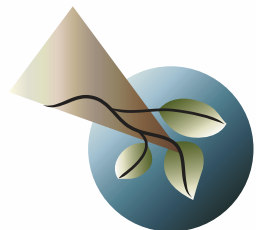


The International Society of Precision Agriculture
presents the



12th International Conference on

Precision Agriculture

July 20-23, 2014

Hyatt Regency • Sacramento, California USA



Conference **Program**

Conference Chairperson

Dr. John V. Stafford

Silsoe Solutions, UK

President, International Society of Precision Agriculture

www.ispag.org/icpa

Conference Coordination

PAQ Interactive, Inc.

The 12th ICPA is brought to you by the International Society of Precision Agriculture



The purpose of ISPA:

- Organize and conduct international conferences related to precision agriculture, such as International Conference on Precision Agriculture, European Conference on Precision Agriculture, and other related conferences.
- Develop and maintain a web-portal to communicate the latest developments in Precision Agriculture.
- Maintain a member listserv to communicate among society members.
- Publish a regular 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 (International Journal of Precision Agriculture).



The International Society of Precision Agriculture presents the

12th International Conference on

Precision Agriculture

**JULY 20-23, 2014 • Hyatt Regency
Sacramento, California USA**

The 12th 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. Sessions will offer information on key topics for scientists, crop consultants, advisors, extension personnel, agronomists, producers and other practitioners.

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Tuesday Poster Session.....	30
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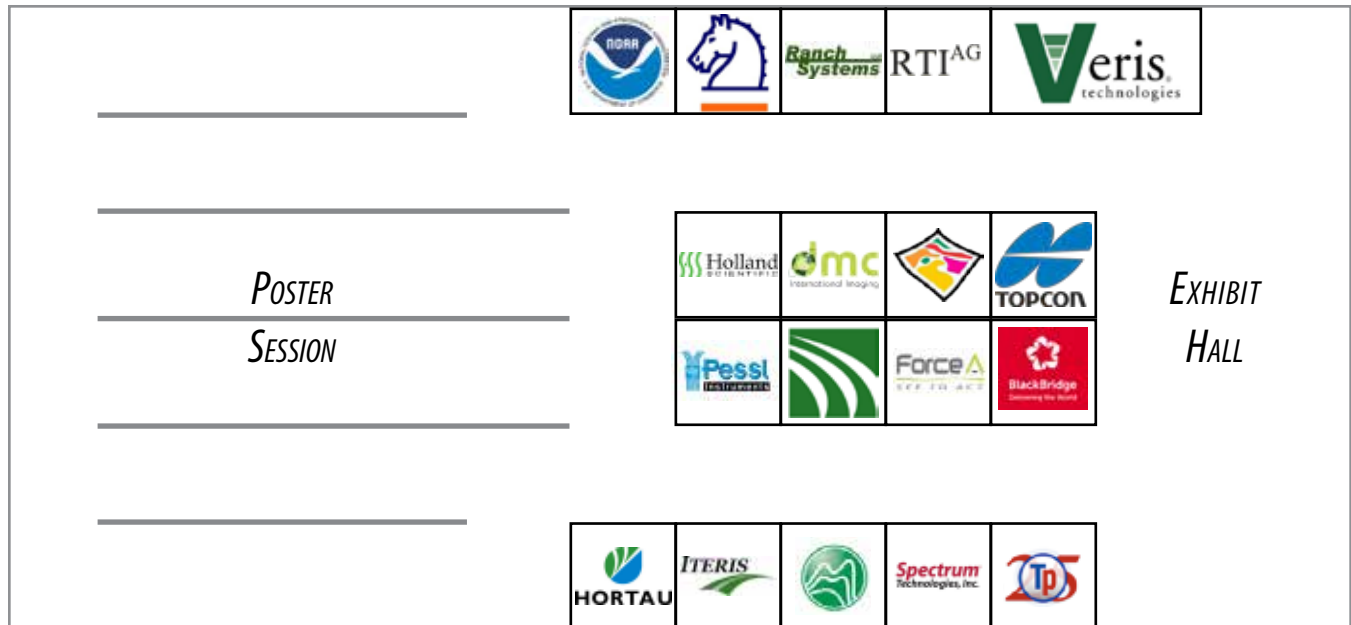
Concurrent Sessions – Morning

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Exhibitor List



BlackBridge

Kurfurstendamm 22
10719 Berlin, Germany
+49 (30) 6098-300100
www.blackbridge.com

DMCii

Compass House, 60 Priestley Road
Surrey Research Park,
Guildford, GU2 7AG
+44 (0) 1483-804299
www.dmcii.com

Farmers Edge

1357 Dugald Rd
Winnipeg, MB R2J 0H3
(204) 233-4099
www.farmersedge.ca

Force-A

Centre Universitaire Paris SUD
Bâtiment 503
Orsay, France 91893
+33 (0)1 69 35 87 15
www.force-a.eu

Geometrics

2190 Fortune Drive
San Jose, CA 95131
(408) 954-0522
www.geometrics.com

Holland Scientific

6001 S. 58th Street, Suite D
Lincoln, NE 68516
(402) 488-1226
www.hollandscientific.com

Hortau

1112 Blvd. de la Rive-Sud, #200
St. Romuald, Quebec
G6W 5M6 Canada
(418) 839-2851
www.hortau.com

Iteris

1700 Carnegie Avenue
Santa Ana, CA 92705-5551
(949) 270-9400
www.iteris.com

National Geodetic Survey

Communications and
Outreach Branch, NOAA, N/NGS12
National Geodetic Survey
SSMC3 #9202
1315 East-West Highway
Silver Spring, MD 20910-3282
(301) 713-4172
www.ngs.noaa.gov

Pessl Instruments GMBH

Werksweg 107
816- Weiz, Austria
+43 (0) 3172-5521
www.metos.atin

Ranch Systems LLC

37 Commercial Blvd., Suite 101
Novato, CA 94949-6112
(415) 884-2770
gallica.ranchsystems.com

Reforest Technologies Intl

5355 Monterey Frontag Rd
Gilroy, CA, 95020
(800) 784-4769
www.rti-ag.com

SkySquirrel Technologies

15767 Central Avenue
Inverness NS, B0E 1 N0, Canada
(902) 258-7724
www.skysquirrel.ca

Spectrum Technologies

3600 Thayer Court
Aurora, IL 60504
(800) 248-8873
www.specmeters.com

SST Software

824 N. Country Club Rd.
Stillwater, OK 74075
(405) 377-5334
www.sstsoftware.com

Terraplus Inc.

52 West Beaver Creek Road
Unit #12
Richmond Hill, Ontario, Canada
L4B 1L9
(905) 764-5505
www.Terraplus.ca

Topcon Positioning Systems, Inc.

7400 National Drive
Livermore, CA USA 94550
(925) 245-8300
www.ag.topconpositioning.com

Veris Technologies

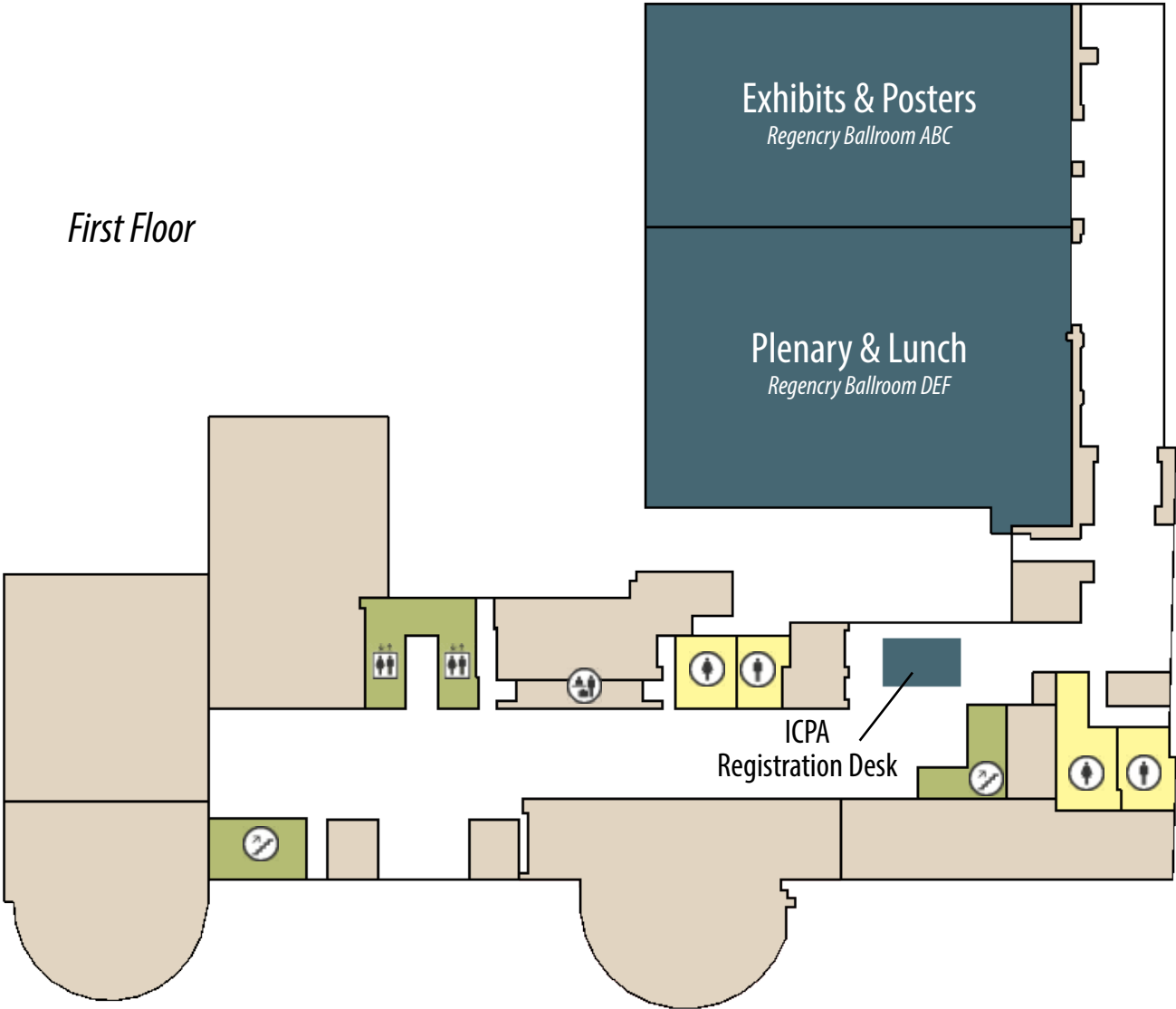
601 N. Broadway
Salina, KS 67401
(785) 825-1978
www.veristech.com

