THE INTERNATIONAL SOCIETY OF PRECISION AGRICULTURE PRESENTS THE 14th INTERNATIONAL CONFERENCE ON PRECISION AGRICULTURE

24-27 June 2018 • Montreal, Quebec, Canada

CONFERENCE PROGRAM

Organized by:

Dr. Nicolas Tremblay, Conference Co-Chair
President, International Society of Precision Agriculture
president@ispag.org

Dr. Viacheslav Adamchuk, Conference Co-Chair
Secretary, International Society of Precision Agriculture
secretary@ispag.org
ISPA Board Members

The ISPA is governed by an international Board of Directors consisting of elected officers (President, President-Elect, Secretary, Treasurer, and Immediate Past-President). Candidates for officers will be nominated by the ISPA Board of Directors and elected by the Society members.

PAST PRESIDENT
Dr. Ken Sudduth
Research Agricultural Engineer
USDA-ARS
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McGill University
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Agricultural Economist and Cropping Systems Economist
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treasurer@ispag.org

PRESIDENT
Dr. Nicolas Tremblay
Plant Nutrition and Crop Management Specialist
Horticultural R&D Center,
Agriculture and Agri-Food Canada
president@ispag.org

The 14th 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 offers oral and poster presentations as well as time for networking and discussion on how precision agriculture is being implemented around the world. Sessions offer information on key topics for scientists, crop consultants, advisors, extension personnel, agronomists, producers, and others working with technology in the production of food, fuel, and fiber.

ISPA Basics

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

The purpose of ISPA is to:

• Organize and conduct international conferences related to precision agriculture, such as the International Conference on Precision Agriculture and work with other related conferences.

• Develop and maintain a web-portal to communicate the latest developments in precision agriculture with the world, and maintain a member directory and interactive website to communicate among Society members.

• Publish a periodic ISPA enewsletter for members and other subscribers.

• Provide members an opportunity for publication of original scientific research in the Society sponsored peer-reviewed journal, Precision Agriculture.

ISPA Membership & Benefits

Membership Includes:

❍ Membership directory access and opportunities to network with precision agriculture professionals from around the world

❍ Electronic space to post your resume, pictures, etc., for greater networking and professional opportunities

❍ Digital access to the Society’s journal, Precision Agriculture

❍ Opportunities to publish research and review articles in Precision Agriculture

❍ Opportunities to present oral and poster papers at Society-sponsored events such as the
  • International Conference on Precision Agriculture,
  • Asian Conference on Precision Agriculture,
  • European Conference on Precision Agriculture, etc.

❍ Discount on ISPA-sponsored conference registration fees

❍ Periodic newsletter that provides information from around the world related to precision agriculture research activities and industry updates

❍ Opportunities to nominate and be nominated by other members for ISPA sponsored awards and recognition at Society events.

❍ Participate in the Society’s communities of interest
### GENERAL

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**ICPA WEBSITE & APP**

ISPAG.com/ICPA features additional program details including presentation descriptions, speaker bios, and contact information for speakers and exhibitors. Access the complete ICPA conference overview, create and manage your personal conference itinerary, and easily search speakers, exhibitors, and presentations with the ICPA Conference App. Search **Precision Ag Conference** in the app store or get it here:

![Android](image1.png) ![Apple](image2.png)

@IntSoPA

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### MONDAY, 25 JUNE 2018 ORAL PRESENTATIONS

**Concurrent Sessions – Morning** ........................................... 12
- Robotics, Guidance and Automation
- Precision Horticulture
- Proximal Soil Sensing 1
- GIS and Geospatial Data
- Site-Specific Water Management

**Concurrent Sessions – Afternoon** ........................................ 13
- Industry Sponsors
- Site-Specific Nitrogen Management 1
- Proximal Soil Sensing 2
- On-Farm Experimentation with Site-Specific Technologies 1
- Precision Dairy and Livestock Management 1

**Concurrent Sessions – Late Afternoon** ................................. 14
- Industry Exhibitors
- Site-Specific Nitrogen Management 2
- Crop Biomass Sensing
- On Farm Experimentation with Site-Specific Technologies 2
- Precision Dairy and Livestock Management 2

### TUESDAY, 26 JUNE 2018 ORAL PRESENTATIONS

**Concurrent Sessions – Morning** ........................................... 17
- Precision Agriculture and Global Food Security
- Site-Specific Nutrient, Lime, and Seed Management 1
- Proximal Sensing of Crop 1
- Big Data, Data Mining, and Deep Learning 1
- Applications of UAS 1

**Concurrent Sessions – Afternoon** ........................................ 18
- Profitability and Success Stories in Precision Agriculture 1
- Site-Specific Nutrient, Lime, and Seed Management 2
- Proximal Sensing of Crop 2
- Big Data, Data Mining, and Deep Learning 2
- Applications of UAS 2

**Concurrent Sessions – Late Afternoon** ................................. 19
- Profitability and Success Stories in Precision Agriculture 2
- Site-Specific Nutrient, Lime, and Seed Management 3
- Remote Sensing 1
- Big Data, Data Mining, and Deep Learning 3
- Precision Irrigation 1

### WEDNESDAY, 27 JUNE 2018 ORAL PRESENTATIONS

**Concurrent Sessions – Morning** ........................................... 21
- Education and Outreach in Precision Agriculture
- Precision Crop Protection
- Remote Sensing 2
- Decision Support Systems
- Precision Irrigation 2
ICPA offers three 3-hour pre-conference workshops at the conference hotel on Sunday 24 June from 9:30 am - 1:00 pm.

**R Workshop for Precision Agriculture Applications**  
Instructors: Todd Barr, M.Sc.; and Timothy Schwinghamer, Ph.D.
This workshop introduces the precision agriculture enthusiasts to the popular open source R software to handle various sources of data acquired for characterizing field heterogeneity. The RStudio interface and numerous packages for organizing, manipulating and exploring data will be presented to the workshop participants. Formation of R scripts for standard statistical and geo-statistical analysis will be demonstrated to interpret and extract information. With a series of hands-on activities, the participants will obtain practical techniques such as sensor data cleaning and filtering, local pedotransformation functions, spatial interpolation, prescription mapping for site-specific management.

**On-Farm Experimentation and Decision-Support**  
Instructors: Simon Cook, Ph.D.; Myrtille Lacoste, Ph.D.; Fiona Evans, Ph.D.; Nicolas Tremblay, Ph.D.; and Viacheslav Adamchuk, Ph.D.
This workshop discusses the requirements, methods and theories that may be used to assist in making optimal crop management decisions. The first part will focus on on-farm experimentation (OFE): 1) organization and benefits of OFE; 2) social processes and engagement; 3) designs, data and statistics. The second part will demonstrate how to generate insights applicable at the individual farm level using results from research trials collected in a diversity of contexts. Data sharing, meta-analyses and artificial intelligence-based DSS will be highlighted. A case-study will demonstrate how to enhance the management of agro-climatic, managerial and economic constraints under the framework of uncertain response to fertilizer inputs and changing farming conditions.

**UAV Operation and Data Analysis for Precision Agriculture Applications**  
Instructors: Philippe Vigneault, B.Sc.; and Kosal Khun, M.Sc
This 3-hour workshop introduces participants to the key requirements for efficient operation, analysis and interpretation of unmanned aerial vehicles data in a low-altitude remote sensing context. Topics to be covered will include 1) guidelines and best practices in UAV logistics, 2) challenges in processing UAV data; and 3) pros, cons and alternatives to vegetation indices for agricultural applications. This workshop is targeted to final users of UAV imagery (scientists, agronomists and producers) and UAV service providers.
ICPA Exhibit Hall
LEVEL 4

1 13 19
2 14 20
3 15 21
4 16 22
5 17 23
6 18 24

Break Area
Level 4 Foyer

10 11
12

Booths:

Booth 1: agr.gc.ca
Booth 2: Precision Agriculture Curriculum
Booth 3: pix4d.com
Booth 4: coinottawa.truecourse.ca
Booth 5: climate.com
Booth 6: micasense.com
Booth 7: qubitsystems.com
Booth 8: inserosolutions.com
Booth 9: agrian.com
Booth 10: hortau.com
Booth 11: infoag.org
Booth 12: veristech.com
Booth 13: soiloptix.com
Booth 14: ncinnovation.ca
Booth 15: uoguelph.ca
Booth 16: metos.at
Booth 17: logiag.com
Booth 18: agbusiness.ca
Booth 19: fieldapex.com
Booth 20: malvernpanalytical.com
Booth 21: dualem.com
Booth 22: nextinstruments.net
Booth 23: soilreader.com
Booth 24: waypointanalytical.com
CONFERENCE FLOOR PLAN

