



Conference Program

3-5 December, 2019

New Law Lecture Theatre 101
The University of Sydney
Australia



Note: Author in **bold** is presenting the paper at the conference

Day 1: Tuesday 3 December 2019

8:00	Registration	
	Facilitator: Brett Whelan	
8:45	Acknowledgement of Country	
8:55	Opening – Prof. Iain Young, Dean of Science	
9:00	Digital Agriculture: What is it or what it is? – Alex McBratney (The University of Sydney, Australia)	
9:20	What role for research in catalysing digital agriculture - examples and lessons learnt – Michael Robertson (Agriculture & Food, CSIRO, Australia)	
9:40	How to capture value from Ag big data - Andrea Koch (Board Director, National Farmers Federation)	
10:00	Discussion	
10:15	<i>Morning Tea - 30 mins</i>	
	Facilitator: Budiman Minasny	
10:45	Practical uses of digital agriculture - successes to date, and what we need for the future – Jessica Koch (Past President, SPAA)	
Time	Title	Authors
11:05	Digital soil constraint management: How many samples should I take?	Stirling Robertson (University of Southern Queensland, Australia); Bennett, J (University of Southern Queensland, Australia); Lobsey, C. (University of Southern Queensland, Australia)
11:15	Digital mapping of CEC in the Proserpine area using gamma ray data and machine learner in Matlab environment.	Xueyu Zhao (University of New South Wales, Australia); Li, N. (University of New South Wales, Australia), Arshad, M. (University of New South Wales, Australia), Triantafyllis, J. (University of New South Wales, Australia)
11:25	Portable NIR spectrometer for assessing cotton macro and micro-nutrient status.	Jeremy Aditya Prananto (University of Sydney, Australia); Minasny, B. (University of Sydney, Australia); Weaver, T. (CSIRO, Australia)
11:35	Digital soil mapping of soil exchangeable sodium percentage (ESP) based on wavelet transform	Nan Li (University of New South Wales, Australia); Triantafyllis, J. (University of New South Wales, Australia)
11:45	Predicting within paddock soil moisture using observations from multiple spatial supports.	James Moloney (University of Sydney, Australia); Bishop, T. (University of Sydney, Australia); Pagendam, D. (CSIRO, Australia); Searle, R. (CSIRO, Australia)



11:55	Discussion	
12:10	<i>PhD Student - Survey Proposal. Nicole McDonald (University of Southern Queensland, Australia)</i>	
12:15	Lunch - 45 mins	
Facilitator: Tom Bishop		
13:00	AgTech innovation and the two valleys of death. - David Lamb (Food Agility CRC)	
Time	Title	Authors
13:20	Establishing a spectral library to predict soil physical and chemical properties in cotton growing soils.	Dongxue Zhao (University of New South Wales, Australia); Ashad, M. (University of New South Wales, Australia); Li, N. (University of New South Wales, Australia); Zhao, X. (University of New South Wales, Australia); Triantafilis, J. (University of New South Wales, Australia)
13:30	Monitoring soil water use at the plot level using electromagnetic induction surveys.	Mohammad Murad (University of Sydney, Australia); Minasny, B. (University of Sydney, Australia); Bramley, H. (University of Sydney, Australia); McBratney, A. (University of Sydney, Australia)
13:40	FarmDecisionTECH – lessons learned from a field trial of agricultural Internet of Things.	Allen Benter (DPI NSW, Australia); Watts, B. (Bralca Pty, Australia); Clark, A. (Department of Primary Industries, Australia); Pierce, M. (Department of Primary Industries, Australia)
13:50	A high spatiotemporal resolution real-time temperature mapping system to support digital agriculture.	Mathew Webb (DPI Tasmania; University of Sydney, Australia); Kidd, D. (Department of Primary Industries, Australia); Minasny, B. (University of Sydney, Australia)
14:00	The role that low-cost nanosatellites can play in monitoring farm water levels.	Tom Rayner (Myriota, Australia)
14:10	Economics of autonomous cropping systems: the case for UK arable farming systems.	Lowenberg-DeBoer, J. (Harper Adams University, United Kingdom); Karl Behrendt (Harper Adams University, United Kingdom); Godwin, R. (Harper Adams University, United Kingdom); Franklin, K. (Harper Adams University, United Kingdom); Gill, J. (Harper Adams University, United Kingdom);
14:20	Discussion	
14:35	Afternoon Tea - 30 mins	