Hotel Floor Plans

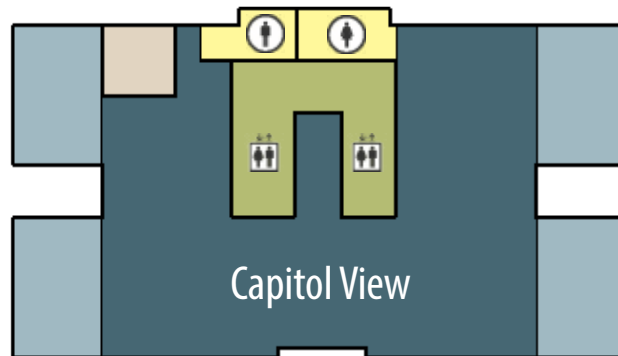


Hyatt Regency
Sacramento, CA
USA

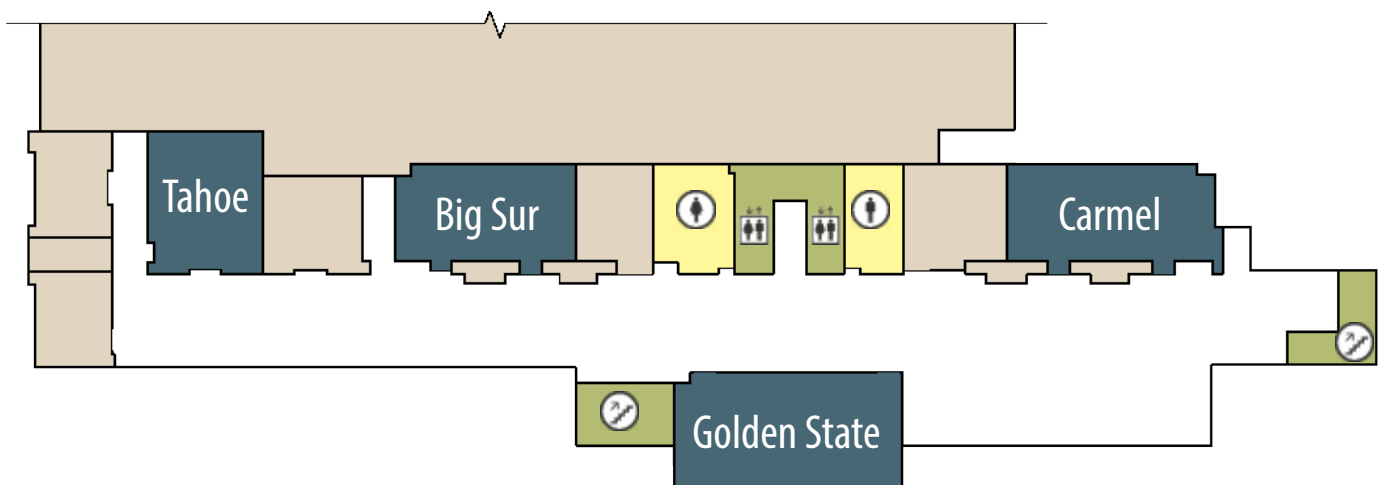
First Floor



Capitol View/ 15th Floor



Second Floor



Program Overview

Sunday, July 20

3:00 pm-6:00 pm

Exhibit Hall Setup
Regency Ballroom ABC

6:00 pm-9:00 pm

Welcome Reception
Sponsored by E&J Gallo Winery
Capitol View - 15th Floor

Monday, July 21

6:30 am-9:30 am

Exhibit Hall Setup
Regency Ballroom ABC

7:00 am-5:00 pm

Registration Open
Hotel Lobby

8:00 am-9:50 am

Opening Plenary Session
Regency Ballroom DEF

9:50 am-10:20 am

Break, Exhibit Hall
Regency Ballroom ABC

10:20 am-12:00 pm

Concurrent Sessions

Precision Horticulture I: Engineering
Tahoe

Precision Irrigation I
Big Sur

Unmanned Aerial Systems I
Capitol View - 15th Floor

Economics, Adoption, and Models
Carmel

Plant Optical and Thermal Sensors
Golden State

12:00 pm-1:30 pm

Luncheon
Regency Ballroom DEF

1:30 pm-3:30 pm

Concurrent Sessions

Precision Livestock and Pasture Management
Tahoe

PA Case Studies I
Big Sur

Unmanned Aerial Systems II
Capitol View - 15th Floor

Precision Crop Protection: Pesticides
Carmel

Sensor Technologies
Golden State

3:30 pm-4:00 pm

Break, Exhibit Hall
Regency Ballroom ABC

4:00 pm-5:00 pm

Concurrent Sessions

PA Case Studies II
Tahoe

Probability, Economics
Big Sur

Monsanto Sponsor Showcase
Capitol View - 15th Floor

Fluorescence Sensing
Carmel

Data Standards
Golden State

5:00 pm-6:30 pm

Poster Session and Reception
Regency Ballroom ABC

6:30 pm-8:00 pm

Open Discussion on Standards Needs for Precision Agriculture
Golden State

Program Overview

Tuesday, July 22

7:00 am-5:00 pm

Registration Open

Hotel Lobby

8:00 am-5:00 pm

Exhibit Hall Open

Regency Ballroom ABC

8:00 am-10:00 am

Concurrent Sessions

Precision Horticulture II

Tahoe

Engineering & Energy

Big Sur

Spatial Variability

Capitol View - 15th Floor

Precision Crop Protection: Disease

Carmel

Remote Sensing

Golden State

10:00 am-10:30 am

Break, Exhibit Hall

Regency Ballroom ABC

10:30 am-11:30 am

Concurrent Sessions

Engineering Technologies

Tahoe

Precision Decision Support Systems

Big Sur

DuPont-Pioneer Showcase

Capitol View - 15th Floor

Detecting Soil Pollutants

Carmel

Nitrogen Sensors I

Golden State

11:30 pm-1:50 pm

ISPA Luncheon, Awards and Entertainment

Regency Ballroom DEF

1:30 pm-3:30 pm

Concurrent Sessions

Precision Horticulture III

Tahoe

Proximal Sensing

Big Sur

Precision Nutrient Management

Capitol View - 15th Floor

Compaction

Carmel

Sensors: Biomass

Golden State

3:30 pm-4:00 pm

Break, Exhibit Hall

Regency Ballroom ABC

4:00 pm-5:00 pm

Concurrent Sessions

Precision Conservation

Tahoe

PA Technologies II

Big Sur

Unmanned Aerial Systems III

Capitol View - 15th Floor

Spatial Variability

Carmel

Sensors: Chlorophyll

Golden State

5:00 pm-6:30 pm

Poster Session and Reception

Regency Ballroom ABC

Wednesday, July 23

7:00 am-10:30 am	Registration Open <i>Hotel Lobby</i>
8:00 am-10:30 am	Exhibit Hall Open <i>Regency Ballroom ABC</i>
8:00 am-10:00 am	Concurrent Sessions Precision Horticulture IV <i>Tahoe</i> Management Zones <i>Big Sur</i> Precision Irrigation II <i>Capitol View</i> Engineering <i>Carmel</i> Nitrogen Sensors II <i>Golden State</i>
10:00 am-10:30 am	Break, Exhibit Hall <i>Regency Ballroom ABC</i>
10:30 am-12:00 pm	Closing Plenary Session <i>Regency Ballroom DEF</i>
1:00pm	Post Conference Tour <i>Hotel Lobby</i>

Welcome Reception

WELCOME RECEPTION

Sunday Evening

6:00 - 9:00pm

Capitol View- 15th Floor

SPONSORED BY:



Opening Plenary Session

Monday, July 21, 8:00 am

REGENCY BALLROOM DEF

Session Chair: John Stafford

Keynote Speakers

Precision Agriculture, Food Security and Geostatistics

Dr. Margaret Oliver



Margaret Oliver did her first degree in Geography and Geology in the UK at the University of Bristol, followed by a PhD in soil science at the University of Birmingham. The early research focused on the multivariate and geostatistical analysis of soil data from the Wyre Forest. Since then her research interests have included the application of a wide range of numerical methods to soil and

other data including pollen counts, forestry, radon emission, remotely sensed imagery and the incidence of childhood cancer. Specific interests are in sample design for spatial analysis and eventual mapping, risk analysis associated with prescribed thresholds in relation to soil pollutants or deficiencies of soil nutrients, and the relations between different scales of spatial variation. Most recent research has been in the field of precision agriculture.