Office: Level 4  Salon 8
Receptions: Level 4  Foyer
Exhibit Hall: Level 4  Ballroom West
Plenary Sessions: Level 4  Ballroom Centre & East
Luncheons: Level 4  Ballroom Centre & East
Breaks: Level 4  Ballroom West
Poster Sessions: Level 4  Foyer

Monday through Wednesday Breakout Sessions:
Breakout 1  Level 3  Salon Drummond West
Breakout 2  Level 3  Salon Drummond Centre
Breakout 3  Level 3  Salon Drummond East
Breakout 4  Level 3  Salon 6
Breakout 5  Level 3  Salon 7

Workshops: Level 2  Salons 1, 2 & 3
Speaker Ready Room: Level 2  Salon 2
Board Meeting: Level 2  Salon 3
Sunday, 24 June 2018

9:30am - 1:00pm  Pre-Conference Workshops  Sheraton Level 2
R Workshop for Precision Agriculture Applications  Level 2 Salon 1
  Todd Barr, Timothy Schwinghamer
On-Farm Experimentation and Decision-Support  Level 2 Salon 2
  Simon Cook, Fiona Evans, Myrtille Lacoste, Nicolas Tremblay, Viacheslav Adamchuk
UAV Operation and Data Analysis for Precision Agriculture Applications  Level 2 Salon 3
  Kosal Khun, Philippe Vigneault

6:00pm - 8:00pm  Welcome Reception  Level 4 Foyer

Monday, 25 June 2018

7:00am - 6:00pm  On-site Registration Open  Level 4 Foyer
8:00am - 10:00am  Opening Plenary Session  Level 4 Ballroom Centre & East
Welcome to the 14th ICPA, Nicolas Tremblay
Welcome from Agriculture and Agri-Food Canada, Alain Houde
Welcome from McGill University, Anja Geitmann
Keynote Presentation: It’s Not Rocket Science – Much More Actually. A Discussion on the Trends Impacting Technology Adoption on Farms, Chris Paterson

10:00am - 10:30am  Break in Exhibit Hall  Level 4 Ballroom West
10:30am - 12:00pm  Concurrent Sessions  Level 3 Salons
Robotics, Guidance and Automation
Precision Horticulture
Proximal Soil Sensing 1
GIS and Geospatial Data
Site-Specific Water Management

12:00pm - 1:30pm  Luncheon  Level 4 Ballroom Centre & East
Our Sponsors and Exhibitors, Viacheslav Adamchuk
Introduction of Craige Mackenzie
Our Social Licence to Operate and the Benefits of Precision Ag, Craige Mackenzie

Sponsored by
## Monday, 25 June 2018 - continued

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
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<tbody>
<tr>
<td>1:30pm</td>
<td>Concurrent Sessions</td>
<td>Level 3 Salons</td>
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<td>2:00pm</td>
<td><strong>Industry Sponsors</strong></td>
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<td>Site-Specific Nitrogen Management 1</td>
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<td>Proximal Soil Sensing 2</td>
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<td>On-Farm Experimentation with Site-Specific Technologies 1</td>
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<td>Precision Dairy and Livestock Management 1</td>
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<td>3:00pm</td>
<td>Break in Exhibit Hall</td>
<td>Level 4 Ballroom West</td>
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<td>3:30pm</td>
<td>Concurrent Sessions</td>
<td>Level 3 Salons</td>
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<td>4:00pm</td>
<td><strong>Industry Exhibitors</strong></td>
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<td>Site-Specific Nitrogen Management 2</td>
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<td>Crop Biomass Sensing</td>
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<td>On Farm Experimentation with Site-Specific Technologies 2</td>
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<td>Precision Dairy and Livestock Management 2</td>
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<tr>
<td>5:00pm</td>
<td>Poster Session and Reception</td>
<td>Level 4 Ballroom West, and Foyer</td>
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<td>6:30pm</td>
<td>Country/Region Meetings</td>
<td>Level 3 Salons</td>
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## Tuesday, 26 June 2018

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<tr>
<th>Time</th>
<th>Activity</th>
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<tr>
<td>7:00am</td>
<td>On-site Registration Open</td>
<td>Level 4 Foyer</td>
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<td>8:00am</td>
<td>Plenary Session</td>
<td>Level 4 Ballroom Centre &amp; East</td>
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<td></td>
<td><strong>Defining Precision Agriculture</strong>, Nicolas Tremblay</td>
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<td><strong>Keynote Presentation: From Data to Decisions with Artificial Intelligence</strong>, Yoshua Bengio</td>
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<td>9:30am</td>
<td>Break in Exhibit Hall</td>
<td>Level 4 Ballroom West</td>
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<td>10:00am</td>
<td>Concurrent Sessions</td>
<td>Level 3 Salons</td>
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<td>11:00am</td>
<td><strong>Precision Agriculture and Global Food Security</strong></td>
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<td>Site-Specific Nutrient, Lime, and Seed Management 1</td>
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<td>Proximal Sensing of Crop 1</td>
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<td>Big Data, Data Mining, and Deep Learning 1</td>
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<td>Applications of UAS 1</td>
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<td>12:00pm</td>
<td>Conference Luncheon &amp; Awards Ceremony</td>
<td>Level 4 Ballroom Centre &amp; East</td>
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<td><strong>Graduate Student Awards</strong>, Ian Yule</td>
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<td><strong>Pierre C. Robert Scientist Awards</strong>, Ian Yule</td>
<td>Springer</td>
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<td><strong>Université Laval</strong></td>
<td>UNIVERSITY OF GUELPH</td>
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<td><strong>University of Guelph</strong></td>
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Sponsored by FieldApex, XorVio
Tuesday, 26 June 2018 - continued

1:15pm - 3:00pm
Concurrent Sessions
Level 3 Salons
- Profitability and Success Stories in Precision Agriculture 1
- Site-Specific Nutrient, Lime, and Seed Management 2
- Proximal Sensing of Crop 2
- Big Data, Data Mining, and Deep Learning 2
- Applications of UAS 2

3:00pm - 3:30pm
Break in Exhibit Hall
Level 4 Ballroom West

3:30pm - 5:00pm
Concurrent Sessions
Level 3 Salons
- Profitability and Success Stories in Precision Agriculture 2
- Site-Specific Nutrient, Lime, and Seed Management 3
- Remote Sensing 1
- Big Data, Data Mining, and Deep Learning 3
- Precision Irrigation 1

5:00pm - 6:30pm
Poster Session and Reception
Level 4 Ballroom West, and Foyer
Sponsored by PIX4D

6:30pm - 8:00pm
Community Meetings
Level 3 Salons

Wednesday, 27 June 2018

7:00am - 8:00am
On-site Registration Open
Level 4 Foyer

8:00am - 9:30am
Concurrent Sessions
Level 3 Salons
- Education and Outreach in Precision Agriculture
- Precision Crop Protection
- Remote Sensing 2
- Decision Support Systems
- Precision Irrigation 2

9:30am - 10:00am
Break in Exhibit Hall
Level 4 Foyer

10:00am - 12:00pm
Closing Plenary Session
Level 4 Ballroom Centre & East

Conference Summary, Nicolas Tremblay

Minister of Agriculture and Agri-Food, The Honourable Lawrence MacAulay

Upcoming Events

ISPA Board of Directors and Officers Election Results, Nicolas Tremblay

President Yule Remarks and the 15th ICPA, Ian Yule

12:00pm - 9:00pm
Technical Tour
Meet in Lobby
Open to all for an additional cost. Includes box lunch and dinner.
Sponsored by McGill
Monday, 25 June 2018

**Opening Plenary Session**

Room: Ballroom Centre & East (Level 4)

*Chair: Nicolas Tremblay*

8:00am  **Welcome to the 14th ICPA, Nicolas Tremblay**

8:05am  **Welcome from Agriculture and Agri-Food Canada, Alain Houde**

8:15am  **Welcome from McGill University, Anja Geitmann**

8:20am  **Keynote Presentation: It’s not rocket science - much more actually.**

**A discussion on the trends impacting technology adoption on farms.**

Chris Paterson leads the Bayer CropScience Digital Farming initiative (XARVIO.com) in North America, and resides in Calgary, Alberta. Chris has been involved with agronomy and agribusiness across North America for 25 years, and for the past 10 years has been directly involved with the development of business applications around emerging technologies that generate, or consume farm data. The Digital Farming team that Chris leads has technical competencies in agronomy, data science, IT, and precision Ag technologies. Together with colleagues from South America and Europe, the team has been able to rapidly evolve from recruitment of the right people, to raw ideation and conceptualizing, through product development and ground truthing, to full commercialization and revenue generation in 3 years. Because Bayer Digital Farming has an approach to the market that focuses on collaboration with other companies, his team has involvement with a broad spectrum of companies and technologies including farm data management platforms, equipment sensors, weather and imagery sensors, robotics, artificial intelligence, wireless mobile connectivity, etc. Chris will introduce some trends that are driving (or preventing) adoption of precision ag and farm data technologies on North American farms, show some potentially disruptive technologies to watch for, and reveal where Bayer Digital Farming thinks their opportunity is emerging.

