South Australian AgTech Strategic Plan

Prepared by the South Australian AgTech Advisory Group

October 2020

SOUTH AUSTRALIA

Government of South Australia

Minister's Foreword

The opportunity is before our primary producers to significantly increase productivity and profitability through the adoption of AgTech on-farm. In South Australia, we could be at the forefront of AgTech adoption.

Our farmers are some of the most innovative in the world but the adoption of AgTech on-farm is largely left to the younger generation. In fact, a survey to inform this plan found 18 per cent of primary producers are not intending to invest in technology into the future. This needs to change.

Imagine if every farm had the opportunity to utilise thermal imagery to understand and refine their on-farm inputs. The productivity gains would be phenomenal.

As a dairy farmer in a previous life, we had technology recording data on every cow. This helped my business make better informed decisions. Technology continues to change and grow at a rapid pace and with the increasing global demand for safe, healthy and convenient food, the opportunity to further utilise AgTech will continue to rise.

AgTech has the potential to make a step change to the profitability and sustainability of agriculture in South Australia, as well as equip the community to overcome the challenges we will face in the coming years.

However, we are yet to realise the full potential value of adopting AgTech, particularly on-farm. The return is estimated at $2.6 billion per annum in extra agricultural gross value of production, giving AgTech an important role to play in progressing Growth State: Our plan for prosperity.

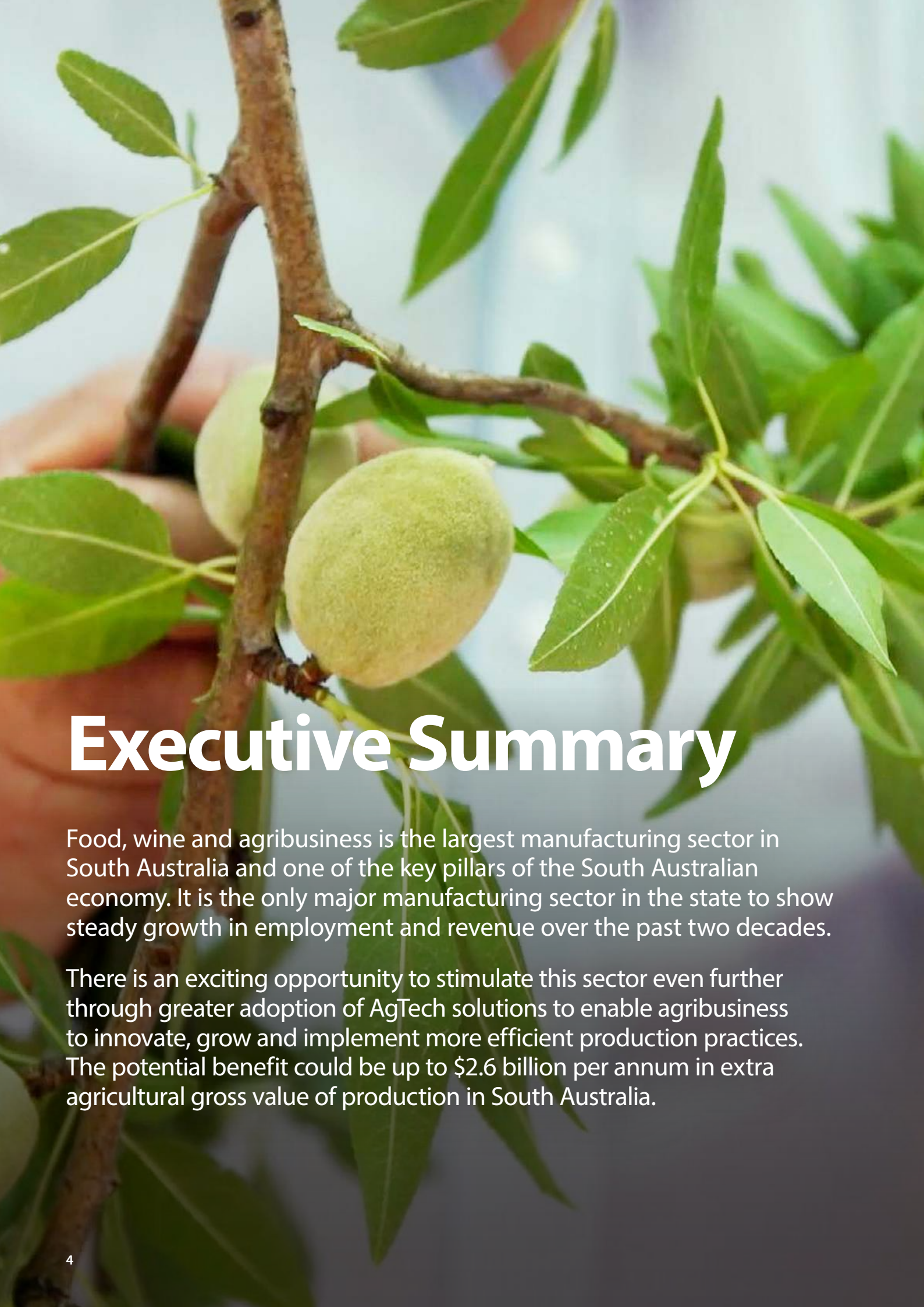
For this reason, the South Australian Government established an AgTech Advisory Group in 2019 to provide high level, strategic advice to inform decision making on the practical application and adoption of AgTech on-farm.

I commend the AgTech Advisory Group for their excellent work, and I am delighted to release the South Australian AgTech Strategic Plan. I am confident this plan will drive adoption of AgTech across the State's primary production sector, creating significant value for the entire supply chain.

For the first time in South Australia we have a collaborative and cohesive blueprint for the AgTech sector. Now the hard work begins.

David Basham, MP

Minister for Primary Industries and Regional Development
South Australian Government



Executive Summary

Food, wine and agribusiness is the largest manufacturing sector in South Australia and one of the key pillars of the South Australian economy. It is the only major manufacturing sector in the state to show steady growth in employment and revenue over the past two decades.