Margaret retired at the end of September 2004 from her post as Reader in Spatial Analysis at the University of Reading. She has retained a link and a base at the University as a Visiting Professor since January 2005. She has published over 100 academic papers and has also made contributions to books. She is co-author of two books and has edited two books - Geostatistical Applications for Precision Agriculture and Precision Agriculture for Sustainability and Environmental Protection.

She is Deputy Editor of the European Journal of Soil Science (2011–present) and was Co-Editor of Precision Agriculture with John Stafford for six years until the end of 2010, but remains on the Editorial Board.

Plant Specific Agriculture, Engineering Technologies for Crop Mapping, Proximal Sensing, and Management at the Centimeter Scale

Dr. David Slaughter



David Slaughter is a professor in the Biological and Agricultural Engineering Department and director of the Biological and Agricultural Engineering Sensors and Instrumentation Laboratory (BAESIL) at the University of California, Davis. He received his Ph.D. degree (1987) at the University of Florida, his M.Sc. degree (1984) at North Carolina State University, and his B.Sc. degree (1982) at

the University of California, Davis. Dr. Slaughter is a world leader in the development of non-destructive and non-invasive sensing systems for determining the quality, characteristics and identity of agricultural commodities and an expert in mechatronic systems for precision agriculture. He has six ASABE paper awards and he holds six US patents related to innovations he developed in these topic areas. He was a pioneer in the development of one of the first robotic fruit harvesting systems and holds the USA patent on the concept of the robotic cultivator. He developed one of the first machine-vision based automatic guidance systems for precision inter-row weed control and for automated spray bandwidth control in row crops. He has developed, not one, but three technologies (based upon: machine vision, x-ray, and RTK-GPS) for automated, pesticide-free, intra-row weed control in specialty crops. He has developed a robust, on-farm system for plant species determination in tomato and lettuce. Moreover, he co-developed 1-cm scale pulsed-jet micro-dosing technology for applying liquid materials onto individual plant leaves and applied this technology to create an automated system for thermal micro-dosing of lethal non-pesticide treatments to control intra-row weeds in organic production systems. Dr. Slaughter's outstanding work in the area of non-destructive and non-invasive sensing systems for determining important characteristics of agricultural commodities has led to the development of fundamental knowledge, practical methodology and reduction to practice of many nondestructive and noninvasive sensing techniques for the rapid determination of internal quality in agricultural commodities.

Monday, July 21, Morning

Precision Horticulture I: Engineering

TAHOE

Session Chair: Nicolas Tremblay

- 10:20 **Towards Automated Pneumatic Thinning Of Floral Buds On Pear Trees**
N. Wouters, R. V. Beers, B. de Ketelaere, J. de Baerdemaeker, W. Saeys, T. Deckers
- 10:40 **Autonomous Service Robots For Orchards And Vineyards: 3D Simulation Environment Of Multi Sensor-Based Navigation And Applications**
A. Linz, A. Ruckelshausen, E. Wunder, J. Hertzberg
- 11:00 **Post-Harvest Quality Evaluation System On Conveyor Belt For Mechanically Harvested Citrus**
D. Choi, W. S. Lee, C. Yang, R. Ehsani, F. M. Roka
- 11:20 **Precision Thinning Of Fruit Crops**
L. Damerow, C. Seehuber, M. Blanke
- 11:40 **A Dual Motor Actuator Used To Detach Fruit By Shaking Limbs Of Fruit Trees**
M. E. De Kleine, Y. Ye, M. Karkee, Q. Zhang

Precision Irrigation I

BIG SUR

Session Chair: David Franzen

- 10:20 **Sustainable Use of Irrigation Water**
C.H. Mackenzie
- 10:40 **Introducing An Integrated Framework To Optimize Cotton Variable Rate Irrigation In Humid Regions**
A. Haghverdi, B.G. Leib
- 11:00 **Evaluation Of A Sensor-Based Precision Irrigation System For Efficiency And To Monitor And Control Groundwater Over-Pumping In Oman**
H. Jayasuriya, S. Zekri, R. Zaier, H. A. Al-Busaidi, N. Hamza, A. Teirab
- 11:20 **Rapid Sensing For Water Stress Detection In Foxtail Millet (Setaria Italica)**
M. Wang, S. Sankaran, P. Ellsworth, A. Cousin
- 11:40 **A Method to Estimate Irrigation Efficiency with Evapotranspiration Data**
H. Zeng, B. Wu, N. Yan

Unmanned Aerial Systems I

CAPITOL VIEW - 15th Floor

Session Chair: Ignacio Ciampitti

- 10:20 **Detection Of Nitrogen Deficiency In Potatoes Using Small Unmanned Aircraft Systems**
E. R. Hunt Jr., D. A. Horneck, P. B. Hamm, D. J. Gadler, A. E. Bruce, R. W. Tumer, C. B. Spinell, J. J. Brungardt
- 10:40 **sUAVS Technology For Better Monitoring Crop Status For Winter Canola**
I. A. Ciampitti, H. Wang, K. Shroyer, K. P. M. Stamm, V. Prasad, D. Mangus, A. Sharda
- 11:00 **Unmanned Aerial System To Determine Nitrogen Status In Maize**
R.J.M. Melchiori, A.C. Kemerer, S.M. Albarenque
- 11:20 **A Comparison Of Performance Between UAV And Satellite Imagery For N Status Assessment In Corn**
N. Tremblay, P. Vigneault, C. Bélec, E. Fallon, M. Y. Bouroubi
- 11:40 **Discussion**

12:00 - 1:30 Luncheon

REGENCY BALLROOM DEF

Monday, July 21, Morning

Economics, Adoption, and Models

CARMEL

Session Chair: John Fulton

- 10:20 **Value Of Connectivity In Rural Areas: Case of Precision Agriculture Data**
T. B. Mark, T. Griffin
- 10:40 **Precision Agriculture As Bricolage: Understanding The Site Specific Farmer**
I. Yule, B.A. Wood
- 11:00 **Sustainable Grain Production With Continuous Improvements And Lean Production**
J. Olsson, A. Rydberg, B. Sundström, H. Aström
- 11:20 **Economics Of Site Specific Liming- Comparison Of On-The-Go And Grid-Based Soil Sampling To Determine The Soil pH.**
P. Wagner, T. Leithold
- 11:40 **Discussion**

Plant Optical and Thermal Sensors

GOLDEN STATE

Session Chair: Raj Khosla

- 10:20 **Use Of Active Radiometers To Estimate Biomass, Leaf Area Index, And Plant Height In Cotton**
K. F. Bronson, K. R. Thorp, J. W. White, M. M. Conley, J. Mon
- 10:40 **Hand-Held Sensors For Measuring Crop Reflectance And Assessing Crop Biophysical Characteristics**
K. H. Holland, J. S. Schepers
- 11:00 **Detection Of Fruit Tree Water Status In Orchards From Remote Sensing Thermal Imagery**
J. Bellvert, M. Mata, J. Girona, P.J. Zarco-Tejada, V. González-Dugo, E. Fereres
- 11:20 **An Inexpensive Aerial Platform For Precise Remote Sensing Of Almond And Walnut Canopy Temperature**
K. Crawford, J. Roach, R. Dhillon, F. Rojo, S. Upadhyaya
- 11:40 **Discussion**

