more than money

nab

AGTECH

The emerging opportunity for Financial Services

March 2017

NAB LaBs

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About NAB LaBs

NAB Labs is National Australia Bank's innovation hub, focused on the rapid experimentation and commercialisation of customer-led innovation. Primarily driven by human-centred design, NAB Labs investigates current challenges, analyses trends, and understands users to identify, prototype and iteratively deliver solutions. NAB Labs brings to life the infrastructure, capabilities, and talent of the organisation to allow disruptive innovation to go to market quickly and efficiently to 'change the way the bank changes'.

FOREWORD

The world is undergoing a digital transformation, where no sector is immune. With technology evolving at an unprecedented pace and customer expectations constantly rising, business survival is dependent on understanding and adapting to this changing landscape.

The Agriculture industry is on the edge of an AgTech revolution. "AgTech" is a term describing the collection of emerging technologies that can be applied to delivering efficiency and profitability improvements to the Agricultural sector. Ranging from land and livestock sensors, farm management software to digitally connected supply chains, these technologies have the potential to dramatically shift the way people and data are connected across Agricultural ecosystems, processes and supply chains. As food scarcity and climate changes continue, the move to digital will create greater transparency of the risk and reward dynamics of the sector.

Whilst the development and uptake of these technologies is increasing across both western and developing nations, the Financial Services industry is yet to truly harness the value AgTech can create for customers. We are starting to see other vertically integrated Agricultural suppliers play in this space, potentially taking share from incumbent credit providers.

An integrated AgTech and Financial Services ecosystem has the potential to deliver financial products to the Agricultural sector with far greater understanding and transparency of a farmer's financial and risk position. As NAB's innovation centre of excellence, NAB Labs is excited by the potential to take advantage of the opportunities AgTech presents for Financial Services.

Jonathan Davey
Executive General Manager, NAB Labs – National Australia Bank

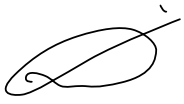
We are proud to be Australia's largest Agribusiness bank – Agriculture is in our heritage and we have been specialising in the industry for a very long time. NAB's Agribusiness bankers have relationships with customers spanning decades - so they have been with our clients through the cycles and across a lot of industries. Part of our long-term success has been due to our ability to constantly innovate and adapt to our customer's needs.

Innovation can become a 'buzz' word unless you can see it, but when you get out onto some of the properties in regional Australia, innovation is everywhere. Innovation is in the blood of our nation's farmers - they are rapidly adopting technology within their farming operations. Technologies such as detailed spatial maps from drones, satellites and specialist farm machinery helping farmers with stocking rates, to irrigation schedules and nutrient applications. Technology has always been part of Agribusiness but the rate of change at the present is unprecedented and this poses unique challenges and opportunities for our clients.

There is a need to ensure the technology deployed can stand up to the rigors of the Australian climate and deliver on the promises that have been made. We also face connectivity challenges that must be resolved to ensure our customers can benefit from the data revolution no matter where they are. Innovation is also at the heart of dealing with some of the biggest risks agribusinesses are facing - particularly sustainability and the challenges associated with rising energy costs.

We've surveyed over 5,000 farmers for two consecutive years and found that 85% of them already saw energy costs as a significant business risk. Farmers were also concerned about water scarcity, soil health, runoff, and biodiversity. But interestingly, 74% of them have already made adaptations to their business in response to natural resource challenges.

The opportunity is for more successful Agricultural enterprises – connected from paddock to plate. Just as we have innovated in the past, we will continue to innovate in the future to provide world class Financial Services to our current customers and the emerging AgTech sector.



Khan Horne
General Manager, Agribusiness – National Australia Bank

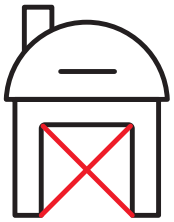
1. CONCEPT OVERVIEW

What is AgTech?

Envision a world where farmers use sensors and farm management software to make daily decisions about what crops and livestock need attention. Instead of manually weighing and organising livestock to send to the abattoir, these farmers rely on thermal imaging and digitally connected weigh bridges to herd cattle into a paddock ready for collection. Instead of spending hours sitting on farm equipment, imagine if these farmers could use robotic machinery to remotely manage harvesting, picking and ploughing with granular precision.

