

Who will help run the farm?

Creating a pathway to a career on farm for the
next generation of farm managers

A report for:



By Daniel Paul Kahl

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Executive Summary

For many in the agriculture industry around the world, an issue of significant concern is the sourcing of staff with the required skill set to assist in managing the operation of their farm businesses. In an environment of technological advancement, demographic shifts, urban-rural disconnect and increasing size, farm businesses struggle to access an appropriately trained and skilled workforce from which to source labour to fill the increasingly multifaceted roles on farm. In particular, the industry has a 'missing middle', with a dearth of talent to fill middle management roles that assist in both the decision-making process and the implementing of on farm operations.

This report investigates existing programs based in industry, education and privately, that assist in a person's development towards a career in farm management. Globally, many programs exist in this field. However, what this report aims to do is examine the potential links between these programs and initiatives. By doing so, the objective is to develop a career path that begins at a primary school age and allows individuals to develop an appreciation of agriculture, make a head start in an agricultural career and develop knowledge with an emphasis on tying that knowledge to experience, to ensure the skills and abilities built up have an applied nature and are 'paddock ready'.

Whilst not all the findings of this report may be directly applicable at farm level, it's aim is to provide a viewpoint that can provide industry with a bigger picture on the pathway required to bring more people into agriculture. What this report suggests is that by supporting and advocating for curriculum-based programs in the classroom, more children from a broader range of backgrounds can be introduced to agricultural whilst learning their Science, Technology, Engineering and Mathematics (STEM) subjects. It also suggests that by supporting school-based traineeships and apprenticeships, those who are inclined towards agriculture can be given a head start. In turn, by helping to establish and utilise links between vocational and tertiary education institutions, agriculture can further up skill its workforce and importantly keep all participants engaged in further learning.

The resolution of this issue is as multifaceted as the skills requirement of the 'missing middle'. What it is important is the creation of a pathway that engages the next generation of farm managers at a young age and sets them on a trajectory towards a career in

agriculture and farm management that will allow them to enjoy professional and personal development, provide the opportunity to build a career in agriculture without necessarily coming from a farming background and to allow the agriculture industry to further build its capacity and not be hamstrung by a lack of human capital.

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Foreword

In 2014, my family's mixed farming operation near Wee Waa, in New South Wales (NSW), was presented with the opportunity to expand. Effectively, the expansion meant our operation doubled in size in terms of land developed for irrigated and dryland cropping.

The journey since taking on these properties has required us to change the way we look at our business structure, in particular that of our staffing requirements and the skill requirements necessary to operate and manage what is an almost corporate sized farming enterprise. Our philosophy towards farming is that it requires five key elements; land, water, equipment, capital and people. Our cropping decisions are based on whichever of these we have the least of. More often than not that element is water. However, an element which we and many other farming businesses often take for granted is the limitations placed on us by that fifth element, people.

Over the last four years we have developed a management structure for our farm business that is designed to share the responsibility and workload between upper management, middle management (Assistant Farm Managers or Farm Supervisors) and our farm staff. The difficulty we have faced in filling the roles within this structure, in particular those of middle management, is the inspiration behind my Nuffield research and the purpose for pursuing the scholarship.

Throughout the Nuffield Scholarship, I have travelled to Brazil, Mexico, the United States (USA), Ireland, France, New Zealand, South Africa, Greece, the United Kingdom (UK), the Netherlands and Belgium. What I have found is that the "missing middle" in agricultural labour forces is not a trend unique to our operation, the cotton industry or Australian agriculture in general. The scholarship has been a fantastic opportunity to learn more about how we can address this issue and to attempt to formulate strategies to build greater workforce capacity within agriculture. It has also provided me with an unforgettable insight into agriculture globally and the fantastic community we are all a part of.

Acknowledgments

Firstly, my thanks to Nuffield Australia for presenting farmers across the many agricultural industries in our country with the fantastic opportunity the scholarship presents. The benefits go way beyond the outcome of each scholar's research and I consider myself extremely fortunate to be counted amongst the now 400 plus Australian Scholars.

Thanks also to the Cotton Research and Development Corporation and Cotton Australia for supporting a scholarship each year. Your investment in the people of our industry is vital and again I am very appreciative of the opportunity your commitment to that has provided me.

I received a great deal of support from my partner, Kate, both whilst away on Contemporary Scholars Conference (CSC) and Global Focus Program (GFP) and while travelling together on my individual travel. I don't imagine many Nuffield Scholars get to travel with a personal assistant and I am hugely thankful that Kate leaped in head first, taking notes and photos in over 70 meetings and keeping me on track. She deserves plenty of credit, thanks KC.

The final but most important acknowledgement has to go to my family and in particular, my father James and my brother Sam with who I work. We're in the middle of an important time for our business, going through our recent expansion, implementing our succession plans and trying to capitalise on finally having water available to irrigate some decent acreage. To let me take off for 18 weeks of the year, during some key times, is a sacrifice I am doubtful I will ever be able to fully repay, and I am immensely grateful for the opportunity they've enabled me to take, so thank you.

Abbreviations

AGCAP – Agricultural Careers and Professions

ANZSCO – Australian and New Zealand Standard Classification of Occupations

BBL – Beroeps begeleidende leerweg

CEJA – European Council of Young Farmers

CSC – Contemporary Scholars Conference

FX Program – Farm Experience Program

GFP – Global Focus Program

NFF – National Farmers Federation of Australia

NSW – New South Wales

STEM – Science, Technology, Engineering and Mathematics

UK – United Kingdom

USA – United States of America

Objectives

The objectives of this report were to research programs, methods or strategies used to attract, up skill and to an extent, retain, participants to the agricultural workforce. In particular:

- To investigate industry programs that attempt to engage younger generations with agriculture and attract potential workforce participants to agricultural career paths.
- To investigate methods used by schools, universities and colleges in South Africa, the UK, the Netherlands and the USA to attract students to agriculture-based study.
- To speak with farm businesses about the skill requirements of their workforce and how they attempt to address any shortages.
- To investigate existing and possible linkages between institutional (schools, colleges, universities) programs, industry-based initiatives and what's being done at the farm level.
- To develop a pathway that utilises different programs and training approaches to both attract and develop candidates towards a career in farm management.

Chapter 1: Introduction

The missing middle

The evolving nature of farming has seen agriculture go through a number of revolutions and restructures throughout history. In the last 150 years in particular, the impact of technological change on farming, particularly in developed and faster developing countries, has seen significant changes in how the practise of farming is conducted. Over the course of the first and second industrial revolutions, agriculture transitioned from man power to animal power and then from animal power to mechanical power.