12:00 - 1:30 Luncheon

REGENCY BALLROOM DEF

Monday, July 21, Afternoon

Precision Livestock and Pasture Management

TAHOE

Session Chair: Ian Yule

- 1:30 **NIRS Sensor Controlled Total-Mixed-Ration For Nutrient Optimized Feeding Of Dairy Cattle**
W. Büscher, P. Twickler, C. Maack, J. Marquering, M. Müller
- 1:50 **The Performance Of Mobile Devices' Inertial Measurement Unit For The Detection Of Cattle's Behaviors On Pasture**
A.L.H. Andriamandroso, B. Dumont, F. Lebeau, J. Bindelle
- 2:10 **Capturing, Demonstrating And Delivering Value From Integrating Real-Time On-Farm Sensing With External Information Flows**
D. Henry, G. Bishop-Hurley, L. Overs, S. Brosnan, A. Krumpholz
- 2:30 **Spatial Variability Of Soil Properties And Yield Of An Alfalfa Pasture Under Grazing In Brazil**
A. C. C. Bernardi, G. M. Bettiol, R. P. Ferreira, K. E. L. Santos, L. M. Rabello, R. Y. Inamasu
- 2:50 **Estimating Spatial Variation In Annual Pasture Yield**
S.J. Dennis, W. Clarke-Hill, A.L. Taylor, R.A. Dynes, K. O'Neill, T. Jowett
- 3:10 **Exploiting The Variability In Pasture Production On New Zealand Hill Country**
I. Yule, M. Grafton, P. McVeagh, R. Pullanagari

PA Case Studies I

BIG SUR

Session Chair: Paul Carter

- 1:30 **First Results Of Development Of A Smart Farm In The Netherlands**
C. Kempenaar, T. Feher, C.E. Westerdijk, C.G. Kocks
- 1:50 **Factors Related To Adoption Of Precision Agriculture Technologies In Southern Brazil**
A. A. Anselmi, C. Bredemeier, L. C. Federizzi, J. P. Molin
- 2:10 **Introducing Precision Agriculture To High School Students In Australia**
A.M. Cosby, M.G. Trotter
- 2:30 **Precision Agriculture Use In Selected Agricultural Regions In Brazil**
A. C. C. Bernardi, R. Y. Inamasu
- 2:50 **Evaluating Different Nitrogen Management Strategies For The Intensive Wheat-Maize System In North China Plain**
Q. Cao, Y. Miao, B. Liu, X. Gao, Y. Liu, G. Feng, F. Li
- 3:10 **Precision Nutrient Management In Cotton At Different Yield Targets In Northern Transitional Zone Of Karnataka**
C. P. Chandrashekara, M. P. Potdar, P. L. Patil, N. R. Mamle Desai, S.R. Desai, M. B. Chetti and G.B. Balol

Unmanned Aerial Systems II

CAPITOL VIEW - 15th Floor

Session Chair: Ignacio Ciampitti

- 1:30 **The TOAS Project: UAV Technology For Optimizing Herbicide Applications In Weed-Crop Systems**
J. M. Peña, J. Torres-Sánchez, A. I. de Castro, F. López-Granados, J. Dorado
- 1:50 **Verify The Effectiveness Of UAS-Mounted Sensors In Field Crop And Livestock Production Management Issues**
J. Nowatzki, S. G. Bajwa, B. G. Schatz, V. Anderson, W. L. Harnisch
- 2:10 **The Use Of A Multirotor And High-Resolution Imaging For Precision Horticulture In Chile**
D. Wulfsohn, I. Z. Lagos
- 2:30 **Weed Seedlings Detection In Winter Cereals For Site-Specific Control: Use Of UAV Imagery To Overcome The Challenge**
J. Torres-Sánchez, J. M. Peña, A. I. de Castro, A. Serrano-Pérez, F. López-Granados
- 2:50 **Applying Conventional Vegetation Vigor Indices To UAS-Derived Orthomosaics: Issues And Considerations**
K. Pauly
- 3:10 **3-Dimension Reconstruction Of Cactas Using Multispectral Images**
Y. Zhang, F. Liu, Y. He, L. Tan, Y. Zhang

3:30 - 4:00 Break In Exhibit Hall

REGENCY BALLROOM ABC

Monday, July 21, Afternoon

Precision Crop Protection: Pesticides

CARMEL

Session Chair: James Schepers

- 1:30 **Development Of Variable Rate System For Soil Disinfection Based On Injection Technique**
W. Ma, X. Wang, M. Zhang
- 1:50 **Weed Identification From Seedling Cabbages Using Visible And Near-Infrared Spectrum Analysis**
W. Deng, Y. Huang, C. Zhao, X. Wang
- 2:10 **Perspectives For Site Specific Application Of Soil Herbicides In Arable Farming**
C. Kempenaar, S. Heijting, J. M. Michielsen
- 2:30 **Use Of Vegetation Indices In Variable Rate Application Of Potato Haulm Killing Herbicides**
C. Kempenaar, S. Heijting, J. M. Michielsen
- 2:50 **Effect Of Time Of Application On Spray Coverage Using Solid Set Canopy Delivery System**
A. Sharda, D. Mangus, M. Karkee, Q. Zhang
- 3:10 **Recognition And Classification Of Weeds In Sugarcane Using The Technique Of The Bag Of Words**
W. E. Santiago, A. R. Barreto, D. G. Figueredo, R. C. D. R. Tinini, N. J. Leite, B. J. Teruel

Sensor Technologies

GOLDEN STATE

Session Chair: Viacheslav Adamchuk

- 1:30 **Rapid Data Acquisition For In-Field Plant Phenomics**
K. H. Holland, M. Schlemmer
- 1:50 **Using Precision Agriculture And Remote Sensing Techniques To Improve Genotype Selection In A Breeding Program**
F. A. Rodrigues Junior, I. Ortiz-Monasterio, P. J. Zarco-Tejada, K. Ammar, B. Gérard
- 2:10 **Airborne Active Optical Sensors (AOS) For Photosynthetically-Active Biomass Sensing: Current Status And Future Opportunities**
D. W. Lamb, K. H. Holland
- 2:30 **Application Of Semantic Sensor Web In Agriculture**
Y. Zhang, T. Chen
- 2:50 **Field-Based High-Throughput Phenotyping Approach For Soybean Plant Improvement**
L. Li, L. Tian, D. Jiang, Z. Lu, R. P. Campos
- 3:10 **Discussion**

3:30 - 4:00 Break In Exhibit Hall

REGENCY BALLROOM ABC

Monday, July 21, Late Afternoon

PA Case Studies II

TAHOE

Session Chair: Won Suk Lee

- 4:00 **Trials Of Precision Restoring Agriculture In Japan**
S. Shibusawa
- 4:20 **Strategies for Scientific Communication of Precision Agriculture in Brazil**
A.C.C. Bernardi, C.V.P. Fragalle, E.P. Fragalle, J.C. Silva, R.Y. Inamasu
- 4:40 **Discussion**

Probability, Economics

BIG SUR

Session Chair: Peter Wagner

- 4:00 **Economically Optimized Site Specific Nitrogen Application Using Data Mining Tools**
B. Burges, P. Wagner
- 4:20 **Evaluating Decision Systems For Using Variable Rate In Planting Soybean**
P. M. Kyveryga, P. Reeg, T. A. Mueller, J. Connor
- 4:40 **Optimizing Site-Specific Adaptive Management Using A Probabilistic Framework: Evaluating Model Performance Using Historic Data**
P. G. Lawrence, L. J. Rew, B. D. Maxwell

Sponsor Showcase

CAPITOL VIEW - 15th Floor

- 4:00 **Agronomic Decision Support for Precision Agriculture**
Moorea Brega

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MONSANTO



5:00 - 6:30 Monday Poster Session and Reception

REGENCY BALLROOM ABC

6:30 - 8:00 Open Discussion on Standards Needs for Precision Agriculture

GOLDEN STATE

Monday, July 21, Late Afternoon

Fluorescence Sensing

CARMEL

Session Chair: Yuxin Miao

- 4:00 **Evaluating Leaf Fluorescence Sensor Dualex 4 For Estimating Rice Nitrogen Status In Northeast China**

W. Yu, Y. Miao, S. Hu, J. Shen, H. Wang

- 4:20 **Selection Of Fluorescence Indices For The Proximal Sensing Of Single And Multiple Stresses In Sugar Beet**

G. Leufen, G. Noga, M. Hunsche

- 4:40 **Discussion**

Data Standards

GOLDEN STATE

Session Chair: Ken Sudduth

- 4:00 **SPADE: An AgGateway Project for Interoperability in Precision Agriculture**