With the Agricultural sector on the verge of reinvention, these scenarios are already taking place through the application of Agricultural Technology (AgTech). As shown in the diagram below, AgTech is a term used to describe emerging technologies being applied to transform Agricultural processes from paddock to plate. Application of these technologies creates the potential to increase connectivity of people and data across supply chains from primary input, production, distribution and ultimately to end consumers. Improved data and connectivity enables farmers to have better control of inputs and resource allocation, optimising farm management practices to generate maximum output and quality whilst minimising risk.

Inputs

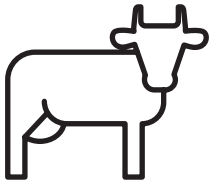


Sensors

The use of digitally connected air crop and soil sensors can enable real time capture of soil and water conditions. This data can be fed into farm management as well as smart fertilisation and irrigation systems, enabling more precise (and often automated) decisioning of water and fertiliser use.

Yield mapping

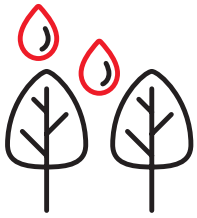
The use of digitally connected sensors can improve yield mapping techniques to be real time.



Livestock sensors and biometrics

The use of GPS, radio frequency identification and biometrics can identify and transmit real time information about livestock.

Farm management



Farm management software and data aggregation

Digital platforms bring together multiple data sources to create a holistic picture of farm performance. These platforms also leverage advanced algorithms to create actionable insights from these combined data sets. This can enable farmers to make better driven decisions based on real measurement as well as enable comparison of cost and performance outputs.

Imaging

Imaging technology is being used to automatically/remotely measure and monitor the conditions of livestock and crops.

Production

Automation

Robotic machinery could be used to automate Agricultural processes including harvesting, picking, ploughing, and planting.

Distribution

Connected cloud based supply chains

The use of Blockchain and emerging payment infrastructure could be used with satellite technology to seamlessly facilitate provenance, payment and tracking from paddock to plate. AgTech enabled supply chains have the potential to reduce counterparty risk for farmers as well as optimise paddock to plate transport.

Marketplaces

Data brought together with the help of farm management software can be fed into emerging marketplaces connecting demand and supply of Agricultural inputs and outputs.

Banking

There is currently limited direct connection into the AgTech ecosystem by the Financial Services sector. Credit assessment, valuations, supply chain payments and business forecasting is currently heavily reliant on analogue methods.

The role of AgTech to deliver sustainable global production

The role AgTech plays in the global Agricultural sector will continue to grow in importance as the United Nations' Food and Agriculture Organisation (FAO) estimate that food production capacity needs to increase by 70% to meet projected global population growth over the next 20 years[1,2]. Shifting tastes and demands of the emerging middle class of developing nations is also uplifting the need for increased global supply of quality crops and produce. This requirement to expand global production capacity whilst maintaining quality will be driven by the optimisation of natural assets (soil, water, biodiversity). In the past, a lack of digital data has hidden the full economic value of these natural assets, making it difficult to measure the direct link between the optimisation of inputs and improvements in yield and quality[3]. An AgTech enabled sector will allow for transparency of the economic valuation of these assets, allowing quantifiable measurement.

1 Food and Agriculture Organisation of the United Nations, Global Agriculture towards 2050, 2009
2 Deloitte, Positioning for prosperity: Catching the next wave, 2014
3 The World Bank, 'Natural capital Accounting', March 31 2016

AgTech isn't new

Whilst the term 'AgTech' is relatively new, farming and primary production has continued to evolve in line with rising demand as well as the availability of new technology. The Agricultural sector has been an early adopter of technology, leveraging new practices and technologies in order to drive efficiency and higher yields. With technology evolving at an increasing pace, there is a real ability and opportunity for the Agricultural sector to continue this evolution.

A perspective from an industry innovator – Birchip Cropping Group (BCG)

Agricultural innovation is not new! Jethro Tull invented the seed drill in 1700 and its uptake by farmers revolutionised grain production. In the 1960s Rogers' theory of diffusion of innovation identified an adoption theory within Agriculture, introducing terms such as early adopters and laggard. This thinking has since shaped and influenced marketing across all aspects of life, particularly technology. Fast forward to today and nearly all harvests on broad acre cropping farms in Australia have a yield monitor but very few farmers are using yield maps as a tool to make better decisions about the upcoming seasons, with yield maps commonly called 'pretty pictures'. With the exponential growth of new AgTech products and services, how do we make sure these advancements translate into value for farmers and not just expensive technology that is under-utilised and misunderstood?

