The International Society of Precision Agriculture presents the

11th International Conference on

Precision Agriculture

JULY 15 - 18, 2012 • Hyatt Regency Indianapolis, Indiana USA

www.ispag.org/icpa

Conference Program

Colorado State University

IPNI International Plant Nutrition Institute

ISPA

International Society of Precision Agriculture

www.ispag.org

Conference Chairperson

Dr. Rajiv Khosla, President, ISPA
Colorado State University
ICPA@Colostate.edu

Organizing Committee

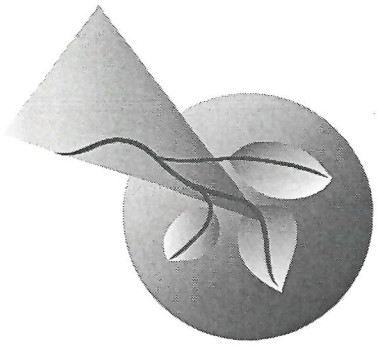
Dr. John Stafford, President-Elect, ISPA
Dr. Nicolas Tremblay, Secretary, ISPA
Dr. Steve Phillips, International Plant Nutrition Institute
Dr. Dwayne Westfall, Colorado State University
Mr. Quentin Rund, PAQ Interactive

Executive Director, ISPA

Dr. Harold Reetz

Conference Coordination

PAQ Interactive



11th International Conference on

Precision Agriculture

JULY 15-18,2012 • **Hyatt Regency**
Indianapolis, Indiana USA

The 11th International Conference on Precision Agriculture will highlight significant research and its applications in precision agriculture and showcase emerging technologies and information management for agriculture. It will offer oral and poster presentations and exhibits, as well as a discussion and exchange of information in various aspects of precision agriculture. The dedicated sessions on Precision A to Z tracks will offer information on key topics for practitioners, crop consultants, advisors, extension personnel, agronomists, producers and other practitioners.

The 11th ICPA is brought to you by the International Society of Precision Agriculture, Colorado State University and International Plant Nutrition Institute.

Colorado State University

IPNI International Plant Nutrition Institute

ISPA
International Society of Precision Agriculture

Program Committee

Conference Chairperson:

Dr. Rajiv Khosla, President, ISPA
Professor of Precision Agriculture
Colorado State University, Fort Collins , CO, USA

Organizing Committee:

Dr. John Stafford, President-Elect, ISPA
Silsoe Solutions, 197, Oliver Street, Ampthill, Bedford MK45 2SG, UK

Dr. Nicolas Tremblay, Secretary, ISPA
Research Scientist
Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, QC, Canada

Dr. Dwayne Westfall, Professor of Soil Fertility
Colorado State University, Fort Collins, CO, USA

Mr. Quentin Rund, ICPA Secretary
PAQ Interactive, Monticello IL, USA

A to Z Track Chair:

Dr. Steve Phillips, Director, Southeast United States
International Plant Nutrition Institute, Owens Cross Roads, AL, USA

Executive Director:

Dr. Harold Reetz, Executive Director, ISPA
Reetz Agronomics, Monticello, IL USA

Theme Session Chairs:

Machine Vision and Imaging Applications to Precision Agriculture

Dr. Daniel Lee Won Suk, Associate Professor
Agricultural & Biological Engineering Dept.
University of Florida, Gainesville, FL, USA

Precision Conservation and Carbon Management

Dr. Jorge A. Delgado, Soil Scientist
Soil Plant Nutrient Research Unit
USDA, Agricultural Research Service, Fort Collins, CO, USA

Precision Horticulture

Dr. Reza Eshani, Associate Professor of Agricultural & Biological Engineering
Citrus Research & Education Center (CREC)
University of Florida, Lake Alfred, FL, USA

Award Committee Chair:

Dr. Bruno Basso
Associate Professor, Dept. Crop Systems, Forest and Env. Sci.Systems
University of Basilicata, Italy

Award Committee Members:

Dr. Ian Yule
Professor in Precision Agriculture Soil and Earth Sciences PN 432, Institute of Natural Resources
Massey University, Private Bag 11222, Palmerston North, New Zealand

Dr. David Franzen
Professor of Soil Science & Extension Specialist
North Dakota State University, USA