J. Tevis, J. M. Russo, D. D. Daggett, J. W. Wilson, R. A. Ferreyra

- 4:20 **CANopen Implementation To Wireless Sensor Network**

M. Madetoja, R. Virrankoski

- 4:40 **Discussion**

5:00 - 6:30 Monday Poster Session and Reception

REGENCY BALLROOM ABC

6:30 - 8:00 Open Discussion on Standards Needs for Precision Agriculture

GOLDEN STATE

Tuesday, July 22, Morning

Precision Horticulture II

TAHOE

Session Chair: Michael Blanke

- 8:00 **Design, Error Characterization And Testing Of A System To Measure Locations Of Fruits In Tree Canopies**
R. Arikapudi, S. G. Vougioukas, F. Jimenez-Jimenez, F. K. Anjom, R. Elkins, C. Ingels
- 8:20 **Detection Of Fruit In Canopy Night-Time Images: Two Case Studies With Apple And Mango**
O. Cohen, R. Linker, A. Payne, K. Walsh
- 8:40 **Effect Of Starch Accumulation In Huanglongbing Symptomatic Leaves On Reflecting Polarized Light**
A. Pourreza, W. S. Lee
- 9:00 **Conditioning Factors For Decision-Making Regarding Precision Agriculture Techniques Usage**
C. C. da Costa, H. L. Burnquist
- 9:20 **A Method For Sampling Scab Spots On Apple Leaves In The Orchard Using Machine Vision**
M. Nielsen, K. Nielsen, M. G. Bertelsen
- 9:40 **Basic Tests Of pH And EC Probes For Automatic Real Time Nutrient Control In Protected Crop Production**
Y.-K. Huh, S.-Y. Jang, Y.-K. Choo, S.-O. Chung, Y.-J. Kim, K.-Y. Jung

Engineering & Energy

BIG SUR

Session Chair: Josse De Baerdemaeker

- 8:00 **Measuring And Mapping Sugarcane Gaps**
J. P. Molin, J. P. S. Veiga, D. S. Cavalcante
- 8:20 **Tomato Development Monitoring In An Open Field, Using A Two-Camera Acquisition System**
U. Verma, F. Rossant, I. Bloch, J. Orensanz, D. Boisgontier
- 8:40 **Advances In Automating Individual Plant Care Of Vegetable Crops**
D. Slaughter
- 9:00 **Assessing Impact Of Precision On Agricultural Energy Requirements: Weed Control Case Study**
O. M. Toledo, B. L. Steward, L. Tang
- 9:20 **Design And Construction Of An Ultrasonic Cutting Width Sensor For Full-Feed Type Mid-Sized Multi-Purpose Combines**
Y.-K. Huh, M.-C. Choi, S.-O. Chung, Y.-S. Chae, J.-S. Lee, S.-K. Kim, K.-Y. Jung
- 9:40 **Discussion**

Spatial Variability

CAPITOL VIEW - 15th Floor

Session Chair: Viacheslav Adamchuk

- 8:00 **Spatial Variation And Correlation Between Electric Conductivity (EM38), Penetration Resistance And CO₂ Emissions From A Cultivated Peat Soil**
O. Berglund
- 8:20 **Water And Nitrogen Use Efficiency Of Corn And Switchgrass On Claypan Soil Landscapes**
D.L. Boardman, E.B. Allphin, N.R. Kitchen, A.L. Thompson
- 8:40 **New Innovation Approaches In Precision Farming – The Example Of The Base Fertilization Process**
S. Klingner, J. Friedrich, M. Becker, M. Schneider
- 9:00 **Multilayer And Multiyear Data Analysis In Precision Yield Planning**
A. Melnitchouck
- 9:20 **Economic and Environmental Evaluation of Benefits From Using a Spatial and Temporal Farm Management Information System**
A. Rydberg, M. Gilbertsson, J. Engstrom

10:00 - 10:30 Break in Exhibit Hall

REGENCY BALLROOM ABC

Tuesday, July 22, Morning

Precision Crop Protection: Disease

CARMEL

Session Chair: Victor Alchanati

- 8:00 **Thermal Sensing Of Roses Affected By Downy Mildew**
S. Gómez, E.-C. Oerke, H.-W. Dehne, U. Steiner
- 8:20 **Biological Soil Mapping- Infestation Of Plasmodiophora Brassicae And Soil Characteristics**
A. Jonsson, K. Marzec-Schmidt, C.-F. Aberger, A.-C. Wallenhammar
- 8:40 **Using Airborne Imagery To Monitor Cotton Root Rot Infection Before And After Fungicide Treatment**
C. Yang, G.N. Odvody, R.R. Minzenmayer, R.L. Nichols, T. Isakeit, J.A. Thomasson
- 9:00 **FungiPrecise- A German Project For Precise Real-Time Fungicide Application In Winter Wheat**
K. H. Dammer, A. Garz, A. Hamdorf, M. Hoffmann, A. Ustyzhnin, M. Schirmann, P. Leithold, H. Leithold, T. Volk, M. Tackenberg
- 9:20 **Diagnosis Of Sclerotinia Infected Oilseed Rape (Brassica Napus L) Using Hyperspectral Imaging And Chemometrics**
N. Chen, F. Liu, L. Jiang, L. Feng, Y. He, Y. Bao
- 9:40 **Discussion**

Remote Sensing

GOLDEN STATE

Session Chair: Chenghai Yang

- 8:00 **Use Of Quality And Quantity Information Towards Evaluating The Importance Of Independent Variables In Yield Prediction**
A.M. Denton, E. Momsen, J. Xu D.W. Franzen, J.F. Nowatzki, K. Farahmand
- 8:20 **Multitemporal Satellite Imaging To Support Near Real-Time Precision Farming**
G.J. Holmes
- 8:40 **Development Of An Index-Based Insurance Product: Validation Of A Forage Production Index Derived From Medium Spatial Resolution fCover Time Series**
A. Roumigué, A. Jacquin, G. Sigel, H. Poilve, B. Lepoivre, O. Hagolle
- 9:00 **Using Imagery As A Proxy Yield Map And Scouting Tool**
A.R. Schepers, J.S. Schepers
- 9:20 **Evaluating Soil Nutrition Status With Remote Sensing Derived Land Productivity**
M. Jihua, Y. Xingzhi, C. Zhiqiang
- 9:40 **Design, Development And Application Of A Satellite-Based Field Monitoring System To Support Precision Farming**
M. Jihua, L. Zhongyuan, W. Bingfang

10:00 - 10:30 Break in Exhibit Hall

REGENCY BALLROOM ABC

Tuesday, July 22, Mid-Morning

Engineering Technologies

TAHOE

Session Chair: Stavros Vouglioukas

- 10:30 **Autonomous Service Robots For Orchards And Vineyards: 3D Simulation Environment Of Multi Sensor-Based Navigation And Applications**
A. Linz, A. Ruckelshausen, E. Wunder, J. Hertzberg
- 10:50 **Evaluation Of The Temporal And Operational Stability Of Apparent Soil Electrical Conductivity Measurements**
A. S. Mat Su, V. I. Adamchuk
- 11:10 **GNSS Positioning Techniques For Agriculture**
T.G. Morley, P. M. Casiano, Z. Sadeque

Precision Decision Support Systems

BIG SUR

Session Chair: Josse De Baerdemaeker

- 10:30 **Pesticide Application Manager (PAM)- Decision Support In Crop Protection Based On Terrain, Machine, Business & Public Data**
M. Scheiber, C. Federle, B. Kleinhenz, M. Roehrig, J. Feidhaus, B. Hartmann, D. Martini, B. Golla
- 10:50 **Nutrient Expert Software for Nutrient Management in Cereal Crops**
M. Pampolino, K. Majumdar, S. Phillips
- 11:10 **Discussion**

Sponsor Showcase

CAPITOL VIEW - 15th Floor

Session Chair: Quentin Rund

- 10:30 **DuPont Pioneer EncircaSM Next Generation Services**

B. Gunzenhauser

Sponsored by:



- 11:10 **The Central China Agricultural High-Tech Industry Development Zone**
E. You Fu

**11:30 - 1:50 ISPA Luncheon and Presentation of
Graduate Student Awards
and Pierre C. Robert
Precision Agriculture Awards**
REGENCY BALLROOM DEF

Tuesday, July 22, Mid-Morning

Detecting Soil Pollutants

CARMEL

Session Chair: Jose Molin

- 10:30 **Heavy Metal Pb2+ Pollution Detection In Soil Using Terahertz Time-Domain Spectroscopy For Precision Agriculture**
B. Li, C.J. Zhao
- 10:50 **Visible And Near-Infrared Spectroscopy For Monitoring Potentially Toxic Elements In Reclaimed Dumpsite Soils Of The Czech Republic**
A. Gholizadeh, L. Borůvka, R. Vašát, M. M. Saberloon
- 11:10 **Discussion**

Nitrogen Sensors I

GOLDEN STATE

Session Chair: Sakae Shibusawa

- 10:30 **Crop Circle Sensor-Based Precision Nitrogen Management Strategy For Rice In Northeast China**
Q. Cao, Y. Miao, J. Shen, S. Cheng, R. Khosla, F. Liu
- 10:50 **Rapidscan And CropCircle Radiometers: Opportunities And Limitation In Assessing Wheat Biomass And Nitrogen**
D. J. Bonfil, A.A. Gitelson
- 11:10 **Evaluation Of In-Field Sensors To Monitor Nitrogen Status In Soybean**
M. Maharlooei, S. Sivarajan, J. Nowatzki, S. G. Bajwa, H. Kandel

**11:30 - 1:50 ISPA Luncheon and Presentation of
Graduate Student Awards
and Pierre C. Robert
Precision Agriculture Awards**
REGENCY BALLROOM DEF