Since that time, the impact of technological change on farms has gone beyond just mechanisation. The third, or digital, industrial revolution has introduced more advanced mechanisation on farm, with an increasing amount of information-based technology, automation and improvements in input efficiency allowing farmers to exercise greater control over their production systems. These new technologies have the potential to rapidly alter the way production systems operate. Important to this topic, these changes mean that the skill requirements for people on farm are beginning to shift. Across many industries, the future of work will be in “thinking jobs” and farming is certainly amongst them. Moving forward, in a world heavily influenced by data, automation and technology and less by man power, participants in the agricultural workforce will need core skills in STEM subjects, (Science, Technology, Engineering and Maths), and the ability to problem solve and adapt (Greber, J. 2016).

With all this rapid technological advancement happening around it, the agricultural community could be said to be going through a restructure of its own already. An Australian Government Productivity Commission Research Paper published in 2005 analysing Trends in Australian Agriculture found a number of shifts in the Australian farming community. Whilst the overall workforce numbers remained relatively stable in the period between 1983 and 2003, this stability was the result of a decreasing number of employers being balanced out by an increasing number of employees. This shift can be attributed to a demographic change towards smaller family sizes and fewer children living and working on farm. The traditional “family farm” where the majority of work is done by family members with a few employed hands has begun to shift and instead there is an increased need for hired staff.

In the same time period, the number of farms or farming businesses in Australia decreased from 178,000 to 132,000 while the average farm size increased from 2,720 hectares to 3,340 hectares. Whilst the Australian agricultural industry is still dominated by smaller farms, 63% being smaller than 500 hectares, there is an increasingly dual nature in the agricultural sector (Productivity Commission, 2005) where there are a large number of low output small farms and a smaller number of high output, large farms.

These trends have continued as the number of farm businesses in 2017 has fallen to 88,073 with an average size of 4,471 hectares (Australian Bureau of Statistics, 2017). Australia isn't alone, as these trends can be seen globally. In South Africa for example, the number of farms has decreased from 72,000 in 1994 to 27,000 in 2017 (Hoffman, W. 2017). In parts of USA such as Texas, farm size is decreasing (Texas Land Trends, 2014) as land is fragmented through intergenerational transfer. However, this does not result in the number of farming entities increasing as urban/rural competition demand for land makes purchasing farms uneconomical for those wishing to enter the industry and instead leasing of multiple farms is the norm (Berthold, A. 2017).

It is in this context that the agricultural sector finds itself in need of someone to help run the farm, to assist in not just the day-to-day activities but in the decision-making and management of on farm resources. A Cotton Australia policy document published in March 2015 describes the need the industry has for the middle management/leading hand role in a way that can be applied to many agricultural industries. As on farm roles become more multi-faceted and require a higher skill set, it is the middle management role that is most difficult to fill (Cotton Australia, 2015).

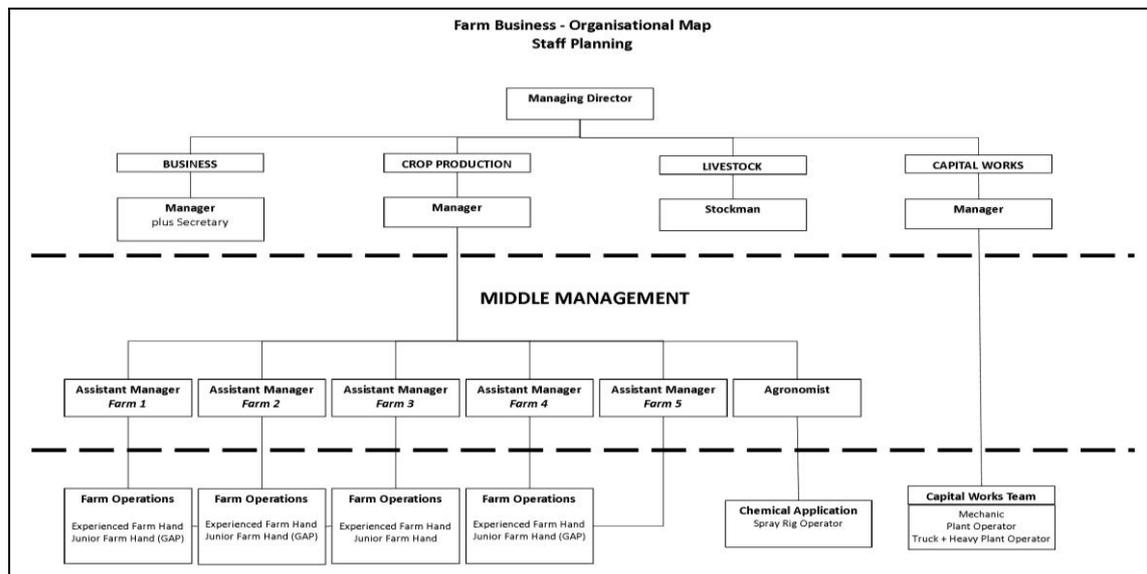


Figure 1: An organisational map for a medium sized farm business. Source: Merced Farming Pty Ltd (2014)

This shortage can be put down to a number of factors. Some regions face competition from the resource sector and other industries, placing pressure on an already genuine skill shortage in the immediate labour pool. In a Farm Sector Employer Survey, 51% of respondents said it was difficult to source appropriately trained and skilled personnel for their farm (National Farmers Federation, 2014). The practise of filling skills gaps with foreign or visa workers has provided short-term relief for many but results in a greater workload on the permanent, usually family sourced management and means that the training and knowledge invested in those workers is lost when they inevitably move on. The time and financial cost of this ongoing induction and training causes a further cost on farming businesses and results in a drain on the limited amount of opportunity for permanent or longer-term prospects to begin moving up through the ranks.

The demographic shifts mentioned above also place pressure on the number of individuals looking for a career in farm management. As farms generally become fewer and larger and with land and water values increasing, there are significant barriers to entry for individuals not from a farming background to make a start. The growing disconnect between urban and rural also impacts on people’s perceptions of farming and on the potential career prospects someone with an interest in agriculture might place on the industry. Farming’s reputation tends to be one of low wages, long and inflexible working hours and few career development prospects and training opportunities. For those without any direct skin in the

game and the opportunity to benefit from profitable businesses, this perception provides very little incentive for new entrants (Nettle, R et al, 2011).

As discussed, this is not a problem unique to Australian agriculture and there are a number of programs or initiatives in operation around the world attempting to address this issue. What this report endeavours to do is investigate programs, courses and initiatives that currently exist to address this issue and highlight the existing and potential linkages that can be made between them in order to create a pathway for individuals to embark on and develop a career on farm.