This is a question we are constantly addressing at Birchip Cropping Group (BCG). We formed in 1992 as a group of district farmers eager to progress our Agricultural region through local research and innovation. Over the years we have continued this mandate and successfully delivered new research driven approaches to improve farming. One example of this is the Yield Prophet, an online crop production model designed to present grain growers and consultants with real-time crop information, providing integrated production risk advice and monitoring decision support relevant to farm management.

As the landscape of AgTech is rapidly evolving, we need to be on the front foot with identifying new opportunities. At BCG, we are currently undertaking preparations to develop a business case for the establishment and operation of a Data Cooperative as a method for aggregating farmer data. This will enable us to begin investigating and identifying the value proposition for farmers. The cooperative option allows farmers to retain full custodianship of their data and has helped alleviate the concerns relating to trust.

Chris Sounness, CEO Birchip Cropping Group

2. GLOBAL LANDSCAPE

Despite cUS$3.2bn of Venture Capital (VC) investment in AgTech in 2016, the totality of these investments accounted for a small slice of total VC and Agriculture investment[4,5,6]. With majority of investment used for early stage AgTech companies, it is clear that whilst there is a global mandate and opportunity for AgTech to deliver value for the sector, innovation is in early stages[6]. Across nations, adoption intention is driven by factors such as private/public sector collaboration, connected start-up ecosystems and existing primary production power[7].

Some countries leading the pack in creating the global AgTech market are:

USA

Contributing over 5% to GDP, the leader of AgTech innovation globally is the US, accounting for just under 50% of global AgTech investment in 2016[8]. Its success as a sector leader can be credited to scale of farm holdings (c2000% more than global averages) and funding, the established investor and start-up community, as well as strong international investment and government funding[9].

The Netherlands

Following the US, the Netherlands is the biggest global exporter of Agriculture and plays a strong role in delivering AgTech innovation. With one of the most active AgTech venture funds in the world, a world class food research institutes, developed start-up community and collaboration between science, industry and government can be attributed to the booming sector[13].

India

As a leading global producer of rice and milk (contributing 18.5% of the world milk supply) India is one of the top five nation's leading the AgTech market[10]. With 53 Indian AgTech firms raising $US313m in VC funding over 2016, a key accelerator of AgTech development in India is the emerging trend for strong AgTech start-up and corporate partnerships[11]. These partnerships are aimed at developing AgTech solutions specific to India's unique needs and farming practices[12].

Israel

Israel has become a global AgTech leader out of necessity with over 50% of its land mass in desert or semi-arid area. This shortage of natural resource has encouraged innovation and the pioneering new technology to enable utilisation of available land. With the AgTech ecosystem supporting over 200 AgTech companies, the Israeli government also assists with grants and tax benefits and has world leading Agricultural university faculties[14].

With much of global AgTech innovation innovation focused on Agricultural market places, farm management software and sensors it is becoming increasing clear that there is potential shared value between the AgTech and Financial Services sector. Despite being a large provider of funding and support into the broader Agricultural sector, no Financial Services institution has yet to solve this challenge. Agricultural equipment providers that also provide finance for their products are starting to play in this space.

4 Consultancy UK, "Investments in Agricultural technology start-ups boom to 4.6 billion", 2016
5 KPMG & CB Insights, KPMG Venture Pulse Q4, 2017
6 Agfunder, AgTech Investing report 2016, 2017
7 CB Insights, The AgTech market map: 80+ Start-ups Powering The Future of Farming and Agribusiness, retrieved from https://www.cbinsights.com/blog/Agriculture-tech-market-map-company-list/
8 United States Department of Agriculture, Ag and Food Sectors and the Economy, 2014
9 Food and Agriculture Organisation of the United Nations, Country profiles; United States of America, 2014
10 KPMG, Flash news India Economic Survey, 2015-2016
11 Agfunder, opcit
12 AgFunder, "How an Indian Agtech Startup's Partnership with Milking Equipment Giant Highlights Emerging Trend", 2015
13 Netherlands Foreign Investment Agency, Agriculture and Horticulture 2016, retrieved from http://investinholland.com/industries/agrifood/
14 KPMG & Startup Australia, Powering Growth: Realising the potential of AgTech for Australia

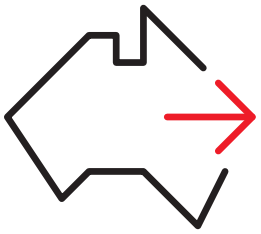
3. AUSTRALIAN LANDSCAPE

Australia's Agricultural industry has been an everlasting contributer to Australia's economy, generating $253bn of revenue in 2017 and contributing to 14% of exports[15,16,17].

