

The Future of Work in Queensland to 2030

The Rural Jobs and Skills Alliance (RJSA) offers the following responses to questions from the discussion paper from Jobs Queensland The Future of Work in Queensland to 2030 - Evolution or revolution?

RJSA developed from the agricultural sector's need to engage more with the education and training sectors, and the Queensland Government's commitment to create and support jobs across the state.

RJSA's purpose is to address mutual goals for our member organisations that focus on the attraction, development and retention of new entrants and existing workers to underpin the prosperity of Queensland's agricultural sector now and into the future.

RJSA provides advice to government, service providers and other organisations with respect to employment, skills, industry training and workforce planning on behalf of Queensland's agriculture and related industries.

We have collated industry feedback on the Discussion Paper and summarised the responses, by theme, as follows:

1. Technology impacts

- *How do we identify and prepare for change associated with the impact of new technologies?*
- *What will government, industries, employers and workers need to prepare for and adapt to this change?*
- *What is the role of government in relation to the adoption/uptake of technology? For example: accelerate, regulate or non-intervention?*

Agriculture remains the most diverse job market of any sector in the economy. It is well known that for various reasons, the expertise and labour supply needed in our sector is constantly challenged. Further, the rapid pace of digitalisation, mechanisation and the Internet of Things (IoT) are changing current roles, education needs and training requirements. Overlaying all this is the global challenge of feeding, clothing and growing amenity for 9.8 billion people by 2050 in a changing climate, while maintaining quality products and nurturing the environment.

The agriculture sector recognises the need to embrace the use of technology and the opportunities for advancement that these innovations offer. We know the sector will be highly influenced in the coming years by disruptive technologies that may increase efficiency, productivity and profitability. Improving the capability to use technologies, data, robotics and automation more efficiently is a challenge that can bring production benefits for all industries.

Realising the full potential of digital agriculture in Australia could boost the value of production by \$20.3 billion, according to the findings of the Accelerating Precision Agriculture to Decision Agriculture (P2D) research project. Producers across all agricultural industries would benefit from the estimated overall increase in production value of 25%, while also securing their global competitiveness (Leonard, et al., 2017).

The P2D research has also highlighted issues around digital literacy, grower trust, and the availability of appropriate data and decision support tools. It has also confirmed that a lack of access to mobile and internet telecommunications infrastructure is a major barrier to adoption.

The effects of technology on agriculture jobs has been discussed in our previous report submitted to Jobs Queensland (Queensland Farmers' Federation, 2018). The report highlights that the jobs and skills are changing as technology evolves. To be prepared for the possible changes in the future, workers in the agriculture sector will need to acquire skills that complement and utilise the technologies, rather than compete or prevent technology uptake. These findings align to the findings of the Future Skills report (AlphaBeta, 2019).

Increased process automation has the potential to increase labour efficiency (Heath, 2018). The impact of digital technologies on labour efficiency is likely to affect routine tasks that have a high degree of predictability and a need for high accuracy. In a sector where labour costs are significant, labour efficiency and improved workplace health and safety are of great potential value for agriculture businesses.

[What will government, industries, employers and workers need to prepare for and adapt to change?](#)

To remain relevant and continuously adapt to the advancement that technology and innovation bring, government, industry, training providers and those responsible for developing training packages must embrace the concept of life-long learning. This will be important because the ever-changing landscape requires these stakeholders to be up to date with the latest knowledge and be flexible to any changes required, including the lead-times necessary to implement appropriate responses.

To respond to the current change, the sector needs to invest and prepare to continuously support its workforce for change by providing the opportunity to upskill. It will also need to ensure there is a close connection with the training and education sector to ensure that training meets their needs.

Industries have the role to ensure they provide training opportunities in the workplace, make more of mentoring, apprenticeships and on the job learning opportunities available. For this to be possible, strategic alliances between industry, government and training providers at all levels (school level, universities, VET, and others) is needed.

Industries will also need to encourage their workers to make acquiring new skills a priority and provide incentives and time to workers. Over the next two decades, Australia will need to double its investment in education and training from a combined 300 billion hours to 600 billion hours (AlphaBeta, 2019).

The agriculture sector needs to lead collaborative efforts with training providers and government to support flexible programs that meet their needs. Industries play a fundamental role in providing information about the skills that they expect of their workforce, as technology continues to change job functions and tasking.