Facilitator: Tiho Ancev		
15:05 Digital approaches to winegrowing - Rob Bramley (CSIRO)		
Time	Title	Authors
15:25	Using data-driven forecasts of sugarcane yield to optimise variable N fertiliser application.	Si Yang Han (University of Sydney, Australia) ; Filippi, P. (University of Sydney, Australia); Bishop, T. (University of Sydney, Australia)
15:35	Artificial intelligence for diagnosing plant diseases: a case study on android application 'Plantix'.	Srikanth Rupavatharam (ICRISAT, India) ; Whitbread, A. (ICRISAT, India); Dhulipala, R (ICRISAT, India); Kummer, B. (Peat GmbH, Germany)
15:45	Mapping and monitoring of paddy fields extent and growth stages in Indonesia.	Rudiyanto (Universiti Malaysia Terengganu, Malaysia); Budiman Minasny (University of Sydney, Australia) ; Budi Indra Setiawan (IPB Bogor, Indonesia)
15:55	Using multi-layered, multi-farm datasets to forecast yield, identify yield gaps, and understand causes of variability in cotton.	Patrick Filippi (University of Sydney, Australia) ; Bishop, T. (University of Sydney, Australia); Whelan, B. (University of Sydney, Australia); Vervoort, W. (University of Sydney, Australia)
16:05	Digitisation of paddy field in West Sumatra, Indonesia: opportunities for digital agriculture application.	Dian Fiantis (Universitas Andalas, Indonesia) ; Frisa Irawan Ginting (Universitas Andalas, Indonesia); Nanda Dwi Putra (Universitas Andalas, Indonesia); Adrila Nopal Zalukhu (Universitas Andalas, Indonesia); Minasny, B. (University of Sydney, Australia)
16:15	Impacts of spatial resolution on the predictive quality of yield forecast models	Dhahi Al-Shammari (University of Sydney, Australia) , Filippi, P. (University of Sydney, Australia); Whelan, B. (University of Sydney, Australia); Bishop, T. (University of Sydney, Australia)
16:25	Discussion	
16:40	Close	



Day 2: Wednesday 4 December 2019

8:30	Registration	
Facilitator: Sabrina Lomax		
9:00	What are the prospects of success in a digitally enabled agricultural supply chain? Working collaboratively with industry - Evie Murdoch (KPMG)	
Time	Title	Authors
9:20	Flour mill optimisation utilising new sensor technology.	John Kalitsis (AEGIC, Australia); Ken Quail (AEGIC, Australia); Alex McBratney (University of Sydney, Australia); Budiman Minasny (University of Sydney, Australia)
9:30	What are the enabler and barriers for actualising sensory technology in agriculture?	Andrew Coetzee (University of Sydney, Australia); Petri Hallikainen (University of Sydney, Australia)
9:40	Can near-infrared spectroscopy scanning predict meat quality?	Cassius Coombs (University of Sydney, Australia); Luke Neely (University of Sydney, Australia); Budiman Minasny (University of Sydney, Australia); Mario Fajardo (University of Sydney, Australia); Luciano A. Gonzalez (University of Sydney, Australia)
9:50	Predicting grapevine quality from climate indicators: which model and indicator combination works best?	Alessia Cogato (University of Padova, Italy); Francesco Pirotti (University of Padova, Italy), Franco Meggio (University of Padova, Italy); Francesco Marinello (University of Padova, Italy)
10:00	Grain quality for crop management and marketing.	Brett Whelan (University of Sydney, Australia)
10:10	Defining technology addressable trust issues in supply chains - Richard Heath (Australian Farm Institute)	
10:30	Discussion	
10:45	<i>Morning Tea - 30 mins</i>	
Facilitator: Sergio (Yani) Garcia		
Time	Title	Authors
11:15	Selective non-chemical weed control in large scale cropping systems requires the development of machine learning based weed recognition.	Michael Walsh (University of Sydney, Australia); Caleb Squires (University of Sydney, Australia); Guy Coleman (University of Sydney, Australia)
11:25	A site-specific weed management system utilising an unmanned aerial vehicle	Bruen Smith (University of Southern Queensland, Australia); Livia Faria Defeo (University of Southern Queensland, Australia);



