

Encouraging more women into broad scale agriculture

Where are the females in the grains industry?

A report for:



By Randall Wilksch

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Executive Summary

The participation of women in the grains industry is very low and does not seem to be rapidly changing. Compared to 20 years ago, there are more women studying agriculture and there are women in agronomy roles, but the Australian grains industry remains dominated by men.

After interviewing over 60 women it appears the problem is global and it is a problem hindering the successful growth and progress of the grains industry into the future. As Maree Crawford (Elders) stated, *“It is not just a gender equity issue – it is an issue for the Australian agricultural sector. Lack of influence and involvement from half of a potential resource is a lost opportunity for input and growth.”*

The reasons for women not being part of the grains industry are similar across the globe (Australia, New Zealand, Europe, Canada and the USA) and across sectors of the grains industry (farmers, agribusiness, universities, government and policy makers). The most common key reasons suggested through this study include:

- Cultural and historic beliefs and attitudes against the role of women as farm managers.
- Lack of acceptance by many industry participants of women in farm business leadership roles rather than being an invisible business partner.
- A difficulty in accessing finance in a male-dominated agribusiness financial world.
- Lack of engagement and knowledge transfer by industry bodies, researchers, agronomists, machinery dealers and other farmers.

Additional reasons for women not actively participating in agriculture include a perception that women lack:

- Physical strength.
- Skills and confidence with machinery operation and maintenance.
- A woman’s role is still often seen as a mother and traditionally the primary child carer.

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Foreword

I started my Nuffield journey looking at how we in rural Australia can use social media to do a better job of communicating to our urban compatriots that people involved in agriculture produce safe, healthy food and we do care about the food we produce.

I soon discovered that many other international scholars are looking at this topic and decided, during the Global Focus Program (GFO), that I wanted to look at why there were so few women involved in the Australian broad-scale grain growing, compared to other sectors of agriculture.

I believe women provide a diverse and interesting perspective and are in general more customer-focussed and less production driven. In our society, women are the major purchasers of food and it seems to me that old, boring, white guys (like me!) have done a terrible job of convincing the public that food produced in the way we do it is safe. The 'anti-toxic chemical' organic movement is gaining much traction, even though much of the information is based on opinion, not fact.

Several years ago, after significant changes to our farming system, I was interviewed by a young female journalist for the state's agricultural newspaper. At the close of the interview, I asked her:

"How often do you interview women?"

"Well, never, women aren't grain farmers!" she replied with an apologetic laugh.

"You're perpetuating the myth!" I stated, astounded, and we moved onto other topics, but it did make me wonder where are women in agriculture?

I am a father of two girls and two boys, and while my children are still young, it is regularly assumed by other farmers that my boys will be farmers and not my girls. Why is this?

Just before I left on my Nuffield Scholarship, a colleague's wife gave birth to their fourth child, a little boy. Previously, the couple had three girls. Upon birth of the boy someone remarked, "Now you'll have someone to take over the farm!" I find it incredible that, in 2016, women are still not seen as equals in the grain sector of agriculture.

There are, proportionately, many more women in dairy, horticulture, and viticulture than in the grains industry.

In the grains business, women are rarely seen at conferences, meetings and gatherings of

farmers, unless the women are representing the 'extension' side of agriculture. There are more female agronomists, researchers and resellers than when I began my farming career, but still very few who identify as being a farmer.

I believe this to be part of the answer! Women don't identify as being a grain farmer. I observed this over and over during my travels. Therefore, part of the "no women grain farmers" is actually that very few women identify as being farmers, when really, this is more about the definition of what a farmer is.

Many women look after the family, manage the businesses accounts, drive utes to move people and machinery, pick up parts from town, drive the smaller (secondary) tractor, but told me that they don't identify as being a 'farmer'.

Why are you not a farmer? I asked over and over.

"Well, I don't drive the seeder" or "I don't drive the header (combine)."

Several conclusions led me to believe that encouraging women into agriculture will make it a better, more rounded industry. I believe that a higher proportion of women in food production will enable a greater dialogue with food purchasers, increasing confidence in food safety and thereby allowing consumers to build more trust in farmers as sustainable custodians of land and safe, regulated food production.

Acknowledgments

I would like to acknowledge the support of my partner, Julie, and our four children who just 'got on with life' and became a very independent, capable family unit while I was away for a total of 18 weeks in 2016.