Tuesday, July 22, Afternoon

Precision Horticulture III

TAHOE

Session Chair: Qin Zhang

- 1:50 **Applications Of Small UAV Systems For Tree And Nursery Inventory Management**
Y. She, R. Ehsani, J. Robbins, J. N. Leiva, J. Owen
- 2:10 **Management Zones Delineation In Brazilian Citrus Orchards**
A. F. Colaço, M. A. Ruiz, D. Y. Yida, J. P. Molin
- 2:30 **Effect Of A Variable Rate Irrigation Strategy On The Variability Of Crop Production In Wine Grapes In California**
L.. Sanchez, M. Mendez-Costabel, B. Sams, A. Morgan, N. Dokoozlian, L. J. Klein, N. Hinds, H. F. Hamann, A. Claassen, D. Lew
- 2:50 **A Novel Portable System For Improving Accuracy Of Reimbursement For Fruit Picking**
Y. G. Ampatzidis, M. D. Whiting
- 3:10 **Discussion**

Proximal Sensing

BIG SUR

Session Chair: Carolyn Hedley

- 1:50 **Development Of Online Soil Profile Sensor For Variable Depth Tillage**
A. B. Tekin, H. Yalçın
- 2:10 **Development Of An On-The-Spot Analyzer For Measuring Soil Chemical Properties**
V. Adamchuk, N. Dhawale, F. Rene-Laforest
- 2:30 **Prediction Of Cation Exchange Capacity Using Visible And Near Infrared Spectroscopy**
Y. Tekin, Y. Ulusoy, Z. Tümsava, A. M. Mouazen
- 2:50 **Using A Potable Spectroradiometer For In-Situ Measurement Of Soil Properties In A Slope Citrus Field**
Q. Li, S. Shibusawa, H. Umeda, M. Kodaira, K. Usui
- 3:10 **Comparison Of Calibration Models Developed For A Visible-Near Infrared Real-Time Soil Sensor**
B. S. N. Allah, S. Shibusawa, M. Kodaira, K. Inoue

Precesion Nutrient Management

CAPITOL VIEW - 15th Floor

Session Chair: Richard Ferguson

- 1:50 **Nitrogen Fertilisation Recommendations: Could They Be Improved Using Stochastically Generated Climates In Conjunction With Crop Models?**
B. Dumont, W. M. Morales, B. Bodson, M. F. Destain, B. Basso, J. P. Destain
- 2:10 **Comparison Of The Variable Potassium Fertilization On The Light And Heavy Soils**
G. Kulczycki, P. Grocholski, P. Stepien, A. Michalski
- 2:30 **Beyond The 4-Rs Of Nurient Management In Conjunction With A Major Reduction In Tillage**
B. McClure, G. Swanson, J.S. Schepers
- 3:10 **Discussion**

3:30 - 4:00 Break in Exhibit Hall

REGENCY BALLROOM ABC

Tuesday, July 22, Afternoon

Compaction

CARMEL

Session Chair: Shrini Upadhyaya

- 1:50 **Soil Compaction: Impact Of Tractor And Equipment On Corn Growth, Development And Yield**
S. Sivarajan, M. Maharlooel, J. Nowatzki, S. G. Bajwa
- 2:10 **GIS Mapping Of Soil Compaction And Moisture Distribution For Precision Tillage And Irrigation Managment**
H. Jayasuriya, S. Al-Adawi, M. A. Wardy, K. A. Hinai
- 2:30 **Development Of An Hydraulic Penetrometer Data Acquisition Software**
E. R. Spadim, K. P. Lanças, S. P. S. Guerra, D. Casiero, I. Marasca
- 2:50 **Penetration Resistance And Yield Variation At Field Scale**
E. Bölenius, J. Arvidsson
- 3:10 **Automatic Soil Penetrometer Measurements and GIS-Based Documentation With The Autonomous Field Robot Platform BoniRob**
C. Scholz, K. Moeller, A. Ruckelshausen, S. Hinck, M. Goettinger

Sensors: Biomass

GOLDEN STATE

Session Chair: Raj Khosla

- 1:50 **Spectral High-Throughput Assessments Of Phenotypic Differences In Spike Development, Biomass And Nitrogen Partitioning During Grain Filling Of Wheat Under High Yielding Western European Conditions**
K. Erdle, U. Schmidhalter
- 2:10 **Predicting Winter Wheat Biomass And Grain Protein Content**
M. Majdi, D. Benjamin, D. Marie-France
- 2:30 **NDVI 'Depression' In Pastures Following Grazing**
M. M. Rahman, D. W. Lamb, J. N. Stanle, M. G. Trotter
- 2:50 **Estimation of Vegetative Biomass Using On-the-Go Mobile Sensors**
J.J. Pittman, T.J. Butler, S.M. Interrante, D.B. Arnall, C.A. Moffet
- 3:10 **Near-Real-Time Remote Sensing And Yield Monitoring Of Biomass Crops**
L. Li, L. Tian, Y. Zhao, T. Ahamed, K. Ting

3:30 - 4:00 Break in Exhibit Hall

REGENCY BALLROOM ABC

Tuesday, July 22, Late Afternoon

Precision Conservation

TAHOE

Session Chair: Newell Kitchen

- 4:00 **Production And Conservation Results From A Decade-Long Field-Scale Precision Agriculture System**

N.R. Kitchen, C. Baffaut, K.A. Sudduth, E.J. Sadler, K.S. Veum, R. Kremer, R.N Lerch

- 4:20 **Precision Design Of Vegetative Buffers**

M.G. Dosskey, T.G. Mueller, S. Neelakantan

- 4:40 **Climate Change And Sustainable Precision Crop Production With Regard To Maize (Zea Mays L.)**

A. J. Kovács, A. Nyéki, G. Milics, M. Neményi

PA Technologies II

BIG SUR

Session Chair: Chunjiang Zhoo

- 4:00 **A Five Year Study Of Variable Rate Fertilization In Citrus**

A. F. Colaço, J. P. Molin

- 4:20 **Multivariate Geostatistics As A Tool To Estimate Physical And Chemical Soil Properties With Reduced Sampling In Area Planted With Sugarcane**

G. M. Sanches, H. C. J. Franco, A. Z. Remacre, P. S. Graziano Magalhães

- 4:40 **Discussion**

Unmanned Aerial Systems III

CAPITOL VIEW - 15th Floor

Session Chair: Ignacio Ciampitti

- 4:00 **Unmanned Aerial System Applications In Washington State Agriculture**

L. Khot, S. Sankaran, T. Cummings, D. Johnson, A. Carter, S. Serra, S. Musacchi

- 4:20 **Development Of An Enterprise Level Precision Agriculture System**

J. Ellingson, B. Werkmeister, B. K. Holub, S. Morgan

- 4:40 **Discussion**

5:00 - 6:30 Tuesday Poster Session and Reception

REGENCY BALLROOM ABC

Tuesday, July 22, Late Afternoon

Spatial Variability

CARMEL

Session Chair: Raymond Hunt

- 4:00 **Site-Specific Variability Of Grape Composition And Wine Quality**
S. Fountas, A. Balafoutis, E. Anastasiou, S. Koundouras, G. Kotseridis, E. Kallithraka, M. Kyraleou
- 4:20 **Toward More Precise Sugar Beet Management Based On Geostatistical Analysis Of Spatial Variability Within Fields**
S. A Mahmood, A. J. Murdoch
- 4:40 **Study Of Spatio-Temporal Variation Of Soil Nutrients In Paddy Rice Planting Farm**
C. Wang, T. Chen, J. Dong, C. Li

Sensors: Chlorophyll

GOLDEN STATE

Session Chair: Kyle Holland

- 4:00 **An Evaluation Of HJ-CCD Broadband Vegetation Indices For Leaf Chlorophyll Estimation**
T. Dong, J. Shang, J. Meng, J. Liu
- 4:20 **Estimation Of Nitrogen And Chlorophyll Content In Wheat Crop Using Hand Held Sensors**
M. Singh, A. Kaul, R. Kumar, B. Singh, A. Sharma, J. S. Gill, C. S. Pannu
- 4:40 **Discussion**

5:00 - 6:30 Tuesday Poster Session and Reception

REGENCY BALLROOM ABC

Wednesday, July 23, Morning

Precision Horticulture IV

TAHOE

Session Chair: Reza Ehsani

- 8:00 **Study On The Automatic Monitoring Technology for Fuji Fruit Colour Based On Machine Vision**
M. Chen, M. Li, J. Qian, W. Li, Y. Zhang, X. Yang, Y. Wang
- 8:20 **Precision Nutrient Management For Enhancing Yield Of Groundnut In Peninsular India**
Mudalagiriappa, T. Sheshadri, D. C. Hanumanthappa, M. A. Shankar, S. Jangandi, S.B. Salimath, T. Rundramuni, Nagaraju, N. Devakmar, G. B. Mallikarjuna, M. T. Malagi
- 8:40 **Modeling Canopy Light Interception For Estimating Yield In Almond And Walnut Trees**
F. Rojo, R. Dhillon, S. Upadhyaya, B. Jenkins, B. Lampinen, J. Roach, K. Crawford, S. Metcalf
- 9:00 **Development And Evaluation Of A Leaf Monitoring System For Continous Measurement Of Plant Water Status In Almond And Walnut Crops**
R. Dhillon, F. Rojo, J. Roach, R. Coates, S. K. Upadhyaya, M. Delwiche, C. Han
- 9:20 **Application of Hyperspectral Imaging For Rapid AndNon-Invasive Quantification Of Quality Of Mulberry Fruit**
L. Huang, Y. Zhou, H. Jin, Y. He, F. Liu
- 9:40 **A Novel Hyperspectral Feature Extraction Algorithm Based On Waveform Resolving For Raisin Classification**
Y. Zhao, X. Xu, Y. Shao, Y. He, Q. Li