There is an exciting opportunity to stimulate this sector even further through greater adoption of AgTech solutions to enable agribusiness to innovate, grow and implement more efficient production practices. The potential benefit could be up to $2.6 billion per annum in extra agricultural gross value of production in South Australia.

Revenue from the state's primary industries and related agribusinesses totalled $15.2 billion in 2018/19, supporting over 76,000 jobs directly and underwriting our vibrant regional economy.

Now there is an exciting opportunity to stimulate this sector through the adoption of AgTech solutions to enable agribusiness to innovate, grow and adopt more efficient production practices.

AgTech is the collective term for the tools and technologies – sensors, farm management software, imagery, smart farm equipment and genomics - that enable best practice agriculture. It also describes the connected systems that collect, collate, store and analyse large quantities of spatial and non-spatial data to support and action decisions.

If South Australia grasps the promise of AgTech, the potential benefit could be up to $2.6 billion per annum in extra agricultural gross value of production[1]. Unlocking this additional production is vital to achieve the South Australian Government's Growth State initiative to increase gross state product by three per cent per annum, and contributes significantly to the Food, Wine and Agribusiness Sector Plan to deliver $23 billion by 2030 to the South Australian economy.

The challenge is that too few AgTech solutions have been widely adopted by primary producers. More than 50 per cent of South Australian primary producers are currently not investing in further AgTech[2]. The current use of AgTech is largely restricted to sensors and software for farm management and precision agriculture.

To drive greater adoption of AgTech, the South Australian Government commissioned the AgTech Advisory Group to provide high level, strategic advice on the practical application and adoption of AgTech on-farm.

The AgTech Advisory Group recommends further work is undertaken to accelerate adoption of AgTech post-farm and to grow the South Australian AgTech industry into a globally competitive sector in its own right.

Development of the AgTech Strategic Plan engaged over 600 producers, advisors, AgTech developers, scientists and government, including through an online survey. A draft plan was released in July 2020 and stakeholder feedback was taken into account in finalising the Strategic Plan.

The consultations identified three key challenges to the adoption of AgTech on-farm in South Australia.

To address these challenges, the AgTech Advisory Group proposes a number of priorities to accelerate the practical and widespread adoption of AgTech on-farm.

Strategy Focus

Key Challenges

Challenge 1	***Value proposition of new technologies***	• *Return on investment is not always well defined or attractive* • *Technologies are not always sufficiently fit for purpose* • *Prohibitive AgTech capital cost*
Challenge 2	***Knowledge of new technologies***	• *AgTech industry is immature* • *Insufficient knowledge to adopt / reject* • *Producers prefer advice from trusted advisors and peers* • *Difficulties for entrepreneurs to access 'early adopter' end-users*
Challenge 3	***Deployment of new technologies***	• *Poor network connectivity limits uptake, particularly in remote areas* • *Products need to be easy to use, seamless, integrated and reliable* • *Producers want readily available, ongoing support and training*

1 Based on extrapolation of 2018-19 GVP from PIRSA Primary Industries Scorecard using GVP percentage increase from Leonard, E. (Ed), Rainbow, R. (Ed), Trindall, J. (Ed), Baker, I., Barry, S., Darragh, L., Darnell, R., George, A., Heath, R., Jakku, E., Laurie, A., Lamb, D., Llewellyn, R., Perrett, E., Sanderson, J., Skinner, A., Stollery, T., Wiseman, L., Wood, G. and Zhang, A. (2017). Accelerating precision agriculture to decision agriculture: Enabling digital agriculture in Australia. Cotton Research and Development Corporation, Australia.

2 South Australian AgTech Survey 2020

Priorities and Key Actions

PRIORITY 1

Networking and Collaboration

Unite and integrate the AgTech ecosystem to meet the needs of primary producers and enable a high-growth internationally competitive AgTech sector

KEY ACTIONS

- *An AgTech Clusters Program to network the AgTech ecosystem, focused strongly on end-user needs*
- *Collaborative forums and showcasing events such as AdvanceAg and AgTech Meetups*

PRIORITY 2

Demonstration and Understanding

Improve producer understanding of the best AgTech solutions and where to find them; build the level of trust between AgTech providers and producers

KEY ACTIONS

- *Independent Intermediaries & Ambassadors to advise producers on the benefits of AgTech*
- *Demonstration Sites and events to independently and objectively showcase AgTech solutions*

PRIORITY 3

Entrepreneurial Capability

Contribute to the development of a globally competitive AgTech industry in South Australia

KEY ACTIONS

- *Grow AgTech entrepreneurial capabilities through innovation support initiatives such as FIXE*
- *Link entrepreneurs with end-users through the AgTech Clusters and Demonstration Sites*

PRIORITY 4

Skills and Education

Equip producers, advisors and other service providers with the skills and knowledge to identify, implement and utilise AgTech; train the next generation

KEY ACTIONS

- *Provide professional and workforce training and courses in AgTech through a range of delivery agencies*
- *Develop curriculum for school, university and other professional training for the future generation*

PRIORITY 5

Network Connectivity

Identify, facilitate and promote farm-wide network connectivity solutions to implement AgTech effectively on-farm

KEY ACTIONS

- *Support connectivity solution providers, Clusters and Demonstration Sites to improve farm connectivity*
- *Encourage AgTech developers to provide whole or part solutions within their technology offerings*

PRIORITY 6

Technology Compatibility

Increase openness and compatibility of technology and data so that implementing multiple AgTech solutions on-farm is user-friendly and seamless

KEY ACTIONS

- *Use the Clusters, Demonstration Sites & Intermediaries to source solutions to tech incompatibility*
- *Support global open-data standards and evaluate strategies for greater open data access*

PRIORITY 7

Government Leadership

Clearly demonstrate the commitment and importance of AgTech for the SA Government in driving agricultural growth

KEY ACTIONS

- *Develop clear messaging to highlight the economic importance of AgTech*
- *Explore development of a new initiative to accelerate development and adoption of AgTech in SA*

Next Steps

Implementation of the Strategic Plan for AgTech Adoption will require development of detailed business plans for each of the Actions.