An example of the potential partnerships between industry, training providers and government that aims to address the continuous learning requirements of the industry is the AgSkilled program in NSW. AgSkilled is a direct partnership between Cotton Australia, the Grains Research and Development Corporation and the NSW Government (which is investing \$14.7 million over three years for vocational training for the cotton and grains industries). The program is successful because

it is industry-led, relevant and flexible, and the training is designed to suit business needs and learners with a range of skills and experience. RJSA is seeking support for a similar program to be established in Queensland (please see description of the 'Queensland Agriculture to Schools Engagement Program' (QASEP) in the Training and Skills section of this paper).

Government will need to ensure that funding and accreditation systems provide appropriate incentives to increase learning flexibility. Increase of funding support for skills sets should be a priority. Government will need to provide public funding models and incentives to encourage individuals and business to invest in education and training (AlphaBeta, 2019).

Government has the responsibility to provide the framework for skills changes to take place. Public funding models and financial incentives are important tools to motivate business and workers to take up training opportunities and embrace continuous, life-long learning. Existing eligibility criteria to access funding should be made less restrictive in order to reduce barriers to participation, as imposing restrictions on the type of skills or qualifications to be pursued is a disincentive to re-train or up-skill and also reduces movement of labour between occupations. The funding frameworks need to encourage partnerships between industry and training providers. Funding should also encourage training and education providers to introduce flexible and up to date training. Establishing a certification framework that supports flexible structures is also an important role of government (AlphaBeta, 2019).

Increased flexibility in funding would increase the engagement of all Queenslanders in training.

Despite continued calls for the funding of more skill sets, government adoption of this approach has been limited. The agriculture sector currently has only one funded skill set – the Farm Business Management Skill Set (AHCSS00030). Support of skills sets will benefit the current workforce by accessing training tailored to their needs. This will incentivise their use of the VET system as a method to update their knowledge and therefore increase their ability in the uptake of new knowledge and technology. Increasing the options for those already in the workforce that require upskilling to due changes in their industry would be highly beneficial.

[The role of government in relation to the adoption/uptake of technology](#)

The role of government in relation to technology uptake should be focused in the protection of citizens, promote competition, innovation and/or internalise externalities (Eggers, Kishnani, & Turley, 2018). Innovators can, and increasingly do, move to those countries that provide a legal and regulatory environment more hospitable to entrepreneurial activity. Regulation should be done in a responsive and interactive approach to keep up with change.

The role of regulators is no longer just of a regulator; it's to be more of a partner in bringing safe and effective technologies to the table in order for people to have a high level of confidence in those technologies. They allow partnerships that foster innovation while ensuring an appropriate level of protection for citizens.

Laws and regulations should provide Australian farmers more control over data. Recent changes to law and governance should ultimately give Australian farmers more control over their data, according to the P2D research project. Farm data has become very valuable to farmers with the capability to predict, via scenario projections, business outcomes and the resultant potential to increase farm profits. Concerns around protection and privacy are a barrier to data sharing and therefore an impediment to adopting new technology where data is collected and used to make business decisions (Leonard, et al., 2017).

The P2D research report promotes the adoption of a national agricultural data management policy, strategy and codes of practice which would directly benefit the Australian agricultural sector as a whole. A current project is working on developing data governing principles and a draft checklist that will guide producers when contracting with technology providers. This set of broad, high level principles will form the guiding framework in which data management, including data access, can operate. The policy would include statements on: data custodianship and access, data collection and storage, data harmonisation and standardisation, data stewardship, data portability, data security, data lifecycle management and data auditing.

2. Demographic and social change

- *How do we promote equality through supporting people, especially those most at risk, to engage, stay engaged or re-engage with the labour force and/or education and training?*
- *How do we prepare Queenslanders for the predicted departure from a traditional and linear working life, made up of education, followed by a career and then retirement?*
- *How do we support employers in responding to potential transitions within their industry, including their workforces?*

Engaging the required labour force in regional communities is a challenge. Most agriculture sector employees live in rural and regional areas of eastern Australia. In 2016, 82 per cent of them lived outside a capital city. This is less than the figure of 85 per cent in 2011, indicating relative growth of the agricultural workforce in greater capital cities. (Binks, Stenekes, Kruger, & Kancans, 2018)

An increasing challenge will be attracting and retaining an appropriate mix of skilled workers in rural towns (Korff., 2017). Large rural towns are sustaining their populations, while populations in smaller towns are decreasing suggesting that the ability to source and recruit people in remote regions will likely decrease in the near future (KPMG, 2018). However, rural communities that are able to provide a level of infrastructure such as telecommunications, health, education and childcare are likely to contribute to attracting skilled people to the industry.

