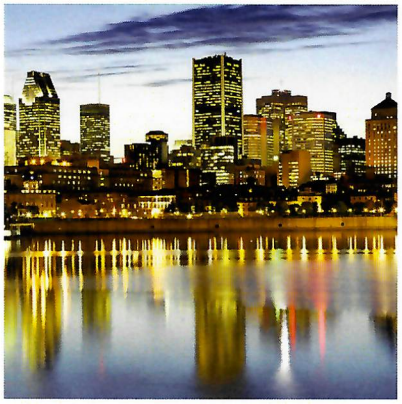
THE INTERNATIONAL SOCIETY OF PRECISION AGRICULTURE PRESENTS THE

14th INTERNATIONAL CONFERENCE ON

PRECISION AGRICULTURE

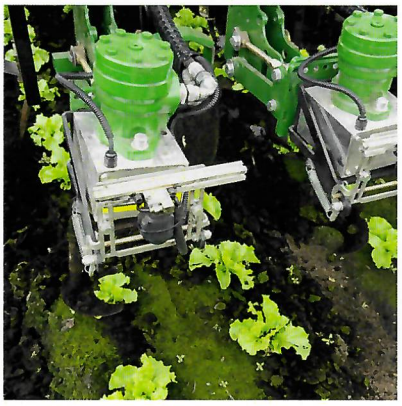
24-27 June 2018 • Montreal, Quebec, Canada



CONFERENCE PROGRAM

Organized by:

ISPA
International Society of Precision Agriculture



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
International Society of Precision Agriculture

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.

PRESIDENT

Dr. Nicolas Tremblay

Plant Nutrition and Crop Management Specialist
Horticultural R&D Center, Agriculture and Agri-Food Canada

president@ispag.org

PRESIDENT-ELECT

Dr. Ian Yule

Professor in Precision Agriculture
Massey University
New Zealand

president-elect@ispag.org

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Dr. Viacheslav Adamchuk

Associate Professor
Department of Bioresource Engineering, McGill University

secretary@ispag.org

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Agricultural Economist and Cropping Systems Economist
Kansas State University

treasurer@ispag.org

PAST PRESIDENT

Dr. Ken Sudduth

Research Agricultural Engineer
USDA-ARS

past-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

TABLE OF CONTENTS

GENERAL

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

Apple

@IntSoPA

MONDAY, 25 JUNE 2018 ORAL PRESENTATIONS

TUESDAY, 26 JUNE 2018 ORAL PRESENTATIONS

WEDNESDAY, 27 JUNE 2018 ORAL PRESENTATIONS

PRE-CONFERENCE

WORKSHOPS

& Program At-a-Glance

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) pro, 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.

14th ICPA PROGRAM-AT-A-GLANCE

SUNDAY, 24 JUNE 2018		
9:30am - 1:00pm	Pre-Conference Workshops	Level 2 Salons 1, 2, 3
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
10:00am - 10:30am	Break	Level 4 Ballroom West
10:30am - 12:00pm	Concurrent Sessions	Level 3 Drummond West, Centre, East, Salon 6, Salon 7
12:00pm - 1:30pm	Luncheon	Level 4 Ballroom Centre & East
1:30pm - 3:00pm	Concurrent Sessions	Level 3 Drummond West, Centre, East, Salon 6, Salon 7
3:00pm - 3:30pm	Break	Level 4 Ballroom West
3:30pm - 5:00pm	Concurrent Sessions	Level 3 Drummond West, Centre, East, Salon 6, Salon 7
5:00pm - 6:30pm	Poster Session and Reception	Level 4 Ballroom West and Foyer
6:30pm - 8:00pm	Country/Region Meetings	Level 3 Drummond West, Centre, East, Salon 6, Salon 7
TUESDAY, 26 JUNE 2018		
7:00am - 6:00pm	On-site Registration open	Level 4 Foyer
8:00am - 9:30am	Plenary Session	Level 4 Ballroom Centre & East
9:30am - 10:00am	Break	Level 4 Ballroom West
10:00am - 11:45pm	Concurrent Sessions	Level 3 Drummond West, Centre, East, Salon 6, Salon 7
11:45am - 1:15pm	Luncheon	Level 4 Ballroom Centre & East
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5:00pm - 6:30pm	Poster Session and Reception	Level 4 Ballroom West and Foyer
6:30pm - 8:00pm	Community Meetings	Level 3 Drummond West, Centre, East, Salon 6, Salon 7
WEDNESDAY, 27 JUNE 2018		
7:00am - 8:00am	On-site Registration open	Level 4 Foyer
8:00am - 9:30am	Concurrent Sessions	Level 3 Drummond West, Centre, East, Salon 6, Salon 7
9:30am - 10:00am	Break	Level 4 Foyer
10:00am - 12:00pm	Closing Plenary Session	Level 4 Ballroom Centre & East
12:00pm - 9:00pm	Technical Tour – Open to all for additional cost. Includes box lunch and dinner.	Meet in hotel lobby.

ICPA SPONSORS

GOLD SPONSORS

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MILA

ICPA EXHIBIT HALL

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nc Research & Innovation

BOOTH 15
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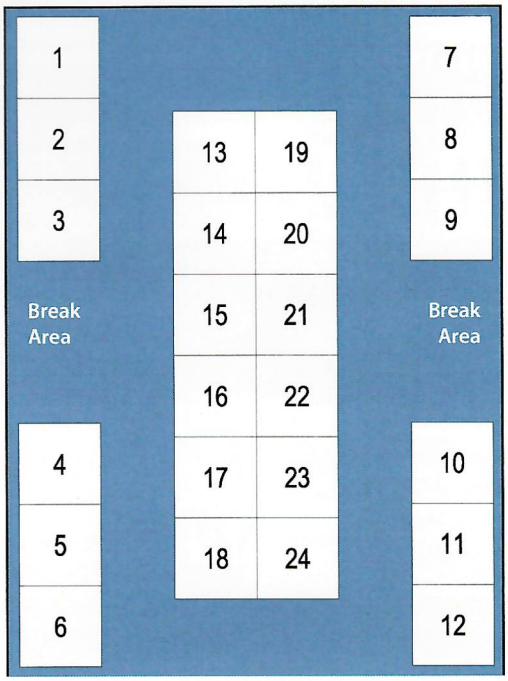
University of Guelph

BOOTH 16
metos.at
Pessl Instruments

BOOTH 17
logiag.com
LOGIAG

ICPA Exhibit Hall
LEVEL 4



Level 4 Foyer

BOOTH 18
agbusiness.ca
ABC Ag Business & Crop Inc.