The AgTech Opportunity

Primary industries are vital to South Australia's economy with grains, livestock, horticulture, wine, seafood, forests and dairy sectors making major contributions to the state's export revenue. Revenue from South Australian primary industries and related agribusinesses[3] totalled $15.2 billion in 2018/19 and supported 76,000 jobs.

Australian agriculture has a goal of reaching $100 billion farm-gate output by 2030 from $69 billion in 2018-19. With the vast majority of arable land currently in use, one of the key drivers to growing productivity and profitability is the development, commercialisation and adoption of AgTech.

Within South Australia, the Government's Growth State initiative aims to achieve an increase in Gross State Product to an average annual rate of three per cent per annum. As a key economic generator, food, wine and agribusiness has been identified as one of the nine key growth sectors over the next ten years. The projected increase in South Australian agricultural gross value of production, if current AgTech offerings were adopted, is estimated at up to $2.6 billion per annum. Supporting industry to unlock this opportunity is a critical element of the Growth State plan.

3 Agribusiness refers to the breadth of business related to agricultural production, including agrichemicals, breeding, crop production, distribution, farm machinery, processing, and seed supply, as well as marketing and retail sales

What is AgTech?

AgTech is the collective term for the tools and technologies – sensors, farm management software, imagery, smart farm equipment and genomics - that enable best practice agriculture. It also describes the connected systems that collect, collate, store and analyse large quantities of spatial and non-spatial data to support and action decisions.

For the purposes of this plan AgTech means:

Sensors

Hardware, software and connectivity systems specifically designed to monitor agricultural assets and related environmental conditions through the collection, analysis, and delivery of data.

Software for farm management, precision agriculture and product traceability

Software packages, data management and analytics tools for integrated and calculated approaches to farm management and product tracing. These products are typically designed as enterprise suites with user-friendly mobile capabilities.

Imagery

Software and hardware systems for monitoring agricultural assets and acquiring important visual and multispectral data for insights into farm operations. Imagery typically refers to aerial monitoring systems that use drone or satellite platforms.

Smart farm equipment

Equipment for farming operations with integrative capabilities, including most robotic technologies. Innovations in this category typically combine a range of different technologies to perform complex farming tasks more effectively, efficiently or autonomously than through traditional farming methods.

Genomics

Technology and science related to the evaluation and improvement of the genetic value of plants and animals.

A number of global trends are driving AgTech development and adoption:

COVID-19

The impact of the COVID-19 pandemic and subsequent economic crisis is unlike any other that agribusiness has faced. Businesses of all sizes and maturities have been affected. Panic buying of food supplies has impacted the entire supply chain, and entire sectors have been cut off from key markets overnight.

Consumer preferences

Changing consumer preferences are impacting demand for food and fibre products, with a growing preference for spending on services and experiences rather than basic nutrition.

Increased market risk

Increasing protectionism and geopolitical volatility are all likely to disrupt market access and the competitiveness of commodity products.

Labour shortages

Increasing labour shortages, including highly skilled labour, are impacting the global agriculture sector, particularly around seasonal demand peaks.

Climate

The agricultural sector must adapt to changing rainfall, temperature and drought patterns which will affect growing characteristics and productivity in many regions.

An AgTech-driven adaptive response can play an important role in increasing the resilience of agribusiness supply chains to these global threats.

However, South Australian agriculture currently lags behind the world in technology adoption and as a result, is losing associated productivity and profitability benefits.

While an estimated 73 per cent of South Australian primary producers[4] are currently using some form of AgTech, this is largely restricted to sensors and software for farm management and precision agriculture. Too few other AgTech solutions have been widely adopted.

There are also varying rates of investment in further AgTech. Almost half the state's producers are investing right now in AgTech, 33 per cent are planning to invest in the future while 18 per cent have no plans to invest at all[5].

Development, commercialisation and adoption of AgTech presents a huge opportunity to increase productivity, quality, efficiency and sustainability across the entire South Australian agriculture production and supply value chain.

4 The terms '**primary producer**' and '**producer**' are used interchangeably in this Plan to refer to a farmer, or other individuals, trust or company carrying on a primary production business, alone or in partnership.
5 South Australian AgTech Survey 2020

South Australian AgTech Strategic Plan

This Strategic Plan is informed by the results of a targeted AgTech survey and stakeholder engagement, as well as learnings from other industry reports and the collective experience of the AgTech Advisory Group.

In formulating the Strategic Plan, the AgTech Advisory Group adopted the following guiding principles:

- The main focus is to address the limited adoption of AgTech on-farm.
- While AgTech is also important to the food processing and manufacturing sector, the Strategic Plan only incorporates this in the context of improving on-farm adoption of AgTech. It is recommended the application of AgTech to the post-farm agricultural value chain is explored further.
- Where possible, implementation of the Strategic Plan should build on existing initiatives and resources, including farming systems groups, and sector specific plans to avoid 'reinventing the wheel'.
- This is not just a plan for government: buy-in and action will be required from the full range of stakeholders.

The Strategic Plan process engaged extensively with over 600 producers, developers, industry, scientists and government, as illustrated in the following timeline.

The draft Strategic Plan was presented publicly at an event on 16 July 2020 by the AgTech Advisory Group and via webinar. Stakeholder feedback was overall highly supportive of the Strategy and has been taken into account in finalising the Strategic Plan.

The AgTech Adoption Challenges

Challenges to the adoption of AgTech on-farm were identified in the Agricultural Technologies in South Australia survey undertaken by the Advisory Group in March 2020, with over 600 primary producers, advisors, developers, scientists and researchers providing feedback.

Importantly, the survey identified that primary producers are often unaware of the technologies available or are being sold solutions that are not fit-for-purpose or cost-effective. This was a recurring theme across all groups surveyed including primary producers, advisors, developers and scientists.

Barriers to the adoption of AgTech can be divided into three main categories (see below table).

To overcome these barriers, producers are seeking AgTech demonstrations, skills training, Return on Investment (ROI) case studies, independent expert advice, incentives to adopt technology, improved digital connectivity and enhanced AgTech compatibility.