*Sponsored by*

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**Conference Luncheon**

Room: Ballroom Centre & East (Level 4)

*Chair: Viacheslav Adamchuk*

12:00pm  **Our Sponsors and Exhibitors, Viacheslav Adamchuk**

12:05pm  **Introduction of Craige Mackenzie**

12:10pm  **Our Social Licence to Operate and the Benefits of Precision Ag, Craige Mackenzie**

*Sponsored by*
### MONDAY MORNING
Oral Presentations

**Concurrent sessions begin at 10:30 am**

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<tr>
<th>Robotics, Guidance and Automation</th>
<th>Precision Horticulture</th>
<th>Proximal Soil Sensing 1</th>
<th>GIS and Geospatial Data</th>
<th>Site-Specific Water Management</th>
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<tbody>
<tr>
<td>Room: Drummond West (Level 3)</td>
<td>Room: Drummond Centre (Level 3)</td>
<td>Room: Drummond East (Level 3)</td>
<td>Room: Salon 7 (Level 3)</td>
<td>Room: Salon 6 (Level 3)</td>
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<tr>
<td>Chair: Cornelia Weltzien</td>
<td>Chair: Rodrigo Ortega</td>
<td>Chair: Shrini Upadhyaya</td>
<td>Chair: Athyna Cambouris</td>
<td>Chair: Ian Yule</td>
</tr>
</tbody>
</table>

**Flourish - A Robotic Approach for Automation in Crop Management**

- **[10:30 am]**
  - Achim Walter

**Observational Studies in Agriculture: Paradigm Shift Required**

- **[10:30 am]**
  - Louis Longchamps

**A Precision Management Strategy on Soil Mapping**

- **[10:30 am]**
  - Sakae Shibusawa

**GIS Web and Mobile Development with Interfaces in QGIS for Variable Rate Fertilization**

- **[10:30 am]**
  - Ricardo Cuitiva

**Application of a Systems Model to a Spatially Complex Irrigated Agricultural System: a Case Study**

- **[10:30 am]**
  - Joanna Sharp

**An Economic Feasibility Assessment for Adoption of Autonomous Field Machinery in Row Crop Production**

- **[10:45 am]**
  - Jordan Shockley

**Monitoring Potassium Levels in Peat-grown Pineapple Using Selected Spectral Ratios**

- **[10:45 am]**
  - Siva Kumar Balasundram

**Compensating for Soil Moisture Effects in Estimation of Soil Properties by Electrical Conductivity Sensing**

- **[10:45 am]**
  - Ken Sudduth

**Identifying and Filtering Out Outliers in Spatial Datasets**

- **[10:45 am]**
  - Leonardo Felipe Maldaner

**Effect of Irrigation Scheduling Technique and Fertility Level on Corn Yield and Nitrogen Movement**

- **[10:45 am]**
  - Michael Dukes

**Machine Monitoring As a Smartfarming Concept Tool**

- **[11:00 am]**
  - Milan Kroulik

**Evaluation of HLB-infected Citrus Rootstocks Using Ground Penetrating Radar**

- **[11:00 am]**
  - Yiannis Ampatzidis

**Delineation of Site-Specific Nutrient Management Zones to Optimize Rice Production Using Proximal Soil Sensing and Multispectral Imaging**

- **[11:00 am]**
  - Jose Eduardo Villalobos Leandro

**Using Geospatial Data to Assess How Climate Change May Affect Land Suitability for Agriculture Production**

- **[11:00 am]**
  - Krishna Bahadur KC

**Managing the Kansas Mesonet for Site Specific Weather Information**

- **[11:00 am]**
  - Mary Knapp

**UAV Images as a Source for Retrieval of Machine Tracks and Vegetation Gaps Along Crop Rows**

- **[11:15 am]**
  - Mark Spekken

**Modelling ‘Concord’ Berry Weight Dynamics**

- **[11:15 am]**
  - Golnaz Badr

**Soil2data: Concept for a Mobile Field Laboratory for Nutrient Analysis**

- **[11:15 am]**
  - Stefan Hinck

**Automated Segmentation and Classification of Land Use from Overhead Imagery**

- **[11:15 am]**
  - Assia Benbihi

**Development of a High Resolution Soil Moisture for Precision Agriculture in India**

- **[11:15 am]**
  - Kamal Das

**ADAPT: A Rosetta Stone for Agricultural Data**

- **[11:30 am]**
  - Dan Danford

**Calculating the Water Deficit of Apple Orchard by Means of Spatially Resolved Approach**

- **[11:30 am]**
  - Nikolaos Tsoulias

**Comparison of the Performance of Two VIS-NIR Spectrometers in the Prediction of Various Soil Properties**

- **[11:30 am]**
  - Marie-Christine Marmette

**Agricultural Remote Sensing Information for Farmers in Germany**

- **[11:30 am]**
  - Holger Lilienthal

**Farm Soil Moisture Mapping Using Reflected GNSS SNR Data Onboard Low Level Flying Aircraft**

- **[11:30 am]**
  - Laurent Ameglio

**Ag Data Coalition**

- **[11:45 am]**
  - John Fulton

**On-the-Go NIR Spectroscopy and Thermal Imaging for Assessing and Mapping Vineyard Water Status in Precision Viticulture**

- **[11:45 am]**
  - Javier Tardaguila

**Analysis of Soil Properties Predictability Using Different On-the-Go Soil Mapping Systems**

- **[11:45 am]**
  - Viacheslav Adamchuk

**Delineation of ‘Management Classes’ within Non-Irrigated Maize Fields Using Readily Available Reflectance Data and Their Correspondence to Spatial Yield Variation**