An effective pathway will introduce the next generation to agriculture and start them young by engaging them in where their food and fibre comes from, before giving those with an inclination towards agriculture a head start by setting them on a path towards gaining core skills and experience to begin their career. As they continue on this pathway, it will be vital for continued learning to tie knowledge to experience, and then for further learning to be brought on farm to ensure investment of time and resources into training results in quality candidates with applied knowledge and experience.

Chapter 2: Start Them Young

Programs to engage the younger generations with agriculture

An increasing matter of importance for agriculture is the significant disconnect between rural communities, the agriculturally based industries within them and ever expanding urban populations. Rural-urban disconnect has a range of ramifications, as greater portions of the population become further removed from the reality of where their food and fibre comes from and form their understanding on misconceptions and misinformation. An entire Nuffield report could be written on each of these ramifications; agriculture's social license to operate, social vs. economic vs. environmental impacts of water use, sustainable food production to name a few. However, for the purpose of this report, this disconnect has a direct impact on people and their engagement with agriculture as a potential career prospect.

In Texas, 95% of the state is privately owned, yet 90% of the population live in cities (Berthold, A. 2017). In Australia, two thirds of the population reside in one of the eight capital cities. What is most concerning about these trends is the diminishing connection and relationship between urban and rural populations. An Urban Youth Research Survey conducted by Rabobank in 2014 found that 77% of city-based teenagers in Australia knew little to nothing about farming and food production while 17% had never set foot on a farm (Rabobank, 2014). In 2017, in the lead up to National Ag Day (<https://www.agday.org.au/>), the National Farmers Federation of Australia (NFF) spoke to results of a survey it had commissioned which suggested 83% of Australians felt that agriculture and farming has little or no relevance to their lives while less than half had met or talked to a farmer in the 12 months preceding the survey. NFF's belief, based on these results, was that they "proved an urgent need for agriculture to be promoted nationally as an exciting, hi-tech industry vital to Australia's economic future, to reverse the misconception that it is a dull, outdated sector of the past" (Neales, S. & Fox Koob, S. 2017).



Figure 2: Rabobank Urban Youth Research Source: <https://www.farmexperienceprogram.com/> (2018)

In terms of building workforce capacity and developing the next generation of farm managers, this could not be truer. Monika Basson is Marketing Manager for the Agri-Sciences faculty at South Africa's Stellenbosch University and describes the difficulties they face in attracting students to their farm management courses, saying "farming is not a profession that has any sexiness to it" but that it is because many do not understand what a career in agriculture would consist of (Basson, M. 2017). Farming groups in Europe such as the European Council of Young Farmers (CEJA) face similar issues and the concern is that if the gap between agriculture and society widens further, that even less people will be drawn to agriculture (Maes, J. 2017).

A number of initiatives have been put in place to attempt to address this disconnect and in particular ensure that young people, of a primary and secondary school age, are given the opportunity to interact with and better understand agriculture. Following their Urban Youth Research, Rabobank Australia implemented the FX (Farm Experience) Program (<https://www.farmexperienceprogram.com/>). By partnering with schools in metropolitan areas, the program arranges for students aged 16-18 to spend a week living and experiencing farm life. Importantly, it allows those students to build their own perceptions of a career in agriculture based on their own experiences rather than an inherited or unknowingly gained misconception. A later chapter of this report will consider the importance of tying knowledge to experience further, but it is worth making note here. If an individual has an experience to justify or further prove what they have learned, it makes that knowledge much more powerful and meaningful to them going forward. (Rabobank Australia, 2017).

Fresno State University in California offers a somewhat similar learning experience through their Ag Discovery Summer Camps, which are part of a nation-wide United States

Department of Agriculture Program (https://www.aphis.usda.gov/aphis/ourfocus/civilrights/agdiscovery/ct_agdiscovery_program). Aimed at those 12-17 years, it provides the opportunity for young people to spend two weeks staying in dorms on campus and to explore the career opportunities that agriculture can offer. Fresno State University has a number of commercial farm units on campus, providing the participants of the Ag Discovery camps the ability to appreciate the commercial nature of farming, the diversity of career prospects and high-tech nature of modern agriculture. (Willis, M. 2017).

Of course, a well-known and long-standing program in the USA is 4-H (<https://4-h.org/>). Standing for Head, Heart, Hands and Health, 4-H aims to provide “experiences where young people learn by doing” (4-H, 2017). Traditionally these experiences had an agricultural or food production theme, growing vegetables, raising and showing livestock, etc. Today, it has developed to include science, engineering, health and citizenship focused projects but what is important to note is the importance of all those focus areas is reflective of agriculture. All of these focus areas can be learned using agriculture as the vehicle. There are 550,000 children in 254 counties participating in 4-H programs in the USA providing an amazing opportunity to cultivate the next generation to at least have an understanding of the importance of agriculture and its influence on their lives.

What these programs, Rabobank’s FX, Fresno State’s Ag Discovery camps and 4-H, also ensure is that young people are able to develop a more realistic understanding of agriculture as a future career path by seeing firsthand how the role of farmer has changed. By demonstrating the variety of roles in agriculture and how the role of farmer has changed to include robotics, genetics, high levels of technology and less about long, labour intensive hours in gumboots, young people can look at agriculture as an industry that does have a great deal of appeal and is more than just sows, cows and ploughs.

Programs like these however rely on the young person to make the choice to participate. In a number of countries, there are organisations with programs in place that endeavour to bring agriculture to the classroom and therefore reach further. One organisation in particular that does this at a primary school level is the PLANT Foundation in the Central Valley of California through their Farm Academy Live virtual classrooms. These virtual classrooms, which meet the curriculum requirements, use agriculture as the vehicle through which teachers can deliver STEM modules (Giannini, E. 2017).

In the USA, just 2% of the population are farmers. In giving a TEDx Talk, PLANT Chairman Dino Giacomazzi noted why it is important for agriculture to reach and engage a greater talent pool, “Farmers have always been problem solvers but now they are facing problems they can’t solve on their own. How do we get kids in cities, the problem solvers of tomorrow, thinking about ag problems today?” By teaching STEM through agricultural examples, the program creates a link between the science and technology of agriculture with the science and technology of everyday life. (Giacomazzi, D. 2017).



Figure 3: A Farm Academy Live virtual classroom. Source: <https://plantfoundation.org/> (2018)

To increase the talent pool of future farm managers, the agricultural industry needs more people coming in. To continue having the social license to operate and remain valid in a modern, urbanised society, the image of farming and agriculture needs to change. Programs like these have the potential to assist with both. Stellenbosch University’s Monika Basson suggests that of key importance is the engagement of younger students, encouraging the right subject choices during their schooling career and teaching them the exciting possibilities in agriculture (Basson, M. 2017). Mr Georg Haeusler is the Director of Resources within the Directorate General of Agriculture and Rural Development at the European Commission. He suggests that the solution is not to incentivise young people towards agriculture. Instead they need to see the industry as profitable and viable and that to do so, the industry needs to alter the disconnect (Haeusler, G. 2017). It would seem that the first step to doing so would be to start them young, while there is still an opportunity for a lasting impression to be made of the importance of agriculture in everyday life and the array of career possibilities it holds.