Agriculture is and will remain a key employer, particularly in Queensland's regional communities, so it is critical that the awareness, education and employment pathways for the agriculture sector are effective. Following the Queensland Government's decisions to cease funding for the Schools Industry Partnership Program (SIPP) and close operations of the Queensland Agricultural Training Colleges (QATC) by the end of 2019, the sector is facing a significant gap in pathway responses. These programs must be replaced by more responsive and flexible structures into the future as outlined in the QASEP proposal (refer to the Training and Skills section of this paper).

Integration of overseas migrants into the workforce is also a challenge and an opportunity. People from culturally and linguistically diverse backgrounds represented approximately 11 per cent (25,205 people) of all agriculture sector employees in 2016. This is up from nine per cent (18,699 people) in 2011. Immigrant communities have played a central role in the development of Australia's agricultural sector especially in horticulture – filling labour shortages, introducing new agricultural commodities and practices, innovation and knowledge transfer (Collins, Krivokapic-Skoko, & Monani, 2016).

Official statistics are likely to underestimate the contribution of some temporary agricultural workers such as Working Holiday Makers, skilled workers on 457 Visas and seasonal workers such as Pacific Island Seasonal Workers (Binks, Stenekes, Kruger, & Kancans, 2018)

Currently, skill shortages exist in some regional Australian industries such as agriculture, manufacturing and food/meat processing. Addressing skill shortages in regional industries can contribute strongly to the successful development of regional Australia, and subsequently the nation more broadly. Getting the right person with the right skills for a specific role is often challenging for regional Australian employers. Presently many of the skill shortages in regional industries are met by temporary overseas migrants on various visa arrangements (Samad, Teicher, Akbar, & Kinnear, 2018).

In the past decade, the Australian Government has encouraged permanent and temporary migrants to settle and work in regional Australia. A recent report on migrant employment in regional Australia (Samad, Teicher, Akbar, & Kinnear, 2018) states that here is also a common view among employers, industry peak bodies, government departments and other key stakeholders interviewed, that there are significant social and economic benefits of having permanent migrants in regional industries. Migrant workers often bring skill-sets that are beneficial for agribusiness employers.

Despite this, the report found that there are barriers to migrants settling and working in regional areas. They include issues such as: language proficiency, overseas skills/qualification recognition, not having the right skills for the job, lack of knowledge about jobs in regional areas, lack of communication between employers and migrants, the lack of facilities and infrastructure (transport, access to quality education, network and communication infrastructure) to support their integration and willingness to work in regional or rural areas, and social isolation or lack of community with shared cultural, language and ethnic background in regional areas.

Skills recognition appears to be a barrier to employing migrants in the rural and regional industries (Queensland Treasury and Trade, 2013). The system of skills recognition apparently gives insufficient consideration to recognising and converting skills that are necessary in agriculture, manufacturing and food and meat processing industries.

In a recent report by Deloitte Access Economics (2018) there are approximately 6,240 under-utilised migrants and refugees equipped with skills aligned to areas of the current skills shortage. The report makes the following recommendations:

- A system that recognized previous experience and skills is needed.
- There is also a need to identify the actual skill shortage depending on the emerging demands on agribusiness industries so that skill matching can occur more effectively. Understanding the requirements of industry, where shortfalls exist and where migrants can add value is very important.
- That the actual skills shortage in regional Queensland may be assessed in collaboration with the industry bodies and that training programs be developed to train or upskill people (including the migrants) and to facilitate clear career pathways. Specific employment focused training for the regional industries could be developed in collaboration with stakeholders including employers, community groups, Registered Training Organisations (RTOs), higher education providers, and industry peak bodies.
- Government policy should facilitate initial settlement of migrants (skilled, unskilled, family and humanitarian entrants) in regional areas based on the skill needs of the regional areas. It is further recommended that the humanitarian entrants may also be granted region specific visas based on regional skill shortages.