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fieldapex.com
FieldApex

BOOTH 20
malvernpanalytical.com
Malvern Panalytical

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dualem.com
DUALEM

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nextinstruments.net
Next Instruments

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soilreader.com
SoilReader

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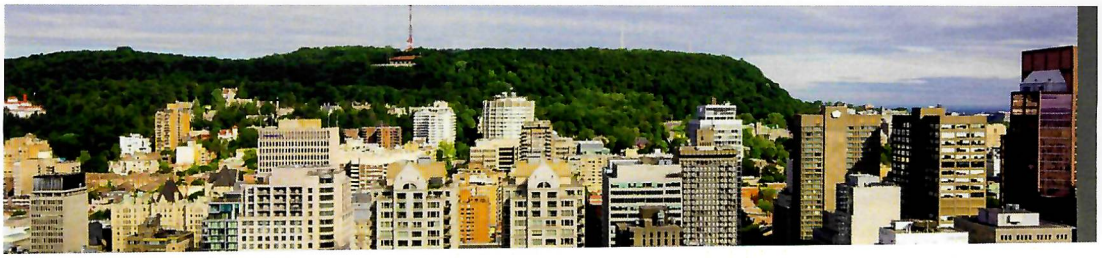
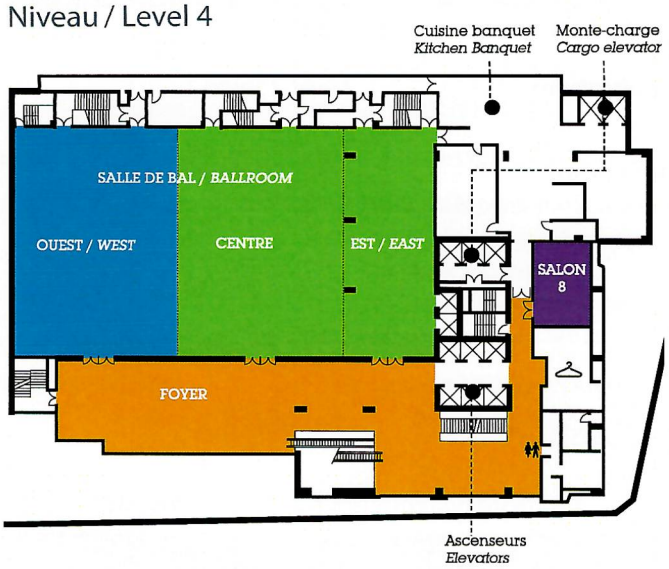
waypointanalytical.com
Waypoint Analytical



Sheraton
LE CENTRE
MONTRÉAL HÔTEL

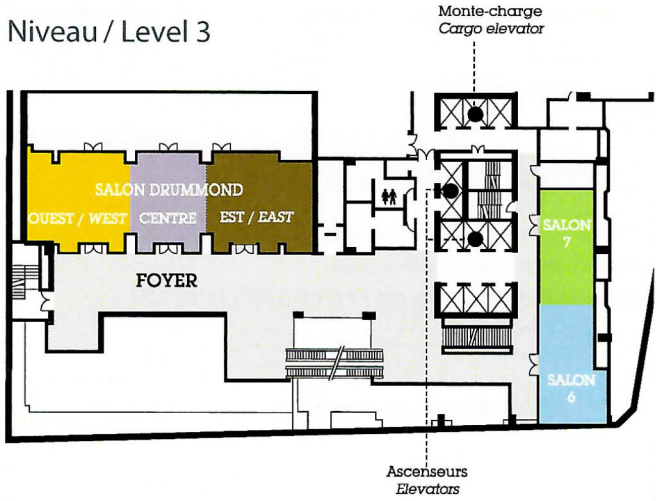
CONFERENCE FLOOR PLAN

Niveau / Level 4



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

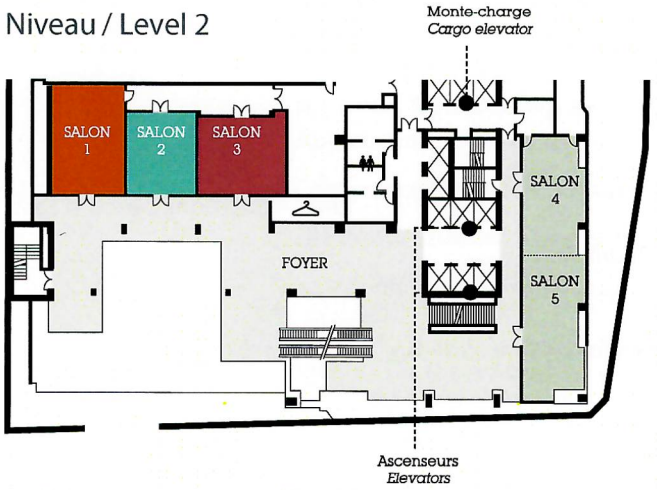
Niveau / Level 3



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

Niveau / Level 2



Workshops:	Level 2	Salons 1, 2 & 3
Speaker Ready Room:	Level 2	Salon 2
Board Meeting:	Level 2	Salon 3

PROGRAM OVERVIEW

Sunday, 24 June 2018

9:30am - 1:00pm	Pre-Conference Workshops	Sheraton Level 2
	R Workshop for Precision Agriculture Applications *Todd Barr, Timothy Schwinghamer*	Level 2 Salon 1
	On-Farm Experimentation and Decision-Support *Simon Cook, Fiona Evans, Myrtille Lacoste, Nicolas Tremblay, Viacheslav Adamchuk*	Level 2 Salon 2
	UAV Operation and Data Analysis for Precision Agriculture Applications *Kosal Khun, Philippe Vigneault*	Level 2 Salon 3
6:00pm - 8:00pm	Welcome Reception *Sponsored by* CLIMATE FIELDVIEW ottawaCOIN	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* *Sponsored by* xarvio™ Digital Farming Solutions	
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* UPA POUVOIR NOURRIR POUVOIR GRANDIR L'Union des producteurs agricoles	

Monday, 25 June 2018 - continued

1:30pm - 3:00pm	Concurrent Sessions **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**	Level 3 Salons
3:00pm - 3:30pm	Break in Exhibit Hall	Level 4 Ballroom West
3:30pm - 5:00pm	Concurrent Sessions **Industry Exhibitors** **Site-Specific Nitrogen Management 2** **Crop Biomass Sensing** **On Farm Experimentation with Site-Specific Technologies 2** **Precision Dairy and Livestock Management 2**	Level 3 Salons
5:00pm - 6:30pm	Poster Session and Reception *Sponsored by* MicaSense	Level 4 Ballroom West, and Foyer
6:30pm - 8:00pm	Country/Region Meetings	Level 3 Salons

Tuesday, 26 June 2018

7:00am - 6:00pm	On-site Registration Open	Level 4 Foyer
8:00am - 9:30am	Plenary Session **Defining Precision Agriculture,** *Nicolas Tremblay* **Keynote Presentation: From Data to Decisions with Artificial Intelligence,** *Yoshua Bengio* *Sponsored by* MILA	Level 4 Ballroom Centre & East
9:30am - 10:00am	Break in Exhibit Hall	Level 4 Ballroom West
10:00am - 11:45am	Concurrent Sessions **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**	Level 3 Salons
11:45am - 1:15pm	Conference Luncheon & Awards Ceremony **Graduate Student Awards,** *Ian Yule* *Sponsored by* Springer, Université Laval, University of Guelph **Pierre C. Robert Scientist Awards,** *Ian Yule* *Sponsored by* FieldApex, xarvio Digital Farming Solutions	Level 4 Ballroom Centre & East

PROGRAM OVERVIEW

Tuesday, 26 June 2018 - continued

1:15pm - 3:00pm	Concurrent Sessions **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**	Level 3 Salons
3:00pm - 3:30pm	Break in Exhibit Hall	Level 4 Ballroom West
3:30pm - 5:00pm	Concurrent Sessions **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**	Level 3 Salons
5:00pm - 6:30pm	Poster Session and Reception *Sponsored by* PIX4D	Level 4 Ballroom West, and Foyer
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 **Education and Outreach in Precision Agriculture** **Precision Crop Protection** **Remote Sensing 2** **Decision Support Systems** **Precision Irrigation 2**	Level 3 Salons
9:30am - 10:00am	Break in Exhibit Hall	Level 4 Foyer
10:00am - 12:00pm	Closing Plenary Session **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*	Level 4 Ballroom Centre & East
12:00pm - 9:00pm	**Technical Tour** Open to all for an additional cost. Includes box lunch and dinner. *Sponsored by* McGill	Meet in Lobby