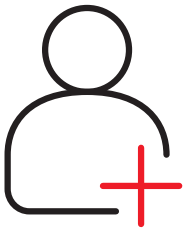
Total Agriculture industry revenue
$253bn

Agriculture GDP contribution
2.9%

Agriculture & food % of Australian exports
14%



Number of Australian Agriculture jobs
239k



Growing demand in key export markets presents an upside if Australian producers can increase yield and quality. With varying climatic conditions being a key risk to output quality; leveraging AgTech to meet projected global demand for high quality fresh produce and protein (especially in Asia) is a large opportunity for the Australian economy. To maintain Australia's competitive advantage in global markets, an AgTech enabled sector will be crucial to enabling quantifiable linkages between improved farm management and inputs and better quality outputs. As a critical enabler of investment into improved practices and AgTech enabled infrastructure, the Financial Services sector can play a key role in this. The use of AgTech to create digital transparency of both crop and protein quality as well as more efficient production and supply chains will open the sector to new investment flows.

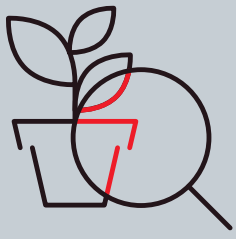
Australia's Agriculture capital gap

With the age distribution being significantly skewed to farmers aged 65 plus, there needs to be a focus on supporting young talent to progress this industry into the future. It is likely Australia's Agricultural sector will not only face a skills shortage but also a massive ownership transition which is estimated to require billions to fund. With access to capital and incompatible working arrangements being key factors to young people entering the sector, the industry needs to consider how to leverage technology to make the industry more palatable in the eyes of emerging generations. Remote monitoring solutions are challenging the need for farmers to be on site all the time with emerging capital investment outfits providing access to capital for young farmers, lowering the significant barriers to entry that exist today.

15 IBIS World, Agribusiness Industry report, 2016
16 ABS, Australian Industry:2014-15, 2016
17 Deloitte, Positioning for prosperity: Catching the next wave, 2014

The AgTech opportunity for Australia's Financial Services sector

Volatility of financial return due to recurrent environment risk is a major barrier to investment in Australia's Agricultural sector[18]. Despite the fact that Australia is one the driest inhabited continents with around 70% of the mainland classified as arid or semi-arid land, almost half of Australia's total land area is used for Agriculture[19,20]. Hence, effective management of natural risk to generate maximum return and quality presents a large opportunity for those invested in positive sector outcomes. As shown by the diagram below, collaboration between the Financial Services and Agricultural sectors presents an opportunity to create shared value for banks, farmers and the Australian economy more broadly.

Business objectives of farmers	The AgTech value opportunity	The Financial Services value opportunity	Impact to farmers
Efficient farm management and benchmarking 	Real time data and improved forecasting means more responsive planning and management from paddock to plate. This improved transparency between the relationships of farm practices and profitability also allows easier benchmarking and data sharing between peers. **Example:** By using sensor data feeding into farm management software, farmers can move away from uniform decision making across all land plots and identify which farm practices and outputs are delivering the greatest yield with the lowest input cost.	With greater transparency and understanding of the underlying risk and return dynamics of a farmer's business, Financial Services could leverage this data to more dynamically assess risk, return and appetite of farmers for credit products.	• Ability to continually redirect resources and effort towards assets which will deliver the greatest yield and maximum profitability • Ability to make data driven decisions on how to maximise output and quality of Agricultural assets • Opportunity to collaboratively manage collective systemic risks (salinity, weeds, pests etc.)
Valuations 	Valuations will include more data about what assets and farming practices drive sustainable profitability outcomes. **Example:** AgTech enabled sensors could be used to place a monetary value on the comparative economic value of land pastures for the purposes of measurement of future output sustainability.	Financial Services could play a role in leveraging AgTech innovations to create new investable asset classes such as soil health, pasture quality.	• Reward for investment in farming practices creating long term sustainability and profitability • Expansion of investable asset classes may mean newfound access to investment and lending
Transparency 	Increased connectivity and cooperation within the Agricultural ecosystem has the potential to create transparency of efficiency gains from paddock to plate. **Example:** Digitally connected Agricultural supply chains could enable automated restocking, provide data about product arrival times and delays as well as pre-signal produce spoilage.	Financial Services could play a role in leveraging emerging technology protocols (i.e Blockchain) or data rich payment infrastructure to create immutable transparency and feedback loops of quality and value credentials of an Agricultural output.	• Improved transparency of distribution cycle from paddock to plate • Optimisation of produce sales cycle to reduce waste • Improved transparency of outcomes to investors and credit providers