When considering at what age someone chooses their career path, it is unlikely that a primary school or early high school aged child will firmly decide on farming as their career based on having been exposed to agriculture through their schooling career. But the path that leads them to their future career certainly does start whilst in school. Why do children wish to be astronauts or firemen or rock stars? Those careers can take them to the moon, mean they are a hero and are careers that provide excitement and stimulation. Driven by a youth spent with access to social media, smart phones and constant distraction, the next generation needs to have its attention drawn towards the possibilities of a career in agriculture if they are to consider it at all.

To find the next generation of farm managers, the funnel at the start of this career path needs to be wider (van Wijk, J. & Titulaer, S. 2017). Agriculture requires more people entering a career pathway from the beginning to result in an increased likelihood for people to continue on that path, find an interest in agricultural fields, choose subjects that will benefit them on that path and maybe choose a career in farming and farm management. Agriculture as a whole needs to consider the potential for programs such as PLANT's virtual classrooms to influence how schools deliver their curriculum and advocate for the adoption of such programs in Australia's education systems. This exposure to agriculture in the classroom can then be linked with the opportunity to participate in additional programs like Fresno State's Discovery camps, Rabobank's FX program or in clubs such as 4H to provide further information about the potential career opportunities for the next generation in agriculture and the career paths that will take them there.

Chapter 3: Set them on a Path

Giving those with an inclination towards Agriculture a head start

Be it through the perception of agriculture in the schooling system or other factors, a career in farming has often been seen as a plan B career. Whilst there is certainly some, usually from farming families or backgrounds, who have planned pathways to a farming career, often those who end up working in farming are those without an inclination to academics who upon finishing high school or after dropping out early pick up a job with low qualification requirements. For those from farming backgrounds who intend to return to a career in farm management on the family farm there is a well trodden path. In South Africa, this hereditary planning will begin in an Agricultural High School, in the city of Paarl for example, progressing to further education at an Agricultural College like Elsenburg or University at Stellenbosch before gaining work experience away from the farm and then eventually returning (Hoffman, W. 2017). It is a common path for many in Australia as well, continuing from high school to agricultural colleges such as Marcus Oldham College in Victoria or universities with strong agricultural programs, such as the University of New England in NSW.

However, as discussed previously, the trend in Australia is towards fewer farmers and fewer people starting on that path by way of their exposure and experience in farming from a formative age. In the USA, there is an increasing trend for students at Fresno State University to be the children of farm workers, not farm owners (Willis, M. 2017) and it is likely that this trend could be replicated in Australia. However, just because these children have a background in farming, growing up around their parents' workplace, does not mean they too will readily start out on this path. The farm is not there as a fall back for them as it has might be for those from families with farm ownership and so it is important that there is a pathway there that leads to a career providing development and that recognises education and skill.

In many countries, a path of further education will often lead away from the farm. As a result, those who place an importance on education are not those likely to choose a career in farm management in the first instance. As agriculture progresses with increasing technology and a greater emphasis on the collection and interpretation of data, the skill set requirements of a career in farm management will change and increase while still needing

the hands-on abilities required now (Smit, H. 2017). The future is in “thinking jobs” and farms require employees with increasing levels of digital skills as well their traditional skill set. In order to build up the next generation of farm managers it is important for the process of tomorrow’s thinkers and problem solvers starting out on a path towards a career in farming and farm management to begin at a high school level.

If the process has begun by starting children young through having their curriculum of STEM subjects delivered through an agricultural lens and through other outreach programs, the next step is to give those children who have been attracted or engaged by agriculture a head start on their path to their farming career. While the future is in thinking jobs that will require individuals to complete school and have a solid grounding in science, maths and technology, there is no reason why they can’t also begin to build a body of experience in agriculture.

The Dutch education system allows this opportunity by students progressing from agricultural high schools into the Beroeps begeleidende leerweg (BBL) programs. BBL is an agricultural apprenticeship which students can choose to undertake after completing four years of high school. Partnered with a business, students spend around 60% of their time working and gain practical work experience and the rest of the time in a training college, such as Citaverde College in Roermond, completing units in math, language and citizenship as well as units specific to the industry in which they are pursuing a career (Diddens, B. 2017). It is this rounded education that is important when trying to develop a future farm manager, ensuring that individuals complete a full education to grow in to a higher skilled, “thinking job” rather than early school leaver with a relatively low skill base. Students pay to undertake the course and host businesses are eligible to receive a subsidy, incentivising them further to participate in providing an apprenticeship.



Figure 4: Meeting with Bert Diddens of Citaverde College which delivers the BBL program.

Source: Kahl, D (2017), the Netherlands

AB Werkt is a member based, labour recruitment organisation in the Netherlands that make use of the BBL program to increase the number of skilled workers they are able to provide to their members in need of additional labour. The agriculture sector in the Netherlands faces similar issues to Australia in that there is a missing middle in the workforce (van Wijk, J. & Titulaer, S. 2017). By encouraging their candidates through the BBL program, AB Werkt is able to build their own pool of middle management candidates to fulfil the needs of their members. What both AB Werkt and Citaverde College do is engage with secondary schools and provide information to teachers and students about the program, what it involves and the possibilities it provides. They also offer advice to interested students on what subjects to choose while still in school to start tailoring their choices towards a career in agriculture. While BBL allows specified learning for a particular industry, this engagement at a school level gives young people the opportunity to make a head start on the learning that they will require for their future career.

The Boswell Company in California has the size and scale to allow it to develop and train their staff from within, promoting staff and allowing them to progress through the company. The company does this by identifying staff with the potential to progress into management roles and assisting them in achieving the prescribed list of required training or qualifications to successfully fill the new role before they progress, rather than promoting first and having to rectify skills gaps as they arise. Their approach to providing this pathway for their staff can be applied equally to the concept of getting young people started early at a high school age.

If a career in farm management is going to appear attractive, the perception of it needs to be altered. Once an individual is interested in pursuing a career in farming, there needs to be a distinct and prescribed pathway for them to follow so that they can tick off the skills they need to build along the way (McNabb, S. 2017).