Table of Contents

GENERAL

PROGRAM: MONDAY, JULY 16, 2012

Opening Plenary Session

Concurrent Sessions – Morning

Luncheon

Concurrent Sessions – Afternoon

Concurrent Sessions – Late Afternoon

PROGRAM: TUESDAY, JULY 17, 2012

Concurrent Sessions – Morning

Concurrent Sessions – Mid-Morning

Luncheon, Awards, and Entertainment

Concurrent Sessions – Afternoon

Concurrent Sessions – Late Afternoon

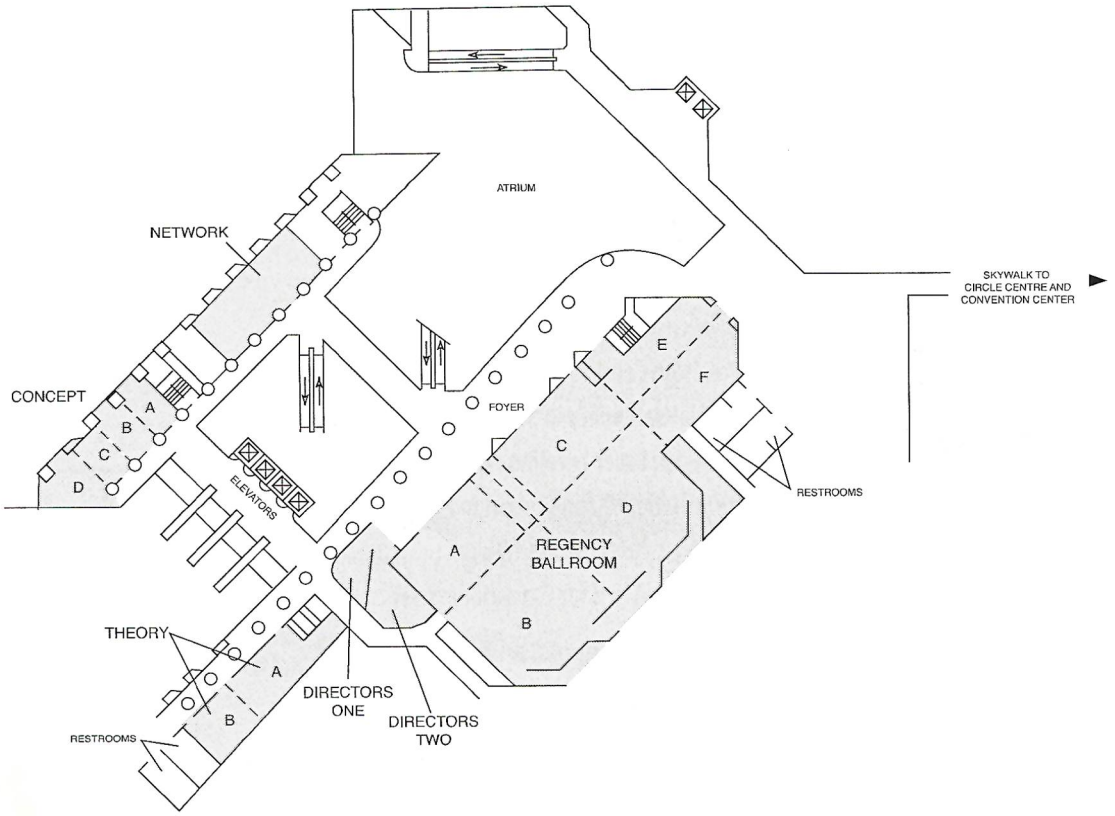
PROGRAM: WEDNESDAY, JULY 18, 2012

Concurrent Sessions – Morning

Closing Plenary Session

Hotel Floor Plans

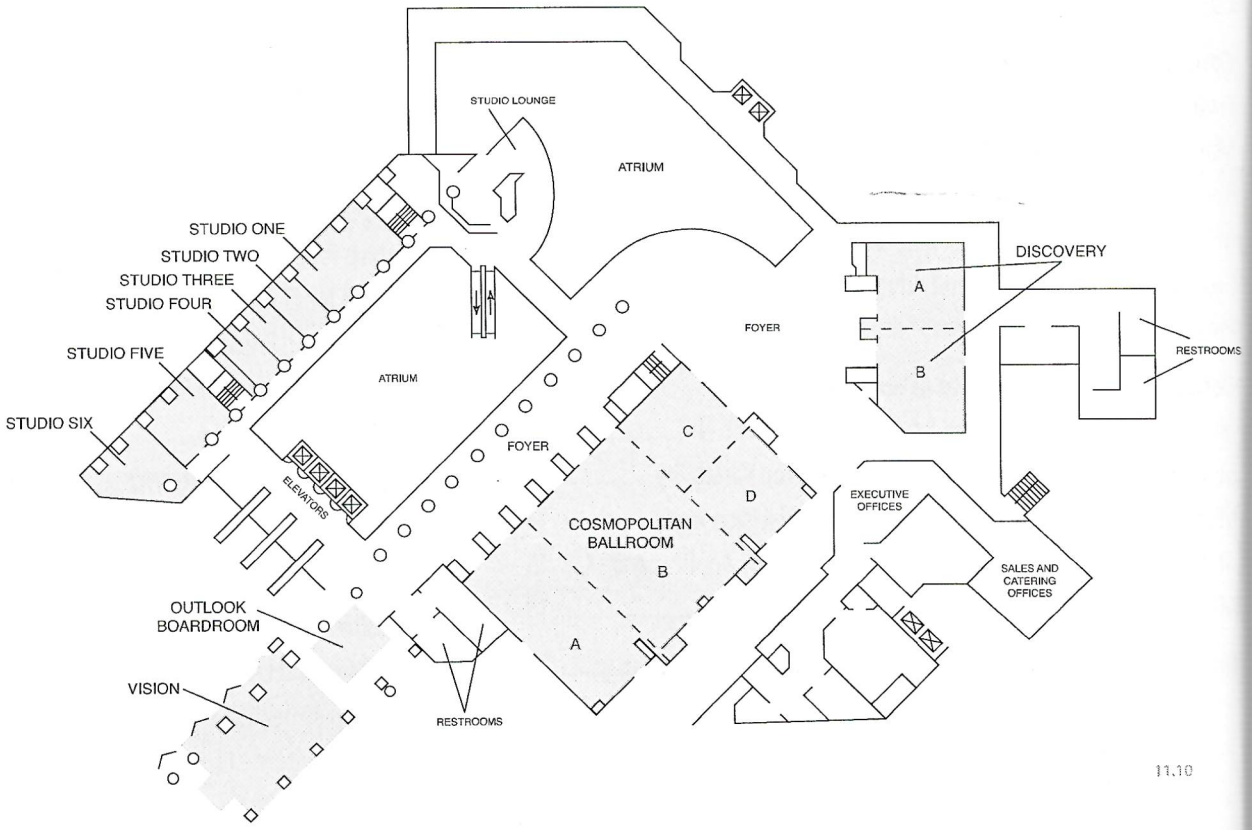
SECOND LEVEL



HYATT™

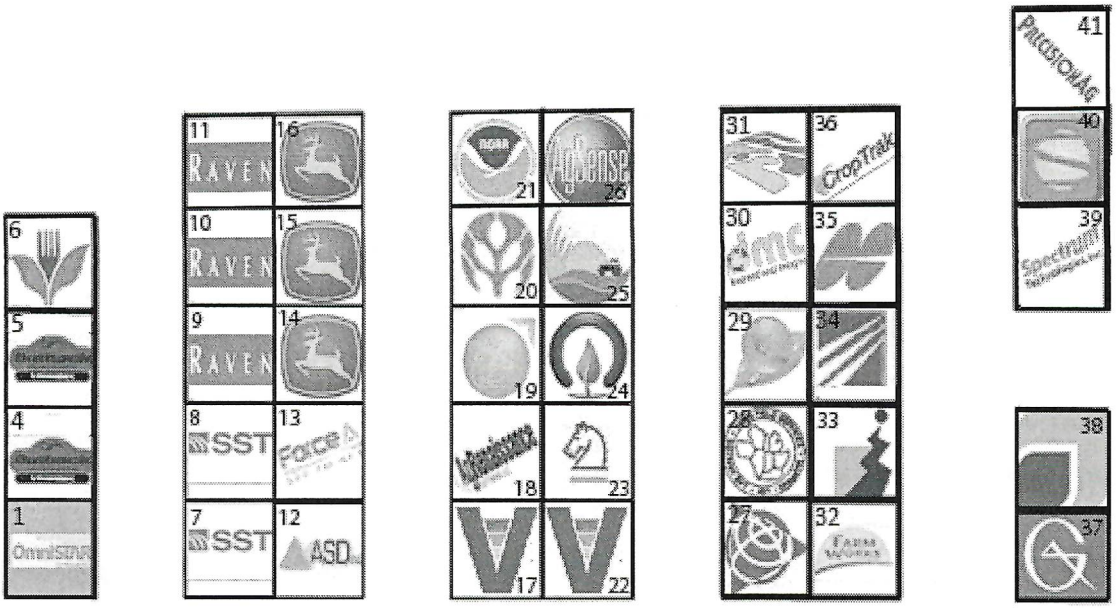
Hyatt Regency
Indianapolis, IN
USA

THIRD LEVEL



11.10

Exhibitor List



AgIntegrated Inc.
State College, PA, USA
(814) 237-5617
www.agintegrated.com

Ag Renaissance Software LLC
Raleigh, NC, USA
(919)-518-8030
www.agrenaissance.com

Agrian Inc.
Fresno, CA, USA
(559) 437-5700
www.agrian.com

Ag Sense LLC
Blaine, MN, USA
(605) 352-8350
www.agsense.net

AMMO Ag
Clarendon Hills, IL, USA
(312) 786-4201
www.ammoag.com

ASD Inc.
Boulder, CO. USA
(303) 444-6522
www.asdi.com

AquaCheck
Perry, IA, USA
(515) 465-5681
www.aquachecktech.com

DMCii Ltd.
Guildford, Surrey, Australia
+44 (0)1483 804299
www.dmcii.com

Farmers Edge Precision Consulting
Overland Park, KS, USA
(913) 710-8596
www.farmersedgeusa.com

Farm Works a Division of Trimble
Westminster, CO, USA
(800) 282-4103
www.trimble.com

Force-A
Orsay, France
+ 33 1 69 35 87 47
www.force-a.com

Geonics Limited
Mississauga, ON, Canada
(905) 670-9580
www.geonics.com

GEOSYS Inc.
Plymouth, MN, USA
+33 (0)5 62 47 80 80
www.geosys.com

John Deere
Urbandale, IA, USA
(866) 404-9057
www.johndeere.com

Lindsay Corporation
Omaha, NE, USA
(402) 829-6800
www.lindsay.com

MapShots Inc
Cumming, GA, USA
(678) 513-6093
www.mapshots.com

National Geodetic Survey - NOAA
Silver Spring, MD, USA
(301) 713-3242
www.geodesy.noaa.gov

OmniSTAR
Houston, Texas, USA
(888)-666-4782
www.omnistar.com

Outback Guidance by Hemisphere GPS/AgJunction
Hiawatha, KS, USA
(800) 247-3808
www.outbackguidance.com

PrecisionAg
Willoughby, OH, USA
(440)-942-2000
www.precisionag.com

Precision Earth / CropTrak
Tucson, AZ, USA
(800)-787-8046
www.croptrak.com

PROGIS
Villach, Austria
(+43) 4242 263 32-0
www.progis.com

Raven Industries
Sioux Falls, SD, USA
(800) 243-5435
www.ravenprecision.com

Satshot
IA, ND, USA
(701) 235-5767
www.satshot.com

Solum Inc.
Mountain View, CA, USA
(650) 963-9775
www.solumtech.com

Spectrum Technologies
Plainfield, IL, USA
(815) 436-4440
www.specmeters.com

Springer
Dordrecht, AA, The Netherlands
(+31) 78 657 60 00
www.springer.com

SST Software
Stillwater, OK, USA
(405) 377-5334
www.sstsoftware.com

Topcon Precision Agriculture
Livermore, CA, USA
(925) 245-8300
www.global.topcorn.com

Trimble
Westminster, CO, USA
(408) 481-8000
www.trimble.com

United Soils INC
Fairbury, IL, USA
(815) 692-2626
www.unitedsoilsinc.com

Veris Technologies
Salina, KS, USA
(785) 825-1978
www.veristech.com

11th ICPA Sponsors

Program Overview

Sunday, July 15

3:00 pm-6:00 pm	**Registration** *Atrium 3rd Floor*
6:00 pm-9:00 pm	**Evening Welcome Reception** *The Eagle's Nest (Top Floor)*

Monday, July 16

6:30 am-9:30 am	Exhibit Hall Setup *Cosmopolitan Ballroom*
7:00 am-5:00 pm	Registration Open *Atrium 3rd Floor*
9:50 am-5:00 pm	Exhibit Hall Open *Cosmopolitan Ballroom*
8:00 am-9:50 am	**Opening Plenary Session** *Regency Ballroom A-D*
9:50 am-10:20 am	**Break in Exhibit Hall** *Cosmopolitan Ballroom*
10:20 am-12:00 pm	**Concurrent Sessions**
	Managing In-Season Crop Variability *Concept*
	Precision Nutrient Management *Network*
	Machine Vision and Imaging Applications to Precision Agriculture - I *Regency E&F*
	Remote Sensing Applications in Precision Agriculture - I *Vision*
	Modeling and Geostatistics - I *Studio One*
	Precision A to Z for Practitioners - I *Discovery*
12:00 pm-1:30 pm	**Luncheon** *Regency Ballroom A-D*
1:30 pm-3:30 pm	**Concurrent Sessions**
	Engineering Technologies and Advances: Equipment - I *Concept*
	Managing Spatial Variability in Soils *Network*
	Remote Sensing Applications for Field Crops *Regency E&F*
	Information Management in Precision Agriculture - I *Vision*
	Profitability, Sustainability and Adoption of Precision Agriculture *Studio One*
	Precision A to Z for Practitioners - II *Discovery*
3:30 pm-4:00 pm	**Break in Exhibit Hall** *Cosmopolitan Ballroom*
4:00 pm-5:00 pm	**Concurrent Sessions**
	Engineering Technologies and Advances: Equipment - II *Concept*
	Sensor Applications in Managing In-Season Crop Variability *Network*
	Machine Vision and Imaging Applications to Precision Agriculture - II *Regency E&F*
	Global Proliferation of Precision Agriculture and Its Applications - I *Vision*
	Modeling and Geostatistics - II *Studio One*
5:00 pm-6:30 pm	**Poster Session and Cash Bar** *3rd Floor Foyer*