- **[11:45 am]**
  - Armin Werner

**Optimal Sensor Placement for Field-Wide Estimation of Soil Moisture**

- **[11:45 am]**
  - Amin Nobakhti
### MONDAY AFTERNOON

#### Oral Presentations

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<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
<th>Institution/Project</th>
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<tbody>
<tr>
<td>1:30 pm</td>
<td>Digital Agriculture at The Climate Corporation</td>
<td>Libby Rens</td>
<td>University of Guelph</td>
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<tr>
<td>1:45 pm</td>
<td>MicaSense, Inc. Gold Sponsor</td>
<td>Drew Baustian</td>
<td>Gold Sponsor</td>
</tr>
<tr>
<td>2:00 pm</td>
<td>Targeted Application of Crop Production Products Using GIS and Remote Sensing</td>
<td>Lucie Kablan</td>
<td>OttawaCOIN: Rural Solutions, Urban Farm, Global Opportunity</td>
</tr>
<tr>
<td>2:15 pm</td>
<td>FieldApex Gold Sponsor</td>
<td>Tyler Nigon</td>
<td>OttawaCOIN: Rural Solutions, Urban Farm, Global Opportunity</td>
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<tr>
<td>2:30 pm</td>
<td>Brief Outlines of Selected Precision Agriculture Research Projects at the Faculté Des Sciences De L’agriculture Et De L’alimentation De L’université Laval</td>
<td>Brian Bohman</td>
<td>OttawaCOIN: Rural Solutions, Urban Farm, Global Opportunity</td>
</tr>
<tr>
<td>2:45 pm</td>
<td>Precision Agriculture Research at the University of Guelph</td>
<td>Maria Calera</td>
<td>University of Guelph</td>
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<tr>
<td>1:30 pm</td>
<td>Utilizing Weather, Soil, and Plant Condition for Predicting Corn Yield and Nitrogen Fertilizer Response</td>
<td>Bernie Zebarth</td>
<td>University of Guelph</td>
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<tr>
<td>1:45 pm</td>
<td>Optimising Nitrogen Use in Cereal Crops Using Site-Specific Management Classes and Crop Reflectance Sensors</td>
<td>Asim Biswas</td>
<td>MicaSense, Inc. Gold Sponsor</td>
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<tr>
<td>2:00 pm</td>
<td>Variability in Corn Yield Response to Nitrogen Fertilizer in Quebec</td>
<td>Lucie Kablan</td>
<td>Targeted Application of Crop Production Products Using GIS and Remote Sensing</td>
</tr>
<tr>
<td>2:15 pm</td>
<td>Evaluating Remote Sensing Based Adaptive Nitrogen Management for Potato Production</td>
<td>Brian Bohman</td>
<td>Brief Outlines of Selected Precision Agriculture Research Projects at the Faculté Des Sciences De L’agriculture Et De L’alimentation De L’université Laval</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>Practical Prescription of Variable Rate Fertilization Maps Using Remote Sensing Based Yield Potential</td>
<td>Laurent Ameglio</td>
<td>Precision Agriculture Research at the University of Guelph</td>
</tr>
<tr>
<td>2:45 pm</td>
<td>Review of Developments in Airborne Geophysics and Geomatics to Map Variability of Soil Properties</td>
<td>Laurent Ameglio</td>
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</tr>
<tr>
<td>1:30 pm</td>
<td>Soil Microbial Communities Have Distinct Spatial Patterns in Agricultural Fields</td>
<td>Simon Cook</td>
<td>On-Farm Experimentation with Site-Specific Technologies 1</td>
</tr>
<tr>
<td>1:45 pm</td>
<td>Proximal Soil Sensing-Delineation for Potato Fields</td>
<td>Aolin Gong</td>
<td>On-Farm Experimentation with Site-Specific Technologies 1</td>
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<td>2:00 pm</td>
<td>Development of a Soil ECa Inversion Algorithm for Topsoil Depth Characterization</td>
<td>Eko Leksono</td>
<td>Draft Privacy Guidelines and Proposal Outline to Create a Field-Scale Trial Data Repository for Data Collected by On-Farm Networks</td>
</tr>
<tr>
<td>2:15 pm</td>
<td>High Resolution Soil Moisture Monitoring Using Active Heat Pulse Method with Fiber Optic Temperature Sensing at Field Scale</td>
<td>Duminda Vidana Gamage</td>
<td>Evaluation of a Wireless Pulse Oximeter to Measure Arterial Oxygen Saturation and Pulse Rate in Newborn Holstein Friesian Calves</td>
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<td>Thomas Morris</td>
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<td>Can Unreplicated Strip Trials Be Used in Precision On-Farm Experiments?</td>
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<tr>
<td>1:30 pm</td>
<td>A Tool for Monitoring Genetic Selection Differentials in Dairy Herds in Canada</td>
<td>Bernard Hagan</td>
<td>Detection and Monitoring the Risk Level for Lameness and Lesions in Dairy Herds by Alternative Machine-Learning Algorithms</td>
</tr>
<tr>
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<td>Relationships Between First Test Day Metrics of First Lactation Cows to Evaluate Transition Period</td>
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<tr>
<td>Industry Exhibitors</td>
<td>Site-Specific Nitrogen Management 2</td>
<td>Crop Biomass Sensing</td>
<td>On Farm Experimentation with Site-Specific Technologies 2</td>
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<tr>
<td>5-Minute Talks</td>
<td>Room: Drummond West (Level 3)</td>
<td>Room: Drummond East (Level 3)</td>
<td>Room: Salon 7 (Level 3)</td>
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<tr>
<td>Chair: Ken Sudduth</td>
<td>Chair: Thomas Morris</td>
<td>Chair: Sun-ok Chung</td>
<td>Chair: Simon Cook</td>
</tr>
<tr>
<td>Ag Business &amp; Crop Inc.</td>
<td>[3:40 pm] - Brian Hall</td>
<td>Improving the Precision of Maize Nitrogen Management Using Crop Growth Model in Northeast China</td>
<td>Predicting Dry Matter Composition of Grass Clover Leys Using Data Simulation and Camera-Based Segmentation of Field Canopies into White Clover, Red Clover, Grass and Weeds</td>
</tr>
<tr>
<td>Next Instruments</td>
<td>[3:55 pm] - Victoria Ciancy</td>
<td>[4:00 pm] - Marta Aranguren</td>
<td>[4:00 pm] - Roberto Buelvas</td>
</tr>
<tr>
<td>New Soil Sensors from Veris</td>
<td>[4:00 pm] - Eric Lund</td>
<td>Improving Active Canopy Sensor-Based In-Season N Recommendation Using Plant Height Information for Rain-Fed Maize in Northeast China</td>
<td>Ground Vehicle Mapping of Fields Using LiDAR to Enable Prediction of Crop Biomass</td>
</tr>
<tr>
<td>AgOtter-Wireless Rate Control, Data Logging and Real Time Tracking with iPads</td>
<td>[4:20 pm] - Greg Guyette</td>
<td>Predicted Nitrate-N Loads for Fall, Spring, and VRN Fertilizer Application in Southern Minnesota</td>
<td>Estimating Corn Biomass from RGB Images Acquired with an Unmanned Aerial Vehicle</td>
</tr>
<tr>
<td>Automated Crop Phenotyping in the Field</td>
<td>[4:30 pm] - Stephen Hunt</td>
<td>Estimating Corn Biomass from RGB Images Acquired with an Unmanned Aerial Vehicle</td>
<td>Introducing Precision Ag Tools to Over-100 Year Old Historical Experiment</td>
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</table>

**MONDAY LATE AFTERNOON**

**Oral Presentations**

Concurrent sessions begin at 3:30 pm
Monday, 25 June 2018

**Monday Evening Events**

5:00 – 6:30pm  **Poster Session and Reception**  Level 4 Foyer

Join us for the Monday Evening poster session in the Level 4 Foyer from 5:00 pm to 6:30 pm. Authors are asked to be at their poster from 5:30 to 6:00 pm.

Please use your Monday drink ticket in your registration packet and take time to visit with colleagues about their research. Light hors d’oeuvres will be served in the exhibit hall.

The exhibit hall will be open so take advantage of connections with our industry supporters and visit with them about their offerings.

6:30 – 8:00pm  **Regional Meetings**  Level 3 Drummond West, Centre, East, Salon 6, Salon 7

Regional meetings are a great opportunity for networking and share on initiatives complementary to the ICPA at continental, regional or country levels. ISPA country representatives can also be reviewed and new ones can be proposed to the ISPA Board.

**Canada**  
*Athyna Cambouris*  
Drummond West Level 3

**Europe**  
*John Stafford*  
Drummond Centre Level 3

**USA**  
*Ken Sudduth*  
Drummond East Level 3

**Asia/Australasia**  
*Manjeet Singh*  
Salon 7 Level 3

**Latin America**  
*José Molin*  
Salon 6 Level 3
Tuesday, 26 June 2018

Plenary Session
Room: Ballroom Centre & East (Level 4)
Chair: Nicolas Tremblay

8:00am  Defining Precision Agriculture, Nicolas Tremblay

8:30am  Keynote Presentation: From Data to Decisions with Artificial Intelligence, Yoshua Bengio

Dr. Yoshua Bengio will be our keynote speaker on Tuesday, June 26th. Dr. Bengio (computer science, 1991, McGill U; post-docs at MIT and Bell Labs) is Professor at the University of Montreal since 1993, department of computer science and operations research. He is scientific director of MILA (Montreal Institute for Learning Algorithms, currently the largest academic research group on deep learning) and IVADO (Institute for Data Valorization). Yoshua Bengio is Canada Research Chair in Statistical Learning Algorithms. He authored three books and over 300 publications (h-index over 100), mostly in deep learning. He holds a Canada Research Chair in Statistical Learning Algorithms, is Officer of the Order of Canada, recipient of the Marie-Victorin Quebec Prize 2017, he is a CIFAR Senior Fellow and co-directs its Learning in Machines and Brains program. He is on the NIPS foundation board (previously program chair and general chair) and co-created the ICLR conference (specialized in deep learning). He pioneered deep learning and his goal is to uncover the principles giving rise to intelligence through learning, as well as contribute to the development of AI for the benefit of all. He was just named scientist of the year in Canada for his research that revolutionized and deepened our knowledge of artificial intelligence, and his initiatives that made Montreal a hub in the sector.