MONDAY PLENARY SESSIONS

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 xarvio™ Digital Farming Solutions

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 UPA POUVOIR NOURRIR POUVOIR GRANDIR L'Union des producteurs agricoles

MONDAY MORNING Oral Presentations

Concurrent sessions begin at 10:30 am

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

Industry Sponsors Room: Drummond West (Level 3) *Chair: Raj Khosla*	**Site-Specific Nitrogen Management 1** Room: Drummond Centre (Level 3) *Chair: Yuxin Miao*	**Proximal Soil Sensing 2** Room: Drummond East (Level 3) *Chair: Robin Gebbers*	**On-Farm Experimentation with Site-Specific Technologies 1** Room: Salon 7 (Level 3) *Chair: Colt Knight*	**Precision Dairy and Livestock Management 1** Room: Salon 6 (Level 3) *Chair: Candido Pomar*
Digital Agriculture at The Climate Corporation [1:30 pm] *- Libby Rens*	**Utilizing Weather, Soil, and Plant Condition for Predicting Corn Yield and Nitrogen Fertilizer Response** [1:30 pm] *- Newell Kitchen*	**Soil Microbial Communities Have Distinct Spatial Patterns in Agricultural Fields** [1:30 pm] *- Bernie Zebarth*	**An On-farm Experimental Philosophy for Farmer-centric Digital Innovation** [1:30 pm] *- Simon Cook*	**A Tool for Monitoring Genetic Selection Differentials in Dairy Herds in Canada** [1:30 pm] *- Bernard Hagan*
MicaSense, Inc. Gold Sponsor [1:45 pm] *-Drew Baustian*	**Optimising Nitrogen Use in Cereal Crops Using Site-Specific Management Classes and Crop Reflectance Sensors** [1:45 pm] *- Brett Whelan*	**Proximal Soil Sensing-Led Management Zone Delineation for Potato Fields** [1:45 pm] *- Asim Biswas*	**Investigate the Optimal Plot Length in On-Farm Trials** [1:45 pm] *- Aolin Gong*	**A Pilot Study on Monitoring Drinking Behavior in Bucket Fed Dairy Calves Using an Ear-Attached Tri-Axial Accelerometer** [1:45 pm] *- Michael Iwersen*
Targeted Application of Crop Production Products Using GIS and Remote Sensing [2:00 pm] *- Alex Melnitchouck*	**Variability in Corn Yield Response to Nitrogen Fertilizer in Quebec** [2:00 pm] *- Lucie Kablan*	**Development of a Soil ECa Inversion Algorithm for Topsoil Depth Characterization** [2:00 pm] *- Eko Leksono*	**eFields – An On-Farm Research Network to Inform Farm Recommendations** [2:00 pm] *- Elizabeth Hawkins*	**Detection and Monitoring the Risk Level for Lameness and Lesions in Dairy Herds by Alternative Machine-Learning Algorithms** [2:00 pm] *- Daniel Warner*
ottawaCOIN: Rural Solutions, Urban Farm, Global Opportunity [2:10 pm] *- Ryan Thompson*	**Utilization of Spatially Precise Measurements to Autocalibrate the EPIC Agroecosystem Model** [2:15 pm] *- Tyler Nigon*	**High Resolution Soil Moisture Monitoring Using Active Heat Pulse Method with Fiber Optic Temperature Sensing at Field Scale** [2:15 pm] *- Duminda Vidana Gamage*	**Draft Privacy Guidelines and Proposal Outline to Create a Field-Scale Trial Data Repository for Data Collected by On-Farm Networks** [2:15 pm] *- Thomas Morris*	**Relationships Between First Test Day Metrics of First Lactation Cows to Evaluate Transition Period** [2:15 pm] *- Gabriel Machado Dallago*
FieldApex Gold Sponsor *[2:25 pm] -Nicos Keable-Vézina*	**Evaluating Remote Sensing Based Adaptive Nitrogen Management for Potato Production** [2:30 pm] *- Brian Bohman*	**Optimized Soil Sampling Location in Management Zones Based on Apparent Electrical Conductivity and Landscape Attributes** [2:30 pm] *- Paulo Graziano Magalhaes*	**Can Unreplicated Strip Trials Be Used in Precision On-Farm Experiments?** [2:30 pm] *- Gary Hatfield*	**Evaluation of a Wireless Pulse Oximeter to Measure Arterial Oxygen Saturation and Pulse Rate in Newborn Holstein Friesian Calves** [2:30 pm] *- Peter Kanz*
Brief Outlines of Selected Precision Agriculture Research Projects at the Faculté Des Sciences De L'agriculture Et De L'alimentation De L'université Laval [2:40 pm] *- Jean Caron*				
Precision Agriculture Research at the University of Guelph [2:45 pm] *- Clarence Swanton*	**Practical Prescription of Variable Rate Fertilization Maps Using Remote Sensing Based Yield Potential** [2:45 pm] *- Maria Calera*	**Review of Developments in Airborne Geophysics and Geomatics to Map Variability of Soil Properties** [2:45 pm] *- Laurent Ameglio*	**Deriving Fertiliser VRA Calibration Based on Ground Sensing Data from Specific Field Experiments** [2:45 pm] *- Eleonora Cordero*	**Feature Extraction from Radial Descriptor Lines for Body Condition Scoring of Cows** [2:45 pm] *- Abdolabbas Jafari*