I also need to acknowledge my parents Max and Julie, my brother Jordy, and employee Matt for running a very efficient and effective business while I was away – culminating in the highest yields ever across our properties with negligible input from me!

My topic changed over the course of the GFP - and I would like to specifically thank the eight scholars who I travelled with, and welcomed me back into their homes as I began my private study: James Dempster, Fred Appleton, Angus Duddy, Tom Skerman, Robbie Moore, Tom Dineen, Suze Ruesink, and Liz Manchee.

The corporate investor in my scholarship is the Grains Research and Development Corporation. There was no Southern Region contact when my scholarship was announced, so Sharon O'Keeffe (Northern Region) took on the investor's responsibility for me. Sharon was a great contact to get me started, providing encouragement and contacts and for that I am grateful.

Thank you to Maree Crawford (Elders Ltd., Toowoomba) who spoke on 'Bridging the Gender Gap' at the Australian Summer Grains Conference 2016 and provided me with well-researched information that my 'hunches' were statistically correct!

And finally, thank you to the many, many women I spoke with. I talked with people on their combines, at their kitchen tables, formal office boardrooms and even in a fast food restaurant. Your insights and views are fascinating and thank you for helping shape this report.

Abbreviations

CEJA – Conseil European des Jeunes Agriculteurs (Council of young European Farmers)

CEO – Chief Executive Officer

EU – European Union

GFP - Global Focus Program - Nuffield

Ha - Hectare

ISA – Illinois Soybean Association

NFU – National Farmers Union (United Kingdom)

STEM - Science Technology Engineering Mathematics (subject focus in schools)

USDA - United States Department of Agriculture

Objectives

This study aimed to identify why there is a perceived issue with acceptance of women in agriculture and specifically:

- Why are there are so few visible women in the Australian grains industry, when women would seem to be an essential key to the industry's ability to respond to and overcome the challenges of the future and remain vibrant and competitive.
- The perceived barriers to attracting more women into management roles in the grain industry in Australia.
- How women can be empowered to contribute to agriculture; specifically, in advocacy roles, food security and development.
- How industry participants can raise awareness and advocacy to build diversity into all aspects of agriculture.

Chapter 1: Introduction

The Australian family farm is still the backbone of the agricultural industry and is a unique unit in modern industrial society because all or most members of the family participate in both production and reproduction, although women, often as unpaid, 'invisible' workers.

Since the farm family is both an economic and a social unit, the farm women may be called upon to combine several roles, contributing to the farm business as well as performing the tasks of wife, mother, volunteer and more. Consequently, the role of farm women is a complex one with many facets.

Women are farm managers, office workers, production workers and family counsellors. They are decision-makers as well as labourers. They are often concerned for the survival and wellbeing of both family and enterprise. These interrelated, multi-dimensional aspects of farm women's work, make it extremely difficult for the family unit to replace them with outside wage-workers.

The survival of most family farms would be immediately threatened if wives were to cease their contribution – off farm work. Women produce at least 49% of real farm income in Australia, however a Google search today for "Australian farmer" will show that 80-90% of the images will feature men, not women (The Invisible Farmer Project).

Because of the high input, women on grain farms have tended to become invisible.

Our industry needs to adjust and find solutions to ensure women farmers are actively supported and engaged in information transfer to increase their confidence and ability to have input and making informed decisions for their business.

The gender gap in agriculture has been identified although the disparity has not been bridged. It is not just the representation of women in agricultural fields, it is also the inequality in a woman's earning power and the hours worked. The discrepancy of earnings for women is 21.8% less than men in any equivalent agriculture sector and women in management roles is only 14% (Brown, 2017).

In the 2016 Gender Composition of the Workforce report, it identified women in the agriculture, forestry and fishing industries work the most full-time hours of any sector (Workplace Gender Equality Agency, 2016). The same report identified that 2% of women are

unemployed when compared to the male counterparts in the agriculture, forestry and fishing industries (Workplace Gender Equality Agency, 2016). This is not where the discrepancies conclude; women are 16.6% less likely to have paid leave entitlements (Workplace Gender Equality Agency, 2016), which will create socioeconomic issues and is the second highest of all sectors described in the report.