18 BDO Australia, Australian superannuation fund investment in agriculture, 2015
19 ABS, Agricultural Commodities, Australia, 2014-15
20 Australian Government, Geoscience Australia – Deserts, 2016

A perspective from an industry innovator – The Yield

Digital technologies such as real time sensing, robots, drones, satellites and data analytics have the potential to unleash the next step change in farm productivity. The promise is that we can make better and faster decisions while taking the guesswork out of growing. But for many growers, the experience does not live up to the hype. The return on investment for new technology is just not there. The digital experiences and solutions in the market are still fragmented and often just plain hard to use. Ironically the challenge is probably not so much the technology as the right business model.

At The Yield we are experimenting with new business models that are based on data sharing rather than data restricting. For example, in the oyster industry we use real-time environmental data to power enterprise productivity tools that drive economic returns from more efficient harvest scheduling, improved food safety and traceability, and better labour scheduling. That same data is used by food safety regulators to manage harvest opening and closing. We also provide the data to researchers to create new knowledge.

Data sharing brings its own challenges. Growers are rightly worried about who has access to their data and how it might be used. For example, if a big AgChem company has access to on-farm data could it be used to manipulate input prices? Could government use on-farm data to prosecute a grower for breaking regulations on spraying?

On the flip side there are enormous advantages. Many growers may be willing to share data with their bank or insurance company if it meant lower interest rates or premiums. Given the huge benefits of sharing data, including reducing the costs of bringing new products and services to market, we need to find new models to make it viable. Government is important in this, but government is often slow to respond. We need to find practical ways that put the grower in control.

At The Yield, we are focusing on giving our customers transparency and control over how their data is used, and sharing the upside of its re-use. The digital revolution sweeping Agriculture holds tremendous promise for both growers and our environment. It also presents challenges. Leadership from industry, government and the business community is needed so that we can all share in the benefits.

Ros Harvey, Founder and Managing Director, The Yield

Key enablers of an aligned AgTech and Financial Services ecosystem in Australia

As uptake and awareness of AgTech increases, Australia's Financial Services sector can help create significant value. To capture this value, the following enablers will be key:

Evolution and refinement of data capture technology

To improve natural capital outcomes, the ongoing enhancement of data capture and analytic tools will be crucial. The Financial Services sector needs to work with new providers to ensure tools are effective at capturing data on key capital risks. This will allow banking players to potentially leverage this data to drive more effective credit decisioning and support the development of new products. However, transparency in the use of data will be crucial to orchestrate trust and ongoing benefit for all parties.

Cross industry collaboration will be key to delivering customer centric solutions

In order to achieve mass adoption and scale, collaboration across the Agricultural industry will be crucial in ensuring AgTech solutions meet the varying needs of Australian farmers. Open dialogue and proactive partnership between incumbent and new players, as well as related service industries, will be key to creating a connected AgTech ecosystem. This will allow for the development of fit for purpose solutions meeting the needs of multiple players in the ecosystem at once (i.e. farmers, financial institutions etc).

Connected and well-funded start-up ecosystem/investment pipeline

As more support models emerge in the form of AgTech specific accelerators, research hubs and technology platforms, more and more Australian AgTech start-ups are starting to surface. However, more work needs to be done to address on farm adoption, which will ultimately be the key driver for success of AgTech.

Capital flows and allocation

As bank lending is one of the largest funding flows into Australia's Agricultural sector, Financial Services play a key role in driving capital flows and allocation into AgTech products. This will include the incentives which deliver improved economic and risk outcomes for both farmers and banks through data driven credit models.