MONDAY LATE AFTERNOON Oral Presentations

Concurrent sessions begin at 3:30 pm

Industry Exhibitors 5-Minute Talks Room: Drummond West (Level 3) *Chair: Ken Sudduth*	Site-Specific Nitrogen Management 2 Room: Drummond Centre (Level 3) *Chair: Thomas Morris*	Crop Biomass Sensing Room: Drummond East (Level 3) *Chair: Sun-ok Chung*	On Farm Experimentation with Site-Specific Technologies 2 Room: Salon 7 (Level 3) *Chair: Simon Cook*	Precision Dairy and Livestock Management 2 Room: Salon 6 (Level 3) *Chair: Rene Lacroix*
Waypoint Analytical Inc. *[3:30 pm] -Oscar Ruiz*	**Precision Nitrogen Management: Past, Present and Future** [3:30 pm] *- Raj Khosla*	**Feasibility of Estimating the Leaf Area Index of Maize Traits with Hemispherical Images Captured from Unmanned Aerial Vehicles** [3:30 pm] *- Enrique Apolo-Apolo*	**Supporting and Analysing On-Farm Nitrogen Tramline Trials So Farmers, Industry, Agronomists and Scientists Can LearN Together** [3:30 pm] *- Daniel Kindred*	**Economic Evaluation of Automatic Heat Detection Systems in Dairy Farming** [3:30 pm] *- Johanna Pfeiffer*
The Agrian Platform [3:35 pm]-*Thomas Morier*				
Ag Business & Crop Inc. [3:40 pm] *- Brian Hall*				
Irrigation Monitoring Made Easy by Hortau [3:45 pm]- *Caroline Letendre*	**Improving the Precision of Maize Nitrogen Management Using Crop Growth Model in Northeast China** *[3:45 pm]* *- Xinbing Wang*	**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** [3:45 pm] *- Søren Skovsen*	**An Economic-Theory-Based Approach to Management Zone Delineation** [3:45 pm] *- Brittani Edge*	**Evaluation of the Ear-Tag Sensor System SMARTBOW for Detecting Estrus Events in Indoor Housed Dairy Cows** [3:45 pm] *- Vanessa Schweinzer*
InfoAg Conference [3:50 pm] *-Steve Phillips*				
Next Instruments [3:55 pm] *- Victoria Clancy*				
New Soil Sensors from Veris *[4:00 pm] - Eric Lund*				
Merits and Building High Resolution Models Using Gamma Radiation [4:05 pm]- *Zach Harner*	**Use of Field Diagnostic Tools for Top Dressing Nitrogen Recommendation When Organic Manures Are Applied in Humid Mediterranean Conditions** [4:00 pm] *- Marta Aranguren*	**Laser Triangulation for Crop Canopy Measurements** [4:00 pm] *- Roberto Buelvas*	**Can Optimization Associated with On-Farm Experimentation Using Site-Specific Technologies Improve Producer Management Decisions?** [4:00 pm] *- Bruce Maxwell*	**Evaluation of an Ear Tag Based Accelerometer for Monitoring Rumination Time, Chewing Cycles and Rumination Bouts in Dairy Cows** [4:00 pm] *- Michael Iwersen*
Using Malvern Panalytical's Near-Infrared Spectrometers for Precision Agriculture Applications [4:10 pm] - *Robert Cocciardi*				
Precision Soil Analysis for Precision Agriculture [4:15 pm]- *Cal Harrison*	**Improving Active Canopy Sensor-Based In-Season N Recommendation Using Plant Height Information for Rain-Fed Maize in Northeast China** [4:15 pm] *- Xinbing Wang*	**Ground Vehicle Mapping of Fields Using LiDAR to Enable Prediction of Crop Biomass** [4:15 pm] *- Søren Skovsen*	**Shared Protocols and Data Template in Agronomic Trials** [4:15 pm] *- Davide Cammarano*	**Development of a Small Tracking Device for Cattle Using IoT Technology** [4:15 pm] *- Joe Mari Maja*
Optical High-Resolution Camera System with Computer Vision Software for Recognizing Pests, Fruits on Trees, and Growth of Crops [4:20 pm] - *Gottfried Pessl*				
Farming with Data: From Grains to Plantations [4:25 pm] - *Gregor MacLean*	**Precision Nitrogen and Water Management for Enhancing Efficiency and Productivity in Irrigated Maize** [4:30 pm] *- Evan Phillippi*	**Mapping Cotton Plant Height Using Digital Surface Models Derived from Overlapped Airborne Imagery** [4:30 pm] *- Chenghai Yang*	**Influence of Planter Downforce Setting and Ground Speed on Seeding Depth and Plant Spacing Uniformity of Corn** [4:30 pm] *- Ajay Sharda*	**Precision Feeding Can Significantly Reduce Lysine Intake and Nitrogen Excretion Without Compromising the Performance of Growing Pigs** [4:30 pm] *- Candido Pomar*
AgOtter-Wireless Rate Control, Data Logging and Real Time Tracking with iPads [4:30 pm]- *Greg Guyette*				
Introduction to Dualem [4:35 pm]- *Richard Taylor*				
Automated Crop Phenotyping in the Field [4:40 pm] - *Stephen Hunt*	**Predicted Nitrate-N Loads for Fall, Spring, and VRN Fertilizer Application in Southern Minnesota** [4:45 pm] *- David Mulla*	**Estimating Corn Biomass from RGB Images Acquired with an Unmanned Aerial Vehicle** [4:45 pm] *- Kosal Khun*	**Introducing Precision Ag Tools to Over-100 Year Old Historical Experiment** [4:45 pm] *- Bijesh Maharjan*	

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

Precision Agriculture and Global Food Security Room: Drummond West (Level 3) *Chair: José Molin*	Site-Specific Nutrient, Lime, and Seed Management 1 Room: Drummond Centre (Level 3) *Chair: John Fulton*	Proximal Sensing of Crop 1 Room: Drummond East (Level 3) *Chair: John Stafford*	Big Data, Data Mining, and Deep Learning 1 Room: Salon 7 (Level 3) *Chair: Louis Longchamps*	Applications of UAS 1 Room: Salon 6 (Level 3) *Chair: Gábor Milics*
Agronōmics: Eliciting Food Security from Big Data, Big Ideas and Small Farms [10:00 am] *- Roger Sylvester-Bradley*	**Main Stream Precision Farming - 7.000 VRA Maps for Winter Rapeseed** [10:00 am] *- Rita Hoerfarter*	**Field Phenotyping and an Example of Proximal Sensing of Photosynthesis** [10:00 am] *- Onno Muller*	**Digital Transformation of Canadian Agri-Food** [10:00 am] *- Karen Hand*	**Using UAV Imagery for Crop Analytics** [10:00 am] *- Austin Coates*
Precision Agriculture for Small Farm Holders [10:15 am] *- Paresh Bharatiya*	**Spatial Variability of Canola Yield Related to Terrain Attributes Within Producer's Fields** [10:15 am] *- Alan Moulin*	**A Comparison of Three-Dimensional Data Acquisition Methods for Phenotyping Applications** [10:15 am] *- Oliver Scholz*	**Changing the Cost of Farming: New Tools for Precision Farming** [10:15 am] *- Penelope Nagel*	**Using an Unmanned Aerial Vehicle with Multispectral with RGB Sensors to Analyze Canola Yield in the Canadian Prairies** [10:15 am]- *Kim Hodge*
Opportunities for Precision Agriculture in Serbia [10:30 am] *- Aristotelis Christos Tagarakis*	**Development of a Graphical User Interface for Spinner-Disc Spreader Calibration and Spread Uniformity Assessment** [10:30 am] - *Richard Colley III*	**Soybean Plant Phenotyping Using Low-Cost Sensors** [10:30 am] *- Felippe Hoffmann Silva Karp*	**Multi-Temporal Yield Pattern Analysis - Adaption of Pattern Recognition to Agronomic Data** [10:30 am] *- Gerald Blasch*	**Autonomous Mapping of Grass-Clover Ratio Based on Unmanned Aerial Vehicles and Convolutional Neural Networks** [10:30 am] - *Søren Skovsen*
Prospects and Challeges to Precision Agriculture Technologies Development in Ghana: Scientists' and Extension Agents' Perspectives. [10:45 am] - *Martin Bosompem*	**Understanding Temporal and Spatial Variation of Soil Available Nutrients with Satellite Remote Sensing** [10:45 am] *- Zhiqiang Cheng*	**Field Grown Apple Nursery Tree Plant Counting Based on Small UAS Imagery Derived Elevation Maps** [10:45 am] *- Lav Khot*	**Forecasting Crop Yield Using Multi-Layered, Whole-Farm Data Sets and Machine Learning** [10:45 am] *- Patrick Filippi*	**Rumex and Urtica Detection in Grassland by UAV** [10:45 am] *- Charles Fox*
Pix4D in Agriculture: A New Automatic Processing Pipeline for Absolute Reflectance Values and the Future of Agriculture Specific Products [11:00 am] -*Angad Singh*	**Precision Fall Urea Fertilizer Applications: Timing Impact on Carbon Dioxide, Ammonia Volatilization and Nitrous Oxide Emissions** [11:00 am]- *Stephanie Bruggeman*	**Using Precision Agriculture Tools and Improved Data Analysis for Evaluating Effects of Integrated Nutrient Management Programs** [11:00 am] *- Rodrigo Ortega*	**Data Clustering Tools for Understanding Spatial Heterogeneity in Crop Production by Integrating Proximal Soil Sensing and Remote Sensing Data** [11:00 am] *- Md Saifuzzaman*	**Correlating Plant Nitrogen Status in Cotton with UAV Based Multispectral Imagery** [11:00 am] *- Wesley Porter*
Sustainable Food Production Systems [11:10 am] *- Craige Mackenzie*	**A Crop Simulation Approach to Estimate the Value of On-farm Field Trials** [11:15 am] *- Laila Puntel*	**Integration of Multispectral and Thermal Data for Mapping Crop Water Stress for Precision Irrigation of Vegetable Crops** [11:15 am] *- Samuel Ihuoma*	**Using Deep Learning in Yield and Protein Prediction of Winter Wheat Based on Fertilization Prescriptions in Precision Agriculture** [11:15 am] *- Amy Peerlinck*	**Through the Grass Ceiling: Using Multiple Data Sources on Intra-Field Variability to Reset Expectations of Pasture Production and Farm Profitability** [11:15 am] - *Warren King*
	Delineating Management Zones for Site-Specific Fertilization to Improve Crop Productivity in Potato Cropping Systems [11:30 am] *- Aitazaz Farooque*	**A New Method for Assessing Plant Lodging and Canola Root System Architecture** [11:30 am] *- Bao-Luo Ma*	**Precision Agriculture and the Diversity-Stability Hypothesis** [11:30 am] *- Clarence Swanton*	**Virtual Orchard: A Novel Approach to Generate 3D Point Cloud of Canopy Profile and Extract Tree Geometry** [11:30 am] *- Alireza Pourreza*