It is not just agriculture that lacks women in leadership. Interestingly, only 3.5% of ASX200 companies have a female Chief Executive Officer (CEO), with only 12% of directors on these boards being women (Australian Bureau of Statistics, 2012). From an education standpoint, the women involved in agriculture have an average incidence of tertiary education that is double that of men (Marslen, 2015).

The traditional masculine image of the farmer is reflected in the fact that men made up the majority (72%) of farmers in Australia in 2011. Women did, however, account for a sizable minority of the nation's farming workforce (28% or 44,700). The proportion of female farmers has fallen slightly in recent decades (from 30% in 1981), even as the proportion of women in other occupations has increased (from 37% in 1981 to 47% in 2011) (Australian Bureau of Statistics, 2012).

Women on farms also tend to have a higher incidence of paid off farm work.

The contribution that women make to the nation's farm sector is not simply measured by the number who report farming as their main job. It is also necessary to consider the many other women who live in families where their partner is a farmer. In 2011, this included around 35,100 women who had a job outside the farm, helping supplement farm income while also supporting the operation of the farm through other means, with more than half (57%) doing 15 or more hours per week. Equally, there were around 16,000 women in farming families who were not employed in paid work, but most (79%) spent 15 or more hours per week doing unpaid domestic work (Australian Bureau of Statistics, 2012).

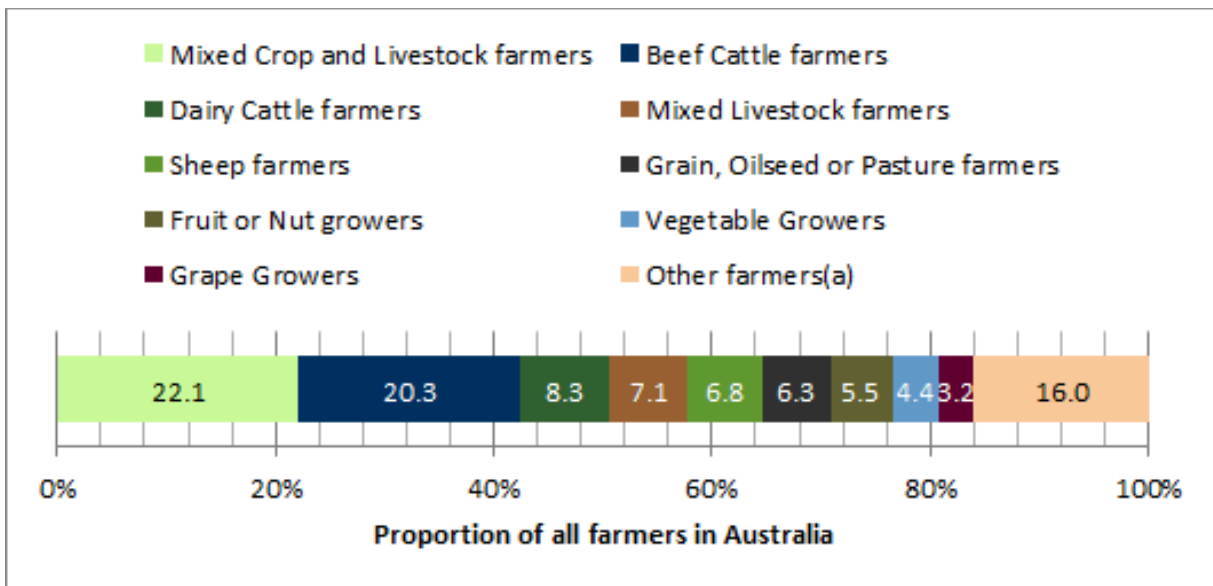


Figure 1: Farmers in Australia - (a) Includes sugar cane growers, poultry farmers, flower growers and apiarists, etc. Source: ABS 2011 Census of Population and Housing

To build a sustainable agriculture industry, structural and cultural change is required, and will allow the diversity of gender, background, culture and age to drive agriculture into the future. It could be argued that the lack of embracing diversity has been to the detriment of agriculture. This is highlighted by the historic notion that a farmer’s son will also be a farmer. What about a farmer’s daughter? Or further diversity by including those not born into agriculture? Unfortunately, the sector has not yet identified opportunities or developed ownership structures for people, let alone women, to make the transition into agriculture.