From the AgTech developer's perspective, a deeper understanding of primary producer needs is required, and opportunities to integrate their products with other AgTech solutions.

The AgTech Adoption Priorities

The AgTech Advisory Group's analysis and survey feedback identified a number of priorities that need to be put in place to create the necessary conditions for practical application and adoption of AgTech on-farm at scale.

What we heard

Challenge 1

Value proposition of new technologies

ROI is not always well defined or attractive
AgTech solutions need to provide sufficient uplift in functionality and financial return to justify switching away from current practice.

Technologies are not always sufficiently fit-for-purpose
This can occur when entrepreneurs do not engage early with producers to ensure AgTech products target their key pain-points.

Prohibitive AgTech capital expense
Many producers already have most of their capital tied up, so there must be a clear value-proposition to justify the upfront investment of time and money. In some cases, producers simply lack the capital to make the investment, even with a clear ROI case.

Challenge 2

Knowledge of new technologies

AgTech industry is immature
AgTech's rapid emergence, and the pace at which it operates, is causing a level of confusion and frustration for producers.

Decision to adopt or reject
Knowledge and persuasion are essential pre-cursors to any decision to adopt or reject AgTech.

Producers prefer advice from trusted advisors and peers
The majority of producers want to see others using the product, preferably those they trust and who are equally conservative (i.e. not just early adopters).

Difficulties for entrepreneurs to access sufficient end-users
It can be difficult for entrepreneurs to engage sufficient early adopters who can, in turn, raise awareness within the broader farming community.

Challenge 3

Deployment of new technologies

Products need to be easy to use, seamless, integrated and reliable
If AgTech solutions are too complex or unreliable, producers won't buy in. They do not want to learn or operate multiple systems simultaneously. Open data access would also help optimise AgTech solutions.

Poor network connectivity limits uptake, particularly in remote areas
With heavy reliance of digital technologies on internet access, poor network connectivity can be a major limitation to adoption.

Producers want ongoing and readily available support and training
There needs to be a reliable source of ongoing technical support, preferably person-to-person by trusted advisors.

PRIORITY 1

Networking and Collaboration

Objective

Integrate the AgTech ecosystem to ensure AgTech meets the needs of primary producers and enables a high-growth, internationally competitive AgTech sector.

Rationale

Close and frequent interaction between researchers, AgTech developers and entrepreneurs, service providers and primary producers is an essential requirement to ensure AgTech solutions are optimised for on-farm needs, and are taken up rapidly and broadly across the primary production sector.

Actions

1. Establish an AgTech Clusters Program that will effectively network the State's researchers, AgTech developers/ entrepreneurs, service providers and primary producers to fast-track research, field demonstrations, training and commercialisation of new and existing AgTech, with a strong focus on end-user needs. It likely that separate Clusters will be required for the different agriculture sub-sectors. The AgTech Clusters should utilise (not duplicate) existing physical infrastructures, networks and primary industries support groups and programs.
2. Utilise collaborative forums and showcasing events such as AdvanceAg and AgTech Meetups to bring together primary producers, researchers and AgTech providers to better understand challenges and opportunities, as well as build trust.

Outcomes

- Optimised and integrated AgTech solutions to address key on-farm needs.
- Heightened awareness of new AgTech products and their value proposition for producers.
- Fast-tracked adoption of new technologies.
- An internationally competitive AgTech industry.
- Training opportunities for students, researchers, entrepreneurs, producers, service providers and advisors in the latest AgTech developments.
- Relationships and trust between AgTech developers, producers and other stakeholders across the value-chain.

The AgTech Adoption Challenges

The Networking and Collaboration Priority has broad relevance across all three AgTech Adoption Challenges:

Challenge 1

Value proposition of new technologies

By creating a collaborative ecosystem, AgTech developers will have a clearer understanding of the real and perceived barriers for technology development and roll out.

Challenge 2

Knowledge of new technologies

Bringing the stakeholders together will improve understanding of the development and application of AgTech. It will also ensure that AgTech reflects the realities of South Australian agribusinesses and addresses real life problems.

Challenge 3

Deployment of new technologies

AgTech Clusters and collaborative events will provide opportunities to demonstrate effective deployment of new technology on-farm.

Examples of Opportunities

- The Waite Research Precinct is the largest concentration of agricultural research organisations and scientists in the Southern Hemisphere. It underpins Australia's agricultural industries with both fundamental and applied research, through its strengths in grains, soil science and wine production. Home to 12 research organisations, centres and nodes, with 1,500 scientists, technicians, teachers, support staff and students, it has contributed new varieties of barley, wheat, oats and pulses and grapevine rootstocks which have increased yields in the face of Australia's harsh climate conditions and overcome potentially devastating pests, diseases, increasing drought and soil salinity.
- The Federal Government has announced plans for eight Adoption and Innovation Hubs across Australia, bringing together research providers with research users with a regional focus, including one in South Australia. The Hubs will harness research, development and innovation to build drought resilience.
- The Rural Research and Development Corporations and state and regional professional industry associations and farming systems groups are well-placed to educate their members through newsletters, forums, events and training programs on the needs of AgTech.

PRIORITY 2

Demonstration and Understanding

Objective

Improve primary producer understanding of the best AgTech solutions available and where to find them, and build the level of trust between AgTech providers and primary producers.

Rationale

Many primary producers see benefit in field demonstrations of products at a commercial or semi-commercial scale to assist them in understanding and evaluating the value proposition as it relates to their business.

Actions

1. Recruit a group of expert independent AgTech Intermediaries to provide advice to producers on the benefits of available AgTech solutions, as well as facilitate stronger linkages between AgTech developers and the end-users.
2. Invite producers, who have adopted AgTech extensively, to become Ambassadors, championing to other producers the benefits of adopting AgTech.
3. Utilise demonstration sites to independently and objectively showcase existing AgTech, test new solutions and demonstrate how different technologies can be integrated. Field demonstrations on operating commercial farms, both private and government, can provide 'real-world' case studies for producers.
4. Complement the demonstration sites with showcasing events and online case studies, as well as extension activities such as field days, workshops, webinars and virtual visits.
5. Ensure there is local relevance taking into account regional differences in climate, soil types and production systems.
6. Connect with Rural Research and Development Corporations, Cooperative Research Centres, Regional Development Australia boards, local government, research organisations, industry associations and farming systems groups to increase opportunities to get AgTech incorporated into the programs of new and established events. These groups are also an important resource to deliver demonstration and showcasing initiatives.