TUESDAY AFTERNOON Oral Presentations

Concurrent sessions begin at 1:15 pm

Profitability and Success Stories in Precision Agriculture 1 Room: Drummond West (Level 3) *Chair: Terry Griffin*	Site-Specific Nutrient, Lime, and Seed Management 2 Room: Drummond Centre (Level 3) *Chair: David Mulla*	Proximal Sensing of Crop 2 Room: Drummond East (Level 3) *Chair: Asim Biswas*	Big Data, Data Mining, and Deep Learning 2 Room: Salon 7 (Level 3) *Chair: Daniel Kindred*	Applications of UAS 2 Room: Salon 6 (Level 3) *Chair: Yubin Lan*
A Gap Analysis of Broadband Connectivity and Precision Agriculture Adoption in Southwestern Ontario, Canada [1:15 pm] - *Mamun Chowdury*	**Potential of Apparent Soil Electrical Conductivity to Describe Soil Spatial Variability in Brazilian Sugarcane Fields** [1:15 pm] - *Guilherme Sanches*	**Active Canopy Sensor-Based Precision Rice Management Strategy for Improving Grain Yield, Nitrogen and Water Use** [1:15 pm] - *Yuxin Miao*	**On-Farm Digital Solutions and Their Associated Value to North American Farmers** [1:15 pm] - *Richard Colley III*	**Rape Plant NDVI Spatial Distribution Model Based on 3D Reconstruction** [1:15 pm] - *Yang Chen*
Yield Maps, Soil Maps, and Technical Efficiency: Evidence from U.S. Corn Fields [1:30 pm] - *Jonathan McFadden*	**Soil Spatial Variability Assessment and Precision Nutrient Management in Maize (Zea Mays L.)** [1:30 pm] - *Milind Potdar*	**Nitrogen Sensing by Using Spectral Reflectance Measurements in Cereal Rye Canopy** [1:30 pm] - *Martin Strenner*	**Using Deep Learning - Convolutional Naural Networks (CNNS) for Real-Time Fruit Detection in the Tree** [1:30 pm] - *Kushtrim Bresilla*	**Effectiveness of UAV-Based Remote Sensing Techniques in Determining Lettuce Nitrogen and Water Stresses** [1:30 pm] - *Subodh Bhandari*
A Long-Term Precision Agriculture System Maintains Profitability [1:45 pm] - *Matt Yost*	**Frameworks for Variable Rate Application of Manure** [1:45 pm] - *Holger Lilienthal*	**Development of a Machine Vision Yield Monitor for Shallot Onion Harvesters** [1:45 pm] - *Amanda Jacques*	**A Case Study Comparing Machine Learning and Vegetation Indices for Assessing Corn Nitrogen Status in an Agricultural Field in Minnesota** [1:45 pm] - *Aicam Laacouri*	**Calibrated UAV Image Data for Precision Agriculture** [1:45 pm] - *J. Alex Thomasson*
Risk Efficiency of Site-Specific Nitrogen Management with Respect to Grain Quality [2:00 pm] - *Andreas Meyer-Aurich*	**Modifying Agro-Economic Models to Predict Effects of Spatially Varying Nitrogen on Wheat Yields for a Farm in Western Australia** [2:00 pm] - *Fiona Evans*	**Sensor Comparison for Yield Monitoring Systems of Small-Sized Potato Harvesters** [2:00 pm] - *Md. Kabir*	**Assessment of the Information Content in Solar Reflective Satellite Measurements with Respect to Crop Growth Model State Variables** [2:00 pm] - *Nathaniel Levitan*	**Snap Bean Flowering Detection from UAS Imaging Spectroscopy** [2:00 pm] - *Ethan Hughes*
Using Profitability Map to Make Precision Farming Decisions: A Case Study in Mississippi [2:15 pm] - *Xiaofei Li*	**Increasing Profitability & Sustainability of Maize Using Site-Specific Crop Management in New Zealand** [2:15 pm] - *Allister Holmes*	**Variety Effects on Cotton Yield Monitor Calibration** [2:15 pm] - *Earl Vories*	**Importance of Multiple Variables in Predicting Corn Yields Using Artificial Intelligence** [2:15 pm] - *Abdulwasey Mohammed*	**Pest Detection on UAV Imagery Using a Deep Convolutional Neural Network** [2:15 pm] - *Yacine Bouroubi*
Overview and Value of Digital Technologies for North American Soybean Producers [2:30 pm] - *Jenna Lee*	**Weed Detection Among Crops by Convolutional Neural Networks with Sliding Windows** [2:30 pm] - *Karthik Kantipudi*	**Real-Time Fruit Detection Using Deep Neural Networks** [2:30 pm] - *Jean-Pierre Da Costa*	**Case Study on Using a Centralized Repository to Support Agricultural Research** [2:30 pm] - *John Fulton*	**Unmanned Aerial Systems and Remote Sensing for Cranberry Production** [2:30 pm] - *Brian Luck*
Economic and Environmental Impacts in Sugarcane Production to Meet the Brazilian Ethanol Demands by 2030: the Role of Precision Agriculture [2:45 pm] - *Guilherme Sanches*	**Increasing Corn (Zea Mays L.) Profitability by Site-Specific Seed and Nutrient Management in Igmand-Kisber Basin, Hungary** [2:45 pm] - *Gábor Milics*	**Assessment of Crop Growth Under Modified Center Pivot Irrigation Systems Using Small Unmanned Aerial System Based Imaging Techniques** [2:45 pm] - *Momtanu Chakraborty*	**AgronomoBot: A Smart Answering Chatbot Applied to Agricultural Sensor Networks** [2:45 pm] - *Gustavo M. Mostaco*	**Yield Assessment of a 270 000 Plant Perennial Ryegrass Field Trial Using a Multispectral Aerial Imaging Platform** [2:45 pm] - *Pieter Badenhorst*