- To maximise the benefits of migrant settlement in regional areas, there is a need for infrastructure such as communication networks, transportation and government services as well as empowering local communities to manage migrant settlement in their locality.

The challenge for policy makers is to devise effective measures to settle migrants in regional areas. The challenge for industry bodies and regional communities is to come up with an integrated approach that is clearly communicated and understood by new migrants and addresses the anxieties that new migrants feel in considering a regional option for their future.

The need for the introduction of an Agricultural Visa to match reliable migrant workers with jobs in agriculture and to prevent worker exploitation. A relevant issue is the need for a tailored solution for the agriculture sector to source temporary skilled workers to solve their labour shortages. A recent report led by University of South Australia associate law professor Dr Joanna Howe, *Towards a Durable Future: Tackling Labour Challenges in the Australian Horticulture Industry*, found there was a chronic shortage of legitimate, willing and capable workers within certain growing areas (Howe, Clibborn, Reilly, van den Broek, & Wright, 2019).

The National Farmers' Federation (NFF) continues to call for the introduction of an Agricultural Visa to ease horticulture's labor crisis and to prevent worker exploitation. NFF claim "A tailored Ag Visa would ensure workers have entered Australia via legal and legitimate means; are working in accordance with visa conditions, and that their presence in the Australian workforce is transparent. Importantly, it would protect against exploitation".

[Responding to potential transitions in Agriculture – The need for succession planning support.](#)

As expressed in our recent report (Queensland Farmers' Federation, 2018), agriculture has the highest share of employed persons who are above retirement age, and its labour workers are aging. About 23 per cent of the sector's workforce is likely to retire over the next five years (Skills Impact, 2018). Upcoming retirements are likely to bring significant job vacancies across the sector, requiring efforts from employers to refill these skills.

Improved succession planning tools are required to support the transition of the agriculture sector. The need for new business structures to support a new generation of farmers is also a key challenge. This involves supporting industry education and extension programs to provide the tools and advice needed to adopt more efficient and effective business structures.

The sector is likely to find a tightening of labour supply, particularly for skilled farm managers. Agriculture needs quality leaders and appropriately skilled workforce to adopt innovation. Producers with general, technical and business educations may be more willing and better at adopting innovation. To encourage the uptake of new technologies and products, producers require an understanding of their background principles, and the potential benefits and risks involved in their adoption.

The sector has identified the following strategies to address some of the demographic and social changes affecting the various agricultural industries:

- Introduction of a dedicated agricultural visa designed to support people coming to Australia for employment in Agriculture (KPMG, 2018). The visa will provide legitimate incentive for international labour hire where domestic shortages exist.

- Implementing successful planning models to encourage new participants to replace the aging population.
- Increasing the attractiveness of rural communities. Ensuring that by 2030 all regions in Australia have access to improved levels of communications, health, education and child care services.
- Finding innovative solutions for attracting and retaining workers. For example, better labour coordination to offset seasonal employers to address seasonability in demand and provide more attractive, stable terms of employment

3. Legal, institutional and policy influences

- *What is the role of institutions (government, vocational education and training, etc.) in the process of transition?*

In the context of industry engagement and the role of government, amongst the stated key objectives of the Queensland Government's VET Quality Framework is the ongoing stakeholder consultation with Industry Advisory Organisations (VETIAOs) to ensure industry input into the determination of priority training areas and skills requirements to address industry needs. The shared goal is to be responsive to new priorities and to adjust policy settings to manage investment levels and send price signals to the market, redirecting investment to new and emerging industry and regional priorities.

This level of engagement between industry and government forms a crucial partnership in the attempt to create a more flexible and responsive VET system that meets the needs of industry to sustain innovation and the competitiveness of the Queensland economy. The role of government here is significant in the way the responsible department must use the regular advice from industry (in the form of market intelligence) on issues of emergent concern in the education and training sectors, to inform and shape policy development and subsequent program delivery.

The institutional role to be played by government in its program delivery of VET and the desired outcomes that industry consider to be important, including the necessary measures to implement, are addressed in detail in the following section on training and skills.