Outcomes

- Greater visibility of technology solutions already operating in the market, including information on product cost and performance, as well as ways to integrate different AgTech offerings into primary production operations.
- Independent comparative data on product offerings, particularly the ROI.
- Heightened trust between AgTech developers and primary producers.
- Access to better information on end-user needs and pain-points by AgTech developers.
- AgTech training and upskilling opportunities for producers and their advisors.

The AgTech Adoption Challenges

The Demonstration and Understanding Priority has broad relevance to all three AgTech Adoption Challenges:

Challenge 1

Value proposition of new technologies

Demonstration sites, Intermediaries, Ambassadors and showcasing events can be used to clearly articulate the on-farm value and ROI of AgTech products.

Challenge 2

Knowledge of new technologies

Producers will be more willing to adopt new technologies if they have independent demonstration and advice that relates to their specific requirements.

Challenge 3

Deployment of new technologies

Demonstration facilities and independent advisors can help producers apply and integrate AgTech solutions to work reliably and seamlessly.

Examples of Opportunities

- A new AgTech demonstration farm with a focus on horticulture and viticulture has been established at the Loxton Research Centre. Producers are encouraged to participate in "hands-on" experiments with AgTech hardware and software, ask questions of suppliers, and learn about availability and cost.
- Demonstration of AgTech is an increasing focus for governments and farming systems groups across Australia. For example, the Stirlings to Coast Farmers group in Western Australia has installed self-learning weather stations on its two Smart Farm properties at Woogenellup (cropping) and Kendenup (livestock and cropping) to provide real-time, more accurate data to growers and industry, and to assist management of operations such as spraying where it is important to know weather conditions with accuracy[6].
- The inaugural AdvanceAg[7] was held at the Adelaide Showgrounds in February 2020 with a specific focus on showcasing AgTech adoption opportunities. Following the success of this event, AdvanceAg will now be held annually in SA.

6 https://www.farmweekly.com.au/story/6856983/southern-farmers-create-weather-network/
7 https://pir.sa.gov.au/primary_industry/AgTech/advance_ag

PRIORITY 3

Entrepreneurial Capability

Objective

Contribute to the development of a globally competitive AgTech industry in South Australia.

Rationale

South Australia is home to a wealth of world-class AgTech infrastructure and expertise, as well as emerging complementary industries such as space, machine learning and defence. South Australia has the opportunity to become an AgTech entrepreneurial power-house, if these technologies can be integrated effectively and deeper cross-sector connections made between researchers, entrepreneurs, AgTech developers and primary producers.

Actions

1. Integrate existing innovation support initiatives and programs to grow AgTech entrepreneurial capabilities, align their solutions more closely to producer needs, and increase access to interstate and international markets.
2. Explore the need for a new initiative to accelerate the development, commercialisation and adoption of AgTech (Action 4 under Priority 7).
3. Utilise the AgTech Clusters (Priority 1) and Demonstration Sites (Priority 2) to provide opportunities for entrepreneurs to work together to develop integrated solutions and to access more 'early adopters' who are willing to help them develop the product further, and convince their peers to trial new technology.
4. Identify areas of development where South Australia has a natural advantage such as global leadership in dryland farming, viticulture and wool. This will provide an ideal testing ground for AgTech that can be developed and exported globally.
5. Liaise with emerging complementary industries such as space, machine learning and defence, and other SA based research and innovation capabilities, to create cross-sector strategic plans.

Outcomes

- Value propositions for AgTech solutions are matched more closely to the end user needs.
- Faster and more extensive adoption of AgTech solutions by primary producers.
- Internationally competitive AgTech industry as an economic driver in its own right.

The AgTech Adoption Challenges

The Entrepreneurial Capability Priority is relevant to all three AgTech Adoption Challenges, and particularly Challenge 1:

Challenge 1

Value proposition of new technologies

The proposed support actions will help nurture a successful AgTech industry in SA that engages early with end-users, and develops solutions with a clear value proposition and attractive ROI for producers.

Challenge 2

Knowledge of new technologies

Integration of the AgTech ecosystem will allow producers to better understand the value of new AgTech solutions to their specific needs, and for AgTech developers to access more potential end-users.

Challenge 3

Deployment of new technologies

Opportunities for entrepreneurs to work together and with 'early adopters' can lead to better integration, ease of use and reliability of AgTech products.

Examples of Opportunities

- South Australia's innovation initiatives and programs that can be harnessed to grow the AgTech industry include the Future Industries eXchange for Entrepreneurship (FIXE)[8], Go2Gov[9], and the SA university entrepreneurial programs (ThincLab[10], the New Ventures Institute[11] and the Innovation and Collaboration Centre[12]).
- South Australia has access to a range of AgTech start-up acceleration and early adopter programs, such as Farmers2Founders[13], SproutX[14], Cicada GrowLabs[15], FOMENT[16] and Rocket Seeder[17], as well as early-stage funding opportunities (Southern Angels[18] and Artesian Ventures/SAVCF).
- Internationally, opportunities exist to connect with AgLaunch in the USA which provides agricultural start-ups access to a farm-centric 'Support-to-Scale' innovation program.

8 https://www.fixe.org.au
9 https://www.fixe.org.au/go2gov
10 https://www.adelaide.edu.au/thinclab/
11 https://www.nviflinders.com.au
12 https://icc.unisa.edu.au
13 https://www.farmers2founders.com
14 http://www.sproutx.com.au/
15 https://growlab.cicadainnovations.com
16 https://www.foment.com.au
17 https://www.rocketseeder.com
18 https://www.southernangels.com.au

PRIORITY 4

Skills Development and Education

Objective

Equip primary producers, agricultural advisors and other service providers with the knowledge and skills to identify, implement and utilise cost-effective AgTech, and train the next generation of AgTech leaders and stakeholders.