Management Zones

BIG SUR

Session Chair: Tim Shaver

- 8:00 **Detection Of Drainage Failure In Reconstructed Cranberry Soils Using Time Series Analysis**
D. W. Hallema, Y. Périard, J. A. Lafond, S. J. Gumiere, J. Caron
- 8:20 **Assessing Definition Of Management Zones Through Yield Maps**
M. Spekken, R. G. Trevisan, M. T. Eitelwein, J. P. Molin
- 8:40 **Optimization Of Maize Yield: Relationship Between Management Zones, Hybrids And Plant Population**
A. A. Anselmi, J. P. Molin, R. Khosla
- 9:00 **Developing A High-Resolution Land Data Assimilation And Forecast System For Agricultural Decision Support**
F. Chen, M. Bariage, D. Gochis, W. Mahoney
- 9:20 **Precision Agriculture In Sugarcane Production. A Key Tool To Understand Its Variability**
P. S. Graziano Magalhães, G. M. Sanches, H. C. J. Franco, C. Driemeier, O. T. Kölln, O. A. Braunbeck
- 9:40 **Discussion**

Precession Irrigation II

CAPITOL VIEW - 15th Floor

Session Chair: Nicolas Tremblay

- 8:00 **Automatic Detection And Mapping Of Irrigation System Failures Using Remotely Sensed Canopy Temperature And Image Processing**
V. Alchanatis, Y. Cohen, M. Sprinstin, A. Cohen, A. Dag, I. Zipori, A. Naor
- 8:20 **Are Thermal Images Adequate For Irrigation Management?**
O. Rosenberg, V. Alchanais, Y. Cohen, Y. Sranga, A. Bosak
- 8:40 **Response Of Rhodes Grass (Chloris Gayana Kunth) To Variable Rate Application Of Irrigation Water And Fertilizer Nitrogen**
V. C. Patil, K. A. Al-Gaadi, R. Madugundu, E. Tola, S. A. Marey, D. J. Mulla, S. K. Upadhyaya
- 9:00 **Site Specific Drip Fertigation**
Abdul Hakkim V.M.
- 9:20 **Discussion**

10:00 - 10:30 Break in Exhibit Hall

REGENCY BALLROOM ABC

Wednesday, July 23, Morning

Engineering

CARMEL

Session Chair: John Fulton

- 8:00 **Control System Applied To No-Till Seeding For High-Quality Operation**
A. L. Johann, A. G. Araújo, A. Toledo, A. R. Hirakawa
- 8:20 **Fusion Of Multi Exposure Stereo Images And Thermography For Obstacle Detection On Agricultural Vehicles**
M. Nielsen, K. Nielsen
- 8:40 **Instrumented Blades With Automated Control Used In Chisel Plough Acting In Variable Depths**
T. M. Machado, D. A. Fiorese, K. P. L. anças, B. B. Fernandes, J. V. P. Testa
- 9:00 **Row-Crop Planter Requirements To Support Variable-Rate Seeding of Maize**
S. S. Virk, A. Poncet, T. P. McDonald, J. P. Fulton, K. S. Balkcom, B. Ortiz, G. L. Pate
- 9:20 **Agribot: Development Of A Mobile Robotic Platform To Support Agricultural Data Collection**
R. A. Tabile, R. V. Sousa, A. J. V. Porto, R. Y. Inamasu
- 9:40 **Discussion**

Nitrogen Sensors II

GOLDEN STATE

Session Chair: David Bonfil

- 8:00 **In-Season Nitrogen Requirements For Maize Using Model And Sensor-Based Recommendation Approaches**
L. J. Stevens, R. B. Ferguson, M. Mamo, N. R. Kitchen, D. W. Franzen
- 8:20 **Active Optical Sensor Algorithms For Corn Yield Prediction And In-Season N Application In North Dakota**
D. W. Franzen, L. K. Sharma, H. Bu, R. Ashley, G. Endres, J. Teboh
- 8:40 **Optical Sensors To Predict Nitrogen Demand By Sugarcane**
H. C. J. Franco, O. T. Kölln, G. M. Sanches, J. R. Neto, S. G. Q. Castro, R. Y. Inamasu, P. S. G. Magalhães, O. A. Braunbeck, R. Otto, E. Mariano, R. Y. Inamasu
- 9:00 **Cotton Field Relations Of Plant Height To Biomass Accumulation And N-Uptake On Conventional And Narrow Row Systems**
G. Portz, N. de S. Vilanova Jr. R. G. Trevisan, J. P. Molin, C. Portz, L. V. Posada
- 9:20 **Discussion**

10:00 - 10:30 Break in Exhibit Hall

REGENCY BALLROOM ABC

Closing Plenary Session & Tour

Wednesday, July 23, Mid-Morning

Closing Plenary Session

REGENCY BALLROOM DEF

Session Chair: John Stafford

10:30 - 12:00pm

10:30 **Special Awards Presentation**

**Results of ISPA Elections and
Introduction of 2014-2016 Board of Directors**

Discussion of 13th ICPA Dates and Locations

Closing Comments by John Stafford

Passing of the Gavel to New President, Ken Sudduth

12:00 **Conference Adjournment**

Post Conference Tour

HOTEL LOBBY

Tour Coordinator: Shrini Upadhyaya

Tour requires separate registration

12:30 **Meet for Tours**

Tour group to meet in hotel lobby at 12:30

Busses depart promptly at 1:00pm

1:00 **Depart from the Hyatt Regency Sacramento**

6:00 **Arrive at the Hyatt Regency Sacramento**

Approximate arrival time

Monday Poster Session

TOPIC	BOARD #	POSTER TITLE	AUTHOR(S)
SPATIAL VARIABILITY IN CROP, SOIL, AND NATURAL RESOURCES	1	The Spatial And Temporal Variability Analysis Of Wheat Yield In A Suburban Of Beijing	X. An, Z. Meng, Z. Wang, G. Wu, W. Fu
	2	A Comprehensive Model For Farmland Quality Evaluation With Multi-Source Spatial Information	X. Gu, Y. Dong, Y. Wang, X. Song
	3	Physiological Responses Of Corn To Variable Seeding Rates In Landscape-Scale Strip Trials	B. J. Leonard, D. B. Myers, N. R. Kitchen, K. A. Sudduth
	4	Spatial Dependence Of Soil Compaction In Different Annual Cycle Of Sugar Cane For Sandy Soil	K. P. Lanças, I. Marasca, F. C. Masiero, D. A. Fiorese, S. P. S. Guerra
	5	Probability Distributions And Alternative Transformations Of Soil Test $\text{NO}_3\text{-N}$ And $\text{PO}_4\text{-P}$, Implications For Precision Agriculture	A. P. Moulin
	6	Soil And Crop Spatial Variability In Cotton Grown On Deep Black Cotton Soils	C. P. Chandrashekar, M. P. Potdar, M. B. Chetti, G. B. Balol, B. T. Nadagouda, S. B. Khalaghatagi
	7	Soil Characterization And Mapping According To Shallow And Deep Apparent Electrical Conductivity	N. Tremblay
	8	3D Map In The Depth Direction Of Field For Precision Agriculture	H. Umeda, S. Shibusawa, Q. Li, K. Usui, M. Kodaira
SENSOR APPLICATION IN MANAGING IN-SEASON CROP VARIABILITY	9	Design And Implementation Of Agricultural Sensor Data Of Multiple And Heterogeneous Access Architecture	C. Dong, D. Jing, C. Tian'en, J. Shuwen
	10	X-Ray Computed Tomography For State Of The Art Plant And Root Analysis	S. Gerth, S. Reisinger, N. Uhimann, R. Hanke
	11	Application Based Wireless Sensor Node For Underground Moisture Sensing For Precision Agriculture	S. P. Nayse, M. Atique
	12	Development Of A Portable Plant Growth Monitoring And Diagnostic Instrument	J. Ni
	13	In-Season Decision Support Tools For Estimating Nitrogen Side-Dress Rates For Maize (<i>Zea Mays</i> L.)	Chim, B. K., T. Black, M. Lynch, W. Thomason
REMOTE SENSING APPLICATIONS IN PRECISION AGRICULTURE	14	Advanced Remote Sensing From Agricultural Aircraft And New Unmanned Aerial Platforms In Plant Health Assessment	S. Thomson
	15	Study On Plant Health Condition Monitoring Using Acoustic Radiation Force	T. Sugimoto, Y. Nakagawa, M. Sano, T. Shirakawa, K. Yamagishi, T. Sugihara, M. Ohaba, S. Shibusawa
	16	Monitoring Ratio Of Leaf Carbon To Nitrogen In Winter Wheat Based On Hyperspectral Measurements	X. Xu, H. Feng, Z. Li, G. Yang, X. Song
	17	Creation Of Prescription For Optimal Nitrogen Fertilization Through Evaluation Of Soil Carbon Amount Using Remotely Sensed Data	C. Hongo, E. Tamura, K. Aijima, K. Niwa, O. Nagata, K. Wakabayashi
	18	Understanding spatial variability of rice yield in Italy using remote sensing	B. Basso