Since 2014 in North West NSW a regional program called Agribusiness Careers and Professions (or AGCAP) has been providing students with the opportunity to undertake a School based Traineeship (<http://agribusinesscareers.com.au/>). Funded through Regional Development Australia Northern Inland, AGCAP allows students to remain in school through the final two years of their education while spending one day a week working on site with a local employer. By the end of the program, students have completed their Higher School Certificate, undertaken 800 hours of paid work with their chosen employer and met the requirements for a Certificate II in Agriculture (AGCAP, 2017). Importantly, what this program does is capture those individuals who have the ability and the intelligence to be managers in “thinking jobs” but who may not be academically inclined and do not thrive in a schooling environment. Instead of dropping out of school and joining the workforce with a low skill level and little experience, AGCAP ensures that students continue building their skill base in those core principles of science, maths and technology and even gain further appreciation for the application of those skills in their future career. Since its’ establishment, AGCAP has grown to include students from 14 schools in the New England North West region.

By having the program supported and tied to local businesses and employers, it shows students that there is a career path to follow; from their schooling, to a traineeship to a full-time job with the scope to progress both within the business and the industry. The opportunity AGCAP provides is invaluable in attracting, supporting and bringing through the next generation of farm managers. Since 2014, 70 students have started and completed traineeships through the AGCAP program, numbers that are expected to grow as the program is adopted into the NSW Curriculum from 2018. Of the 70 students with completed traineeships, approximately 80% have continued on with the same employer upon completion of their secondary education while the remaining 20% are either full-time employed elsewhere or undertaking fulltime study with the intention of returning to agriculture. By providing this head start, potential future managers can be started on a

pathway to management, not just a career as a moderately skilled labourer or plant operator. Programs such as AGCAP provide the students with an appreciation for the impact further training and qualifications will have on their career prospects. Of those AGCAP trainees who have completed the program, 95% have continued onto some sort of further education in agriculture, further advancing them down the path to skilled management positions (Stewart, R. 2018).



Figure 5: AGCAP trainee students on an Enrichment Tour, providing hands on experience and a head start to potential future farm managers. Source: <http://agribusinesscareers.com.au/> (2017)

Traineeship programs such as AGCAP also provide a valuable connection between the employer and the training organisations that deliver the formal part of the trainees' qualifications. Traditionally, career paths in farming have been relatively non-formal and required a low level of formal training. In the past that has been a sufficient process but now, despite requiring an increased skill set in their employees, the farm has struggled to provide the training to deliver that in order to up skill their traditional semi-skilled workforce. The partnership provided through an apprenticeship or traineeship style program between farming businesses, training organisations and schools provides all with the opportunity to deliver a more formalised career path and to provide an appropriate blend of formal and informal, on the job training. By partnering to provide this, it utilises the training capabilities of all stakeholder participants without dramatically altering their core activities. The farm business doesn't need to become a training organisation itself or drastically formalise their on-farm training but can ensure the experience and work being done by the trainee helps them meet the requirements of the training organisation and the relevant qualification. Also, the requirements of the training organisation are now linked with real

experience and relevance for the trainee, without the need to provide placements or requiring trainees to attend block teaching periods on campus.

Importantly for the trainee, this format provides them with a more formalised training pathway which they traditionally have not received. And while the path to further education may lead away from the farm for many, those with an interest in agriculture and further education can be retained by the knowledge that there is an importance on training and having a developed a stronger skill set if they choose a career in agriculture and farm management. Even more important is engaging those who have traditionally entering the agricultural workforce as low or semi-skilled workers, not through a lack of intelligence or ability but who are not stimulated or engaged by further classroom or strictly formalised education.

Required Qualifications and Sources of Employment for Cotton Farm Employees				
Farm Hand	Year 10 or 12	Cert I, II or III	Backpackers, advertise, labour hire	family, relatives, word of mouth advertise
Farm Supervisors	Year 12	Cert IV	family, relatives, word of mouth advertise, 457 visas, returning backpackers, employment agencies	
Farm Managers	Advanced Diploma	Degree	family, relatives, , 457 visas, returning backpackers, employment agencies	

Figure 6: Required Qualifications & Sources of Employment for Cotton Farm Employees.
Source: Kotey, B. Presentation to CRDC People Forum 2017.

In research completed in 2017, Associate Professor Bernice Kotey analysed the skills profile and labour structures on Australian cotton farms. She found that there were three main levels that employees fit into; Farm Hands, Farm Supervisors and Farm Managers. Her findings suggested necessary qualifications for these levels based on the required skills for each role. The middle management role, or Farm Supervisor, was found to need a Year 12 level of schooling and a Certificate IV level of qualification. Comparatively, based on Assoc Prof. Kotey’s findings, those in Farm Hand roles need a Year 10 to Year 12 level of schooling and a Certificate I – III level of qualification (Kotey, B. et al. 2015).By implementing traineeships such as AGCAP, these potential future farm managers can be entering the

workforce already on a pathway towards management rather than one as a career farm hand or labourer and given the head start they need to build a better career in agriculture.

Chapter 4: Tie Knowledge to Experience

Linking further education with hands on experience

As farming becomes increasingly complex the importance of having access to an available workforce with a rounded, multi-faceted skill base is becoming an issue of greater urgency. New technologies, trends, business models and changes to how farm businesses operate continue to influence the farming landscape at a pace the industry does not naturally keep up with. And so if left unresolved, the issue of how to attract, up skill and develop the next generation through a defined pathway will leave farm businesses with very few left to help run the farm with both the knowledge and comprehensive skills to interpret and respond in a data driven environment while still having the hands on abilities and know how to deliver the action required from that data. This is what makes tying knowledge with experience so important to ensuring the applied nature of further training.

Up to this point, this report has outlined a pathway beginning at a school level. By starting the next generation young and engaging young people with agriculture, an interest and appreciation for farming can begin and be cultivated through their curriculum and participation in further programs. Those that are attracted to beginning on a path towards a career in farm management can then be given a head start, through utilising traineeship or apprenticeship style programs. The next step on this pathway should then be to continue on this path by providing young people the opportunity to continue learning whilst tying that new knowledge to experiences gained on farm. A number of programs aim to deliver this while some farming enterprises have instigated their own training structures to allow their staff to balance work with further education.