Profitability and Success Stories in Precision Agriculture 2 Room: Drummond West (Level 3) *Chair: James Lowenberg-DeBoer*	**Site-Specific Nutrient, Lime ,and Seed Management 3** Room: Drummond Centre (Level 3) *Chair: Newell Kitchen*	**Remote Sensing 1** Room: Drummond East (Level 3) *Chair: Mats Soderstrom*	**Big Data, Data Mining, and Deep Learning 3** Room: Salon 7 (Level 3) *Chair: Joanna Sharp*	**Precision Irrigation 1** Room: Salon 6 (Level 3) *Chair: Alan Moulin*
Adoption of Precision Agriculture Technology: A Duration Analysis [3:30 pm] *- Terry Griffin*	**Optimizing Corn Seeding Depth by Soil Texture to Achieve Uniform Stand** [3:30 pm] *- Stirling Stewart*	**Detecting Variability in Plant Water Potential with Multi-Spectral Satellite Imagery** [3:30 pm] *- Ofer Beeri*	**The Guelph Plot Analyzer: Semi-Automatic Extraction of Small-Plot Research Data from Aerial Imagery** [3:30 pm] *- Jacob Nederend*	**Real Time Precision Irrigation with Variable Setpoint for Strawberry to Generate Water Savings** [3:30 pm] *- Jean Caron*
Barriers to Adoption of Smart Farming Technologies in Germany [3:45 pm] *- Markus Gandorfer*	**Field Level Management and Data Verification of Variable Rate Fertilizer Application** [3:45 pm] *- Richard Colley III*	**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] *- Zhiqiang Cheng*	**An Efficient Data Warehouse for Crop Yield Prediction** [3:45 pm] *- Vuong M. Ngo*	**Optimal Placement of Proximal Sensors for Precision Irrigation in Tree Crops** [3:45 pm] *- Shrini Upadhyaya*
Akkerweb: A Platform for Precision Farming Data, Science, and Practice [4:00 pm] *- Frits van Evert*	**The Profitability of Variable Rate Lime in Wheat** [4:00 pm] *- Brian Mills*	**Canopy Parameters in Coffee Orchards Obtained by a Mobile Terrestrial Laser Scanner** [4:00 pm] *- Felippe Hoffmann Silva Karp*	**AgDataBox – API (Application Programming Interface)** [4:00 pm] *- Paulo Graziano Magalhaes*	**Elimination of Spatial Variability Using Variable Rate Drip Irrigation (VRDI) in Vineyards** [4:00 pm] *- Itamar Nadav*
Evaluation of the Potential for Precision Agriculture and Soil Conservation at Farm and Watershed Scale: A Case Study [4:15 pm] *- Mohammad Khakbazan*	**Flat Payoff Functions and Site-Specific Crop Management** [4:15 pm] *- Alfons Weersink*	**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*	**Wireless Sensor System for Variable Rate Irrigation** [4:15 pm] *- Ruixiu Sui*
Linking Precision Evaluation of Nitrogen Use Efficiency to Farmers [4:30 pm] *- David Huggins*	**Using a Fully Convolutional Neural Network for Detecting Locations of Weeds in Images from Cereal Fields** [4:30 pm] *- Mads Dyrmann*	**Joint Structure and Colour Based Parametric Classification of Grapevine Organs from Proximal Images Through Several Critical Phenological Stages** [4:30 pm] *- Jean-Pierre Da Costa*	**Precision Agriculture Research Infrastructure for Sustainable Farming** [4:30 pm] *- Cheol-Hong Min*	**Variable Rate Irrigation Management Using NDVI** [4:30 pm] *- Kenneth Stone*
The Impact of Precision Agriculture Technologies on Farm Profitability in Kansas [4:45 pm] *- Terry Griffin*	**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*	**Management Zone Delineation for Irrigation Based on Sentinel-2 Satellite Images and Field Properties** [4:45 pm] *- Vasileios Liakos*

TUESDAY EVENING

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

Education and Outreach in Precision Agriculture Room: Drummond West (Level 3) *Chair: Matt Yost*	**Precision Crop Protection** Room: Drummond Centre (Level 3) *Chair: Dennis Buckmaster*	**Remote Sensing 2** Room: Drummond East (Level 3) *Chair: Milan Kroulik*	**Decision Support Systems** Room: Salon 7 (Level 3) *Chair: Yacine Bouroubi*	**Precision Irrigation 2** Room: Salon 6 (Level 3) *Chair: Bernie Zebarth*
Tracking Two Decades of Precision Agriculture Through the Croplife Purdue Survey [8:00 am] *- James Lowenberg-DeBoer*	**Optimum 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*	**Estimating Cotton Water Requirements Using Sentinel-2** [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* *- Manoj Karkee*	**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] *- Meftah 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

Closing Plenary Session

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

10:00am	**Conference Summary,** *Nicolas Tremblay*
10:10am	**Minister of Agriculture and Agri-Food,** *The Honourable Lawrence MacAulay*
10:25am	**Upcoming Events**
10:45am	**ISPA Board of Directors and Officers Election Results,** *Nicolas Tremblay*
11:00am	**President Yule Remarks and the 15th ICPA,** *Ian Yule*

POST CONFERENCE TOUR

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

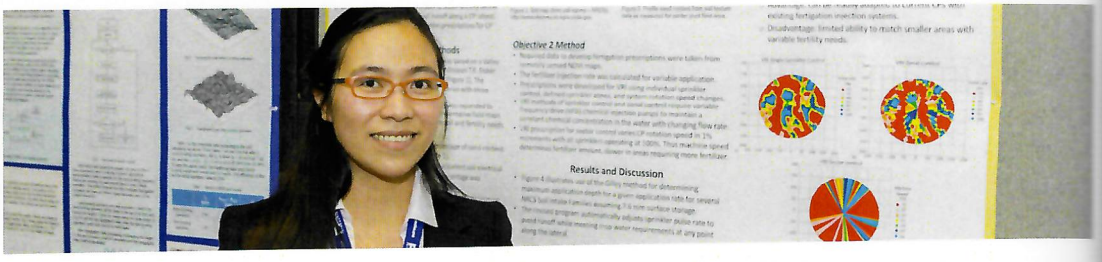
Stop B – Delfland Vegetable Production Farm

Stop C – Macdonald Campus Farm

Stop D – Tadja Hall Faculty Club

Time	Bus #1	Bus #2
12:15	Departure from Sheraton Centre Hotel (box lunch on board)	
13:15	Stop A – **L'Acadie Farm**	Stop B – **Delfland**
14:15	Departure from Stop A	Departure from Stop B
14:30	Stop B – **Delfland**	Stop A – **L'Acadie Farm**
15:30	Departure from Stop B	Departure from Stop A
16:30	Stop C – **Macdonald Campus Farm**	
18:00	Departure from Stop C	
18:10	Stop D – **BBQ on the Lakeshore**	
20:00	Departure from Stop D	
21:00	Return to Sheraton Centre Hotel	

