Australian
Farm Institute

Harvesting the Benefits of Digital Agriculture Conference
15th & 16th June 2017

The Australian Farm Institute (AFI) held the *Harvesting the Benefits of Digital Agriculture* conference at the Crown Promenade Melbourne on the 15th and 16th of June 2017. With support from gold partners, PwC, and bronze partners, Myriota, SST Software, Cotton Research and Development Corporation (CRDC), Geosys, Monsanto, National Narrowband Network Company, DiscoveryAg, Rezare Systems and ICT International, the conference was a great success, attracting over 300 delegate registrations and extensive media coverage from The Australian, ABC Landline, Australian Financial Review, The Weekly Times, ABC Rural, and Stock and Land/ Fairfax Rural.

The conference built on the themes explored in AFI's 2016 *Digital Disruption in Agriculture* conference, which examined the potential for digital technologies to change farm production practices and inform decision-making through accumulation and analysis of vast amounts of data. This year's *Harvesting the Benefits of Digital Agriculture* conference went beyond individual applications of technology to explore the ways that entire agricultural supply chains, business systems and government and market compliance systems could be disrupted and changed by digital agriculture. The program included 27 speakers spread over eight sessions, including a closing panel of experts who provided their opinions on technology in agriculture around the world. Presentation session themes and speakers included:

1. **Who will benefit from digital agriculture**?
   - The Hon Jaala Pulford MP, Minister for Agriculture and Regional Development, State Member for Western Victoria
   - Richard Heath, General Manager Research, Australian Farm Institute
     - Industry activity around harvesting the benefits of digital agriculture and visualising the digital value chain
   - Daniel Turkovich, Head of Product, Farmers Business Network
     - FBN Farm Profit System – data analytics platform
   - Richard Norton, Managing Director, Meat & Livestock Australia
     - Red meat – big data

2. **Digital technology through the supply chain (and its impact on-farm)**
   - Hannah Marriott, 2014 Nuffield Australia Farming Scholar
     - On-farm application of technologies in sheep/red meat.
   - Professor James Rowe, CEO, Sheep CRC Ltd
     - Harvesting sheep industry benefits through digital technologies – ASKBILL, prediction system tool for business customised regional models
   - Harvey Gaynor, CEO and Managing Director, Auscott Ltd
     - Australian cotton supply-chain: cost, quality, provenance.

3. **The role of digital technologies in governance and compliance systems**
   - Dr Sjaak Wolfert, Senior Scientist Information Management and ICT in Agri-Food, Wageningen University and Research, the Netherlands
     - Compliance made easy – the Netherland's approach to data and technology in agriculture, collaboration and business models
   - Dan Galligan, CEO, Canegrowers
     - The Australian Sugar Industry - Will farm data save the reef?
   - Associate Professor Leanne Wiseman, Griffith Law School, Griffith University Law, trust and ag data; preparing for a data ready future

4. **The impacts of digital technologies on the rural workforce**
   - Dr Kim Houghton, General Manager Research and Policy, Regional Australia Institute
     - The future workforce, and agriculture jobs and challenges facing Australia's rural industries
   - Dr Tristan Perez, Professor – Autonomous Systems and Robotics – Electrical Engineering and Computer Science, Institute for Future Environments, QUT
     - Skilling the future workforce in digital agriculture
   - Ella Shannon, Director, AgDraft
     - The online platform helping farmers connect with reliable labour and skills; global future of work trends and trust and collaboration
   - Fiona Simson, President, National Farmers' Federation
     - Australian agriculture labour issues – Ag Resource Co

5. **Traceability and provenance – will digital technologies help to sell agricultural produce with confidence and will farmers see the benefit?**
   - Phil Delaney, Research Program Manager (Build Environment), CRC for Spatial Information
     - Australian Spatial Livestock Innovation Program
   - Dr Mike Briers AO, CEO, Food Agility, University of Technology, Sydney
     - Food Agility CRC: empowering Australia's food industry – comparative advantage through digital transformation.
   - Chris Sounness, CEO, Birchip Cropping Group
     - AgTech: are farmers buying it? Connectivity. Capability. Trust.
   - Mike Buckby, Tasmanian Manager, The Cape Grim Water Company
     - Cape Grim Water – Case study: market differentiation and brand reinforcement