Sponsored by MILA

Conference Luncheon & Awards Ceremony
Room: Ballroom Centre & East (Level 4)
Chair: Ian Yule

10:45am  Graduate Student Awards, Ian Yule  Sponsored by Springer

11:05am  Pierre C. Robert Scientist Awards, Ian Yule

Young Scientist Award  Sponsored by FieldApex

Senior Scientist Award  Sponsored by xarvio™
## TUESDAY MORNING

### Precision Agriculture and Global Food Security
Room: Drummond West (Level 3)
Chair: José Molin

**Agronomía: Eliciting Food Security from Big Data, Big Ideas and Small Farms**
- Roger Sylvester-Bradley
  - 10:00 am

**Precision Agriculture for Small Farm Holders**
- Paresh Bharatiya
  - 10:15 am

**Opportunities for Precision Agriculture in Serbia**
- Aristotelis Christos Tagarakis
  - 10:30 am

**Propects and Challenges to Precision Agriculture Technologies Development in Ghana: Scientists' and Extension Agents' Perspectives.**
- Martin Bosompem
  - 10:45 am

**Pix4D in Agriculture: A New Automatic Processing Pipeline for Absolute Reflectance Values and the Future of Agriculture Specific Products**
- Angad Singh
  - 11:00 am

**Sustainable Food Production Systems**
- Craig Mackenzie
  - 11:10 am

### Site-Specific Nutrient, Lime, and Seed Management 1
Room: Drummond Centre (Level 3)
Chair: John Stafford

**Main Stream Precision Farming - 7,000 VRA Maps for Winter Rapeseed**
- Rita Hoerfarter
  - 10:00 am

**Spatial Variability of Canola Yield Related to Terrain Attributes Within Producer's Fields**
- Richard Colley III
  - 10:15 am

**Understanding Temporal and Spatial Variation of Soil Available Nutrients with Satellite Remote Sensing**
- Richard Colley III
  - 10:45 am

**Precision Fall Urea Fertilizer Applications: Timing Impact on Carbon Dioxide, Ammonia Volatilization and Nitrous Oxide Emissions**
- Stephanie Bruggeman
  - 11:00 am

### Proximal Sensing of Crop 1
Room: Drummond East (Level 3)
Chair: John Stafford

**Field Phenotyping and an Example of Proximal Sensing of Photosynthesis**
- Onno Muller
  - 10:00 am

**A Comparison of Three-Dimensional Data Acquisition Methods for Phenotyping Applications**
- Oliver Scholz
  - 10:15 am

**Soybean Plant Phenotyping Using Low-Cost Sensors**
- Felippe Hoffmann Silva Karp
  - 10:30 am

**Understanding Canopy and Soil Phenotyping**
- Bruggeman
  - 10:45 am

**Data Clustering Tools for Understanding Spatial Heterogeneity in Crop Production by Integrating Proximal Soil Sensing and Remote Sensing Data**
- Md Saifuzzaman
  - 11:00 am

### Big Data, Data Mining, and Deep Learning 1
Room: Salon 7 (Level 3)
Chair: Louis Longchamps

**Using Deep Learning in Yield and Protein Prediction of Winter Wheat Based on Fertilization Prescriptions in Precision Agriculture**
- Amy Peerlinck
  - 11:15 am

**Using Feature Extraction and Machine Learning for Intra-Field Variability Reset Expectations on Intra-Field Variability**
- Alireza Pourreza
  - 11:15 am

**Using UAV Imagery for Crop Analytics**
- Austin Coates
  - 10:00 am

**Changing the Cost of Farming: New Tools for Precision Farming**
- Karen Hand
  - 10:15 am

**Using an Unmanned Aerial Vehicle with Multispectral with RGB Sensors to Analyze Canola Yield in the Canadian Prairies**
- Kim Hodge
  - 10:30 am

**Using Precision Agriculture and the Diversity-Stability Hypothesis**
- Clarence Swanton
  - 11:00 am

**Using Thermodynamic Principles and Remote Sensing to Reset Expectations on Intra-Field Variability**
- Warren King
  - 11:15 am

**Using Multi-Layered, Whole-Farm Data Sets and Machine Learning**
- Patrick Filippi
  - 10:45 am

**Correlating Heterogeneity Requirements of Oceanic and Continental Cropping Systems**
- Charles Fox
  - 11:05 am

### Applications of UAS 1
Room: Salon 6 (Level 3)
Chair: Gábor Milics

**Remote Sensing and Machine Learning for Site-Specific Farming**
- Penelope Nagel
  - 10:00 am

**Remote Sensing Data for Site-Specific Farming**
- Penelope Nagel
  - 10:15 am

**Remote Sensing Data Derived Elevation Maps on Small UAS Imagery**
- Søren Skovsen
  - 10:30 am

**Remote Sensing Data Derived Elevation Maps on Small UAS Imagery**
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  - 10:45 am

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  - 11:30 am
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<thead>
<tr>
<th>Oral Presentations</th>
<th>Concurrent sessions begin at 1:15 pm</th>
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<td><strong>TUESDAY AFTERNOON</strong></td>
<td><strong>Room: Drummond West (Level 3) Chair: Terry Griffin</strong></td>
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<tr>
<td>Profitability and Success Stories in Precision Agriculture 1</td>
<td>Site-Specific Nutrient, Lime, and Seed Management 2</td>
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<tr>
<td>Room: Drummond Centre (Level 3) Chair: David Mulla</td>
<td>Room: Drummond East (Level 3) Chair: Asim Biswas</td>
</tr>
<tr>
<td>A Gap Analysis of Broadband Connectivity and Precision Agriculture Adoption in Southwestern Ontario, Canada</td>
<td>Potential of Apparent Soil Electrical Conductivity to Describe Soil Spatial Variability in Brazilian Sugarcane Fields</td>
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<td><strong>Room: Drummond Centre (Level 3) Chair: David Mulla</strong></td>
<td><strong>Room: Drummond East (Level 3) Chair: Asim Biswas</strong></td>
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<tr>
<td><strong>A Long-Term Precision Agriculture System Maintains Profitability</strong></td>
<td><strong>Development of a Machine Vision Yield Monitor for Shallot Onion Harvesters</strong></td>
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<td><strong>Risk Efficiency of Site-Specific Nitrogen Management with Respect to Grain Quality</strong></td>
<td><strong>Modifying Agro-Economic Models to Predict Effects of Spatially Varying Nitrogen on Wheat Yields for a Farm in Western Australia</strong></td>
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<td><strong>Using Profitability Map to Make Precision Farming Decisions: A Case Study in Mississippi</strong></td>
<td><strong>Increasing Profitability &amp; Sustainability of Maize Using Site-Specific Crop Management in New Zealand</strong></td>
</tr>
<tr>
<td><strong>Overview and Value of Digital Technologies for North American Soybean Producers</strong></td>
<td><strong>Variety Effects on Cotton Yield Monitor Calibration</strong></td>
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<td><strong>Economic and Environmental Impacts in Sugarcane Production to Meet the Brazilian Ethanol Demands by 2030: the Role of Precision Agriculture</strong></td>
<td><strong>Increasing Corn (Zea Mays L.) Profitability by Site-Specific Seed and Nutrient Management in Igmand-Kisber Basin, Hungary</strong></td>
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</table>
## Oral Presentations: TUESDAY LATE AFTERNOON

### Concurrent sessions begin at 3:30 pm

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<thead>
<tr>
<th>Session Title</th>
<th>Room</th>
<th>Chair</th>
</tr>
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<tbody>
<tr>
<td><strong>Profitability and Success Stories in Precision Agriculture 2</strong></td>
<td>Room: Drummond West (Level 3)</td>
<td>James Lowenberg-DeBoer</td>
</tr>
<tr>
<td><strong>Site-Specific Nutrient, Lime, and Seed Management 3</strong></td>
<td>Room: Drummond Centre (Level 3)</td>
<td>Newell Kitchen</td>
</tr>
<tr>
<td><strong>Remote Sensing 1</strong></td>
<td>Room: Drummond East (Level 3)</td>
<td>Mats Soderstrom</td>
</tr>
<tr>
<td><strong>Big Data, Data Mining, and Deep Learning 3</strong></td>
<td>Room: Salon 7 (Level 3)</td>
<td>Joanna Sharp</td>
</tr>
<tr>
<td><strong>Precision Irrigation 1</strong></td>
<td>Room: Salon 6 (Level 3)</td>
<td>Alan Moulin</td>
</tr>
</tbody>
</table>