Rationale

AgTech is a rapidly developing area of research and development combining a range of skills including engineering, computer science and agricultural science. This requires new approaches to training the current and next wave of producers, innovators, managers and leaders in AgTech.

Actions

1. Utilise AgTech Clusters (Priority 1) and Demonstration Sites (Priority 2) to provide resources for professional training on the use and value of AgTech products, as well as workforce training and peer network learning.
2. Provide incentives for Rural Research and Development Corporations, universities and TAFE to invest in AgTech education and promote AgTech career pathways, as well as analyse the effects of digital disruption on future workforce needs.
3. Identify and develop specific short courses, guidelines and models for the adoption of AgTech solutions tailored for specific applications, locations and sectors within South Australia, with a clear focus on ROI.
4. Develop a new curriculum for high school STEM subjects, university courses and other professional training to prepare the next wave of producers, innovators, managers and leaders in AgTech.

Outcomes

- Ongoing training in the latest developments and opportunities in AgTech for primary producers, agricultural advisors and other service providers.
- Training for the future generation of producers, innovators, managers and leaders in AgTech.

The AgTech Adoption Challenges

The Skills Development and Education Priority has relevance to all three AgTech Adoption Challenges, and particularly Challenges 2 and 3:

Challenge 1

Value proposition of new technologies

Professional training and courses on adoption will assist AgTech developers to define and implement the value proposition of their products.

Challenge 2

Knowledge of new technologies

Producers will be more willing to adopt new technologies if they have focused education and skills development courses underpinned by ROI for their specific needs.

Challenge 3

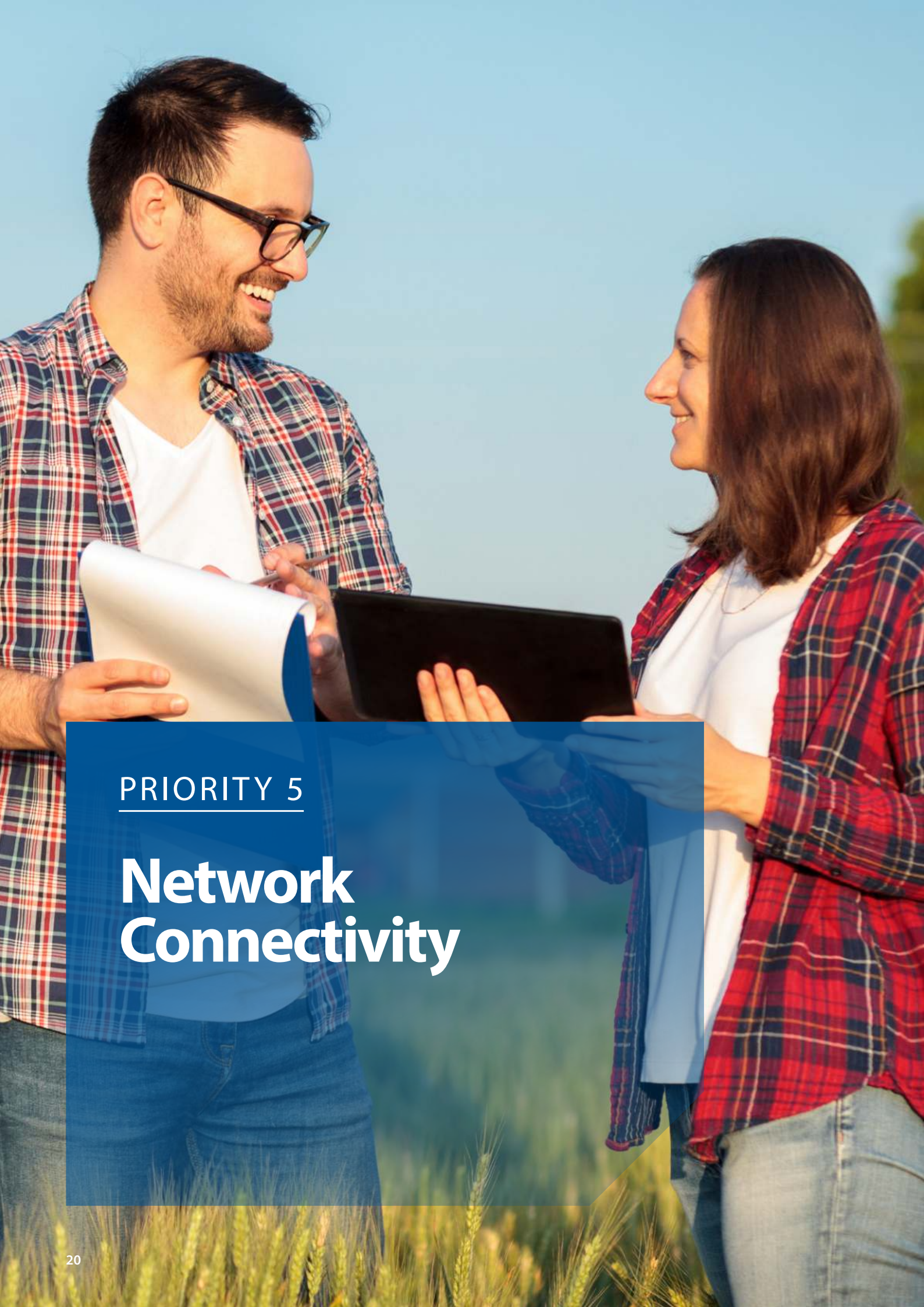
Deployment of new technologies

Continuous, high quality training will assist producers to adopt and integrate new AgTech solutions.