6. **The connection between digital agriculture and agricultural finance**
   - Samuel Marwood, Co-Founder and Managing Director, Cultivate Farms
     - Social media and farm capital
   - Bob McKay, Founder and Executive Chairman, AgriDigital
     - Digitising the agri-supply chain to bring trust and transparency to agriculture.
   - Michael Whitehead, Head of Agribusiness Insights, ANZ Client Insights and Solutions, ANZ Banking Group Ltd
     - Bank funding of agriculture and the data drivers for disruption.
   - Craig Heraghty, National Agribusiness Leader, Partner, PwC

7. **Is the agriculture sector 'investment ready' for digital products and services?**
   - Jock Graham, 2015 Nuffield Australia Farming Scholar
     - Rural communication infrastructure, broadband options and recommendations, and Wi-Sky
   - Sam Gill, Digital Strategy and Business Development Manager, Meat & Livestock Australia
     - Connectivity and communications for agriculture
   - Michael Dean, Co-Founder and Chief Investment Officer, Agfunder, US
     - Investment in AgTech
   - Ron Meeusen, Managing Director, Cultivian Sandbox Ventures, US
     - View from the Venture Capitalist Front

8. **Closing panel – the global context**
   - Dr Sjaak Wolfert, Senior Scientist Information Management and ICT in Agri-Food, Wageningen University and Research, the Netherlands
   - Lisa Prassack, Agri Food Innovation Expert and Data Strategy Consultant, Prassack Advisors, US
   - Ron Meeusen, Managing Director, Cultivian Sandbox Ventures, US
   - Michael Dean, LLM, Co-founder and CIO, AgFunder, US

Observations

Digital agriculture is impacting on the entire supply chain, making a whole of industry approach increasingly important if the benefits are to be captured by all participants. The *Harvesting the Benefits of Digital Agriculture* conference explored the potential for disruption to all aspects of the supply chain with a focus on how farmers will derive benefits. Some of the themes addressed by the line-up of Australian and international speakers included data governance and trust; storage, accessibility, connectivity, cost and perceived user benefit, and importantly – accuracy and speed of data flow.

Case studies from Australia's cotton, sugar, red meat and grains industries explored the opportunities and challenges generated by digital agriculture. The importance of strong interactions and relationships between industry, government, researchers and product manufacturing and marketing sectors was a consistent theme running through the use cases presented. Some exciting examples currently being investigated include sensor technology, objective carcass measurement technology - DEXA, as well as animal facial recognition, and the use of radio frequency identification chips (RFID) in fibre production.

2014 Nuffield Scholar and Greta, Victoria-based lamb producer, Hannah Marriott, provided a detailed insight into the impact of digital technologies on the production and eating quality of her lambs. Ms Marriott cautioned however that acquired data always needed to be analysed in the context of consumer preferences for quality rather than just yield. Ms Marriott also stressed that in the wake of exciting digital transformations at the farm level, there is a need to maintain a level of intuition and 'gut' feel when making management decisions on farm. Delegates also heard from 2015 Nuffield Scholar and Gundagai, NSW-based mixed farmer, Jock Graham, who touched on rural connectivity infrastructure. Mr Graham used the presentation to make some experience-based recommendations regarding connectivity which included private fixed wireless networks, Cel-Fi boosting services and investment in ground-based infrastructure to better serve rural communities along with investment in the internet of things (IoT) devices, automation and precision farming.