### Adoption of Precision Agriculture Technology: A Duration Analysis
- **[3:30 pm]**
  - Terry Griffin

### Barriers to Adoption of Smart Farming Technologies in Germany
- **[3:45 pm]**
  - Markus Gandorfer

### Akkerweb: A Platform for Precision Farming Data, Science, and Practice
- **[4:00 pm]**
  - Frits van Evert

### Evaluation of the Potential for Precision Agriculture and Soil Conservation at Farm and Watershed Scale: A Case Study
- **[4:15 pm]**
  - Mohammad Khakbazan

### Linking Precision Evaluation of Nitrogen Use Efficiency to Farmers
- **[4:30 pm]**
  - David Huggins

### The Impact of Precision Agriculture Technologies on Farm Profitability in Kansas
- **[4:45 pm]**
  - Terry Griffin

### Optimizing Corn Seeding Depth by Soil Texture to Achieve Uniform Stand
- **[3:30 pm]**
  - Stirling Stewart

### Site-Specific Management Zones Delineation Using Drone-Based Hyperspectral Imagery
- **[4:45 pm]**
  - Hachem Agili

### Preventing Spatial Loss of Farm Profitability Using Variable Rate Irrigation
- **[4:45 pm]**
  - Aniko Nyeki

### Developing an Integrated Approach for Estimation of Soil Available Nutrient Content Using the Modified WOFOST Model and Time-Series Multispectral UAV Observations
- **[3:45 pm]**
  - Jacob Nederend

### An Active Thermography Method for Immature Citrus Fruit Detection
- **[4:15 pm]**
  - Hao Gan

### Accelerating Precision Agriculture to Decision Agriculture: Enabling Digital Agriculture in Australia
- **[4:15 pm]**
  - Jane Trindall

### Elimination of Spatial Variability Using Variable Rate Drip Irrigation (VRDI) in Vineyards
- **[4:15 pm]**
  - Itamar Nadav

### Use Cases for Real Time Data in Agriculture
- **[4:45 pm]**
  - Dennis Buckmaster
  - James Krogmeier

### Variable Rate Irrigation Management Using NDVI
- **[4:30 pm]**
  - Kenneth Stone

### Real Time Precision Irrigation with Variable Setpoint for Strawberry to Generate Water Savings
- **[3:30 pm]**
  - Jean Caron

### The Guelph Plot Analyzer: Semi-Automatic Extraction of Small-Plot Research Data from Aerial Imagery
- **[3:30 pm]**
  - Jacob Nederend

### An Efficient Data Warehouse for Crop Yield Prediction
- **[3:45 pm]**
  - Vuong M. Ngo

### AgDataBox – API (Application Programming Interface)
- **[4:00 pm]**
  - Paulo Graziano Magalhaes

### Wireless Sensor System for Variable Rate Irrigation
- **[4:00 pm]**
  - Itamar Nadav

### Site-Specific Nutrient, Lime, and Seed Management 3
  - **[3:30 pm]**
    - Ofer Beeri

### Remote Sensing 1
  - **[3:30 pm]**
    - Stirling Stewart

### Site-Specific Management Zones Delineation Using Drone-Based Hyperspectral Imagery
- **[4:45 pm]**
  - Hachem Agili

### Improving Yield Prediction Accuracy Using Energy Balance Trial, On-the-Go and Remote Sensing Procedure
- **[4:45 pm]**
  - Aniko Nyeki

### Use Cases for Real Time Data in Agriculture
- **[4:45 pm]**
  - Dennis Buckmaster
  - James Krogmeier

### Variable Rate Irrigation Management Using NDVI
- **[4:30 pm]**
  - Kenneth Stone

### Management Zone Delineation for Irrigation Based on Sentinel-2 Satellite Images and Field Properties
- **[4:45 pm]**
  - Vasileios Liakos
Tuesday, 26 June 2018

Tuesday Evening Events

5:00 – 6:30pm  **Poster Session and Reception**  Level 4 Foyer
Join us for the Tuesday Evening poster session in the Level 4 Foyer from 5:00 pm to 6:30 pm. Authors are asked to be at their poster from 5:30 to 6:00 pm.

Please use your Tuesday drink ticket in your registration packet and take time to visit with colleagues about their research. Light hors d'oeuvres will be served in the exhibit hall.

The exhibit hall will be open so take advantage of connections with our industry supporters and visit with them about their offerings.

6:30 – 8:00pm  **Communities of Interest Business Meetings**  Level 3 Drummond West, Centre, East, Salon 6, Salon 7
The primary purpose of Communities is to better assemble members with common interests so as to facilitate planning, communication, and coordination of programs and services. Each community is active in meeting the needs of its members and ISPA. Activities of each community can vary according to need. Elections of Community Leadership can be held at the business meetings.

**On-Farm Data Sharing**
*Tom Morris*
Drummond West Level 3

**Precision Nitrogen Management**
*Yuxin Miao*
Drummond Centre Level 3

**Precision Agriculture Economics, Profitability, Adoption, and Risk Community**
*Terry Griffin*
Drummond East Level 3

**Pedometrics/PSS**
*Asim Biswas & Ken Sudduth*
Salon 7 Level 3
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<th>Education and Outreach in Precision Agriculture</th>
<th>Precision Crop Protection</th>
<th>Remote Sensing 2</th>
<th>Decision Support Systems</th>
<th>Precision Irrigation 2</th>
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<td>Room: Drummond East (Level 3) Chair: Milan Kroulik</td>
<td>Room: Salon 7 (Level 3) Chair: Yacine Bouroubi</td>
<td>Room: Salon 6 (Level 3) Chair: Bernie Zebarth</td>
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Concurrent sessions begin at 8:00 am

**WEDNESDAY MORNING**

**Oral Presentations**

- Tracking Two Decades of Precision Agriculture Through the Croplife Purdue Survey
  - 8:00 am
  - James Lowenberg-DeBoer

- Optimal Spatial Resolution for Precision Weed Management
  - 8:00 am
  - Rodrigo Trevisan

- Temporal Analysis of Correlation of NDVI with Growth and Yield Features of Rice Plants
  - 8:00 am
  - Oscar Barrero

- From Data to Decisions - Ag Technologies Provide New Opportunities and Challenges with On-Farm Research
  - 8:00 am
  - Laura Thompson

- Water Use Efficiency of Precision Irrigation System Under Critical Water-Saving Condition
  - 8:00 am
  - Qichen Li

- Utilizing GPS Technology and Science to Improve Digital Literacy Among Students in Australia and the United States of America
  - 8:15 am
  - Colt Knight

- Real-Time Control of Spray Drop Application
  - 8:15 am
  - Armin Werner

  - 8:15 am
  - Offer Rozenstein

- Development of an Online Decision-Support Infrastructure for Optimized Fertilizer Management
  - 8:15 am
  - Viacheslav Adamchuk

- A Comprehensive Stress Index for Evaluating Plant Water Status in Almond Trees
  - 8:15 am
  - Kelley Drechsler

- Realising the Full Potential of Precision Agriculture: Encouraging Farmer ‘Buy-in’ by Building Trust in Data Sharing
  - 8:30 am
  - Leanne Wiseman

- Spatial Variability of Optimized Herbicide Mixtures and Dosages
  - 8:30 am
  - Per Rydahl

- Late Season Imagery for Harvest Management
  - 8:30 am
  - Jason Ward

- Corn Nitrogen Fertilizer Recommendation Models Based on Soil Hydrologic Groups Aid in Predicting Economically Optimal Nitrogen Rates
  - 8:30 am
  - Mac Bean

- Three Years of On-Farm Evaluation of Dynamic Variable Rate Irrigation: What Have We Learned?
  - 8:30 am
  - Vasileios Liakos

- Learn, Share, Connect and Be Inspired: How One Farming Group in Australia is Driving PA Adoption
  - 8:45 am
  - Nicole Dimos

- Rapid Identification of Mulberry Leaf Pests Based on Near Infrared Hyperspectral Imaging
  - 8:45 am
  - Liang Yang

- Unmanned Aerial Systems (UAS) for Mitigating Bird Damage in Wine Grapes
  - 8:45 am
  - Santosh Bhusal

- Improving Corn Nitrogen Rate Recommendations Through Tool Fusion
  - 8:45 am
  - Curtis Ransom