Interoperability across systems

As more AgTech players continue to emerge, consideration needs to be given to how these emerging platforms and business models connect to create seamless customer experiences. To minimise resources required for Financial Services players to partner and deliver scale, easy connection within the ecosystem will be key.

Evolution of the Agricultural banking model

In order to support the effective use of AgTech enabled insights and data, the banking and relationship model surrounding the Agricultural sector will need to shift. Future models will need to enable bankers to play the role of a data driven trusted advisor.

Australian banks are in exploratory phases of AgTech

To date the harnessing of AgTech and Financial Services has been limited to delivering insights, exploratory research and experimentation rather than delivering new products into market. No major bank in Australia has delivered an AgTech solution that has created significant scale or shifts in customer behaviour.

A perspective from an industry innovator – Figured

Global Agriculture is undergoing massive changes with the ever increasing investment in technology and production. However, volatility in global soft commodity prices and the vagaries of inconsistent weather patterns remain. No matter how much we invest in technology, if it doesn't rain the farmer is in a world of pain, which I think is a concept that is being forgotten as we continue to invest in technology and chase yield.

There are great companies doing really impressive things in the AgTech space. The realm of the Internet of Things (IoT) in Agriculture has exploded. AgTech start-ups who are into satellite mapping, GPS tracking, data sensing, drones (lots of drones) seem to be all the rage right now. They are all generating some really interesting data. But how much of it is actually being used, and what if it doesn't rain? Or there's a global commodity price shock? Dairy industry case in point.

Yet we rarely hear talk about profitability or, more importantly, discussion about long-term strategies to remain profitable through the good times and bad.

Unless you can tie data back to your general ledger and reconcile it with your bank account, it does not provide you with any real meaningful insights for financial decision making. Therefore, farmers are making decisions based on what may generate more production, rather than higher or more sustainable profitability.

We see this as a fundamental flaw within the global trend of investing in more on-farm AgTech. Yield is relative, and the geographical spread of Australia does not allow easy comparison. Profit margin however, is a universal measure, but yet seemingly there's a reluctance to talk about it, or lack of understanding to be able to talk about it.

Having financial data at the centre of this rapidly expanding ecosystem of AgTech products is imperative to move the industry's conversations away from yield, and towards financial sustainability. While we can't predict the weather, we can have some foresight into the future by doing a simple task that fewer than 10% of Australian farmers do: budgeting.

Historical yield and weather data count for nothing if a farmer isn't confident his cash will last the season. The solution to these issues is simple, communication and collaboration. This includes engagement between on-farm tech and financial data, and collaboration around financial decisions, budgets, and the development of paddock and season plans. Communication between farmer, accountant, banker and advisors and collaboration of this farming team to strive for a sustainable and profitable farm is key. How do we shape the conversations between all the stakeholders in a farm? We give them the tools to do so.

Figured is bringing the world of AgTech data onto a single farm financial management platform (in the cloud of course) that provides farmers and the farming team with meaningful insights allowing them to make real time and forward looking financial decisions. Underpinned by the Xero accounting platform, Figured provides a single set of books (and hence single source of truth) for the accountant, farmer, banker and advisor to evaluate past, current and future financial positions, accessible 24/7 via the cloud. With report sharing and communication features built into the app, Figured is committed to encouraging the move in conversation from yield to profit, and increasing the financial literacy of the Australian farmer via communication and collaboration with the farming team. See more at www.figured.com

James Black– GM Australia, Figured

4. THE OPPORTUNITY FOR AGTECH AND FINANCIAL SERVICES

The major value shift that AgTech could create within Financial Services is the opportunity to seamlessly connect data and people within the Agricultural ecosystem. As shown below, this could enable dramatic improvement of the valuation of assets (natural and physical), provision of data driven insights to farmers, as well as the supply of capital and investment in the sector.

1. Data aggregation and customer insights

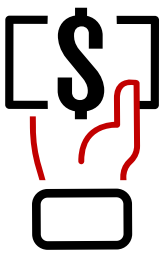
Whilst farmers are continually working with consultants and agronomists to collect and analyse data relating to farm management and performance, the analogue and disparate nature of this data impedes the ability for use. An AgTech solution that aggregates this data could create the ability to deliver actionable customer insights. These insights could ultimately help farmers make better decisions via benchmarking and better understanding of risk exposure etc.