The lack of women in all facets of agriculture is alarming. It demonstrates the need for change. Changing the attitude of agriculture, creating inclusiveness, strengthening leadership and creating opportunities will help encourage women into their agricultural field of choice. This report aims at identifying the key components to changing the current dynamics of the Australian grains industry, specifically, with the intention to detect the current underlying pattern and offer solutions.

Chapter 2: Case studies - Arable Farmers

Iris Bouwers

Crop Producer, The Netherlands

Iris Bouwers is a 23-year-old politically active student, currently studying agribusiness. Iris is actively involved in Dutch Young Farmers, and is currently the International Representative to the European Union. (CEJA).

Her parents are arable farmers growing 160 hectares (ha) of crops. She has another sister who is not actively involved in the family business. At the time of the visit, the Bouwers were harvesting malt barley, and planting valerian (a herb used in homeopathic medicine). Iris's parents are neutral to the idea of having a girl run the farm. They advised the study of agriculture at university and Iris began studying international food science, which had a high percentage of female students. The agribusiness degree has only 40% female students, while there is only one female student of the 30 enrolled in the arable agriculture course.

Iris works on the family property during university breaks, and feels as if she belongs there. Iris stated that if in the future, she has a partner, then they must accept her passion for agriculture and her active role in the family farm, and not assume the farm is theirs and try to take a leadership role.

Iris feels that the machinery required in arable farming can be a barrier to females becoming involved. Machinery is technical, and lack of knowledge and ability to repair or understanding the machine can be intimidating. Iris feels the need to be independent and does not wish to be 'vulnerable' and rely on males to run machinery. She lacks knowledge and feels insecure with that lack of knowledge.

Iris believes women are more detailed in their approach to their jobs, and in general take more pride in getting it right. The issue of lack of skill and understanding of machinery repairs and operation are being worked through by having a facilitated role model and an associated portfolio of photos, simple videos and notes developed by talking through the issues as they arise. The attitude of men can be a barrier, particularly men with sexist attitudes. Iris has observed through her work with CEJA that the men from some countries appear to be far more sexist than those from others.

She is very proud to be advocating for positive change in agriculture.

Djuke van der Maat,

Fruit Producer and 2011 Nuffield Scholar, The Netherlands



Figure 2: Djuke van der Maat. Source: R Wilksch

As the only female fruit trader in the Netherlands, Djuke van der Maat is passionate about educating urban people about food production and agriculture. Djuke is from a family farm and has one sister, both of whom studied agriculture at university (her sister is an agricultural consultant). Djuke said that her parents, originally neutral to the idea of her becoming a farmer, were really encouraging once she had made the decision. Their farm is considered a traditional mixed farm, producing both fruit and animals with a farm shop selling produce. Perhaps less traditional is the fact that the farm business has a real educational bent with Djuke organising events with a hidden message to promote food and agriculture.

Traditionally in this region the eldest son took over the property, but that is changing now, with the 'farmer' in a family being the most qualified person for the job. Djuke sees the future of agriculture more about getting the right people for the right job, rather than specifically getting a woman for a job to fill a quota. She acknowledges it is very difficult to manage the work/life balance in agriculture, particularly because often in agriculture you live where you work and never completely 'switch off'.

Barriers or difficulties that were identified by Djuke as impediments to encouraging women into agriculture included:

- physical strength, occasionally, and

- attitudes of others in the industry. For example, some of the traders she deals with respond to her (male) partner rather than to Djuke.

Attitudes are changing as more people acknowledge women can be farmers.

Another challenge arises when a farming woman finds a partner. Most often a man expects a woman to move her life to him, making it difficult for her to remain on her own farm. There is also an issue of childcare and child rearing in a self-employed role. It is difficult to take time from a business to raise children, and society still sees this as a traditional female rather than male role. Djuke posed the idea that perhaps a government could fund maternity leave for agricultural entrepreneurs for a three-month period.

Jennifer Jacobs

Arable Farmer, Illinois, USA



Figure 3: Randall, Jennifer and her father. Source: R Wilksch

Jennifer is a fourth-generation farmer who studied Agricultural Business at college. Jennifer works with her father on 1,400 acres (560 ha) of owned and leased land. She has a brother and sister who are both not involved with the farm. The opportunity was there to come home and work on the farm post-study, and she took it. She cites her parents as a major influence as to why she is a farmer. ‘Dad always said put your mind to it and you can do it,’ Jennifer recalls. She goes on ‘I didn’t know girls weren’t supposed to do it (go farming) until I was told by someone outside farming!’