EVENING POSTER SESSIONS



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

TOPIC	#	TITLE	PRESENTER
Applications of Unmanned Aerial Systems	1	Assessing Soil Organic Carbon Levels at the Sub-Field Scale in Southwestern Ontario Using a UAV Mounted Multispectral Sensor	*Michael March*
	2	Assessment of Red-Edge Based Vegetation Indices Derived from Unmanned Arial Vehicle for Plant Nitrogen Content Estimation	*Olga Walsh*
	3	Using Unmanned Aerial Vehicle and Active-Optical Sensor to Monitor Growth Indices and Nitrogen Nutrition of Winter Wheat	*Zeyu Zhang*
	4	Monitoring Soybean Growth and Yield Due to Topographic Variation Using UAV-Based Remote Sensing	*Kenneth Sudduth*
	5	Prototype Unmanned Aerial Sprayer for Plant Protection in Agricultural and Horticultural Crops	*Srinivasulu Reddy G*
	6	Salinity Stress Assessment on Vegetation Cover in Arid Regions Using Visible Range Indices of True Color Aerial UAV/Drone Images	*Sawsana Al-Rahbi*
	7	Soybean Maturity Stage Estimation with Unmanned Aerial Systems	*Joby Prince Czarnecki*
	8	UAV/UAS Remote Sensing in Precision Viticulture Pre-Assessment	*Neal Pilger*
	9	UAV Based Remote Sensing of Viticulture Growth Dynamics	*Neal Pilger*
	10	Use of UAV Acquired Imagery As a Precision Agriculture Method for Measuring Crop Residue in Southwestern Ontario, Canada	*Ahmed Laamrani*
	11	Seed and Ear Maize Yield Assessment by Drone-Mounted Camera Simulating VENµS Bands	*Ittai Herrmann*
	12	Combining Texture and Spectral Feature Values for Rice Plant Detection Using Unmanned Aerial Vehicle (UAV) Imagery	*Yongchao Tian*
	13	Wheat Biomass Estimation Using Visible Aerial Images and Artificial Neural Network	*Christian Bredemeier*
Big Data, Data Mining, and Deep Learning	14	Data-Driven Agricultural Machinery Activity Anomaly Detection and Classification	*James Krogmeier*
	15	From Hyperspectral Signatures to Machine Learning Modeling to Predict Nutrient Content in Costa Rican Soils	*Johan Perret*
	16	Improving the Use of Artificial Neural Networks for Site-Specific Nitrogen Fertilization	*Josef Hauser*
	17	Semantic Segmentation of Roadside Survey Imagery for Post-Harvest Tillage Assessment	*Neal Pilger*
Decision Support Systems	18	Field Test of a Satellite-Based Model for Irrigation Scheduling in Cotton	*Ofer Beeri*
	19	Effective Use of a Debris Cleaning Brush for Mechanical Wild Blueberry Harvesting	*Karen Esau*
	20	Spatial Decision Support System: Controlled Tile Drainage – Calculate Your Benefits	*Angela Kross*
	21	Variable Selection and Data Clustering Methods for Agricultural Management Zones Delineation	*Eduardo Souza*
	22	Reverse Modelling of Yield-Influencing Soil Variables in Case of Few Soil Data	*István Sisák*
	23	Economic and Management Tool for Assessing Wild Blueberry Production Costs and Financial Feasibility	*Travis Esau*
	24	A Geographic Information System for Mapping Apple Quality	*Eduardo Souza*
Drainage Optimization and Variable Rate Irrigation	25	Application of Variable-Rate Irrigation for Potato Productivity	*Viacheslav Adamchuk*
Education and Outreach in Precision Agriculture	26	Refractive Index Based Brix Measurement System for Sugar and Allied Industries	*Mahaling Dongare*
	27	Exploring Wireless Sensor Network Technology in Sustainable Okra Garden: A Comparative Analysis of Okra Grown in Different Fertilizer Treatments	*Lamar Burton*
	28	Harness the Power of the Internet to Improve Yield	*Derek Wallace*
	29	Creating Thematic Maps and Management Zones for Agriculture Fields	*Eduardo Souza*

EVENING POSTER SESSIONS

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

TOPIC	#	TITLE	PRESENTER
Farm Animals Health and Welfare Monitoring	30	Evaluation of Nutrient Intake in Sheep Fed with Increasing Levels of Crambe Meal (Crambe Abyssinica Hoscht)	*Darcilene de Figueiredo*
	31	The Correlation Between Criteria from Welfare Quality® Protocol Applied to Dairy Cows Housed in Free-Stall Barn	*Gabriel Dallago*
	32	The Animal Welfare of Dairy Cows Housed in Free-Stall Barn According to the Welfare Quality® Protocol: Good Feeding and Good Housing Principles	*Gabriel Dallago*
	33	Efficiency of Microbial Synthesis and the Flow of Nitrogen Compounds in Sheep Receiving Crambe Meal (Crambe Abyssinica Hochst) Replacing the Concentrade Crude Protein	*Darcilene de Figueiredo*
Genomics and Precision Agriculture	34	Applications of Unmanned Aircraft System for Genomic Selection of Drought Tolerance in Forages	*Pieter Badenhorst*
Geospatial Data	35	Experiences in the Development of Commercial Web-Based Data Engines to Support UK Growers Within an Industry-Academic Partnership	*Yonatan Shahar*
	36	Development of an Overhead Optical Yield Monitor for a Sugarcane Harvester in Louisiana	*Richard Johnson*
	37	Application of Routines for Automation of Geostatistical Analysis Procedures and Interpolation of Data by Ordinary Kriging	*Eduardo Souza*
In-Season Nitrogen Management	38	Estimating Litchi Canopy Nitrogen Content Using Simulated Multispectral Remote Sensing Data	*Shuisen Chen*
	39	Levels of Inclusion of Crambe Meal (Crambe Abyssinica Hochst) in Sheep Diet on the Balance of Nitrogen and Ureic Nitrogen in the Blood Serum	*Darcilene Figueiredo*
	40	Using a UAV-Based Active Canopy Sensor to Estimate Rice Nitrogen Status	*Songyang Li*
	41	Active and Passive Sensor Comparison for Variable Rate Nitrogen Determination and Accuracy in Irrigated Corn	*Leonardo Bastos*
	42	Active Canopy Sensors for the Detection of Non-Responsive Areas to Nitrogen Application in Wheat	*Andres Berger*
	43	Using Drone Based Sensors to Direct Variable-Rate, In-Season, Aerial Nitrogen Application on Corn	*Laura Thompson*
Land Improvement and Conservation Practices	44	Evaluation of Strip Tillage Systems in Maize Production in Hungary	*Tamás Rátonyi*
	45	Organic Nitrogen Uptake: A Novel Pathway to Improve Nitrogen Use Efficiency and Crop Productivity	*Kawsar Ali*
	46	Characterization of Soil Properties, Nutrient Distribution and Rice (Oryza Sativa.) Productivity As Influenced by Tillage Methods in a Typical Gleysols	*Fuseini Issaka*
	47	The Use of Principal Component Analysis of Ecological Data Using CANACO (Case Study: Rangeland of Ravansar)	*Hossein Arzani*
On Farm Experimentation with Site-Specific Technologies	48	Use of Farmer's Experience for Management Zones Delineation	*Eduardo Souza*
	49	Canola Response to Variable-Rate N Applications Under Different Weather Conditions: A Multi-Year Case Study in Northern Ontario, Canada	*Jiala Shang*
Precision Agriculture and Global Food Security	50	An Automatic Control Method Research for 9YG-1.2 Large Round Baler	*Jianjun Dong*
	51	Fortified Fertilizer Application in Wheat (Triticum Aestivum L.) Grown Under Water Stress Condition	*Anser Ali*
	52	Exploring Tractor Mounted Hyperspectral System Ability to Detect Sudden Death Syndrome Infection and Assess Yield in Soybean	*Ittai Herrmann*
	53	Effect of Composts Prepared from Municipal Solid Waste in the Agrochemical Properties of Serosem Soils of Uzbekistan	*Sindor Pardaev*
	54	Farmland Linetype's Acquisition Method Based on Hough Transform and Its Application in Tractor's Roll Angle Monitoring	*Jiangtao Qi*
	55	Development of Farmland-Terrain Simulation System for Consistency of Seeding Depth	*Weiqiang Fu*