Examples of Opportunities

- The Rural Research and Development Corporations are progressively implementing AgTech training programs, such as Wine Australia's "Driving Adoption of Agrifood Technology in the Australian wine industry"[19].
- With the disruption of COVID-19, the University of Adelaide has transitioned all courses to on-line delivery. These micro-credentialed packaged courses open up an opportunity for expanded skills and education development within the agricultural sector.
- The University of Adelaide's ThincLab[20] has also designed an AgTech Accelerator 'Xelarite' ™ which extends the principles of design thinking by incorporating the Y-Combinator and MIT Global Start-up Labs model.

19 www.wineaustralia.com/research/projects/driving-adoption-of-agrifood-technology
20 https://www.adelaide.edu.au/thinclab/



PRIORITY 5

Network Connectivity

Objective

Identify, facilitate and promote farm-wide network connectivity solutions that enable a high standard of information transfer to implement AgTech effectively on-farm.

Rationale

Network connectivity is fundamental to digital agriculture. Digitised farms need widespread and reliable coverage, while poor connectivity limits utility and uptake of AgTech. This is a particularly common problem in regional areas.

Actions

1. Identify and support connectivity solution providers working to improve whole-of-farm connectivity issues using innovative, effective and affordable methods (e.g. NBN Co and other private sector companies).
2. Collaborate with local government, education, emergency services, health and banking which all rely on good connectivity to provide cross-industry solutions.
3. Encourage AgTech developers to provide whole or part solutions within their technology offerings to overcome connectivity issues in the field.
4. Use the AgTech Clusters (Priority 1) as well as the Demonstration Sites and Intermediaries (Priority 2) to make producers aware of the connectivity options for their farms.

Outcomes

- Improved regional network connections.
- Better awareness by producers of the best options available for network connectivity.
- Greater on-farm adoption of AgTech solutions.

The AgTech Adoption Challenges

The Network Connectivity Priority has relevance to all three AgTech Adoption Challenges, and particularly Challenge 3:

Challenge 1

Value proposition of new technologies

AgTech developers will be encouraged to build better network access into their product specifications.

Challenge 2

Knowledge of new technologies

Producers will have access to up to date information on the best options available for network connectivity.

Challenge 3

Deployment of new technologies

Barriers to the use of AgTech solutions due to poor network connections will be overcome.

Examples of Opportunities

- NBN Co has launched a new business unit solely focused on meeting customer needs and raising the digital capability of regional and remote communities across Australia[21].
- Adelaide-based company Myriota Pty Ltd provides low-cost, power efficient direct satellite connectivity for IoT (Internet of Things) uses, such as equipment monitoring. Myriota has developed its own proprietary low-power IoT communications technology, that claims big advantages over existing solutions in terms of battery life, security, scalability and cost[22].
- The LoRa Alliance® is an open, non-profit association that has grown to more than 500 members since its inception in March 2015. Its members closely collaborate and share experiences to promote and drive the success of the LoRaWAN® protocol as the leading open global standard for secure, carrier-grade IoT LPWAN connectivity[23].

21 https://www.nbnco.com.au/corporate-information/media-centre/media-statements/regional-announcement
22 https://myriota.com
23 https://lora-alliance.org/news

PRIORITY 6

Technology Compatibility

Objective

Increase the integration and compatibility of technology and data so that implementing multiple AgTech solutions is user-friendly and frictionless.

Rationale

It is currently time-consuming and difficult for farmers to analyse data generated from multiple technologies, and there are limited opportunities to integrate data from different sources to optimise management decision insights.

Actions

1. Encourage AgTech companies that focus on systems integration and open-source solutions to demonstrate their technologies at AgTech Demonstration Sites (Priority 2).
2. Utilise the AgTech Intermediaries (Priority 2) to source solutions for compatibility and integration between devices for producers.
3. Initiate global open data standards within the AgTech ecosystem, and ensure adherence to 'FAIR' principles: Findable, Accessible, Interoperable, and Reusable.
4. Support AgTech solutions already in place, such as grower community weather stations, to make data openly available to other AgTech (e.g. to assist with smarter irrigation planning).
5. Evaluate strategies for greater open data access to facilitate sharing of cross-industry data via appropriate platforms for data exchange.

Outcomes

- Greater use of data by primary producers to optimise their management decisions and maximise the value gained from AgTech solutions.
- Heightened opportunities for AgTech developers to improve product performance and customer uptake.
- A commercial environment that encourages the development of new AgTech solutions.

The AgTech Adoption Challenges

The Technology Compatibility Priority has relevance to all three AgTech Adoption Challenges, and particularly Challenge 3:

Challenge 1

Value proposition of new technologies

Demonstration Sites and Intermediaries, together with open-source data access, can help AgTech developers build products with strong and clear on-farm value.

Challenge 2

Knowledge of new technologies

If producers gain skilled and trusted advice on how AgTech solutions fit their requirements, they will be more willing to adopt new technologies.

Challenge 3

Deployment of new technologies

Sharing of data, as well as quality advice on AgTech device applications, will help ensure producers apply and integrate AgTech solutions reliably and seamlessly.

Examples of Opportunities

- South Australia has several companies that offer services to primary producers to assist with connecting and integrating network-enabled devices.
- The Australian Farm Data Code[24] aims to promote adoption of digital technology, by ensuring that producers have comfort in how their data is used, shared and managed. The Code was developed and adopted by the National Farmers' Federation in consultation with industry.
- US examples of initiatives to promote and enable open-source data and standards include the Gathering for Open Ag Technology model and the Open Ag Technology and Systems (OATS) Center at Purdue University[25].

24 https://nff.org.au/programs/australian-farm-data-code/
25 https://oatscenter.org/

PRIORITY 7

Government Leadership

Objective

Clearly demonstrate the commitment by the South Australian Government to AgTech as an important driver of agricultural growth.

Rationale

Government leadership in AgTech policy, funding, governance, strategy, promotion, and cross-industry collaboration is critical in providing industry with the confidence to invest in and adopt AgTech. This will allow South Australia to realise the full value of new technology for its primary industries.