2. Tailored credit, valuation and insurance products

Today, bank and investment valuation experts have limited access to vital real time information including seasonal conditions, farm performance data, commodity price fluctuations and locational factors. As a result, customers cannot adequately represent the value of their Agricultural assets and investors (i.e. banks) cannot adequately price for risk and potential return. As AgTech enables unprecedented capture and aggregation of multiple data sources (satellite information, soil and livestock sensors, weather data etc.), there is the potential to transform the way valuations and risk assessment are completed for the purposes of pricing financial products. This could be expanded to enable real time and proactive lending to customers as well as personalised tailoring of insurance products.

3. Supply chain optimisation

For cropping and livestock farmers, the distribution of goods from the paddock to plate involves the physical movement of goods and data alongside multiple payments. Within this process comes manual reconciliation of payments and goods received, payment risk, and analogue capture of asset quality and provenance. With demand coming from both local and export markets for clean green products with transparency of carbon foot print and animal welfare, the use of digital sensors alongside emerging payment platforms such as Australia's NPP or Blockchain could enable transparent transfer of Agricultural goods across supply chains.



4. Intergenerational wealth transfer

The Australian Agricultural industry is faced with a significant intergenerational wealth shift, resulting in a massive shift of ownership and funds within and outside the sector. Whilst this is positive for older farmers looking to release capital (when farms sell); this poses a major barrier to entry for young people wishing to buy these farms, resulting in a large capital gap. Despite young people often having worked in the management and running of a farm for a number of years, there is an inability for these young people to quantify these outcomes (due to lack of measurement) and ultimately leverage this experience to gain lending and or investment. An AgTech enabled sector provides the ability for investors/lenders to truly quantify the demonstrated value of these farmers, which creates opportunities for the creation of new investment vehicles to help fill this capital gap.

Birchip Cropping Group (BCG) believe connectivity, capability and trust will be crucial for the future of AgTech innovations in Australia:

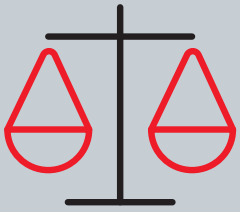
- Connectivity is an issue we currently face as the delivery of Australia wide high speed internet is unlikely in reality. Therefore, innovative bespoke solutions need to be developed so they are fit for purpose.
- Capability is a key ingredient to AgTech adoption. Very little work has been put into developing the value proposition for the farmer and even less in working with the farmer's key trusted advisers on why farmers should invest in AgTech above other areas.
- Trust is going to be crucial in building Agricultural data. Fear around policy decisions, supply pricing and logistics from multinationals, through to availability of capital, finance and insurance are all perceived fears farmers have about making their inside farm gate data more available. Having trusted brokers involved, combined with well thought through chains of custodianship and transparency, will be key for AgTech going forward.

5. NAB'S VISION

In order to ensure the NAB's Agribusiness customers have the greatest opportunity to leverage AgTech to enable more sustainable and innovative outcomes, NAB will continue to:

Support Australian farmers

NAB's Agribusiness team are ardently focussed on improving NAB's ability to be a trusted partner for farmers in the Agricultural sector. With leading knowledge of the sector alongside strong community relationships, NAB's AgriBusiness bankers will continue to work with farmers to achieve better outcomes. As AgTech continues to transform the Agricultural sector, NAB's Agribusiness Team will also continue to evolve and transform its offering to support its customers and keep pace with new innovation.



Help customers protect their natural capital

NAB's Social Innovation team, in collaboration with NAB's Agribusiness team have an active Natural Value Strategy with the vision to create a more productive, resilient and profitable Agricultural industry in Australia via the meaningful measure of our customers' natural capital. NAB's Agribusiness team and Natural Value Team are actively exploring how the use of AgTech enabled farm data could transform credit decisioning and pricing models.

Bring together partners to create customer value

NAB's Agribusiness team are passionate about collaborating across the Agriculture sector to solve customer problems in new and innovative ways. We believe the development of AgTech partnerships are critical to this. These relationships are focused on leveraging NAB's role as the biggest Agricultural bank in Australia to bring together players in the ecosystem to create customer value. Key examples of this include NAB's partnership with Figured, The Yield and CSIRO to aggregate previously untapped data to more deeply understand relationships between farming practices and financial performance.

NAB LaBs

Take a customer led approach to experiment with new solutions

NAB Labs are taking a customer led approach to actively experiment with new solutions that capture value for Financial Services within the AgTech space.

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