		Troy Arnold Jensen (University of Southern Queensland, Australia)
11:35	Sensing solutions for assessing cover crop-based weed management in a national US on-farm network.	Steven Mirsky (USDA Agricultural Research Service, USA); Muthukumar Bagavathiannan (Texas A&M University, USA); Ramon Leon Gonzalez (North Carolina State University, USA); Lovreet Shergill (USDA Agricultural Research Service, USA)
11:45	Paddock-field scale efficacy of a targeted tillage implement for fallow weed control.	Andrew Guzzomi (University of Western Australia, Australia); Caleb Squires (University of Sydney, Australia); Guy Coleman (University of Sydney, Australia); Michael Walsh (University of Sydney, Australia)
11:55	Comparing energy requirements for site-specific weed control. Is laser weeding feasible?	Guy Coleman (University of Sydney, Australia); Michael Walsh (University of Sydney, Australia)
12:05	Utilization of unmanned aerial systems for weed detection and management.	Muthu Bagavathiannan (Texas A&M University, USA); Vijay Singh (Texas A&M University, USA); Bishwa Sapkota (Texas A&M University, USA); Chengsong Hu (Texas A&M University, USA); Dale Cope (Texas A&M University, USA)
12:15	Discussion	
12:30	Lunch - 45 mins	
	Facilitator: Luciano Gonzalez	
13:15	MLA 4.0 digital program and investments shaping the future - Michael Crowley (MLA)	
Time	Title	Authors
13:35	Remote monitoring of cattle behaviour for objective measures of welfare in the beef industry.	Sabrina Lomax (University of Sydney, Australia); Amanda Doughty (Allflex Livestock Intelligence); Christine Nicol (Royal Veterinary College, University of London, UK); Cameron Clark (University of Sydney, Australia)
13:45	How now lame cow: Automatic lameness detection of dairy cattle with 3D sensors - John Gardenier (The University of Sydney, Australia)	
14:05	Optimisation of automated calf feeders for improved data utilisation on farm.	Sarah Legge (University of Sydney, Australia); Sergio Garcia (University of Sydney, Australia)
14:15	A data-based decision-support tool for improving productivity and profitability of pasture-based AMS	Juan Gargiulo (University of Sydney, Australia); N.A. Lyons (University of Sydney, Australia);



		Sergio Garcia (University of Sydney, Australia)
14:25	Making better grazing decisions – data and drought - Peter Richardson (Maia Technology)	
14:45	Discussion	
15:00	<i>Afternoon Tea - 30 mins</i>	
	Facilitator: Petri Hellikainen	
Time	Title	Authors
15:30	Identifying soil provenance	Yuxin Ma (University of Sydney, Australia); Budiman Minasny (University of Sydney, Australia); Alex McBratney (University of Sydney, Australia)
15:40	The ASDO Index – Agricultural Sensor Data Openness – for evaluating on-farm sensors	David Gallacher (University of Sydney, Australia);
15:50	A case study for systematic determination of social media behaviours in premium beef consumers - W. Chinthammit (The University of Tasmania, Australia)	
16:10	Discussion	
16:25	<i>Close</i>	