4. Training and skills

- *How do we identify and develop the new skills that are needed?*
- *How do we develop the workforce of the future if we don't yet know what skills and knowledge the workforce will need?*
- *How do we transition the workforce of today to the workforce of the future?*
- *What skills, knowledge and attributes will employers and the labour force (both new entrants and existing workers) need to succeed in this changing environment?*
 - *How do we recognise skills and knowledge gained through non-formal/non-accredited training and learning?*
 - *What is the role of modularised training/ microcredentialling/nano-degrees?*
- *What is the role of the VET system now and in the future in developing new and existing workers in the labour force? And how will it need to change/ adapt to meet the needs of consumers in the changing work environment?*

More than any other sector of the economy, agriculture has outstanding growth opportunities with the emergence of a food culture and an increasingly prosperous global market that values safe, ethical and sustainable produce (CSIRO, 2015; CSIRO Futures, 2017; Department of Agriculture and

Fisheries, 2018). To meet these market demands the mix and diversity of industries that already exists within Queensland agriculture will change and intensification will be required.

According to Professor Pratley (Kemp & Pratley, 2018), all the current and emerging changes to the agricultural sector will significantly affect the roles available to people working in the industry. “There is a big demand for people with qualifications, not just in agriculture but also in management of big data, robotics, drones, electronics, IT, engineering related to agriculture, as well as the specialists across the agricultural production systems. We need people skilled in managing technological systems. There is also a pull for more people with good business and marketing skills. Previously, marketing was done by industry bodies, but these days a lot of agricultural products are marketed by the company that produces it.”

Professor Kemp (Kemp & Pratley, 2018) agrees that “there will continue to be demand for workers in the sector, and that attaining a high level of skill in the new redefined specialties could well be the best way to secure a dynamic, rewarding career in the future”.

To improve productivity, farmers are going to turn increasingly to specialist expertise – and that is likely to be where many of the best jobs are in the future. But generally, there will remain a good demand for people to work in agriculture.

How do we identify and develop the new skills that are needed?

To improve the way we identify and develop the new skills that are needed in agriculture, **there is a need for a more accurate picture of the agriculture workforce**. As it was expressed in a recent report (Queensland Farmers' Federation, 2018), predicting the agriculture jobs of the future is difficult due to the rate of change in agriculture work (Pratley, 2017). Currently, the data is insufficient in providing an accurate picture of the agriculture labour force. The most complete data source is provided by the Census, and between census data is based on the Labour Quarterly survey (which is based on a sample at a set time and doesn't allow the industry to get accurate and reliable detailed data). Neither of these sources takes peak labour periods, or seasonality, into consideration.

To address this issue, the May 2018 Federal Budget announced \$4.7 million of new funding for the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) to develop data that will improve the understanding of seasonal agricultural labour needs. This will involve collecting new data on labour expenditure, the number and type of people employed on-farms, the mix of skills required by farm businesses (including seasonal and skilled workers) across different agricultural industries, as well as the challenges in recruiting and retaining employees. This analysis will help to inform employment and labour market programs to ensure rural and regional businesses can access the appropriate mix of seasonal and skilled workers to meet their workforce needs.

There is a need for an analysis of digital disruption in future agriculture workforce. Assessment of the disruption (technology, skills, process, analysis) environment in agriculture would be beneficial for strategic planning. This will place the sector in a position to manage and plan for its training needs into the future. The sector needs data that accurately predicts where new jobs might be created, the impact of current roles, the socio-economic benefits automation provides to Australian agriculture, as well as an indication of skills required.

As a result, eleven of the Research and Development Corporations (RDCs) servicing the agricultural industries and led by Cotton are commissioning a study to develop a digital capability framework for the future Australian agriculture workforce including a self-assessment tool and recommending

training solutions. This report will be available late undertake late 2019. The Digital Capability Framework will assess the current and future states of digital capability in the sector and design solutions for addressing any possible skill and workforce needs of the industry.

What skills, knowledge and attributes will employers and the labour force need to succeed in this changing environment?

There is a growing professionalisation of roles to support the changing nature of modern farming businesses. Expectations on what is required of those who wish to enter agriculture and maintain their employment has shifted towards higher-skills and specialisation.

The state's agricultural workforce is undergoing a sizable shift in required roles. Technological change will increase the demand for more professional and technical jobs in our industry (Queensland Farmers' Federation, 2018). Predicted future skill needs include those of other occupations not traditionally associated with agriculture including engineers, data analysts and business support services. Therefore, we need to attract new and different talent into the sector with these required skills.