- Precision Irrigation Management Through Conjunctive Use of Treated Wastewater and Groundwater in Oman
  - 8:45 am
  - Hemantha Jayasuriya

- Data Power: Understanding the Impacts of Precision Agriculture on Social Relations
  - 9:00 am
  - Emily Duncan

- Experimental Study Using Wind Tunnel for Measuring Variability of Spray Drift Sedimentation
  - 9:00 am
  - Majid Alheidary

- Using Field Spectroscopy for Detecting Soil Properties for Site Specific Management in Arid Regions
  - 9:00 am
  - Abdel-Aziz Belal

- Prediction of Corn Economic Optimum Nitrogen Rate in Argentina
  - 9:00 am
  - Laila Puntel

- A Comparative Study of Field-Wide Estimation of Soil Moisture Using Compressive Sensing
  - 9:00 am
  - Amin Nobakhti

- Precision Agriculture: A Paradigm Shift for Espousal of Advanced Farming Practices Among Progressive Farmers in Punjab –Pakistan
  - 9:15 am
  - Ejaz Ashraf

- Detecting Basal Stem Rot (BSR) Disease at Oil Palm Tree Using Thermal Imaging Technique
  - 9:15 am
  - Siti Khairunniza Bejo

- Design of Ground Surface Sensing Using RADAR
  - 9:15 am
  - Mefthah Mohamed

- Analyzing Trends for Agricultural Decision Support System Using Twitter Data
  - 9:15 am
  - Dharmendra Saraswat

- Crop Price Variation and Water Saving Technologies in Alborz Province of Iran
  - 9:15 am
  - Saeed Yazdani
**Closing Plenary Session**

Wednesday, 27 June 2018

Room: Ballroom Centre & East (Level 4)

*Chair: Nicolas Tremblay*

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<tr>
<td>10:00am</td>
<td><strong>Conference Summary</strong>, Nicolas Tremblay</td>
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<tr>
<td>10:10am</td>
<td><strong>Minister of Agriculture and Agri-Food</strong>, The Honourable Lawrence MacAulay</td>
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<tr>
<td>10:25am</td>
<td><strong>Upcoming Events</strong></td>
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<tr>
<td>10:45am</td>
<td><strong>ISPA Board of Directors and Officers Election Results</strong>, Nicolas Tremblay</td>
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<tr>
<td>11:00am</td>
<td><strong>President Yule Remarks and the 15th ICPA</strong>, Ian Yule</td>
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Wednesday, 27 June 2018
Cost: $90/participant, minimum 60 participants, maximum 120 participants
Meet in hotel lobby at Noon. Return to Sheraton at 9:00pm.

14th ICPA Technical Field Tour
The 8-hour field day introduces participants to the specifics of Quebec agriculture with an emphasis on vegetable production on organic soils. Participants will also visit two research facilities with a demonstration of fertility trial research activities as well as new sensor systems to characterize the heterogeneity of soil and plants and to make emerging precision agriculture practices feasible on the large scale. The tour will end with a BBQ on the shore of St-Louis Lake in the historic area of Ste-Anne-de-Bellevue Channel enabling river transportation between the Ottawa River and the St Lawrence River.

Tour Stops:
- **Stop A** - Agriculture and Agri-Food Canada L’Acadie Experimental Farm
- **Stop B** - Delfland Vegetable Production Farm
- **Stop C** - Macdonald Campus Farm
- **Stop D** - Tadja Hall Faculty Club

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<td>12:15</td>
<td>Departure from Sheraton Centre Hotel (box lunch on board)</td>
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<tr>
<td>13:15</td>
<td>Stop A – L’Acadie Farm</td>
<td>Stop B – Delfland</td>
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<td>14:15</td>
<td>Departure from Stop A</td>
<td>Departure from Stop B</td>
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<td>14:30</td>
<td>Stop B – Delfland</td>
<td>Stop A – L’Acadie Farm</td>
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<td>15:30</td>
<td>Departure from Stop B</td>
<td>Departure from Stop A</td>
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<td>16:30</td>
<td>Stop C – Macdonald Campus Farm</td>
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<td>18:00</td>
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<td>18:10</td>
<td>Stop D – BBQ on the Lakeshore</td>
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<td>20:00</td>
<td>Departure from Stop D</td>
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<td>21:00</td>
<td>Return to Sheraton Centre Hotel</td>
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<td>EVENING POSTER SESSIONS</td>
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<td>Monday and Tuesday 5:00pm to 6:30pm, Level 4 Foyer</td>
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<td>EVENING POSTER SESSIONS</td>
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<tr>
<td>Applications of Unmanned Aerial Systems</td>
<td>1</td>
<td>Assessing Soil Organic Carbon Levels at the Sub-Field Scale in Southwestern Ontario Using a UAV Mounted Multispectral Sensor</td>
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<td>Assessment of Red-Edge Based Vegetation Indices Derived from Unmanned Aerial Vehicle for Plant Nitrogen Content Estimation</td>
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<td>4</td>
<td>Monitoring Soybean Growth and Yield Due to Topographic Variation Using UAV-Based Remote Sensing</td>
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<td>5</td>
<td>Prototype Unmanned Aerial Sprayer for Plant Protection in Agricultural and Horticultural Crops</td>
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<td>6</td>
<td>Salinity Stress Assessment on Vegetation Cover in Arid Regions Using Visible Range Indices of True Color Aerial UAV/Drone Images</td>
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<td>Soybean Maturity Stage Estimation with Unmanned Aerial Systems</td>
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<td>UAV/UAS Remote Sensing in Precision Viticulture Pre-Assessment</td>
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<td>UAV Based Remote Sensing of Viticulture Growth Dynamics</td>
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<td>Use of UAV Acquired Imagery As a Precision Agriculture Method for Measuring Crop Residue in Southwestern Ontario, Canada</td>
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<td>11</td>
<td>Seed and Ear Maize Yield Assessment by Drone-Mounted Camera Simulating VENµS Bands</td>
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<td>Combining Texture and Spectral Feature Values for Rice Plant Detection Using Unmanned Aerial Vehicle (UAV) Imagery</td>
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<td>Wheat Biomass Estimation Using Visible Aerial Images and Artificial Neural Network</td>
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<td>Data-Driven Agricultural Machinery Activity Anomaly Detection and Classification</td>
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<td>15</td>
<td>From Hyperspectral Signatures to Machine Learning Modeling to Predict Nutrient Content in Costa Rican Soils</td>
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<td>16</td>
<td>Improving the Use of Artificial Neural Networks for Site-Specific Nitrogen Fertilization</td>
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<td>Semantic Segmentation of Roadside Survey Imagery for Post-Harvest Tillage Assessment</td>
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<td>Field Test of a Satellite-Based Model for Irrigation Scheduling in Cotton</td>
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<td>Effective Use of a Debris Cleaning Brush for Mechanical Wild Blueberry Harvesting</td>
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<td>Spatial Decision Support System: Controlled Tile Drainage – Calculate Your Benefits</td>
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<td>Variable Selection and Data Clustering Methods for Agricultural Management Zones Delineation</td>
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<td>Reverse Modelling of Yield-Influencing Soil Variables in Case of Few Soil Data</td>
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<td>Economic and Management Tool for Assessing Wild Blueberry Production Costs and Financial Feasibility</td>
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<td>A Geographic Information System for Mapping Apple Quality</td>
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<td>Application of Variable-Rate Irrigation for Potato Productivity</td>
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<td>Refractive Index Based Brix Measurement System for Sugar and Allied Industries</td>
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<td>Harness the Power of the Internet to Improve Yield</td>
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<td>Creating Thematic Maps and Management Zones for Agriculture Fields</td>
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### Evening Poster Sessions