Day 3: Thursday 5 December 2019

8:30	Registration	
Facilitator: Liana Pozza		
Time	Title	Authors
9:00	Risk aversion and farm choices: Insights from prospect theory - Edward Anderson (The University of Sydney, Australia)	
9:20	Accounting for natural capital on farms aided by digital technologies.	Tiho Ancev (University of Sydney, Australia) ; Samad Azad (Department of Agriculture and Water Resources, Australia)
9:30	Profit mapping as decision support tool for precision agriculture.	George van Zijl (North-West University, South Africa) ; Dewald Bothma (Anievaal Boerdery, South Africa)
9:40	Financial analysis of precision variable-rate nitrogen (VRN) in Northeast Victoria.	Tom Nordblom (Graham Centre for Agricultural Innovation; Charles Sturt University, Australia) ; Tim Hutchings (Meridian Agriculture, Australia); Sosheel Godfrey (Charles Sturt University, Australia); Cassandra Schefe (Riverine Plains Inc; Monash University, Australia)
9:50	An economic assessment of pasture-based automatic milking systems.	Juan Gargiulo (University of Sydney, Australia) ; N.A. Lyons (University of Sydney, Australia); Sergio Garcia (University of Sydney, Australia)
10:00	Precision livestock farming technologies – at what cost? An ex ante analysis of technologies and digitalisation in grazing systems	Karl Behrendt (Harper Adams University, UK) ; Taro Takahashi (Rothamsted Research, UK); Mark Rutter (Harper Adams University, UK)
10:10	On soil sampling as a capital investment	John McLean Bennett (University of Southern Queensland, Australia) ; Stirling Robertson (University of Southern Queensland, Australia); Ben Lyons (University of Southern Queensland, Australia); Geoff Cockfield (University of Southern Queensland, Australia)
10:20	Discussion	
10:35	<i>Morning Tea - 30 mins</i>	
Facilitator: Patrick Filippi		
Time	Title	Authors
11:05	A value-chain framework to enhance opportunities for digital agtech in agribusiness – Simon Cook (Curtin University, Australia)	
11:25	Attitudes, attributes, and skills driving technology adoption in the Australian cotton industry.	Nicole McDonald (University of Southern Queensland, Australia)



11:35	The Soil Tech project – translating soil science into digital soil management apps for land managers.	Andrea Koch (Andrea Koch Agtech Pty Ltd, Australia); Sam Duncan (FarmLab Pty Ltd, Australia)
11:45	Innovation systems approach to digital development of agriculture: lessons from ICRISAT’s India based digital agriculture innovation platform, the ihub.	Ram Dhulipala (ICRISAT, India); Anthony Whitbread (ICRISAT, India); Srikanth Rupavatharam (ICRISAT, India)
11:55	A commercial perspective on the barriers to adoption of digital agriculture.	Emma Leonard (University of New England, Australia); S. Gregory (University of New England, Australia); R. Wells (AgLogic, Australia); D. Lamb (University of New England, Australia); F. Cowley (University of New England, Australia)
12:05	DigiFarm. A case study for digital agriculture.	Guy Roth (University of Sydney, Australia); Alex McBratney (University of Sydney, Australia)
12:15	Food provenance, traceability and trust – Peter Carter (GS1, Australia)	
12:35	<i>Discussion</i>	
12:50	<i>Lunch - 45 mins</i>	
Facilitator: Alex McBratney		
Time	Title	Authors
13:35	Ethical Challenges in the Development and Delivery of the Agtech Ecosystem.	Turlough Guerin (Ag Institute of Australia, Australia); Scott McKinnon (Ag Institute of Australia, Australia); Guy Coleman (Ag Institute of Australia; University of Sydney, Australia); Sarah Hunter (Ag Institute of Australia, Australia); Virginia Shaw (Ag Institute of Australia, Australia); Mark Harding (Ag Institute of Australia, Australia); Daniel Tan (Ag Institute of Australia; University of Sydney, Australia)
13:45	What’s FAIR about Digital Agriculture?	Nathan Robinson (Federation University, Australia)
13:55	Be digital. Be sustainable - Carolina Diaz (Australian Wool Innovation Ltd)	
14:15	Automation to autonomy - Real-time and in-field response – Broughton Boydell (John Deere)	
14:35	<i>Discussion</i>	
14:50	PANEL	
15:10	<i>Close</i>	
<i>Afternoon Tea – 30 mins</i>		
18:30	Conference Dinner to be held at L'Aqua - Rooftop Level, Cockle Bay Wharf, Darling Park, Sydney NSW 2000	



Australian
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New thinking about agriculture



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CONSERVATION AGRICULTURE 2030 CONFERENCE

Conservation agriculture has transformed the Australian farming sector over the past 50 years by delivering increases in productivity and profitability alongside improvements in soil health, water efficiency and other environmental gains. Understanding the risks embedded in current conservation

agriculture systems and anticipating impacts such as disruptive technologies and community trust issues is vital to ensuring that conservation agriculture can continue to deliver transformative outcomes for Australian farmers. At this conference we will ask the question 'What will conservation agriculture look like in 2030?'



22 & 23 June 2020
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