It is important to note that while a lot of the potential technology can have an impact, much of agriculture involves continuous production processes so disruption tends to occur incrementally and is planned. So, there is a need to sustain current practices until disruption occurs. The industry needs to keep attracting people to current roles that might change in the future.

Agriculture, as a sector, has traditionally been able to cater for a relatively larger than average contingent of low skill labour. Many current farm activities will likely continue to require various degrees of skills and labour. It is unlikely that new technology will perform all tasks that unskilled labour has performed. Therefore, agriculture will still require a mix of skill in its pool of resources (Korff, 2017). However, automation of harvesting and production could provide some solutions to some of the labour supply issues in the horticulture industry by reducing the need for labour intensive tasks and helping create new higher skill jobs. Training support will need to be provided to guide employees and employers to deal with the transition (Howe, Clibborn, Reilly, van den Broek, & Wright, 2019).

While technology capability in the workforce is increasingly needed in agriculture, there will still be requirements for qualified agronomists, soil experts, livestock and other specialists. These professionals need to build their problem-solving capabilities and systems-thinking so that integration with technologies is managed. ICT will need to become part of the process in many of the agriculture occupations (Pratley, 2017).

The P2D research project analysed what needs to happen for Australian producers to capture value from their data. Key recommendations to address this issue include “[providing] education and capacity building to increase digital literacy in the agricultural sector”. A digital skills and capability gap was identified across the value chain. Big data solutions will provide very little value if the industry doesn't have the interpretive skills and analytical expertise required. The P2D project calls for a structured approach for industry to build data and data science expertise (Skinner, 2018).

Adoption of new technologies across industries will require learning new skills, particularly technological skills, environmental skills and managerial skills (Heath, 2018). To uptake the available opportunities, farm managers need a combination of skills in decision making, analysis of data, marketing, while also being aware of the potential of technology. They will in need to be technologically literate and capable, familiar with e-commerce and social media, have advanced

managerial skills, be familiar with modern production techniques and be able to deal with complex environmental issues (Australian Farm Institute, 2017).

Pratley (2017) also mentions that in addition to these roles, there will be a growth in specialist ICT companies and businesses that service technologies. Occupations in the service sector will tend to grow including marketing, value-adding process, packing, logistics, distribution, fencing, harvesting, spraying, picking, farm business advising, data analysis and others. New career paths are also available in the environment sector, land management in conservation, climate change, irrigation and water management, and biosecurity (Burrow, 2017).

How do we transition the workforce of today to the workforce of the future?

The agribusiness sector is recruiting a new generation of technologically savvy graduates as the sector provides more modernised and diverse career pathways for young generations (Australian Academy of Science, 2017).

Agriculture will follow the same pattern of other industries but it is also expected that its workforce, instead of accumulating additional qualifications, will learn through short courses and on-the-job-training which focuses directly on specific skills they require. To navigate rapid job and tasking changes in the future (AlphaBeta, 2019) the sector will need to foster opportunities to improve their skills while at work.

Modes of delivery will also need to change. Demand is expected to increase for more flexible, short-form courses that allow workers to acquire the required skills as and when needed (a just-in-time model). Training providers will therefore need to adjust their skills experience and their teaching methods. Demand for online courses is expected to increase (AlphaBeta, 2019) and training providers will need to adjust to a fit-for-purpose learning approach. The training system is not currently fully equipped to deliver the quality, and amount, of training required.

Support for more skills sets. The workforce will need to update a combination of skills or skill sets to complete the new tasking. These skills sets will evolve as technology is implemented and therefore, increased support for more skills sets is imperative (alphabeta,2019). The increased adoption of skills sets and micro-credentials may increasingly be used as part of an employer's formal training requirements.

As the alphabeta report states by 2040, 41 per cent of the average worker's total education will need to occur after the age of 21 – up from 19 per cent today. This implies that the future workforce will need to acquire the skills while on the job or online rather than in the classroom.

The agriculture sector recognizes that we need to partner with government and the training sector to ensure that our industries have a sustainable and appropriately skilled workforce. Businesses are fundamental in providing insights about the skills required for their business. Real-life education will need to play a bigger role and therefore industry-based learning will need to be encouraged.