A common practise in Australia is for young people, having finished high school, to take a year off or a 'gap year' to earn some money, travel and build some life experience before starting further education at university or starting their careers. Many from farming backgrounds return to the farm for this gap year. The Australian cotton industry has recently begun offering the opportunity for a gap year working on a cotton farm, linking young people from any background with farm businesses who can offer them a position through their program Cotton Gap (Cotton Gap, 2016). Beyond just a job for a year, what Cotton Gap offers is the opportunity for a continuation of the pathway from a traineeship such as AGCAP

onto further training and education to lead into a career in agriculture and farm management. To date there have been 12 school leavers undertake a Cotton Gap over the 2017 and 2018 crop seasons. Interestingly, while some of these did come from farming backgrounds the cohort also includes individuals who had never been on a farm and were enticed by the opportunity to try something different. Of the 12 young people who undertook a year on farm through Cotton Gap seven came from non-farming backgrounds, all of whom have chosen to pursue a career in agriculture at the completion of their gap year. For all of the small number who have been part of the Cotton Gap program, the experience has provided the inspiration to follow a career in agriculture with some altering plans for university after their gap year to pursue agricultural degrees instead of study in other fields or staying on farm in a full time capacity rather than leaving the industry at the end of their year (Fing, R. 2018).

A gap year provides the opportunity to increase individual's level of experience and accreditation, whether starting from scratch or having already attained a Certificate II in Agriculture through AGCAP for example. While spending the year working on a farm and building a body of work and experience level that will increase their employability, an individual can undertake a higher vocational accreditation in Agriculture such as a Certificate IV or Diploma. Importantly, this links in to an existing pathway to further training for a career in agricultural management to go with the experience accrued on farm. Tocal College is an Agricultural College in NSW that provides on campus education and delivers a range of certificate and diploma level qualifications. Whilst Tocal has its own farm units to provide students with hands on experience, it also allows students to undertake their courses online. The existing pathway to further training is that between Tocal and a number of universities in Australia that recognise the qualifications that Tocal's courses provide and allow students to receive credits towards a university degree based on them completing a Cert IV or Diploma through Tocal (Tocal College, 2017). When implemented with a cotton gap year, a budding future farm manager can gain a years' on-farm experience while undertaking a further qualification through Tocal and then continuing on to university having already gained credits towards their chosen degree. A specific example of this is the Bachelor of Agricultural Production and Management the University of New England (UNE). By completing vocational training and a Diploma of Agriculture through Tocal, which can be undertaken while working, it is possible for one third of the required units to be completed

towards the Bachelor Degree that will now take two years to complete rather than three. If they choose, students can even do an Advanced Diploma to further reduce the units and time required to be undertaken at UNE before completing the Bachelor Degree.



Figure 7: The pathway from a vocational Tocal Diploma to a tertiary UNE degree. Source: Tocal College Publication (2017)

Within Australia and around the world, there are other agricultural colleges and universities providing further education whilst ensuring it is linked with real industry experience. In the Western Cape of South Africa, Elsenburg College focuses on the technical and production skills required of farm managers, tying it to knowledge through their on-campus farm units while offering a pathway to further education through ties with Stellenbosch University (Nel, M.2017). Furthermore, Elsenburg ensures their program content remains relevant by having industry representatives evaluate it every three years. In the UK, poultry producer Faccenda Foods takes on five to seven graduate placements each year from Harper Adams University in Shropshire who, as part of their degree, spend their third year on work placement before returning to complete their fourth year. This placement ensures that the knowledge being acquired at Harper is moulded in conjunction with experience. In the case of Faccenda, this also provides a pathway for future managers to return to the business upon graduation and begin their career with the company already understanding the business and its ethos (Coggins, R. & Roberts, D.2017). Similarly, Marcus Oldham College in Victoria, Australia, requires students to spend a year of industry placement during their second year of study. In the Netherlands, agricultural university Aeres Hogeschool in Dronten includes an off-campus internship for a six-week period which must be undertaken on a farm outside of the Netherlands. Whilst the internship is for a shorter period, its placement outside of the country ensures that students gain a broader experience outside of what they may already know.



Figure 8: At Aeres Hogeschool students must complete an internship abroad as part of their degree. Source: Kahl, D (2017), Netherlands

It is clear that these institutions all recognise the importance of tying experience with the increased knowledge they are providing their students. Through the applied nature of this education students are provided with a skill set and knowledge base that is relevant to the workplace and makes them more employable than others who may have either the knowledge or the skills but not both. The importance of adding experience to knowledge or vice versa is it allows improvement. An example of the result when this is not present is the Greek cotton industry. Despite a high number of farmers within the industry, the low levels of further education make it difficult for industry bodies or participants to initiate change to improve practises within the industry (Tsoutsas, T. 2017). Conversely, it is also important that individuals pursuing a career in farm management do not only have knowledge gained through further education if it comes without experience to apply it to.

The high rate of employment for graduates out of these colleges clearly shows that this applied knowledge is sought after in future farm managers. As well as playing host to the Ag Discovery camps, the farm and food production units at Fresno State University provide its students with real experience. As commercial farms it is important for them to be properly managed and this is done by the students. All students have the opportunity to work on the farms and must prove themselves capable to gain paid management roles. It is this combination of work and management experience tied with knowledge gained that puts

students ahead of others in the job market upon graduation and entering the workforce (Willis, M. 2017).

Whether it is through a college or university that incorporates on farm experience or through a gap year linking further training to a shortened university career, these pathways can streamline the advancement of people to a career in farm management. Farm businesses can also participate in providing this pathway by structuring positions or work requirements to allow those with an interest in further education to do so. Sun Pacific is a one of North America's largest fruit producers based in California's San Joaquin Valley. During his time with Sun Pacific, Zack Stuller progressed from a Water Manager to Director of Farming. Himself not from a farming background, Zack recognised the need to develop his young farm hands into managers and did so by providing potential managers with flexible work structures to allow them to undertake two-year degrees (Stuller, Z. 2017). This allowed his workers to combine further education with the work experience they were building on farm.

These programs, courses and initiatives all contribute to continuing an achievable pathway for people into farm management that delivers a readily employable workforce participant. The modern farm manager needs a well-rounded set of skills and this pathway allows for the introduction of a broader range of skills and knowledge to assist in the pursuit of a career in farm management. Farmers have always had to be all-rounders but more than ever there is a greater need for business management skills, the ability to manage people and to interpret data, equal to if perhaps even more so than the actual agronomic skills of farming. For those inclined to further education, these might be the aspects that come more naturally, and it is the agronomic skills that can either be developed or sourced from consultants, agronomists and agricultural scientists. For those less academic but nonetheless intelligent potential farm managers, tying the accrual of knowledge to real experience in an applied nature is crucial to their direction down a pathway to farm management rather than that of senior farm hand or labourer.

Chapter 5: Bringing Learning to the Farm

Developing methods for specialised and recognised training on farm

The final step in creating a pathway for the next generation to a career in farm management is to bring specialised learning and training to the farm. Having ensured that further education is tied to on farm experience and providing individuals with an applied knowledge and practical skill set, the modern farm needs to be able to access specialised training for its future managers. By their nature, course content from university degrees or college programs are likely to be somewhat general in nature. Similarly, the informal training provided on farm is broad and unlikely to allow the development of specialist skills. Besides which, this training is borne out of experience from on farm and is not certain to provide the latest specialist knowledge available. Therefore, farming businesses need access to specialist training to up skill their farm managers for the specific role requirements within their business.