Tuesday, July 17

7:00 am-5:00 pm — **Registration Open**
Atrium 3rd Floor

8:00 am-5:00 pm — **Exhibit Hall Open**
Cosmopolitan Ballroom

8:00 am-10:00 am — **Concurrent Sessions**

Engineering Technologies and Advances: Sensors
Concept

Guidance, Robotics and Automation - I
Network

Canopy Sensing for Crop Management - I
Regency E&F

Spatial Water Management
Vision

Precision Horticulture - I
Studio One

Precision A to Z for Practitioners - III
Discovery

10:00 am-10:30 am — **Break in Exhibit Hall**
Cosmopolitan Ballroom

10:30 am-11:30 am — **Concurrent Sessions**

Precision Conservation and Carbon Management
Concept

Spatial Variability in Soil
Network

Precision Laser Leveling Applications
Regency E&F

Information Management in Precision Agriculture - II
Vision

Precision Horticulture - II
Studio One

Precision A to Z for Practitioners - IV
Discovery

11:30 am-1:50 pm — **Luncheon, Awards and Entertainment**
Presentation of Pierre C. Robert Precision Agriculture Award(s) and Graduate Student Award(s)
Regency Ballroom A-D

1:50 pm-3:30 pm — **Concurrent Sessions**

Engineering Technologies and Advances: Water
Concept

Guidance, Robotics and Automation - II
Network

Canopy Sensing for Crop Management - II
Regency E&F

Precision Crop Protection - I
Vision

Remote Sensing Applications in Precision Agriculture - II
Studio One

Precision A to Z for Practitioners - V
Discovery

3:30 pm-4:00 pm — **Break in Exhibit Hall**
Cosmopolitan Ballroom

4:00 pm-5:00 pm — **Concurrent Sessions**

Proximal Sensing for Crop Parameters
Concept

Soil Analysis for Precision Nutrient Management
Network

Flurosensing for Crop Management
Regency E&F

Emerging Issue in Precision Agriculture
Vision

Hyperspectral Remote-Sensing Applications in Agriculture
Studio One

5:00 pm-6:00 pm — **Poster Session and Cash Bar**
3rd Floor Foyer

Wednesday, July 18

7:00 am-10:30 am	Registration Open *Atrium 3rd Floor*
8:00 am-10:30 am	Exhibit Hall Open *Cosmopolitan Ballroom*
8:00 am-10:00 am	**Concurrent Sessions**
	Proximal Sensing for Soil Properties *Concept*
	Global Proliferation of Precision Agriculture and Its Applications - II *Network*
	Precision Dairy and Livestock Management *Regency E&F*
	Precision Crop Protection - II *Vision*
	Precision Horticulture - III *Studio One*
10:00 am-10:30 am	**Break in Exhibit Hall** *Cosmopolitan Ballroom*
10:30 am-12:00 pm	**Closing Plenary Session** *Regency Ballroom A-D*

Opening Plenary Session

Monday, July 16, 2012, 8:00 am

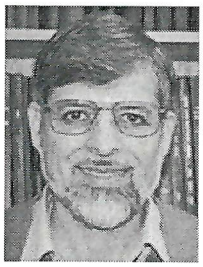
REGENCY BALLROOM A-D

Session Chair: Dr. Rajiv Khosla

Keynote Speakers

Key Advances and Remaining Knowledge Gaps in Remote Sensing for Precision Agriculture

Dr. David Mulla



Dr. Mulla received a Ph.D. degree in Agronomy from Purdue University with emphasis in soil physics (1983). From 1983 to 1995 he was Assistant to Full Professor in the Dept. of Crop and Soil Sciences at Washington State Univ. Since 1995 he has been Professor and Larson Chair for Soil & Water Resources in the Dept. of Soil, Water, and Climate at the Univ. of Minnesota. Since January, 2004 he has been the Director of the Precision Agriculture Center at the Univ. of Minnesota and organized the 7th and 8th International Conferences on Precision Agriculture. In 2007 he was appointed a Founding Fellow in the Univ. of Minnesota's Institute on Environment. In 2011 he was appointed to a National Academy of Sciences committee on water quality standards.

Dr. Mulla and his coauthors (including 40 MS and PhD students) have produced over 200 publications, and have received funding of over $16 million. Dr. Mulla and his colleagues have extensive experience in applying geostatistics, remote sensing and GIS terrain analysis in agricultural, biological and ecological systems, including applications for development of targeted BMP placement and "management zones" in precision agriculture and precision conservation. Broadly speaking, Dr. Mulla's pioneering research on precision agriculture contributed significantly to its adoption in the US and around the world, fostering business opportunities, job growth and greater economic and environmental efficiency in agriculture.

Dr. Mulla is an internationally recognized researcher and scholar. His research has taken him to over 20 countries. He is currently a consultant to the Millennium Challenge Corporation for a project to install erosion control practices and plant 8 million olive trees on 90,000 ha in Morocco. His peers elected him as a Fellow in the Soil Science Society of America (SSSA), and as a Fellow in the Agronomy Society of America. He has served as Associate and Technical Editor for the Soil Science Society of America Journal, and as Associate Editor for the Journal of Precision Agriculture.

From Poking Holes to Precision Sensing: Options Growing for Nutrient Management

Dr. Newell Kitchen

Newell Kitchen is a Soil Scientist with USDA ARS and Adjunct Associate Professor at the University of Missouri. He received his B.Sc. (1984) degree from Brigham Young University, his M.Sc (1986) degree from University of Missouri, and his Ph.D. (1990) degree in Agronomy from Colorado State University. His research focuses on applying new technologies for collecting high-resolution soil and crop information, thereby enabling improved crop production management decisions. He also investigates the impact of various grain and bioenergy cropping systems on soil and water quality. His research is documented in >200 technical publications (including 75 peer-reviewed journal articles, 8 book chapters, and >30 invited papers). He has been active in organizing meeting symposia, editorial service, and currently serves as the Past President of the American Society of Agronomy.

Oral Presentations

Monday, July 16, Morning

Concept

Managing In-Season Crop Variability

Moderator: Dr. Bodo Mistele, Technical University Munich, Germany

10:20 **Use of Corn Height to Improve the Relationship Between Active Optical Sensor Readings and Yield Estimates**
D.W. Franzen, L. Sharma

10:40 **Estimation of Nitrogen of Rice in Different Growth Stages Using Tetracam Agriculture Digital Camera**
M. Saberioon, M.S.M. Amin, A. Gholizadeh

11:00 **Use of Active Crop Canopy Reflectance Sensor for Nitrogen Sugarcane Fertilization**
L.R. Amaral, G. Portz, H.J.A. Rosa, J.P. Molin

11:20 **Development of Ground Based Multi-source Crop Information Collection System**
M. S. Makkar, A. Sharma, S. Gupta

11:40 **Discussion**

Network

Precision Nutrient Management

Moderator: Dr. Richard Ferguson, University of Nebraska Lincoln

10:20 **Precision Nitrogen Management and Global Nitrogen Use Efficiency**
M. L. Gupta, R. Khosla

10:40 **Developing an Integrated Rice Management System for Improved Yield and Nitrogen Use Efficiency in Northeast China**
G. Zhao, Y. Miao, F. Zhang, M. Fan

11:00 **Determination of Optimal Number of Management Zones**
A. Melnitchouck

11:20 **Site-Specific Evaluations of Nitrification Inhibitor with Fall Applications of Liquid Swine Manure**
P. M. Kyveryga, T. M. Blackmer

11:40 **Discussion**

Regency E&F

Machine Vision and Imaging Applications to Precision Agriculture - I

Theme Chair: Dr. Daniel Lee Won Suk, University of Florida

10:20 **A Method for Combining Spatial and Hyperspectral Information for Delineation of Homogenous Management Zones**
S. Cohen, O. Levi, Y. Cohen, V. Alchanatis

10:40 **Spectral Angle Mapper (SAM) Based Citrus Greening Disease Detection Using Airborne Hyperspectral Imaging**
H. Li, W. S. Lee, K. Wang, R. Ehsani, C. Yang

11:00 **An Adaptive Vision Algorithm for Navigation of an Autonomous Pepper Greenhouse Sprayer**
A. Bechar, I. Dar, Y. Edan

11:20 **Evaluation of the Sensor Suite for Detection of Plant Water Stress in Orchard and Vineyard Crops**
R. Dhillon, V. Udompetaikul, F. Rojo, S. Upadhyaya, D. Slaughter, B. Lampinen, K. Shackel

11:40 **Discussion**

12:00 - 1:30 Luncheon
Regency Ballroom A-D

Monday, July 16, Morning

Vision
Remote Sensing Applications in Precision Agriculture - I

Moderator : Dr. Chenghai Yang, USDA-ARS, Texas

10:20 **Automatic Remote Image Processing For Agriculture Uses Through Specific Software**
L. García- Torres, D. Gómez-Candón, J. J. Caballero-Novella, M. Jurado-Expósito, A. de Castro, J.M. Peña-Barragán, F. López-Granados

10:40 **Remote Sensing Imagery Based Agricultural Land Pattern Extraction around Miyajimanuma Wetland**
B. Su, R. Mochizuk, I. Han-ya, K. Ishii, N. Noguchi

11:00 **Evaluating Water Status in Potato Fields Using Combined Information from RGB and Thermal Aerial Images**
R. Rud, Y. Cohen, V. Alchanatis, A. Cohen, M. Sprintsin, A. Levi, R. Brikman, B. Heuer, J. H. Lemcoff, T. Markovits, Z. Dar, C. Rosen, D. Mulla, T. Nigon