5:00 - 6:30 Monday Poster Session

REGENCY BALLROOM ABC

Monday Poster Session

TOPIC	BOARD #	POSTER TITLE	AUTHOR(S)
<i>PROXIMAL SENSING IN PRECISION AGRICULTURE</i>	19	Soil Mapping And Modeling On Twenty-Five Ingredients Using A Real-Time Soil Sensor	M. Kodaira, S. Shibusawa
	20	Suitability Of Crop Canopy Sensors For Determining Irrigation Differences In Maize	T. M. Shaver, S. V. Donk, G. R. Kruger
<i>APPLICATIONS OF UAVS IN PRECISION AGRICULTURE</i>	21	Development And Applications Of Agricultural Unmanned Aerial Vechicles	Y. Huang
<i>ENGINEERING TECHNOLOGIES AND ADVANCES</i>	22	Sound Based Detection Of Moths In Open Fields	N. Bouhlef, F. Rossant, J. Orensanz, D. Boigontier
	23	Angular Velocity Meter Application Study In The Agricultural Vehicle Navigation System	L. Gao, J. Hu
	24	Generic ISOBUS Compliant Precision Agriculture Functionality In A Proprietary Terminal Concept	G. Happich, J. Maurer, M. Ehrl
	25	Performance Evaluation Of Single And Multi-GNSS Receivers In Agricultural Field Conditions	M. S. N. Kabir, M. Song, S.-O. Chung, Y.-K. Huh, Y.-J. Kim
	26	NOAA's National Geodetic Survey's National Spatial Reference System And The National Height Modernization	J. D. Rigney Jr.
	27	Specification Of Data Dimension To Measure The Data Quality On Cotton Production	C. J. Santos, A. R. Hirakawa
	28	Integrated Sensor System For Rice Conditions Monitoring Based UGV	S. Zhang

5:00 - 6:30 Monday Poster Session

REGENCY BALLROOM ABC

Tuesday Poster Session

TOPIC	BOARD #	POSTER TITLE	AUTHOR(S)
<i>PROFITABILITY, SUSTAINABILITY AND ADOPTION</i>	1	Adoption Level Of Precision Agriculture For Brazilian Farmers- 2011/12 Crop Year	J. C. Avanzi, E. Borghi, L. Bortolon, E. S. O. Bortolon, A. Luchiar Jr., R. Y. Inamasu, A. C. C. Bernardi
	2	DTE – A Method Which Integrates Statistical Analysis With Economic Evaluation In Large Area Of Type 23 Experiments.	A.Imiolek, M.Imiolek
	3	Adoption Of Precision Agriculture In Sweden- The Use Of Soil Maps	J. Lindblom, C. Lundström, A. Jonsson, M. Ljung
	4	USA Corn Farm Profits And Adoption Of Precision Agriculture	D. Schimmelpfennig, R. Ebel
	5	Worldwide Patent Map Analysis Of Mechanization Technologies Relating To Rice Production	Z. Yi, X. Wang, Y. Hu
	6	Evaluating Decision Systems For Using Variable Rates In Planting Soybean	P. M. Kyveryga, P. Reeg, T. A. Mueller, J. Connor
<i>PRECISION NUTRIENT MANAGEMENT</i>	7	The Most Sensitive Growth Stage To Quantify Nitrogen Stress In Sugarcane Using Active Crop Canopy Sensor	S.G.Q. Castro, O.T. Kolln, G.M. Sanches, H.C.J. Franco, P.S.G. Magalhães
	8	Variable-Rate Application Of Nitrogen And Potassium Fertilizers In Louisiana Sugarcane Production Systems	R. M. Johnson, B. Viator
	9	Precision Nutrient Management Through Use Of LCC And Nutrient Expert In Hybrid Maize Under Laterite Soil Of India	M. Banerjee, G.S. Bhuiya, G.C Malik, D. Maiti, S. Dutta
	10	Effect Of Land Use Over Spatial Variability Of Nitrogen Mineralization And Some Of Chemical Soil Properties In Mirabad Area Of Iran	S. Kaboodi
	11	Precision Sensors For Improved Nitrogen Recommendations In Wheat	O. S. Walsh, R. Christaiaens, A. Pandey
	12	Research On Measurement Device For NO ₃ -ion Concentration of Nutrient Solution	X. Zhang
<i>PRECISION FERTILIZATION OF HORTICULTURAL CROPS</i>	13	Water Management For Cucumber: Greenhouse Experiments In Saudi Arabia And Modeling Study Using SALTMED Model	A. Alomran
<i>PRECISION DAIRY AND LIVESTOCK MANAGEMENT</i>	14	Application Of Infrared Thermography For Assessing Beef Cattle Comfort Using A Fuzzy Logic Classifier	T. F. Canata, R. V. de Sousa, L. S. Martello
<i>PRECISION CROP PROTECTION</i>	15	Using A Decision Tree To Predict The Population Density Of Redheaded Cockchafer (Adoryphorus Couloni) In Dairy Fields	A.M. Cosby, M.G. Trotter, G.A. Falzon, J.N. Stanley, D.A. Schneider, D.W. Lamb, K.S. Powell
	16	Disease Scouting For Aerial Blight Based On Logical Areas Of Collection In Soybean Fields Rotated With Rice	T. N. Spurlock, C. S. Rothrock, W. S. Monfort, T. W. Griffin
	17	A Portable Instrument For Recognition Of Farm Weeds And Management Of Chemical Spray	J. Song, X. Wang, D. Y. Zhang

5:00 - 6:30 Tuesday Poster Session

REGENCY BALLROOM ABC

Tuesday Poster Session

TOPIC	BOARD #	POSTER TITLE	AUTHOR(S)
PRECISION CONSERVATION MANAGEMENT	18	Effect Of Soil Amendments On Barley Growth And Productivity Under Fully And Minimum Irrigation Conditions In Saudi Arabia	M. Almarshadi
	19	Comparison Of Management Zones Generated By The K-Means And Fuzzy C-Means Methods	C. L. Bazzi, E. G. Souza, K. Schenatto, F. Rodrigues, D. M. Rocha
	20	Spatial Variability Of Soil Compaction In Annual Cycle Of Different Culture Of Cane Sugar Land Clay Sandy	I. Marasca, F. C. Masiero, B. F. Barreto, S. P. S. Guerra, K. P. Lanças
	21	The Influence Of The Interpolation Method In The Management Zones Generation	K. Schenatto, E. G. de Souza, V. A. Bier, C. L. Bazzi
FOOD SECURITY AND PRECISION AGRICULTURE	22	Does Nitrogen Balance Surplus Done At Field Level Help To Assess Environmental Effects Of Variable Nitrogen Application In Winter Wheat?	S.M. Samborski, E. Leszczyńska, M. Stêpień, J. Rozbicki, D. Gozdowski
FLUORESCENCE SENSING FOR PRECISION CROP MANAGEMENT	23	Suitability Of Fluorescence Sensors To Estimate The Susceptibility Degree Of Spring Barley To Powdery Mildew And Leaf Rust	G. Leufen, G. Noga, M. Hunsche
EMERGING ISSUES IN PRECISION AGRICULTURE (ENERGY, BIOFUELS, CLIMATE CHANGE, STANDARDS)	24	Building Proactive Predictive Models With Big Data Technology For Precision Agriculture	C. Belsky, C. Lai, J. Ellington, C. Greene, S. Morgan, B. Holub
	25	Radio Frequency Identification For Implementing Traceability In The Cotton Production In The Brazilian Midwest	M. A. Dota, C. S. Junior, E. Weschter, C. E. Cugnasca
	26	Design Of ECU Monitoring System For Agricultural Vehicle Based On ISO 11783	J. Moon, W. Yang, D. Kim, S. Kim
	27	Analyzing Organic Farming Training In The Curriculum Of The University Of Kwazulu-Natal, Pietermaritzburg	S. J. Polepole, S. H. Worth
	28	A Study On Diagnostic System Based On ISOAgLib For Agricultural Vehicles	Y. WonYong, M. JaeMin, L. JongYeol, K. DaeCheol, K. SeongMin

5:00 - 6:30 Tuesday Poster Session

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