CEO of Canegrowers, Dan Galligan, addressed what is possibly one of the greatest opportunities for digital agriculture in his presentation titled, *Will Digital Agriculture Save the Reef*?
The presentation provided an overview of Australia's sugar industry and explored the interface between agriculture and environment, with particular regard to the impact of agricultural production on the Great Barrier Reef (GBR). Mr Galligan identified reef water quality as a top priority for Canegrowers, noting their commitment to the long term goal of ensuring the quality of water entering the reef from broad scale land use has no detrimental impact on the health and resilience of the GBR by 2020. Mr Galligan noted that the current and potential future use of digital technology at the farm and processing level will aid the industry in meeting its goals, and particularly in reducing the impact of agriculture on the environment.

Conference delegates also heard from speakers involved in start-up businesses providing digital agriculture solutions. Ella Shannon's rural workforce app, *AgDraft*, and Samuel Marwood's, *Cultivate Farms*, which provides a platform for current and aspiring farm owners to connect with each other were presented and generated much discussion.

Chris Sounness, CEO, Birchip Cropping Group (BCG) and Fiona Simson, President, National Farmers' Federation (NFF) both talked about digital agriculture in relation to advocacy for farmers presenting specifically on connectivity, capability and trust, and Australian agriculture labour issues, respectively. Mr Sounness discussed digital platforms to provide traceability and provenance for the grains industry, as well as issues facing farmers as primary users of the majority of technologies discussed at the conference. He stated that user friendliness should be paramount in the development of new technologies. Fiona Simson announced the formation of a partnership between NFF and start-up company, Ag Resouce Co, to establish a digital employment platform that will use algorithms to determine if the employment scenario is a legitimate contracting arrangement.

Executive Directors Summary

The Australian Farm Institute "Harvesting the Benefits of Digital Agriculture" conference held three weeks ago in Melbourne attracted a big crowd of Australian and international participants, which included government ministers, government agencies, agricultural researchers, farmers, technology specialists and potential ag-tech investors. The simple takeout message is that the future of digital agriculture in Australia will depend on the three "Cs" – namely Connectivity, Capability, and Commercial reality.

Connectivity is clearly a major challenge for the sector. While the connection of farms to the internet either via mobile phone services or satellite is becoming more common and reliable, the big challenge for many is connectivity "across" the farm. Many conference speakers and participants made the point that much of the new digital farm technology that is now becoming affordable relies on connections to the internet to regularly upload and download data, and the current very patchy mobile service (generally limited to locations close to main roads or major regional centres) simply is not adequate. Nor is connectivity based on satellite technology, because it relies on access via a stationary receiver, and is limited to one access point per business.

Local narrow-band services that can be used to create a farm-wide wi-fi network provide a partial solution, but these generally are only suitable to transmit very limited amounts of data. Even when such systems are implemented (at individual farmer's expense), a number of providers highlighted that upload capacity can often be the limiting factor, as well as transmission speed. These systems offer solutions for transmitting small volumes of data from digital monitoring systems (e.g. for irrigation, water trough, climate or soil moisture monitoring systems) to a central point for uploading to the internet, but fall well-short of true across-farm connectivity.

Capability is the next major challenge for farm businesses wishing to implement digital farm technologies. There is a dearth of technical advisors available who can help farmers design and implement digital strategies that marry up a range of different sensors and monitors and enable the resulting data to be collected, transmitted and analysed to the point where it aids farmer decision-making.

Too often the assumption appears to be that farmers will happily spend hours each week inputting data and then reformatting and analysing it in order to come up with useful insights that provide more value to them than is currently available through observation, experience and intuition. Similarly, it seems to be assumed that farmers will be able to manage problems with incompatible or patchy connectivity with the same level of knowledge and skills as a trained telecommunications technician. This is not a correct assumption in about 99% of cases.

Farmers want easy-to-use, integrated and comprehensive information that they can use to assist decision-making. Ideally, digital farm technology should help to make farm decision-making more objective, or at the very least should make current compliance and administrative tasks easier and quicker. The level of integration required to achieve this is still a long way off for most of the currently-available crop of digital farm tools, and there is simply not enough technical support available to enable farmers to integrate and adopt these with confidence. Internet-based support models may work for popular, high-volume products like accountancy software, but fail miserably in the absence of poor or non-existent connectivity!