11:20 **Monitoring Drought Stress Index in Wheat Field of Mongolia Using Remote Sensing**
B.Erdenee, B.Batbayar, D.Nasandulam

11:40 **Discussion**

Studio One
Modeling and Geostatistics - I

Moderator: Dr. David Mulla, University of Minnesota

10:20 **I-SALUS: New Web Based Spatial Systems for Simulating Crop Yield and Environmental Impact**
B. Basso, T.-Y. Chou, C. Chien, M. Yeh

10:40 **Performance Evaluation of STICS Crop Model to Simulate Corn Growth Attributes in Response to N Rate and Climate Variations**
J. Sansoulet, E. Pattey, B.L. Ma, G. Jégo, N. Tremblay, C. Drury, N. Beaudoin

11:00 **Assessing the Potential of an Algorithm Based On Mean Climatic Data to Predict Wheat Yield**
B. Dumont, V. Leemans, S. Ferrandis, F. Vancutsem, B. Seutin, B. Bodson, M.-F. Destain, J.-P. Destain

11:20 **Statistical Procedure to Compare Farming Procedures with the Observation of Spatial Trends and Correlations in On-Farm Research**
M. Langrock, P. Wagner

11:40 **Discussion**

Discovery
Precision A to Z for Practitioners I

Moderator: Dr. Steve Phillips, IPNI

10:20 **Exploiting the DMC Satellite Constellation for Applications in Precision Agriculture**
G. Holmes, P. Stephens, S. Mackin

10:40 **The Map - Supported By New NPK-Sensors - Is Intelligent, Not the Tractor**
W. H. Mayer

11:00 **A New Approach to Yield Map Creation**
C. Romier, M. Hyrien, D. Lamker

11:20 **Evaluation of PRS(TM) Probe Technology and Model for Variable Rate Fertilizer Application in Hummocky Fields in Saskatchewan**
K. Greer, E. Bremer, J. Burns

11:40 **The Use of Crop Sensors Beyond Nitrogen and Improving the Right to Farm**
C.H. Mackenzie

12:00 - 1:30 Luncheon
Regency Ballroom A-D

Monday, July 16, Afternoon

Concept
Engineering Technologies and Advances: Equipment - I

Moderator: Dr. Tim Stombaugh, University of Kentucky

1:30 **Maximizing Agriculture Equipment Capacity Using Precision Agriculture Technologies**
A.M. Poncet, J.P. Fulton, T.P. McDonald, G. Pate, B. Tisseyre

1:50 **Implementation of ECU For Agricultural Machines Based On IsoAgLib Open Source**
W. Ham , T. Enkhbaatar, B. Luubaatar, K. Hyeokjae

2:10 **Spray Pattern and Droplet Spectra Characteristics from an Actively Controlled Variable-Orifice Nozzle**
J.D. Luck, M.P. Sama, S.A. Shearer

2:30 **Study on Monitoring System of Wheat Sowing**
W. Fu, Z. Meng, G. Wu, J. Dong, H. Mei, C. Zhao

2:50 **Optimization of Forage Harvesting By Automatic Speed Control and Additive Application**
A. Kunnas, J. Backman, A. Visala, A. Suokannas

3:10 **An RFID-Based Variable Rate Technology Fertilizer Applicator for Plantation Tree Crops**
T. A. Ishola, A. Yahya, A. R. M. Shariff, S. A. Aziz

Network
Managing Spatial Variability in Soils

Moderator: Dr. David Bonfill, Institute of Plant Sciences, Israel

1:30 **Digital Aerial Imagery Guides a Statewide Nutrient Management Benchmarking Survey**
T.M. Blackmer, P.M. Kyveryga

1:50 **Soil pH maps Derived from On-The-Go pH-Measurements as Basis for Variable Lime Application under German Conditions: Concept Development and Evaluation in Field Trials**
H.-W. Olfs, A. Borchert, D. Trautz

2:10 **Comparison of Algorithms for Delineating Management Zones**
R. T. Santos, A. M. Saraiva, J. P. Molin

2:30 **Categorization of Districts Based on Nonexchangeable Potassium: Generation GIS Maps and Implications in Efficient K Fertility Management in Indian Agriculture**
Ch. Srinivasa Rao, A. Subba Rao, H. Magen, K. V. Rao, B.Venkateswarlu

2:50 **Discussion**

Regency E&F
Remote Sensing Applications for Field Crops

Moderator: Dr. David Franzen, North Dakota State University

1:30 **Understanding Spatial and Temporal Variability of Wheat Yield: An Integrated System Approach**
B. Basso, C. Fiorentino, A. D' Errico, D. Cammarano

1:50 **Estimation of Leaf Nitrogen Concentration in Barley with In Situ Hyperspectral Measurements**
X. Xu, J. Wang, C. Li, X. Yang, H. Yang

2:10 **Deriving Nitrogen Indicators of Maize Using the Canopy Chlorophyll Content Index**
F. Li, Y. Miao, G. Feng, S. Yue, X. Chen, B. Liu

2:30 **Spectral Models for Estimation of Chlorophyll Content, Nitrogen, Moisture Stress and Growth of Wheat Crop**
M. Singh, B. Singh, A. Sharma, J. Mukherjee, S. K. Thind, R. Kaur

2:50 **Discussion**

3:30 - 4:00 Break in Exhibit Hall
Cosmopolitan Ballroom

Monday, July 16, Afternoon

Vision

Information Management in Precision Agriculture - I

Moderator: Dr. Sakae Shibusawa, Tokyo University of Agriculture and Technology

1:30 **Using Electronic Technology to Remotely Monitor Conditions, Transfer the Data, and Display Data Real-time on the Internet**
J. Nowatzki, R. Ashley

1:50 **A Model to Analyze "As-Applied" Reports of Variable Rate Applications**
A. F. Colaço, H. J. Rosa, J. P. Molin

2:10 **Towards a Multi-Source Record Keeping System for Agricultural Product Traceability**
X. Yang, C. Sun, Z. Ji, L. Zhao, W. Li, C. Zhou, X. Du, J. Xie, T. Wu, L. Qu, L. Hao

2:30 **Aggregating Precision Agriculture Data Across Regions**
T. Griffin

2:50 **Discussion**

Studio One

Profitability, Sustainability and Adoption of Precision Agriculture

Moderator: Dr. Bruce Erickson, American Soceity of Agronomy

1:30 **Using Crop Budgeting Spreadsheets Can Assist Producers In Evaluating The Cost Effectiveness Of Adoption Of The Various Precision Agriculture Technologies**
R.N. Klein, R.K. Wilson

1:50 **The Use of Artificial Neuronal Networks to Generate Decision Rules for Site-Specific Nitrogen Fertilization**
P. Wagner

2:10 **On-Farm Trials Using Precision Ag in Northeast Louisiana**
D. Burns, S. Blanche, R.L. Frazier, J. Kruse, C. Overstreet

2:30 **The Adoption of Information Technologies and Subsequent Changes in Input Use in Cotton Production**
N.M. Thompson, J.A. Larson, B.C. English, D.M. Lambert, R.K. Roberts, M.M. Velandia, C. Wang

2:50 **Adoption and Non-Adoption of Precision Farming Technologies by Cotton Farmers**
M. Pandit, K. P. Paudel, A.K. Mishra, E. Segarra

3:10 **Discussion**

Discovery

Precision A to Z for Practitioners II

Moderator: Dr. Steve Phillips, IPNI

1:30 **A New Sensing System for Immediate and Direct Measurements of Soil Nitrate**
M. Preiner

1:50 **Field Moist Processing for Soil Analysis: Precision Measurement is Required for Precision Management**
M. Preiner

2:10 **Raising Awareness of the Potential of Crop Sensing Technologies to Improve Environmental Stewardship**
B. Ortiz

2:30 **...continuation of Raising Awareness...**
B. Ortiz

3:30 - 4:00 Break in Exhibit Hall
Cosmopolitan Ballroom

Tuesday, July 17, Morning

Concept

Engineering Technologies and Advances: Sensors

Moderator: Dr. John Fulton, Auburn University

8:00 **Probabilistic Relational Model-based Scheduling Approach for Farmland Soil Sensor Network**
R. Zhang, C. Liping, X. Gang

8:20 **3D Acquisition System Applied to Agronomic Scenes**
B. Billiot, P. Gouton, F. Cointault

8:40 **Development of Sensing System Using Digital Photography Technique for Spot-Application of Herbicide in Wild Blueberry Fields**
Y. Chang, Q. Zaman, T. Esau, A. Farooque, A. Schumann, D. Percival

9:00 **Adaptive Sensor Fusion Method for Agricultural and Environmental Monitoring**
M. A. Dota, C. E. Cugnasca

9:20 **An Approach to Selection of Soil Water Content Monitoring Locations within Fields**
L. Pan, V.I. Adamchuk, R. Ferguson

9:40 **Discussion**

Network

Guidance, Robotics and Automation - I

Moderator: Dr. Daniel Schmoldt, USDA-NIFA, Washington, D.C.