Agricultural businesses need training to be more specialised to their specific business requirements, rather than requiring completion of units unrelated to their operations, if they are to encourage employees to undertake training (Kahl, 2019).

The VET sector should be equipping students with skills that improve their prospects of employment across various agriculture industries. To achieve this, strong industry links are essential. It is recommended that VET funding investment shifts from the traditionally narrow focus on full qualifications to those 'streams' of broader skills (skill sets) that apply across industries. This shift in

focus would better align investment to current and emergent industry priorities and would also produce better student outcomes, for rural and regional employability (job-readiness) (Queensland Farmers' Federation, 2018).

Cost, time commitments and accessibility continue to be the significant reported barriers to accessing training across all agricultural industries and regions. Most RTOs currently only deliver full qualifications, whereas providing training in skill sets should assist to address these issues. In addition, employees would have greater motivation to complete a few units rather than an entire qualification especially if the opportunity existed to do a tailored accredited skill set in blocks of training.

More accessible and achievable programs of short courses to upskill the existing workforce enables them to build on their career, and better connection from school to roles in the agriculture sector can improve the sector's image thereby helping to attract the future workforce required (Kahl, 2019). The sector will increasingly need to provide opportunity for self-development and career improvement to ensure the appropriately skilled workforce necessary.

Workers in agriculture are considered particularly exposed to the effects of automation, emphasising the importance of increased investment in lifelong learning and retraining. Boosting education and skills levels helps people adjust to new technologies or methods of better practices. Less skilled workers will generally bear more of the costs of increased automation, so improving their adaptability and transferable skills is crucial to enabling workers to more easily navigate disruptive or structural changes within or across industries over time. This is particularly relevant in regional and remote rural areas and has implications for the health of local communities and the state economy.

Students benefit from training that includes more generic competencies that can be used across a wide range of occupations, delivering skills that can be used in multiple roles. The training system must continue to support students to move more easily across sectors, by supporting generic competencies and skills sets that applicable across sectors and allow the individual the flexibility to incorporate in their training specific units of competency that are more used by specific industry sectors is a preferred model.

Support for innovative extension and training methods is needed. Extension programs are common place in most agricultural industries and they deliver new information that is available for farmers to access and uptake. Different advisors, vendors, manufacturers and training providers currently offer a large number and variety of workshops and in-house training. This training is usually delivered using traditional training delivery modes, which tend to be linear, inefficient and rarely personalised to the learner's specific needs.

At the same time, students are exposed to and have embraced innovative social technologies in their everyday lives, which are under-utilised for professional skills development. There is clearly a need for a more effective process to provide awareness, skills and knowledge to improve methods and practices. Greater use of smarter and more innovative training approaches incorporating new technologies (for example smartphone apps) should to be incorporated into the delivery methods of the training sector to meet the needs of the agriculture sector. Working with professional organisations like APEN (the Australasia Pacific Extension Network) could assist extension professionals working with people to enable change and innovation in primary industries, natural resource management and communities.

Extension is currently providing short-form ('bites of') practical information through articles, videos, and webinars to allow farmers the ability to link research to practice. Many industries note the long-term decline in extension services has opened a gap in the market where the capacity to understand and adopt new science and innovation into farming systems is lagging and may be responsible for restricting industry growth. Missing at the moment is the creation of strong links between extension and education to ensure that the specific training is tailored to the individual businesses, and that allows a path towards the recognition of the level of skills acquired by the individual (Kahl, 2019).

More flexible course structures should be encouraged that allow students to train in areas that might not be conventional agricultural subjects but of significant value to their career in agriculture. This will help training to be more relevant to industry requirements and support the current workforce to constantly update their knowledge. We need to be able to support business with the desire to develop the confidence to acquire the capabilities and capacity necessary to transition from the business of today into the business of tomorrow. In very practical terms therefore, training service providers (RTOs) and their trainers will be required to upskill to remain current and able to deliver up-to-date training that is relevant to the industry. It is essential that trainers are kept up to date with the latest innovations and best practice.

How do we develop the workforce of the future?

As mentioned by the Coldrake Review (2018, p. 3), the themes emerging from various reports on the state of agricultural education and training have been similar: "the shortage of young people choosing careers in the agricultural sector, the gentrification of the agricultural workforce, the dissonance between the inability to attract as against the potential new job opportunities opening up in agribusiness, the imperative to mobilise industry engagement strategies and the need for education and training providers to embrace flexible delivery". The issue to be addressed is the need for a skilled and adaptable workforce that meets industry's future needs – one that is well resourced, fit-for-purpose and responsive to ever-changing technological advances.