EVENING POSTER SESSIONS

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

TOPIC	#	TITLE	PRESENTER
Precision Crop Protection	56	Development of Vision Monitoring Technology of Determining the Optimum Timing to Control Eurytoma Maslovskii for Increasing Plum Productivity	*Yeonghwan Bae*
Precision Dairy and Livestock Management	57	Ear-Attached Accelerometer as an On-Farm Device to Predict the Onset of Calving in Dairy Cows	*Michael Iwersen*
	58	The Influence of Calf's Sex on Total Milk Yield and Its Constituents of Dairy Cows	*Gabriel Dallago*
	59	Environmental Impacts of Precision Feeding Programs Applied in Brazilian Pig Production	*Candido Pomar*
	60	Dynamic Feeding Intake Monitoring in Growing-Finishing Pigs Reared Under Precision Feeding Strategies	*Candido Pomar*
	61	Usage of Milk Revenue Per Minute of Boxtime to Assess Cows Selection and Farm Profitability in Automatic Milking Systems	*Liliana Fadul-Pacheco*
	62	The Spread of Precision Livestock Farming Technology at Dairy Farms in East Hungary	*Tamás Rátonyi*
	63	Time Series Analysis of Somatic Cell Count from Dairy Herds in Minas Gerais - Brazil	*Gabriel Dallago*
	64	Exploring Relationships Between Dairy Herd Improvement Metrics in Minas Gerais – Brazil Dairy Herds	*Gabriel Dallago*
Precision Horticulture	65	Variability Analysis of Temperature and Humidity for Control Optimization of a Hybrid Dehumidifier with a Heating Module for Greenhouses	*Young-Woo Seo*
	66	Invasive and Non-Invasive Technology for Measuring Water Content of Crop Leaves in Greenhouse Horticulture	*Hiroki Umeda*
	67	Implementation of a CAN Bus System to Monitor Hydroponic System	*Peter Tikasz*
Profitability and Success Stories in Precision Agriculture	68	Variable-Rate-Fertilization of Phosphorus and Lime – Economic Effects and Maximum Allowed Costs for Small-Scale Soil Analysis	*Soeren Schulte-Ostermann*
	69	Toward a Precision Agricultural Implementation for Sugar Cane Plantations in Southwestern Region of Colombia, South America	*Jorge Celades*
Proximal and Remote Sensing of Soil and Crop (including Phenotyping)	70	Mapping Leaf Area Index of Maize in Tasseling Stage Based on Beer-Lambert Law and Landsat-8 Image	*Xiaohe Gu*
	71	Evaluation of an Artificial Neural Network Approach for Prediction of Corn and Soybean Yield	*Angela Kross*
	72	Towards Universal Applicability of On-the-Go Gamma-Spectrometry for Soil Texture Estimation in Precision Farming by Using Machine Learning Applications	*Stefan Pätzold*
	73	Development of a Manual Soil Sensing System for Measuring Multiple Chemical Soil Properties in the Field	*Eko Leksono*
	74	Two-Layer Multiple Soil-Property Mapping Measured with a Real-Time Soil Sensor	*Masakazu Kodaira*
	75	Innovative Assessment of Cluster Compactness in Wine Grapes from Automated On-the-Go Proximal Sensing Application	*Javier Tardaguila*
	76	Designated Value for a Field Polygon Based on Imagery Data: A Case Study of Crop Vigor in Agricultural Application for Irrigation	*Ronit Rud*
	78	Soil Proximal Sensors to Delineate Management Zones in a Commercial Potato Field in Prince Edward Island, Canada	*Abdelkarim Lajili*
	79	Delineation of Soil Management Zones: Comparison of Three Proximal Soil Sensor Systems Under Commercial Potato Field in Eastern Canada	*Athyna Cambouris*
	80	Examining the Relationship Between SPAD, LAI and NDVI Values in a Maize Long-Term Experiment	*Tamás Rátonyi*
	81	Data Fusion of Imagery from Different Satellites for Global and Daily Crop Monitoring	*Ofer Beeri*
	82	Optical High-Resolution Camera System with Computer Vision Software for Recognizing Insects, Fruit on Trees, Growth of Crops	*Gottfried Pessl*

EVENING POSTER SESSIONS

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

TOPIC	#	TITLE	PRESENTER
Robotics, Guidance and Automation	83	Canopy Temperature Mapping with a Vineyard Robot	*Javier Tardaguila*
	84	Economics of Swarm Bot Profitability for Cotton Harvest	*Jared Cullop*
	85	Agricultural Robots: Drivers, Barriers and Opportunities for Adoption	*Karen Rial-Lovera*
	86	High Accuracy Path Tracking for Rice Drill Seeder in Uneven Paddy Fields	*Xiangpeng Liu*
	87	UAVs and Ground-Based Robotics - Agriculture in the 21st Century	*Neal Pilger*
Site-Specific Nutrient, Lime, and Seed Management	88	Design and Performance Experiment of an Outer Grooved-Wheel Fertilizer Apparatus with the Helical Tooth	*Du Jun*
	89	Integration of Proximal and Remote Sensing Data for Site-Specific Management of Wild Blueberry	*Allegra Johnston*
	90	Rapid Acquisition of Site Specific Lime Requirement with Mid-Infrared Spectroscopy	*Matthias Leenen*
Site-Specific Pasture Management	91	Grazing System and Solar Fences, Innovation and Opportunity in Rangeland of Developing Countries	*Hossein Arzani*
Small Holders and Precision Agriculture	92	Practical and Affordable Technologies for Precision Agriculture in Small Fields: Present Status and Scope in India	*Hasan Mirzakhaninafchi*
Smart Weather for Precision Agriculture	93	Correlations Between Meteorological Parameters and the Water Loss of Maize from Silking to Harvesting	*Karina Bodnár*
Wireless Sensor Networks	94	Remote Measurement and Control System of Piggery Environment Based on LoRa	*Liu Xingqiao*
	95	Development of a Wireless Sensor Network for Passive in situ Measurement of Soil CO^2 Gas Emissions in the Agriculture Landscape	*Mohamed Debbagh*

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