Commercial reality is the final hurdle that will present a challenge, especially for technologies that aim to enhance productivity, rather than just make compliance easier. Taking Australian broadacre cropping or livestock production as an example, average gross margins for these enterprises in relatively high rainfall areas range from $350 - $500 per hectare. If a conservative assumption is made that the application of digital technology could lift productivity by 5%, then the potential gain in gross margins ranges from $17.50 to $25 per hectare. Based on other examples, it is reasonable to assume that farmers will want to see benefits of between three and five times the cost as the minimum threshold for adoption of new technologies. This suggests that a cost of between $4 - $6 per hectare is probably the upper threshold of what broadacre farmers would be prepared to pay for technology that holds the promise of a 5% productivity gain.

Obviously in the case of higher value crops like cotton the adoption cost threshold will be higher, but these figures generally represent what appears to be a likely threshold cost for productivity-enhancing technology.

If the initial startup cost amortised over the likely life of the technology and the annual operating costs exceed this level, then it will be difficult to generate the levels of adoption required for a new technology to be successful. If the technology simplifies compliance or regulatory requirements that may alter this somewhat, but the adoption cost threshold is not likely to be much higher than these figures.

Each of these challenges – connectivity, capability and commercial reality – is surmountable, but some government action and cross-industry collaboration will be needed to ensure that none of these become a permanent blockage, and prevents Australian farmers from taking advantage of the undoubted productivity benefits that digital agriculture promises.

Feedback and media coverage

There was a strong media presence at the *Harvesting the Benefits of Digital Agriculture* conference resulting in stories in Stock and Land, the Bombala Times, The Weekly Times, Queensland Country Life, The Examiner, Farm Machinery Sales and Beef Central. Most popular were sessions regarding capturing the value of data through the supply chain, product marketing and provenance, the future of the agriculture workforce, rural connectivity and Australia's position on big data. Combined, media coverage included one TV report on ABC Landline, five print articles, ten online articles and two radio interviews/mentions.

There was a great deal of social media coverage of the conference with the hashtag #aficonf appearing in the top 5 trending hashtags on the Thursday afternoon of the conference. Tweets from the AFI's Twitter account, @AustFarmInstitu alone had over 140K impressions during the conference period.

Feedback sheets from delegates indicated a high level of satisfaction with the quality of the speakers and content of presentations. Delegates were particularly pleased with the networking opportunities the conference provided with like-minded individuals working in and around the digital agriculture space. Of the delegates who submitted feedback, over 90% said they would like AFI to continue offering conferences themed around digital agriculture.

Key findings from the feedback received are summarised in the table below.

Rating of each session (1 = Unsatisfactory 7 = Excellent)	
Who will benefit from digital Agriculture?	5.8
Digital technology through the supply chain (and its impact on-farm)	5.6
The role of digital technologies in governance and compliance systems	5.2
The impacts of digital technologies on the rural workforce	5.6
Traceability and provenance – will digital technologies help to sell agricultural produce with confidence and will farmers see the benefit?	6
The connection between digital agriculture and agricultural finance	6
Is the agriculture sector 'investment ready' for digital products and services?	5.9
Closing panel – the global context	5.3
Satisfaction with Booking arrangements, venue and meals	**6.1**
Extent to which conference gave information relevant to organisation	**6.0**
Extent to which conference provided ability to interact and network	**5.8**

Acknowledgements

AFI would like to thank its members and sponsors for their ongoing support, and acknowledge the contributions of those who attended the 2017 AFI *Harvesting the Benefits of Digital Agriculture* conference. AFI staff, particularly the event organiser, Kylie Smith, are applauded for the seamlessness of the event. The AFI would also like to thank the Crown Promenade Melbourne for the event space, facilities and communication in the lead up to, and during the conference.

The AFI looks forward further collaboration throughout the year, and hopes to see everyone later this year at the annual *Australian Agriculture Roundtable Conference* to be held on November 9th and 10th .

For any further questions, queries, enquires or to provide feedback, please contact the Institute.

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