The industry needs to inform young generations about new and exciting job opportunities and careers in the sector by creating strong link with schools. **Increased support for initiatives that bring industry and schools and the training sector to create awareness of the importance of agriculture, and the possible careers is needed.**

Within its own strategic plan, RJSA acknowledges the importance of attracting new entrants to our sector to ensure its sustainability. RJSA has reviewed literature and best management approaches and has developed an industry-led program to address the perceived gaps in schools-industry engagement called the 'Queensland Agriculture to Schools Engagement Program' (QASEP). We believe the proposed program will improve the way schools and agricultural industries interact, provide mutually beneficial experience and learning opportunities for students and deliver the career pathways the sector needs.

QASEP responds to the Gonski 2.0 Review that reiterated the need to strengthen partnerships across the system to achieve educational excellence in Australia. The subsequent Mitchell Institute report (Torii, 2018) identified school-industry partnerships as the means to deliver the value, quality and contextualisation sought through David Gonski's many recommendations. This is where agriculture and rural industries can partner with the education system to offer real opportunities and generate real benefits for the state and its communities.

The Mitchell Institute report (Torii, 2018, p. 20) has provided a contemporary assessment of the way forward:

- School-industry partnerships need to be valued and measured at the system level
- School-industry partnerships need to be a priority in all schools
- Governments need to make it easier for all parties to engage in school-industry partnerships.

The program aims to build school-industry partnerships in Queensland to attract, inspire and provide informed career opportunities for young people to join the agriculture industries and meet their future workforce needs. Program aims will:

- provide real industry experiences that align with school curriculum and learning priorities
- promote the industry and its career options to students, educators and careers advisors
- help future generations to better understand their pathway options to careers in agriculture
- provide experiential learning to career seekers to explore their potential to work in agricultural industries
- provide individuals and groups with training and experiences to assist them to start a career in agriculture.

RJSA will build on its partnerships with industries, schools, vocational education and training and tertiary sectors to achieve the following objectives:

1. Industry awareness and contextualized learning: To increase student awareness, engagement and participation in learning linked to agriculture.
2. Career awareness: To build students' awareness and enthusiasm for a broad range of new and emerging careers in the sector, including STEM careers.
3. Experiential pathways: To support students to transition from school to work and develop key employability and work-readiness skills needed in industries.
4. Experiential and continuous learning: To develop students' future work capabilities to current and emerging occupations in agriculture.
5. Increase schools' capability: To build the capability of school leadership and teachers to provide up-to-date industry relevant learning.
6. Better education resources: To increase access to state-of-the-art, industry standard technology and equipment to support teaching and learning activities.

In implementing these objectives, QASEP will align with recommendations from the Independent Review into Regional, Rural and Remote (RRR) Education by:

- Expanding the availability, affordability and accessibility of high-quality work experience placements, VET, dual VET/university options and two-year associate degree programs for RRR students.
- Supporting RRR communities to implement innovative approaches to education delivery designed to improve education access and outcomes for students living in remote communities
- Ensuring RRR contexts, challenges and opportunities are explicitly included in the selection and pre-service education of teachers, initial appointment processes and their on-going professional support
- Ensuring RRR contexts, challenges and opportunities are explicitly included in the selection, preparation, appointment and on-going professional support of educational leaders

To attract the next generation of workers, the agriculture sector needs to address the disconnect with and some misperceptions held by schools. Using agriculture as a vehicle to deliver the

curriculum including STEM subjects would help address this issue. The need for STEM skills in agriculture is only going to increase as a substantial portion of the future jobs created by the sector will need STEM training (Kahl, 2019). Therefore, agriculture is seen as a powerful learning ground for children and young adults and why this proposal integrates agriculture learnings to boost the effectiveness of STEM activities where it is feasible to do so.

Industry relationships can help schools align more fully to contemporary skills for work options. The support of school-based traineeship and apprenticeship and work placement opportunities to those inclined towards agriculture can also provide a starting point towards a career in the sector. Furthermore, using the VET sector to upskill its workforce to address lifelong learning.

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