Pitigliano Farms near Tulare, California have a staff of around 45 who are for the most part trained on farm. Whilst on farm training provides the benefit discussed in the previous chapter of tying new knowledge to practises and experiences on farm, it is reliant on up to date information making it on farm to be taught to the workforce (Pitigliano, J. 2017). Extension programs are common place in most agricultural industries and this for the most part delivers that new information to the farm and is available for potential farm managers to access. Penn State University's Extension program publishes what they call 'Agricultural turners' which are one example of the latest research being delivered to farmers in a easy to access format which growers can even apply their own data to (Kime, L. 2017). The Penn State Extension website (<https://extension.psu.edu/>) provides a large body of these 'page turners' under the title 'Practical education you can trust' in the form of articles, videos, webinars and tools to allow farmers and the public the ability to make the best use of the recent research done by the University's extension arm in a broad range of agricultural topic areas. Of course, there are many bodies that provide specific knowledge but what is lacking is specified training that can be tailored to individual businesses and results in a qualification for the individual undertaking the training.

As part of its National Agriculture Workforce Development Plan published in 2014, the NFF in Australia conducted an Agriculture Workforce Farm Sector Employer Survey to gain better understanding of the workforce issues within agriculture. Some key findings from the results of that survey were that 45% of employers in the Australian farm sector had not used any strategies or approaches to develop skills within their enterprise. Further to that, 48% informed the survey that they only assess their labour skill requirements as the need arises (National Farmers Federation, 2014). These are worrying statistics if the Australian agricultural industry is to develop an available workforce with the necessary abilities and skills to continue taking the industry forward. Globally, the farm sector is starting to recognise its need for formalised and specialised training to ensure its farm managers have the necessary knowledge.

In South Africa, demand is present for a short course in financial management for farm managers. Dr Willem Hoffman at Stellenbosch University fields requests to provide short courses in financial planning and management from farmers for their management staff. There is not the time and it does not justify the investment for managers to take on study of an entire degree or course, but they do require these specific skills to meet the increasingly multi-faceted requirements of their roles (Hoffman, W.2017). In the Netherlands Bram Prins, a researcher and lecturer at Aeres Hogeschool has received similar interest and is developing a short program called an “Applied Masters”. The program would require managers to attend a limited number of short courses to up skill themselves in business management and financial planning in an applied manner and as often as possible on the farms where they are employed (Prins, B. 2017). Importantly the program is designed to be accessible for farm businesses of all sizes. This aspect is important as it is the capacity of the entire workforce that requires building and that will involve enterprises of all sizes.



Figure 9: Dr Willem Hoffman of Stellenbosch University delivers short courses for farm businesses and their managers. Source: Kahl, D (2017), South Africa

Two enterprises with the scale to implement their own specialised trading programs are Faccenda Foods in the UK and the Boswell Company in California. In conjunction with the Institute of Leadership and Management, Faccenda provides their Leadership and Management Course tailored for the company. With multiple levels, the course is available to workers looking to up skill and push for management roles. Faccenda also identifies employees with potential and approach them to undertake the course. Each level consists of 3-4 modules and an assignment done over 12 months with employees receiving a certified accreditation upon completion. Staff can also choose to do specific modules outside of the requirements of a certificate if there are specific areas they wish to build a greater skill level in (Coggins, R. & Roberts, and D.2017). Meanwhile the Boswell Company in California provides training in house to develop employees into the foremen and managers they require to operate their business by bringing in training organisations. Importantly, Boswell tries to avoid the Peter Principle that suggests that employees tend to rise to their level of incompetence through promotion based on their performance in their current role rather than how qualified they are for the role they're promoted to and therefore progressively become less effective employees. Their philosophy is to identify where skills need to be improved and to stretch people to build capacity and management ability whilst in their range of ability so as not to promote until failure (McNabb, S. 2017).

The important thing to note about these two companies is that while they do have the scale to implement training programs in house, they have identified the need for that training to be tied to the business and to be conducted in a shortened, specialised format that does not deter potential managers from undertaking the training. Vasileios Markou is the President of his family owned company Violar in Greece, which is one of the country's largest ginner and marketers of cotton as well as warehousing and marketing grains. His experience of training staff supports the notion that for many staff, there is resistance to change and often to training. As previously mentioned, the farming sector needs to encourage those potential managers who don't possess an academic inclination to still progress towards management, rather than stalling at the level of senior hand or labourer. As Vasileios puts it, many farmers do not like the school environment and so training requires small bits of practical information in their own fields (Markou, V. 2017). Otherwise the likelihood of potential managers being engaged by, commencing and completing training is lowered.

As a side issue, in identifying and recruiting potential farm managers Australian farmers are often blocked from retaining or attracting suitable immigrant workers as a result of the inflexibility of the requirements for a visa. The definitions set out by the Australian and New Zealand Standard Classification of Occupations (ANZSCO) are used to assess the suitability of a person for a job role. However, the classifications currently provide a lack of recognition of the middle management level on farms. Whilst the NFF is lobbying for review of these classifications it could be suggested that the difficulty in recognising the skills required for these positions is due to a lack of meaningful qualifications to measure those skills by.

With this in mind, it is worth considering again the skills profiles put together by Assoc. Prof. Bernice Kotey. The three role categories she identified on farm placed Farm Supervisors, or middle management, between Farm Hands and Farm Managers. In the expected qualifications of these roles, the step up from a Farm Supervisor to a Farm Manager is significant, from a Certificate IV requirement for Farm Supervisors to an Advanced Diploma or Degree level of qualification for Managers (Kotey, B. et al, 2015). The traditional path for farm managers is to be developed from within and even with a better-defined pathway starting from a school age, this will still be an important source of farm management going forward. The reality is that potential candidates for farm management positions will not have the incentive or motivation to undertake the level of study to achieve an Advanced

Diploma and certainly not a Degree. Farm businesses also need training to be more specialised and tailored to their business, rather than requiring completion of units unrelated to their operation, if they are to encourage employees to undertake such training.

Study in other industries and academic fields often provide certification recognising knowledge gained on the way to a higher level of qualification. An individual studying to be an Engineer for example will complete their Associate Degree after two years before completing their Bachelor of Engineering after four years. There appears to be the potential for a similar level of recognised skill to be put in place within agriculture particularly at the Farm Supervisor level as described in Assoc. Prof Kotey's research. An Associate Diploma, placed between Certificate IV and Diploma level studies, has the potential to provide both farm businesses and employees looking to gain the skills necessary to progress to management while ensuring the study undertaken is relevant to the business, is an achievable amount of study and readily accessible for businesses and managers alike.