Jennifer believes it is important to understand every farm operation and be familiar with all aspects of the business. There have certainly been times when agriculture salesmen have turned up and demanded to speak to her husband, or ‘the boss’. They have lost business opportunities as Jennifer has shown them the door!

The author had the opportunity to sit with Jennifer on her Case combine while harvesting her corn crop, a new experience as an Australian wheat farmer!

Jennifer and her husband Andy have a particularly interesting arrangement. The author spent several hours with Jennifer and her father, riding (and operating her combine!) until Jennifer had to leave to pick up her children from school. The author then drove 10km and spent time with Andy on his combine, harvesting corn on his property. Andy works with his brother Jeff in a separate farming enterprise to Jennifer and her father.

Andy's perception (on women in agriculture) is that, as farming is a business requiring a lot of cash, part of the problem is financial institutions (predominantly run by men). They do not trust women to run farming businesses and it appears to be far more difficult for women to borrow money to farm compared to their male counterparts. He says the agricultural industry needs to learn to trust women, so do bankers, but he feels it will not happen completely for at least another generation.

Erica Sage

Arable farmer, Canada



Figure 4: Erica Sage. Source: R Wilksch

From a young age, Erica Sage rode in the combine and always knew this is where she wanted to be. Erica is the eldest of three girls, her youngest sister is not involved in agriculture.

Erica's father passed away seven years ago and she manages a very large grain production business. Erica runs a 14,000-acre (5,700 ha) grain farm in Canada with the assistance of her grandfather. They employ seven additional full-time staff. They run four combines plus custom (contract) seven or eight more. When they invested in a new seed drill it was the first in the area.

Erica strongly believes that farming must be in you and you have to be passionate about it to succeed. She knows only a handful of women actively involved in farming. Attitude towards women is one of the main barriers to their involvement but times are slowly changing.

Erica had strong role models in her father and grandfather.

Erica says the books are where you run a farm and she thinks women are better financial managers, with less risk taking. She finishes up by adding she is also good at holidays!

Arable summary

The underlying commonality between these women is the identification that the most qualified person is best suited to taking on managerial roles, particularly on their family farming operations. This highlights the need for continued education equality in the agriculture sector. Since the 1970s, when agricultural degrees permitted women scholars, the ratio of men to women enrolled finally showed parity in 2003 (Pratley, 2017). The flow-on effect of this may only now be showing sign of creating a closer level of equality. Further, Erica highlights the requirement for attitudinal change, regardless of education. This is a fundamental sociological issue that may take further generations to change, regardless of agricultural sector.

Chapter 3: Animal Production Farmers

Chris Ferguson

Livestock farmer and 2010 Nuffield Scholar, Australia

Chris Ferguson and her daughter, Matilda, farm livestock, primarily goats in outback New South Wales.

Chris outlined the tradition in Australia where males inherit properties and women have a career then give it away to move to the farm and become primary carer for the children. Chris sees a lot of resistance from the in-laws (owners of the farming land) to change when a daughter-in-law joins the family. Chris states her family is an example of the industry norms, like it or not. The challenge is that these societal norms are very difficult to overcome which means women joining farming businesses need to be tougher.

Chris believes that there needs to be an open discussion about how farming men react to women stepping up in farming businesses. She believes that there are barriers to the success and engagement of women in agriculture, including the assumptions made that women's opinions are not as valid as her male counterpart, coupled with limited opportunities to voice their opinion. Further, rural social roles are still quite traditional and support is required for success of a business or individual, with fathers being an instrumental part to validating their daughter's importance in agriculture.

Chris has found women help encourage other women in the agricultural industry and there are a few role models around. It was noted that it is important not to be too butch, it is not a competition of sexes that is the issue. The capacity to demonstrate intelligence and an investment of time is far more critical to the success of agriculture.

Social media has really helped, but not always. It can be too sexist and therefore not beneficial.

Chris engages with:

- Various agro-photojournalists on social media
- Graziher magazine (<https://www.graziher.com.au>)
- Her own Facebook and Instagram posts @lifeinthemulga

Ann Moore

Dairy Farmer and 2011 Women and Agriculture Award for Innovation Winner, Cork, Ireland

When asked, 'why don't more women farm?' Ann Moore replied immediately with a laugh, 'Women don't like machinery!'