8:00 **Research on Straight-Line Path Tracking Control Methods in an Agricultural Vehicle Navigation System**
T. Li, J. Hu, L. Gao, H. Hu, X. Bai, X. Liu

8:20 **Path Tracking Control of Tractors and Steerable Towed Implements Based On Kinematic and Dynamic Modeling**
R. Werner, S. Mueller, G. Kormann

8:40 **Optimizing Path Planning By Avoiding Short Corner Tracks**
M. Spekken, J.P. Molin

9:00 **Improvement Precision Agricultural Communication Schema agroXML Based on Multi-Agents System's Deliberation and Decision Making Processes**
A. Gailums, A. Pentjuss

9:20 **Path Generation Method with Steering Rate Constraint**
J. Backman, T. Oksanen, A. Visala

9:40 **Design and Implementation of Virtual Terminal Based On ISO11783 Standard for Agricultural Tractors**
W. Ham, T. Enkhbaatar, B. Luubaatar, K. Hyeokjae

Regency E&F

Canopy Sensing for Crop Management - I

Moderator: Dr. Ken Sudduth, USDA-ARS, Missouri

8:00 **Measuring Sugarcane Height in Complement to Biomass Sensor for Nitrogen Management**
G. Portz, L. R. Amaral, J. P. Molin

8:20 **Can Active Sensor Based NDVI Consistently Classify Wheat Genotypes?**
M. A. Naser, R. Khosla, L. Longchamps, M. Moragues, S. Haley, R. Reich, G. S. McMaster, G. W. Buchleiter

8:40 **Comparison of Active and Passive Spectral Sensors in Discriminating Biomass Parameters and Nitrogen Status in Wheat Cultivars**
K. Erdle, B. Mistele, U. Schmidhalter

9:00 **Optimum Sugarcane Growth Stage for Canopy Reflectance Sensor to Predict Biomass and Nitrogen Uptake**
G. Portz, L. R. Amaral, J. P. Molin, J. Jasper

9:20 **Evaluation of Differences in Corn Biomass and Nitrogen Uptake at Various Growth Stages Using Spectral Vegetation Indices**
M. S. Torino, B.V. Ortiz, J. P. Fulton, K. Balkcom

9:40 **Discussion**

10:00 - 10:30 Break in Exhibit Hall
Cosmopolitan Ballroom

Tuesday, July 17, Morning

Vision

Spatial Water Management

Moderator: Dr. Ian Yule, Massey University, New Zealand

8:00 **Spatial Apparent Electrical Conductivity (ECa), Soil Moisture and Water Use Efficiency in Vertosol Soils**
J.N. Stanley, D.A. Schneider, D.W. Lamb

8:20 **Precision Tools to Evaluate Benefits of Tile Drainage in a Corn and Soybean Rotation in Iowa**
P.R. Reeg, T.M. Blackmer, P.M. Kyveryga

8:40 **Precision Fertigation in Wheat for Sustainable Agriculture in Saudi Arabia**
V.C. Patil, K.A. Al-Gaadi

9:00 **Transient Water Flow Model in a Soil-Plant System for Subsurface Precision Irrigation**
M. Shukri B. Z. A., S. Shibusawa, M. Ohaba, L. Qichen, M. Kodaira, M. Khalid

9:20 **A High-Reliability Database-Supported Modular Precision Irrigation System**
N. Kamel, S. Sharaf, D. Yousef, A. El-Shafei

9:40 **The Effect of Scheduling Irrigation on Yield, Concentration and Uptake of Nutrient in Zero Tilled Wheat (Triticum Aestivum L.)**
H. Singh, H.K. Sachan, D. Krishna

Studio One

Precision Horticulture - I

Theme Chair: Dr. Reza Eshani, University of Florida

8:00 **Affordable Multi-Rotor Remote Sensing Platform for Applications In Precision Horticulture**
R. Ehsani, S. Sankaran, J. M. Maja, J. C. Neto

8:20 **Early Detection of Oil Palm Fungal Disease Infestation Using A Mid Infrared Spectroscopy Technique**
S. Liaghat, S.B. Mansor, H.Z.M. Shafri, S. Meon, R. Ehsani, S.H.M.N. Azam, N.M. Noh

8:40 **Variable Rate Fertilization for Citrus**
A. F. Colaço, J. P. Molin

9:00 **Remote Control System for Greenhouse Environment Using Mobile Devices**
S.-W. Kang, S.-O. Chung, K.-D. Kim, H.-J Kim, J.-Y. Choi, Y.-S. Zhang, K.-H. Han, S.-O. Hur

9:20 **Determination of Sensor Locations for Monitoring of Soil Water Content in Greenhouse**
D.-K. Ryu, S.-O. Chung, K.-D. Kim, Y.-K Huh, J.-Y. Choi, H.-J. Kim, H.-H. Kim

9:40 **OptiThin - Precision Fruiticulture by Tree-Specific Mechanical Thinning**
R. Gebbers, M. Pflanz, M. Zude, A. Betz, B. Hille, J. Mattner, T. Rachow-Autrum, M. Özyurtlu, A.Schischmanow, M. Scheele, J. Schrenk, L. Schrenk

Discovery

Precision A to Z for Practitioners III

Moderator: Dr. Steve Phillips, IPNI

8:00 **AMMO Ag: Agricultural Marketing & Merchandising Optimizer**
D. Dempsey

8:20 **...continuation of AMMO Sponsor Presentation**
D. Dempsey

8:40 **John Deere FarmSight™**
M. Stelford

9:00 **...continuation of John Deere FarmSight™**
M. Stelford

9:20 **Real-Time Fluorescence Sensors for Precision Agriculture**
J.-L. Ayral

9:40 **...continuation of Real-Time Fluorescence Sensors...**
J.-L. Ayral

10:00 - 10:30 Break in Exhibit Hall
Cosmopolitan Ballroom

Tuesday, July 17, Mid-morning

Concept

Precision Conservation and Carbon Management

Theme Chair: Dr. Tom Mueller, University of Kentucky

10:30 **Cloud Computing, Web-Based GIS, Terrain Analysis, Data Fusion, and Multivariate Statistics for Precision Conservation in the 21st Century**
T. Mueller, S. Neelakantan, E. Rienzi, B. Mijatovic, A. Castrignano, A. Pike, C. Bumgardner

10:50 **A Scheme of Precision Carbon Farming for Paddy**
S. Shibusawa, M. Kodaira, Y. Li, T. Oomori, B. Siti Noor Aliah

11:10 **A New Version of the Nitrogen Trading Tool (NTT) To Assess Nitrogen Management across the USA**
J. A. Delgado, J. C. Ascough II

Network

Spatial Variability in Soil

Moderator: Dr. Siva Balasundram, University of Putra, Malaysia

10:30 **Landscape Influences on Soil Nitrogen Supply and Water Holding Capacity for Irrigated Corn**
R. Ferguson, T. Shaver, N. Ward, S. Irmak, S. Van Donk, D. Rudnick, B. Wienhold, M. Schmer, V. Jin, D. Francis, V. I. Adamchuk, L. Hendrickson

10:50 **Relationship of Soil Properties to Apparent Ground Conductivity in Wild Blueberry Fields**
F.S. Khan, Q.U. Zaman, A.A. Farooque, S.R. Saleem, A.W. Schumann, A. Madani, D.C. Percival

11:10 **Discussion**

Regency E&F

Precision Laser Leveling Applications

Moderator: Dr. Alex Melnitchouck, Canada

10:30 **Evaluation of Application Effect of the Laser Land Leveling Technology in Typical Areas of China**
W. Guangwei, M. Zhijun, C. Liping, F. Weiqiang, D. Jianjun

10:50 **Impact of Precision Leveling On Spatial Variability of Moisture Conservation in Arid Zones of Karnataka**
P. S. Kanannavar, P. Balakrishnan, B. T. Pujari, M.B. Patil, S. K. Upadhyaya

11:10 **Laser Leveling Holds a Lot Of Promise in Water Conservation and Saving in Dry Zones (Drought Prone Areas) of Karnataka**
P. S. Kanannavar, P. Balakrishnan, B. T. Pujari, M.B. Patil, S. K.Upadhyaya

11:30 - 1:50 Luncheon, Awards and Entertainment
Regency Ballroom A-D

Tuesday, July 17, Mid-morning

Vision

Information Management in Precision Agriculture - II

Moderator: Dr. Ricardo Inamasu, Embrapa, Brazil

10:30 **Ontology for Data Representation in the Production of Cotton Fiber in Brazil**
C. J. Santos, A. R. Hirakawa

10:50 **Issues in Analysis of Soil-Landscape Effects in a Large Regional Yield Map Collection**
D. B. Myers, N. R. Kitchen, K. A. Sudduth

11:10 **Discussion**

Studio One

Precision Horticulture - II

Moderator: Dr. Reza Ehsani, University of Florida

10:30 **Validation of Variable Rate Spray Decision Rules in Intricate Micro-Metrological Conditions**
L. R. Khot, R. Ehsani, G. Albrigo, W. Swen, J. Camargo Neto, J. Campoy, C. Wellington

10:50 **Impact of Variable Rate Fertilization on Nutrients Losses in Surface Runoff for Wild Blueberry Fields**
S.R. Saleem, Q.U. Zaman, H.N. Ahmad, A.A. Farooque, F. Khan, A.W. Schumann, A. Madani, D.C. Percival

11:10 **Sensor Fusion on a Wild Blueberry Harvester for Fruit Yield, Plant Height and Topographic Features Mapping to Improve Crop Productivity Productivity**
A.A. Farooque, Y. K. Chang, Q. U. Zaman, T. J. Esau, D. Groulx, A.W. Schumann

Discovery

Precision A to Z for Practitioners IV

Moderator: Dr. Steve Phillips, IPNI

10:30 **Raven Sponsor Presentation: Slingshot Overview**
D. Schwiesow

10:50 **Precision Agriculture and Springer**
M. Walsh

11:30 - 1:50 Luncheon, Awards and Entertainment
Regency Ballroom A-D

Tuesday, July 17, Afternoon

Concept
Engineering Technologies and Advances: Water

Moderator: Dr. Bruno Basso, University of Basilicata, Italy

1:50 **Farmer Uptake of Variable Rate Irrigation Technologies in New Zealand**
C. Hedley, I. Yule