Monday and Tuesday 5:00pm to 6:30pm, Level 4 Foyer

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<td><strong>Farm Animals Health and Welfare Monitoring</strong></td>
<td>30</td>
<td>Evaluation of Nutrient Intake in Sheep Fed with Increasing Levels of Crambe Meal (Crambe Abyssinica Hoscht)</td>
<td>Darcilene de Figueiredo</td>
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<td>31</td>
<td>The Correlation Between Criteria from Welfare Quality® Protocol Applied to Dairy Cows Housed in Free-Stall Barn</td>
<td>Gabriel Dallago</td>
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<td>33</td>
<td>Efficiency of Microbial Synthesis and the Flow of Nitrogen Compounds in Sheep Receiving Crambe Meal (Crambe Abyssinica Hochst) Replacing the Concentrate Crude Protein</td>
<td>Darcilene de Figueiredo</td>
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<td><strong>Genomics and Precision Agriculture</strong></td>
<td>34</td>
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<td>Pieter Badenhorst</td>
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<td><strong>Geospatial Data</strong></td>
<td>35</td>
<td>Experiences in the Development of Commercial Web-Based Data Engines to Support UK Growers Within an Industry-Academic Partnership</td>
<td>Yonatan Shahar</td>
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<td>36</td>
<td>Development of an Overhead Optical Yield Monitor for a Sugarcane Harvester in Louisiana</td>
<td>Richard Johnson</td>
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<td>37</td>
<td>Application of Routines for Automation of Geostatistical Analysis Procedures and Interpolation of Data by Ordinary Kriging</td>
<td>Eduardo Souza</td>
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<td><strong>In-Season Nitrogen Management</strong></td>
<td>38</td>
<td>Estimating Litchi Canopy Nitrogen Content Using Simulated Multispectral Remote Sensing Data</td>
<td>Shuisen Chen</td>
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<td>Levels of Inclusion of Crambe Meal (Crambe Abyssinica Hochst) in Sheep Diet on the Balance of Nitrogen and Ureic Nitrogen in the Blood Serum</td>
<td>Darcilene Figueiredo</td>
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<td>40</td>
<td>Using a UAV-Based Active Canopy Sensor to Estimate Rice Nitrogen Status</td>
<td>Songyang Li</td>
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<td>Active and Passive Sensor Comparison for Variable Rate Nitrogen Determination and Accuracy in Irrigated Corn</td>
<td>Leonardo Bastos</td>
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<td>Active Canopy Sensors for the Detection of Non-Responsive Areas to Nitrogen Application in Wheat</td>
<td>Andres Berger</td>
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<td>43</td>
<td>Using Drone Based Sensors to Direct Variable-Rate, In-Season, Aerial Nitrogen Application on Corn</td>
<td>Laura Thompson</td>
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<td><strong>Land Improvement and Conservation Practices</strong></td>
<td>44</td>
<td>Evaluation of Strip Tillage Systems in Maize Production in Hungary</td>
<td>Tamás Rátonyi</td>
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<td>45</td>
<td>Organic Nitrogen Uptake: A Novel Pathway to Improve Nitrogen Use Efficiency and Crop Productivity</td>
<td>Kawsar Ali</td>
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<td>46</td>
<td>Characterization of Soil Properties, Nutrient Distribution and Rice (Oryza Sativa.) Productivity As Influenced by Tillage Methods in a Typical Gleysols</td>
<td>Fuseini Issaka</td>
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<td>The Use of Principal Component Analysis of Ecological Data Using CANACO (Case Study: Rangeland of Ravansar)</td>
<td>Hossein Arzani</td>
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<td><strong>On Farm Experimentation with Site-Specific Technologies</strong></td>
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<td>Eduardo Souza</td>
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<td>49</td>
<td>Canola Response to Variable-Rate N Applications Under Different Weather Conditions: A Multi-Year Case Study in Northern Ontario, Canada</td>
<td>Jiala Shang</td>
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<td><strong>Precision Agriculture and Global Food Security</strong></td>
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<td>An Automatic Control Method Research for 9YG-1.2 Large Round Baler</td>
<td>Jianjun Dong</td>
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<td>Exploring Tractor Mounted Hyperspectral System Ability to Detect Sudden Death Syndrome Infection and Assess Yield in Soybean</td>
<td>Ittai Herrmann</td>
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<td>Effect of Composts Prepared from Municipal Solid Waste in the Agrochemical Properties of Senosem Soils of Uzbekistan</td>
<td>Sindor Pardaev</td>
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<td>Farmland Linetype's Acquisition Method Based on Hough Transform and Its Application in Tractor's Roll Angle Monitoring</td>
<td>Jiangtao Qi</td>
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<td>Development of Farmland-Terrain Simulation System for Consistency of Seeding Depth</td>
<td>Weiqiang Fu</td>
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<td><strong>Precision Crop Protection</strong></td>
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<td>Development of Vision Monitoring Technology of Determining the Optimum Timing to Control Eurytoma Maslovskii for Increasing Plum Productivity</td>
<td>Yeonghwan Bae</td>
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<td><strong>Precision Dairy and Livestock Management</strong></td>
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<td>Ear-Attached Accelerometer as an On-Farm Device to Predict the Onset of Calving in Dairy Cows</td>
<td>Michael Iwersen</td>
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<td>The Influence of Calf’s Sex on Total Milk Yield and Its Constituents of Dairy Cows</td>
<td>Gabriel Dallago</td>
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<td>59</td>
<td>Environmental Impacts of Precision Feeding Programs Applied in Brazilian Pig Production</td>
<td>Candido Pomar</td>
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<td>Dynamic Feeding Intake Monitoring in Growing-Finishing Pigs Reared Under Precision Feeding Strategies</td>
<td>Candido Pomar</td>
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<td>Usage of Milk Revenue Per Minute of Boxtime to Assess Cows Selection and Farm Profitability in Automatic Milking Systems</td>
<td>Liliana Fadul-Pacheco</td>
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<td>Gabriel Dallago</td>
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<td>Exploring Relationships Between Dairy Herd Improvement Metrics in Minas Gerais — Brazil Dairy Herds</td>
<td>Gabriel Dallago</td>
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<td>Variability Analysis of Temperature and Humidity for Control Optimization of a Hybrid Dehumidifier with a Heating Module for Greenhouses</td>
<td>Young-Woo Seo</td>
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<td>Invasive and Non-Invasive Technology for Measuring Water Content of Crop Leaves in Greenhouse Horticulture</td>
<td>Hiroki Umeda</td>
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<td>Implementation of a CAN Bus System to Monitor Hydroponic System</td>
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<td><strong>Profitability and Success Stories in Precision Agriculture</strong></td>
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<td>Toward a Precision Agricultural Implementation for Sugar Cane Plantations in Southwestern Region of Colombia, South America</td>
<td>Jorge Celades</td>
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<td><strong>Proximal and Remote Sensing of Soil and Crop (including Phenotyping)</strong></td>
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<td>Stefan Pätzold</td>
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<td>Development of a Manual Soil Sensing System for Measuring Multiple Chemical Soil Properties in the Field</td>
<td>Eko Leksono</td>
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<td>Masakazu Kodaira</td>
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<td>Innovative Assessment of Cluster Compactness in Wine Grapes from Automated On-the-Go Proximal Sensing Application</td>
<td>Javier Tardaguilla</td>
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<td>Designated Value for a Field Polygon Based on Imagery Data: A Case Study of Crop Vigor in Agricultural Application for Irrigation</td>
<td>Ronit Rud</td>
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<td>Data Fusion of Imagery from Different Satellites for Global and Daily Crop Monitoring</td>
<td>Ofer Beeri</td>
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<td>Optical High-Resolution Camera System with Computer Vision Software for Recognizing Insects, Fruit on Trees, Growth of Crops</td>
<td>Gottfried Pessl</td>
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### EVENING POSTER SESSIONS

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<td>Economics of Swarm Bot Profitability for Cotton Harvest</td>
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<td>Karen Rial-Lovera</td>
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<td>Xiangpeng Liu</td>
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<td>UAVs and Ground-Based Robotics - Agriculture in the 21st Century</td>
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<td>Allegra Johnston</td>
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<td>Rapid Acquisition of Site Specific Lime Requirement with Mid-Infrared Spectroscopy</td>
<td>Matthias Leenen</td>
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<td>Grazing System and Solar Fences, Innovation and Opportunity in Rangeland of Developing Countries</td>
<td>Hossein Arzani</td>
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<td><strong>Small Holders and Precision Agriculture</strong></td>
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<td>Practical and Affordable Technologies for Precision Agriculture in Small Fields: Present Status and Scope in India</td>
<td>Hasan Mirzakhaninafchi</td>
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<td>Karina Bodnár</td>
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<td><strong>Wireless Sensor Networks</strong></td>
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<td>Remote Measurement and Control System of Piggery Environment Based on LoRa</td>
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<td>95</td>
<td>Development of a Wireless Sensor Network for Passive in situ Measurement of Soil CO² Gas Emissions in the Agriculture Landscape</td>
<td>Mohamed Debbagh</td>
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