Actions

1. Develop clear and concise South Australian Government messaging that highlights and reinforces AgTech's development, commercialisation and adoption as a top priority.
2. Advocate for policy and legislative reform that promotes AgTech development, commercialisation and adoption.
3. Establish a clear definition of the AgTech industry to help quantify and track the sector's growth and investment, as well as help coordinate Government support.
4. Explore the development of a new initiative to accelerate the development, commercialisation and adoption of AgTech that addresses key industry pain points and is grounded in the realities of South Australian farming.
5. Ensure the South Australian Government's primary industries assistance framework funds have a strong focus on AgTech.
6. Encourage and support individual Rural Research and Development Corporations to develop and establish digital agriculture strategies, with consistency and connectivity across all sectors.

Outcomes

- Private sector confidence and support for further investment into AgTech and AgTech adoption.
- Improved policy environment and capacity to monitor and support growth and adoption of AgTech.
- Government facilitated adoption of fit-for-purpose agricultural technologies and on-farm innovation.

The AgTech Adoption Challenges

The Government Leadership Priority has broad relevance to all three AgTech Adoption Challenges:

Challenge 1

Value proposition of new technologies

By targeting areas of market failure and unmet need, Government programs and leadership can help ensure AgTech products are well focused on end-user needs.

Challenge 2

Knowledge of new technologies

Supportive Government messaging and industry assistance can provide producers with the knowledge, confidence and support to adopt new technologies.

Challenge 3

Deployment of new technologies

Government plays an important role in ensuring SA's digital infrastructure supports agriculture's changing digital needs, particularly open-data access.

Examples of Opportunities

- Through the Growth State plan, the South Australian Government has established clear growth aspirations for the state and the need for a partnership between government and industry to pursue that growth. Food, wine and agribusiness is one of the nine priority Growth State sectors and AgTech will be an important driver of growth within the sector.
- The South Australian Government legislative change to allow GM food crops to be grown across South Australia, (except on Kangaroo Island)[26] will open opportunities for any future value-added crops, for example drought resistant strains of cereals, pulses and legumes.
- The Gravity Challenge[27] is a national technology innovation program supported by the South Australian Government and headquartered in SA that brings together universities, entrepreneurs and industry to design and build solutions to real industry, social and environmental problems using space data and capability. Agricultural challenges have already been the focus of several initiatives in this program.
- Innovation Saskatchewan[28] has an AgTech Growth Fund (AGF) co-funded with industry, designed to accelerate the commercialisation of game-changing technological innovations in the province's agricultural sector.
- Build on Federal Government initiatives such as the $5 billion Future Drought Fund to help Australian farms and communities prepare for the impacts of drought[29]. The initiatives include, for example, funding for training and network events, innovation hubs, and a Digital Foundations for Agriculture Strategy to support farmers, fishers and foresters better harness technology.

26 www.pir.sa.gov.au/primary_industry/genetically_modified_gm_crops
27 https://gravitychallenge.space
28 https://innovationsask.ca
29 https://www.agriculture.gov.au/ag-farm-food/drought/future-drought-fund#drought-resilience-research-and-adoption

A Word from the Chair

The South Australian Government through, the AgTech Advisory Group, will continue working with stakeholders throughout the AgTech value chain to accelerate adoption of the best technologies, increase agricultural supply chain efficiency and resilience, improve agribusiness profitability, and foster leadership and excellence in the development of AgTech.

Implementation of the South Australian AgTech Strategic Plan will require development of detailed business plans for each of the Actions.

The Strategic Plan is not just for government: buy-in and action will be required from the full range of stakeholders. Where possible, implementation of the Strategic Plan should build on existing initiatives and resources, including farming systems groups, and sector specific plans to avoid 'reinventing the wheel'.

With your help, South Australia can become a national leader in the development, commercialisation and adoption of AgTech.

If you are keen to get involved and contribute to the actions outlined in this plan, contact us and let's collaborate.

Dr Leanna Read
Independent Chair, AgTech Advisory Group

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AgTech Advisory Group

Dr Leanna Read, Independent Chair

Originally an Agricultural Science graduate, Leanna is currently chair of two biotechnology companies and a board member on several government and private sector organisations. She is the former Chief Scientist of South Australia and has received a number of awards in the areas of science, technology and innovation.

Jim Whalley

As South Australia's first Chief Entrepreneur, Jim is leading the strategy to develop a new model for entrepreneurship in South Australia. He is also Chairman and co-founder of innovative defence industry company Nova Systems and a former air force fighter pilot.

Dougal McOmish

Dougal has extensive experience in application and trial of technologies on-farm and in venture capital financing, having been the Chief Operating Officer for Sundrop Farms at Port Augusta and worked in the financial advisory sector with the Macquarie Group in Australia and overseas.

Oli Madgett

Oli has a vineyard in the McLaren Vale wine region and is the co-founder of AgTech start-up Platfarm. Additionally, Oli runs Adelaide AgTech meet-ups, is a member of the AgriFutures Ignite Panel and has extensive history in the digital and IT space in South Australia and overseas.

Andrew Grant

Andrew has co-founded four AgTech start-ups, which are all commercialising technologies with leading South Australian agricultural companies. Andrew has over 20 years of experience in the development, commercialisation and financing of technologies.

Tom Rayner

A fifth generation farmer, Tom is currently the Vice President Sales at satellite communications start up Myriota, which has significant application to the agricultural sector. He has experience working with a range of applications including weather stations, tank monitors, ag-software platforms and asset and livestock trackers.

Professor Andrew Lowe

Andrew is the inaugural Director of Agrifood and Wine at the University of Adelaide working with partners in the agrifood and wine sectors and positioning the university and state as a world-class destination for research and education, including AgTech.

Penny Schulz

Penny is a beef and sheep farmer in the South East adopting the latest on-farm technology and is also vice-president of South Australian peak body Livestock SA. She has worked in the livestock and dairy extension space for more than a decade and has undertaken research into adoption of technology by sheep farmers.

Michele Lally

Michele is a farmer in the Mid North who founded Savannah Lamb, one of the first ethical and regenerative farm brands in South Australia. She built her own Micro Abattoir on-farm and now assists other farmers to use modern technology and innovation to improve their businesses, and to better control the supply chain.

Government
of South Australia