2:10 **Adaptive Control of Capillary Water Flow Under Modified Subsurface Irrigation Based on a SPAC Model**
M. Ohaba, M. Shukri B. Z. A., L. Qichen, S. Shibusawa, M. Kodaira, K. Osato

2:30 **Design Of A Data Acquisition System For Weighing Lysimeters**
W. Huang, L. Chen, C. Zhang, X. Xue

2:50 **Water Distribution Response in a Soil-Root System for Subsurface Precision Irrigation**
Q. Li, S. Shibusawa, M. Ohaba, M. Shukri B. Z. A., M. Kodaira

3:10 **Study on Water Distribution Measurement in Sand Using Sound Vibration**
T. Sugimoto, Y. Nakagawa, T. Shirakawa, M. Sano, M. Ohaba, S. Shibusawa

Network
Guidance, Robotics and Automation - II

Moderator: Dr. Shrini Upadhyaya, University of California, Davis

1:50 **Evaluation of The Advantages of Using GPS-Based Auto-Guidance on Rolling Terrain Peanut Fields**
B. V. Ortiz, G. Vellidis, K. Balkcom, H. Stone, J. P. Fulton, E. van Santen

2:10 **A Remote Interface for a Human-Robot Cooperative Vineyard Sprayer**
R. Berenstein, I. B. Halevi, Y. Edan

2:30 **Compatible ISOBUS Applications Using a Computational Tool for Support the Phases of the Precision Agriculture Cycle**
R. D. Pereira, W. C. Lopes, G. Domingues, A. J. V. Porto, R. Y. Inamasu, R. V. Sousa

2:50 **A Low Cost, Modular Robotics Tool Carrier for Precision Agriculture Research**
K. Jensen, S.H. Nielsen, R.N. Jørgensen, A. Bøgild, N.J. Jacobsen, O.J. Jørgensen, C.L. Jaeger-Hansen

3:10 **Discussion**

Regency E&F
Canopy Sensing for Crop Management - II

Moderator: Dr. Jess Lowenberg-DeBoer, Purdue University

1:50 **Vegetation Indices from Active Crop Canopy Sensor and Their Potential Interference Factors on Sugarcane**
L. Taubinger, L.R. Amaral, J.P. Molin

2:10 **Performance of Two Active Canopy Sensors for Estimating Winter Wheat Nitrogen Status in North China Plain**
Q. Cao, Y. Miao, X. Gao, G. Feng, B. Liu, R. Khosla

2:30 **Appropriate Wavelengths for Winter Wheat Growth Status Based On Multi-Spectral Crop Reflectance Data**
V. R. Sharabian, N. Noguchi, I. Han-ya, K. Ishii

2:50 **Impact of Nitrogen (N) Fertilization on the Reflectance of Cotton Plants at Different Spatial Scales**
F.M. Muharam, S. Maas

3:10 **Discussion**

3:30 - 4:00 Break in Exhibit Hall
Cosmopolitan Ballroom

Tuesday, July 17, Afternoon

Vision
Precision Crop Protection - I

Moderator: Dr. Alexandre Escola, Universitat de Lleida, Spain

1:50 **A Non-Destructive Method of Estimating Red Tip Disease in Pineapple**
S. K. Balasundram, A. K. Faizah, G. Vadamalai, M. H. A. Husni

2:10 **Precision Tools to Evaluate Alternative Weed Management Systems in Soybean**
T. M. Blackmer, P. M. Kyveryga

2:30 **The Effect of Leaf Orientation on Spray Retention on Blackgrass**
M. Massinon, H.H. Boukhalfa, P.-Y. Maréchal, F. Lebeau

2:50 **BrainWeed - Teach-In System for Adaptive High Speed Crop / Weed Classification and Targeting**
T. M. Giselsson, H. S. Midtiby, R. N. Jørgensen

3:10 **Use of Non-Invasive Sensors to Detect Beneficial Effects of Fungicides on Wheat Physiology**
C. A. Berdugo, A.-K. Mahlein, U. Steiner, E.-C. Oerke, H.-W. Dehne

Studio One
Remote Sensing Applications in Precision Agriculture - II

Moderator: Dr. Jose Molin, University of Sao Paulo, Brazil

1:50 **Position Error of Input Prescription Map Delineated From Remote Images**
L. García-Torres, D. Gómez-Candón, J.J. Caballero-Novella, J.M. Peña-Barragán, M. Jurado-Expósito, A. I. de Castro, F. López-Granados

2:10 **Maturity Grape Indicators Obtained By Means Of Earth Observation Techniques**
J. Sanz, J. L. Casanova, A. Romo, S. Fraile

2:30 **Application of RS, GPS & GIS in a National Monitoring System for Accurate Range Assessment**
H. Arzani, M. Farahpour, M. Azimi, H. Kaboli, H. Mirdavodi, M. Borhani, J. Abdollahi

2:50 **Potential of Visible and Near Infrared Spectroscopy for Prediction of Paddy Soil Physical Properties**
A. Gholizadeh, M.S.M. Amin, M. Saberioon

3:10 **Spectral Characterization to Discriminate Grass Weeds from Wheat Crop Using Remote Sensing and GIS for Precision Agriculture and Environmental Sustainability**
R. Randhawa, R.K. Mahey, J.S. Mahal, P.K. Kingra, K. Pukhraj

Discovery
Precision A to Z for Practitioners V

Moderator: Dr. Brian Arnall, Oklahoma State University

1:50 **Use of Zone or Grid Soil Nutrient Management as Part of an Integrated Site-Specific Nutrient Strategy**
D. Franzen

2:10 **Davco's Journey Into Precision Sugarcane Farming**
D. Cox

2:30 **Making the Most of Precision Ag Data: Big Data in Farm Management**
T. Griffin

2:50 **Sensor Algorithms 101**
B. Arnall

3:10 **...continuation of Sensor Algorithms 101**
B. Arnall

3:30 - 4:00 Break in Exhibit Hall
Cosmopolitan Ballroom

Tuesday, July 17, Late Afternoon

Concept

Proximal Sensing for Crop Parameters

Moderator: Dr. Yuxin Miao, China Agricultural University

4:00 **Assessing Water Status in Wheat under Field Conditions Using Laser-Induced Chlorophyll Fluorescence and Hyperspectral Measurements**
B. Mistele, S. Elsayed, U. Schmidhalter

4:20 **Proximal Sensing Tools to Estimate Pasture Quality Parameters**
R. Pullanagari, I. Yule, M. Tuohy, M. Hedley, W. King, R. Dynes

4:40 **Mapping the Leaf Area Index In Vineyard Using a Ground-Based LIDAR Scanner**
J. Arnó, I. Del Moral, A. Escolà, J. Company, J. Masip, R. Sanz, J.R. Rosell, J.A. Martínez-Casasnovas

Network

Soil Analysis for Precision Nutrient Management

Moderator: Dr. Chunjiang Zhao, NERCITA, Beijing, China

4:00 **Stable Isotope N-15 as Precision Technique to Investigate Elemental Sulfur Effects on Fertilizer Nitrogen Use Efficiency of Corn Grown in Calcareous Sandy Soils**
A. Soaud, M.Rahman, F. H. Al Darwish

4:20 **Spatial Variability of Soil Properties in Intensively Managed Tropical Grassland in Brazil**
A. C. C. Bernardi, G. M. Bettiol, P. P. A. Oliveira, M. Campana, L. M. Rabello, R. Y. Inamasu

4:40 **Discussion**

Regency E&F

Flurosensing for Crop Management

Moderator: Dr. Madan Gupta, University of Queensland, Australia

4:00 **Early Detection of Corn N-Deficiency by Active Fluorescence Sensing in Maize**
L. Longchamps, R. Khosla, D.G. Westfall

4:20 **Using Multiplex® to Manage Nitrogen Variability in Champagne Vineyard**
O. Garcia, S. Debuisson, M. Morlet, C. Germain, L. Panigai, M. Le Moigne, El M. Fadaili, N. B. Ghozlen, Z. G. Cerovic

4:40 **Potential Indicators Based On Leaf Flavonoids Content for the Evaluation of Potato Crop Nitrogen Status**
F. B. Abdallah, J.P. Goffart

5:00 - 6:00 Poster Session and Cash Bar
3rd Floor Foyer

Tuesday, July 17, Late Afternoon

Vision

Emerging Issue in Precision Agriculture

Moderator: Dr. M. B. Patil, University of Agricultural Sciences, India

4:40 **Using Soil Attributes To Model Sugar Cane Quality Parameters**
F. A. Rodrigues Junior, P. S. G. Magalhães, H. C. J. Franco, D. G. P. Cerri

4:00 **Evaluation of Photovoltaic Modules at Different Installation Angles and Times of the Day**
K.-S. Bae, S.-O. Chung, J.-W. Kong, Y.-K. Huh, Y.-S. Chae, S.-O. Hur, D.-H. Lee

4:20 **Application of Information Technologies in Precision Apiculture**
A. Zacepins, E. Stalidzans, J. Meitalovs

Studio One

Hyperspectral Remote-Sensing Applications in Agriculture

Moderator: Dr. Yanbo Huang, USDA-ARS, Mississippi

4:00 **Ground Level Hyperspectral Imagery for Weeds Detection in Wheat Fields**
I. Herrmann, U. Shapira, A. Karnieli, S. Kinast, D.J. Bonfil