A Diploma of Agriculture requires completion of ten units and is suggested to require 26 hours per week to complete in one year, 13hours a week if studying over two years (Tocal College, 2017). For those not academically inclined and who are already working full time, without access to higher education facilities nearby, this is an unlikely study load to take on. An Associate Diploma, requiring half the units and half the workload, would present a much more manageable workload. It would also allow, through a relatively wider range of units from which to complete five units, the ability to cherry pick the units most relevant to different farm enterprises, better tailoring the knowledge gained to the requirements of the business and its management. Importantly, rather than watering down or diminishing the value of the Diploma or higher qualifications, the Associate Diploma also has the potential to act as a gateway to continued study and converting the Associate Diploma to a full Diploma.

In terms of the implications toward ANZSCO, having another level of qualification to recognise the skill base middle management do have on farm means there is potential to reduce the restrictions that exist to attracting and retaining immigrant staff. Whether immigrant or local, farm businesses have already invested time and money in training these staff on farm and this investment is often lost. By having more accessible and achievable programs of short courses to up skill the existing workforce and their capacity and to extend the pathway created from school to farm management, farm businesses and the agriculture

industry can alter the image of career prospects in farming. By bringing specialist learning to the farm, a career in farming and farm management can be seen as one that provides opportunity for self-development, career advancement and that recognises skills built over time.

Conclusion

In a modern day environment of technological advancement, demographic shifts, urban-rural disconnect and increasing size of farm businesses, it is important that the agricultural industry – and more specifically the farming sector – work collaboratively to address the issue of the missing middle within the available farm workforce. In order to do so, the development of a career pathway starting from a school age is vital in attracting people to a career in farm management.

This report has shown that in order to attract the next generation to a future in farming the industry needs to address the disconnect that exists between today's youth and agriculture and that this can be achieved by using agriculture as a vehicle to deliver the curriculum requirements of STEM subjects in schools. Not only will this help to change the image of farming and agriculture in young people, but it has the potential to set the next generation of farm managers on a trajectory to a career in farm management.

Once set on this path those individuals with an inclination to a career in agriculture must be further encouraged and given the opportunity to make a head start down that pathway. Whilst the future may be in thinking jobs, it is important that future managers are able to develop both the increasing levels of digital skills as well as building the traditional skills of a farmer. Equally as important is that this pathway captures not just those with an academic ability and desire for further education but those with a more vocational method of learning. The development and support of traineeship and apprenticeship programs is integral to bringing through potential managers on a pathway to management, not just a skilled plant operator or farm hand.

Once established on a pathway to a career in farm management, individuals must be able to continue learning whilst tying new knowledge to experiences gained on farm. Both industry and educational institutions recognise the value of ensuring this in producing a readily employable workforce. Continuing to develop partnerships between industry, educational institutions and farm businesses will help increase the capacity of a workforce with an applied knowledge. It will also allow achievable development opportunities for those already participating in the workforce and access for farm businesses of all sizes to up to date and specialised training for their staff, bringing learning to the farm.

Globally, the programs exist to help address the issue of the missing middle. What is required is for those programs to be adapted, supported, implemented and linked together to create a clear pathway for the next generation of farm managers, from school to a rewarding career in farm management.

Recommendations

- Advocate for the development and adoption of teaching packages which use agriculture as the vehicle to deliver STEM subjects in Australian schooling systems on a national level.
- In collaboration with existing programs, develop a national outreach program to allow school age people the opportunity to spend time on farm and gain rural experience and an appreciation for where their food and fibre comes from.
- Utilise existing models for school-based traineeships to provide young people with an interest in agriculture a head start on their careers and building necessary skills, creating a more formalised training pathway and instilling importance in further education.
- Expand existing programs linking farm businesses with new entrants such as Cotton Gap, providing a continuation of pathway from trainee to further training.
- Support and advocate further partnerships between vocational and tertiary educational institutions allowing further learning to be tied to hands on experience, more readily accessible to more participants and streamlining the advancement of people to farm management positions.
- Address the difficulty in recognising agricultural skills by developing more targeted and specialised qualifications by which to measure them by while also bringing more achievable specialist learning to the farm.

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Plain English Compendium Summary

Project Title:	Who will help run the farm? Creating a pathway to a career on farm for the next generation of farm managers.
Nuffield Australia Project: Scholar: Organisation:	1707 Daniel Kahl Merced Farming Pty Ltd "Glencoe" 63 Cotton Lane PO Box 10 Wee Waa NSW 2388
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Objectives	<p>The objectives of this report were to research programs, methods or strategies used to attract, up skill and to an extent, retain, participants to the agricultural workforce, in particular;</p> <ul style="list-style-type: none">• To investigate industry programs that attempt to engage younger generations with agriculture and attract potential workforce participants to agricultural career paths.• To investigate methods used by schools, universities and colleges in South Africa, the United Kingdom, the Netherlands and the Usutu attract students to agriculture-based study.• To speak with farm businesses about the skill requirements of their workforce and how they attempt to address any shortages.• To investigate existing and possible linkages between institutional (schools, colleges, universities) programs, industry-based initiatives and what's being done at the farm level.• To develop a pathway that utilises different programs and training approaches to both attract and develop candidates towards a career in farm management.
Background	<p>In a modern day environment of technological advancement, demographic shifts, urban-rural disconnect and increasing size of farm businesses, it is important that the agricultural industry and more specifically the farming sector work collaboratively to address the issue of the missing middle within the available farm workforce. In order to do so, the development of a career pathway starting from a school age is vital in attracting people to a career in farm management.</p>
Research	<p>Existing programs and initiatives by educational institutions, industry bodies and farm businesses. Research was conducted in South Africa, the United Kingdom, Greece, Ireland, Belgium, the USA and Australia using a combination of interviews, farm and campus visits and personal study.</p>
Outcomes	<p>Globally, the programs exist to help address the issue of the missing middle. What is required is for those programs to be adapted, supported, implemented and linked together to create a clear pathway for the next generation of farm managers, from school to a rewarding career in farm management.</p>
Implications	<p>This report informs readers of the existing programs and initiatives that exist in this topic space, beginning at a school age through to continued career development of workforce participants, potential and existing farm managers. It investigates the linkages and progression between these programs in a way that aligns them to a clear career path, providing an ongoing pathway for individuals to follow in to a career in farm management.</p>
Publications	<p>Nuffield Australia National Conference presentation, Melbourne, September 2018</p>