4:20 **Hyperspectral Imagery for the Detection of Nitrogen Stress in Potato for In-season Management**
T. Nigon, C. Rosen, D. Mulla, Y. Cohen, V. Alchanatis, R. Rud

4:40 **Model for Remote Estimation of Nitrogen Contents of Corn Leaf Using Hyper-Spectral Reflectance under Semi-Arid Condition**
M. N. Tahir, J. Li, B. Liu, G. Zhao, Y. Fuqi, C. Chengfeng

5:00 - 6:00 Poster Session and Cash Bar
3rd Floor Foyer

Wednesday, July 18, Morning

Concept

Proximal Sensing for Soil Properties

Moderator: Dr. Mats Soderstrom, Swedish University of Agricultural Sciences

8:00 **Estimating Soil Quality Indicators with Diffuse Reflectance Spectroscopy**
K.A. Sudduth, R.J. Kremer, N.R. Kitchen, D.B. Myers

8:20 **The Ultimate Soil Survey in One Pass: Soil Texture, Organic Matter, pH, Elevation, Slope, and Curvature**
G. Kweon, E. Lund, C. Maxton

8:40 **Improvement of the Quality of "On-The-Go" Recorded Soil pH**
T. Leithold, P. Wagner, M. Schneider

9:00 **Nineteen-Soil-Parameter Calibration Models and Mapping for Upland Fields Using the Real-Time Soil Sensor**
M. Kodaira, S. Shibusawa, K. Ninomiya

9:20 **Discussion**

Network

Global Proliferation of Precision Agriculture and Its Applications - II

Moderator: Mr. Marc Vanacht, Ag Business Consultant, Missouri

8:00 **The Opportunities to Implement Precision Agriculture Technology in Indonesia: A Review**
S. Virgawati

8:20 **Brazilian Precision Agriculture Research Network**
R. Y. Inamasu, J. M. Naime, E. P. Fragalle, L. R. Queiros, A. V. Resende, M. F. Vilela, L. H. Bassoi, N. B. Perez, A. C. C. Bernardi

8:40 **System Approach to Implementing Precision Agriculture in Ukraine**
I. Boiko

9:00 **Precision Nutrient Management in Cotton- A Case Study from India**
M. Patil, U.K Shanwad, H. Veeresh, N.L Rajesh, P.S.Kanannavar, Shailendrakumar

9:20 **Discussion**

Regency E&F

Precision Dairy and Livestock Management

Moderator: Dr. Newell Kitchen, USDA-ARS, Missouri

8:00 **Challenges and Opportunities for Precision Dairy Farming in New Zealand**
I. J. Yule, C.R. Eastwood

8:20 **Field Evaluation of Automated Estrus Detection Systems - Meeting Farmers' Expectation**
B. Dela Rue, C. Kamphuis, C Burke, J. Jago

8:40 **The Use of Sensing Technologies to Monitor and Track the Behaviour of Cows on a Commercial Dairy Farm**
I.G. Draganova, I. Yule, M. Stevenson

9:00 **Two On-Farm Tests to Evaluate In-Line Sensors for Mastitis Detection**
C. Kamphuis, B. Dela Rue, J. Jago

9:20 **Influence Of Phosphorus Application With Or Without Nitrogen On Oat (Avena Sativa) Grass Nutritive Value And In Situ Digestion Kinetics In Buffalo Bulls**
M.A.Shahzad, M.Nisa, M.Sarwar, I. Babar, N.A.Tauqir

9:40 **Discussion**

10:00 - 10:30 Break in Exhibit Hall
Cosmopolitan Ballroom

10:30 - 12:00 Closing Plenary Session
Regency Ballroom A-D

Wednesday, July 18, Morning

Vision

Precision Crop Protection - II

Moderator: Dr. Audun Korsaeth, Norwegian Institute for Agricultural and Environmental Research

8:00 **Estimating the Plant Stem Emerging Points (PSEPS) of Sugar Beets at Early Growth Stages**
H. S. Midtiby, R. N. Jørgensen, T. M. Giselsson

8:20 **Comparison and Evaluation of Spray Characteristics of Three Types of Variable-Rate Spray**
W. Deng, C. Zhao, J. Zhou

8:40 **Thermography as Sensor for Downy Mildew on Roses**
S. Gómez, E.-C. Oerke, H.-W. Dehne, U. Steiner

9:00 **Modeling and Decision Support System for Precision Cucumber Protection in Greenhouses**
M. Li, X. Yang, S. Qiao, C. Sun, J. Qian, Z. Ji, M. Chen, C. Zhao

9:20 **Spatial Econometric Approaches to Develop Site-Specific Nematode Management Strategies in Cotton Production**
Z. Liu, T. Griffin, T. Kirkpatrick

9:40 **Pesticide Drift Control with Wireless Sensor Networks**
I. M. Santos, C. E. Cugnasca

Studio One

Precision Horticulture - III

Moderator: Dr. Michael Blanke, University of Bonn, Germany

8:00 **Young Leaf Detection for Spot Spray Treatment of Citrus Canopies to Control Psyllids**
P.A. Larbi, R. Ehsani, M. Salyani, J.M. Maja, A.R. Mishra

8:20 **Determination of Sensor Locations for Monitoring of Greenhouse Ambient Environment**
M.-J. Ryu, S.-O. Chung, K.-D. Kim, Y.-K Huh, S.-O. Hur, S.-K. Ha, K.-H. Han, H. H. Kim

8:40 **Variability in Soil Water Content and Sensor-Based Irrigation Scheduling for Protected Ginseng Production**
S.-O. Chung, B.-K. Cho, J.-W. Cho

9:00 **Recognition Algorithms for Detection of Apple Fruit in an Orchard for Early Yield Prediction**
R. Zhou, L. Damerow, M. Blanke

9:20 **Use of Cluster Regression for Yield Prediction in Wine Grape**
R. A. Ortega, L. E. Acosta, L. A. Jara

9:40 **Discussion**

10:00 - 10:30 Break in Exhibit Hall
Cosmopolitan Ballroom

10:30 - 12:00 Closing Plenary Session
Regency Ballroom A-D

TOPIC	BOARD #	POSTER TITLE	AUTHOR(S)
PRECISION CROP PROTECTION	1	Development of a Quick Diagnosis Method to Target Fields with Better Potential for Site-Specific Weed Management	L. Longchamps, B. Panneton, M.-J. Simard, G.D. Leroux
	2	Monitoring Soybean Root Development under Till-System Management (TSM) at Dry-Farming Conditions	B. Sani, H. Aliabadi Farahani
PRECISION HORTICULTURE	3	Research on Nutrition and Quality Detection Technology of Soil, Leaf and Fruit of Citrus Based on and Digital Image Spectroscopic Techniques	S.L. Yi, L. Deng, S.L. He, Y.Q. Zheng
	4	Spatial Variability of Inceptisol and Entisol Soils and Their Effect on Merlot Grape Must Composition	A. Miele, C.A. Flores, J.M. Filippini-Alba
	5	Remote Sensing of Nitrogen and Water Status on Boston Lettuce Transplants in a Greenhouse Environment	M. Tempesta, G.P. Gianquinto, N. Tremblay, P. Vigneault, M.Y. Bouroubi, M. Dorais
PRECISION DAIRY AND LIVESTOCK MANAGEMENT	6	Remote Collection of Behavioral and Physiological Data to Detect Lame Cows	C. Kamphuis, J. Burke, J. Jago
PRECISION NUTRIENT MANAGEMENT	7	A Statistical and an Agronomic Approach for Definition of Management Zones in Corn and Soybean	C. L. Bazzi, E. G. Souza, R. Khosla, R. M. Reich
	8	Use of Chemical and Physical Attributes Of the Soil in Management Units Definition	C. L. Bazzi, E. G. Souza, M. A. Uribe-Opazo, L. H. P. Nobrega, D. M. Rocha
	9	Economic Evaluation of a Variable Lime Application Strategy Based on Soil pH Maps Derived from On-The-Go pH-Measurements under German Conditions	H.-W. Olfs, A. Borchert, D. Dabbelt, G. Recke, D. Trautz
	10	Effect of Urea Application through Drip Irrigation on Yield, Water and Nitrogen Use Efficiency of Summer Bitter Gourd	S. B. Goswami, S. Saha
SENSOR APPLICATION IN MANAGING IN-SEASON CROP VARIABILITY	11	Active Sensor Performance – Dependence to Measuring Height, Light Intensity and Device Temperature	S. Kipp, B. Mistele, U. Schmidhalter
	12	A Comparison of Plant Temperatures as Measured By Thermal Imaging and Infrared Thermometry	H. Hackl, P. Baresel, B. Mistele, Y. Hu, U. Schmidhalter
	13	Assembly of an Ultrasound Sensors System for Mapping of Sugar Cane Height	M. J. Silva, A. H. S. Garcia, F. Rodrigues Júnior, A. Bastos, P. S. Graziano Magalhães
	14	In-season Diagnosis of Rice Nitrogen Status Using an Active Canopy Sensor	Y. Yao, Y. Miao, S. Huang, R. Jiang, S. Huang, M. Gnyp, G. Bareth, R. Khosla

Poster Sessions, Monday

TOPIC	BOARD #	POSTER TITLE	AUTHOR(S)
PRECISION AERIAL APPLICATION	15	Current Status and Future Directions of Precision Aerial Application For Site-Specific Crop Management In The USA	Y. Lana, S. J. Thomson, Y. Huang, W. C. Hoffmann, H. Zhang
	16	Ultra-low Altitude and Low Spraying Technology Research in Paddy	X. Xue, W. Qin, Y. Lan
REMOTE SENSING APPLICATION IN PRECISION AGRICULTURE	17	Variation in Nitrogen Use Efficiency for Multiple Wheat Genotypes across Dryland and Irrigated Cropping Systems	M. A. Naser, R. Khosla, L. Longchamps, M. Moragues, S. Haley, R. Reich, G. S. McMaster, G. W. Buchleiter
	18	Comparing Sensing Platforms for Crop Remote Sensing	L. Longchamps, R. Khosla
	19	Estimation of Soil Moisture from RADARSAT-2 Multi-Polarized SAR Data over Wheat Fields	G. Yang, C. Zhao, W. Huang, J. Wang
	20	Estimation of Rice Yield from MODIS Data in West Java, Indonesia	C. Hongo, T. Furukawa, G. Sigit, M. Maki and K. Honma, K. Yoshida, K. Oki, H. Shirakawa
	21	Applications for Precision Agriculture: the Italian Experience of SIRIUS Project	F. Altobelli, P. Nino, F.Vuolo, S. Vanino, F. Lupia, I. Namdarian, C. De Michele
	22	Assessment of Land Use Changes in Dirab Region of Saudi Arabia Using Remotely Sensed Imageries	K. A. Al-Gaadi
	23	Remote NIR-Sensor Fusion with Weather Data for Improved Prediction of Wheat Yield Models	S.I. Øvergaard, A. Korsaeth, T. Isaksson
	24	Estimating Crop Leaf Area Index from Remotely Sensed Data: Scale Effects and Scaling Methods	Y.Y. Dong, J.H. Wang, C.J. Li, G.J. Yang, X.Y. Song, W.J Huang, Y.Y. Dong, and J.H. Wang
PROFITABILITY, SUSTAINABILITY, AND ADOPTION	25	Adoption and Tendencies of Precision Agriculture Technologies in the Tocantins State, Brazil	C.A. Junior, L.Bortolon, E. Borghi, A.L. Junior, E.S.O. Bortolon, A. Aires de Freitas, R. Y. Inamasu
EMERGING ISSUES IN PRECISION AGRICULTURE (ENERGY, BIOFUELS, CLIMATE CHANGE)	26	Climatological Diagnostic Analysis: A Case Study for Parbhani District in Marathwada Region of India	M. S. Pendke, S. N. Pawar, A. K. Gore, G. U. Shinde

TOPIC	BOARD #	POSTER TITLE	AUTHOR(S)
Food Security	27	Microbial Contaminants in Cocoa Powder Samples in South – West Nigeria	O. Jayeola
	28	Enhancing Farmers' Indigenous Knowledge Management in Cassava Varietal Trial Using Agro Ecosystem Analysis, Farmers' Drama Group and Animations in Eastern part of Nigeria	R.N. Nwakwasi, C.C. Asiabaka, and F.N. Nnadi, J. Chikaire, O.M. Adesope, C.C. Ifeanyi-Obi
	29	Farmers Cooperatives in Georgia as Key Factor for Food Security	K. Nadiradze
SPATIAL VARIABILITY IN CROP, SOIL AND NATURAL RESOURCES	30	Local And Regional Soil Clay Mapping Using Gamma Ray Spectrometry	M. Söderström, H. Stadig
	31	Long Term Effects of Irrigation with Sewage Effluent on Some Soil Properties	Al-Omran A.M., M. Alwabel, S. Al -Sharani
	32	Natural Resources Management through Frontier Technologies - A Case Study from India	U. K. Shanwad, N. L. Rajesh, M. B. Patil
	33	Evaluation of Application Effect of the Laser Land Leveling Technology in Typical Areas of China	W. Guangwei, M. Zhijun, C. Liping, F. Weiqiang, D. Jianjun
	34	Soil Spatial Variability in the Everglades Agricultural Area in South Florida	J.L. Pantoja, S.H. Daroub, O.A. Diaz
	35	Precision Tools to Evaluate Benefits of Tile Drainage in a Corn and Soybean Rotation in Iowa	P.R. Reeg, T.M. Blackmer, P.M. Kyveryga
	36	Analysis of Spatial Variability of Key Soil Attributes In North-Central Ukraine	V.I. Adamchuk, Y.I. Boiko
	37	Spatial Variability of Sugarcane Yields in Relation to Soil Salinity in Louisiana	R. M. Johnson, R. P. Viator
	38	Spatial and Temporal Variability of Corn Grain Yield as a Function of Soil Parameters, and Climate Factors	M. S. Rodrigues, J. E. Corá, E. A. Rienzi, T. G. Mueller, A. Castrignanò
	39	On-The-Go pH Sensor: An Evaluation in a Kentucky Field	M. S. Rodrigues, E. M. Gianello, B. Mijatović, E. A. Rienzi, T. G. Mueller, A. Castrignanò
	40	Measurement of Systematic Errors in Crop Prediction	A.M. Denton, E.W. Momsen, J.X. Xu

Poster Sessions, Tuesday

TOPIC	BOARD #	POSTER TITLE	AUTHOR(S)
PRECISION CONSERVATION AND CARBON MANAGEMENT	41	Cloud Computing and Web 2.0 Mapping Technologies for Disseminating Land Use Planning Information	S. Neelakantan, T. Mueller, B. Mijativoc, E. Rienzi, C. Bumgardner
	42	Indexes for Targeting Buffer Placement to Improve Water Quality	M.G. Dosskey, Z. Qiu
	43	Soil Organic Carbon Multivariate Predictions Based on Diffuse Spectral Reflectance: Impact of Soil Moisture	E. A. Rienzi, B. Mijatovic, T.G. Mueller, C.J. Matocha, F. J. Sikora
	44	Soil Salinity, Sand Encroachment and Erosion as Indicators of Land Degradation in Harad Center, Saudi Arabia	A.S. Modaihsh, Sallam, A. Sh., Mahjoub, M.O.
ENGINEERING TECHNOLOGIES AND ADVANCES	45	Measuring Error on Working Depth of Real-time Soil Sensor	R. Kanda, S. Shibusawa, M. Kodaira
	46	Developing a Human-Robot Collaborative System for Precision Agricultural Tasks	A. Bechar, J. Wachs, J. Lumkes, S. Nof
	47	Architecture and Model of Data Integration between Management Systems and Agricultural Machines for Precision Agriculture	W. C. Lopes, R. R. D. Pereira, M. L. Tronco, A. J. V. Porto, R. Y. Inamasu, R. V. Sousa
	48	Implementation of a Controller Unit Based on the ISO 11783 Standard for Automatic Measurement of the Electrical Conductivity of the Soil	R.V. Sousa, R.R.D. Pereira, W.C. Lopes, L.M. Rabello, R.Y. Inamasu
	49	An Approach to Making Non-Smell Composting System : Case Study in Fuchu	R. Fusamura, S. Shibusawa, S. Yagi, M. Kodaira
PROXIMAL SENSING IN PRECISION AGRICULTURE	50	Temporal N Status Evaluation Using Hyperspectral Vegetation Indices in a Potato Crop	T. Morier, A. N. Cambouris, K. Chokmani
	51	Integrated Crop Canopy Sensing System for Spatial Analysis of In-Season Crop Performance	V.I. Adamchuk, L.S. Shiratsuchi, C.C. Lutz, R.B. Ferguson
	52	Different Leaf Sensing Approaches for the Estimation of Winter Wheat Nitrogen Status	B. Liu, Y. Miao, G. Feng, X. Gao, S. Yue, F. Li
PRECISION AERIAL APPLICATION	53	Response and Positioning Accuracy of a Variable-Rate Aerial Application System and Use of Enhanced Imagery for Creation f Prescription Maps	S. J. Thomson, Y. Huang, R. Price
	54	Ground-Based Spectral Reflectance Measurements for Evaluating the Efficacy of Aerially-Applied Glyphosate Treatments	Y. Lan, W. C. Hoffmann, D. E. Martin, B. Fritz, J. Lopez Jr., H. Zhang, R. Lacey
	55	Differentiation of Cotton from Other Crops at Different Growth Stages Using Spectral Properties and Discriminant Analysis	Y. Lan, C. P. -C. Suh, J. K. Westbrook, W. C. Hoffmann, H. Zhang, R. Lacey
	56	Development of a PWM Precision Spraying Controller	H. Zhu, Y. Lan, W. Wu, W. C. Hoffmann, Y. Huang, X. Xue, J. Liang, B. Fritz
	57	Sampling Size Study for Canopy Spectral Reflectance Measurements	K. Pavuluri, W.E. Thomason
	58	Potential Applications of Low-Altitude Remote Sensing (LARS) with Radio-Controlled Helicopter Platforms: Case Studies on Nutrient and Pest Management under Agricultural Systems in Developing Countries	H. P. W. Jayasuriya, K. C. Swain, G. Samseemoung

Conference Sponsors

We would like to thank the following organizations for their sponsorship.

Platinum Sponsor

Springer

the language of science

Gold Sponsors

AMMO

Ag Marketing & Merchandising Optimizer

ForceA

SEE TO ACT

JOHN DEERE

Silver Sponsors

RAVEN

Simply improving your position.℠

Bronze Sponsors

GEOSYS

ALABAMA PRECISION AG EXTENSION

ISPA

International Society of Precision Agriculture

www.ispag.org