Ann is a farmer's daughter trained as a chef and after getting married she ran a farm guest house. Her husband David managed a dairy until diagnosis with Multiple Sclerosis meant a change in his work situation. They decided to continue farming, as Ann is an optimist (a trait she sees as critical in farming) and Ann took over running the property, selling the guest house.

Anne feels women are a lot more cautious by nature and more risk averse. Ann does know of other women farming, but not by themselves, always as part of a partnership. Women often look at value-adding farm produce or diversifying with simple changes to the business. Most women work off-farm in order to provide another income or help pay for machinery.

Women are often restricted in their career choices as they are still the primary caregivers for the family, bringing up children. Ann gave an example of a man that deliberately milked his cows later in the day to avoid looking after the children!

Women are more interested in animals rather than grassland management in general, and Ann felt this is the nurturing aspect of females.

The regional agricultural newspaper has a section devoted to women, written by women, but it can occasionally focus too greatly on the traditional 'housewife' tasks, rather than articles about progressive female farm managers.

Ann feels farms are great places to bring up children, as farm kids are more resilient and learn how to work. Her son is currently at agricultural college where there are more females than males enrolled in his course. Ann's daughter doesn't want to be involved with the farm as she doesn't wish to be a slave to the farm.

Valerie and Oliver Gerber

Dairy Farmers, Switzerland

Producing milk from organically raised cows for premium organic Gruyere cheese production, Valerie and Oliver focus on producing a premium product. Valerie is a qualified veterinarian specialising in artificial insemination, who says she was one of two girls out of 25 in her university course. Valerie says that there are growing numbers of women now enrolled in

agricultural university courses, but that is primarily because food sciences are now included in the agricultural sector. There is also a greater encouragement of women into business-building courses, to try and make women more involved in the business. Historically, Switzerland has had significantly different regions with completely different attitudes to women in agriculture. In some parts women did all the milking, while in other areas, women were not allowed in the milking parlour.

Maeve O'Keefe

Dairy Farmer and 2015 Nuffield Scholar, Cork, Ireland

Maeve O'Keefe is a 2015 Nuffield Scholar, dairy farmer and inventor of the Inspect4 cattle hoof paring rollover crush.

One of four daughters, Maeve states that her father was a strong influence in her wanting to be a dairy farmer. Maeve's mother always wished to be a dairy farmer but was discouraged by her father as it 'wasn't a woman's place'. Maeve says that women do not rate themselves as farmers, often talking down their abilities and skillsets. There are also cultural and historical influences discouraging women from taking up agriculture as a career path. If for several hundred years, the farm has gone to the firstborn son, it's a difficult thing to change if a girl wishes to go farming!

Inspect4 Cattle hoof paring rollover crush

Cows go lame in the dairy industry, requiring the animal to be restrained and the hoof manually lifted and inspected by a farmer or veterinarian to determine the cause of the lameness. This task can be both difficult and dangerous as the animal is stressed and liable to kick during the process. It is also a very physical task to restrain a large animal, and not a task for the faint-hearted. With the assistance of the farms engineers, Maeve designed and built a hydraulic crush that securely holds the animal and lays it over, allowing the operator to inspect all four hooves while the animal remains contained and calm.

Rather than see physical strength as an impediment, clever thinking designed a better system. The crush has been shown at field days and won several awards, and although Maeve has faced some hesitation from some that a woman could design a better system, she has actually been told by one man that his wife would not let him buy the crush!

Regula & Ueli Bach

Dairy Farmers and cheesemakers, Switzerland



Figure 5: Regula Bach making Raclette cheese in the traditional manner over a wood fire.

Source: R Wilksch

At 1,700 metres above sea level, Regula and Ueli Bach were making Raclette cheese at their summer dairy pasture when visiting. Regula explained that there are many women farmers in the mountains, but all are part of a team as it is difficult to get the work done as a single work unit. Most common is a husband and wife team. Regula took over her parent's farm when she got married. It is 45 ha, milking 23 cows and making cheese. In Switzerland it is legislated that land is cheaper when passed (sold) to a son or daughter (family) compared to outside family member (new husband).

In the region visited, farms are very small and the businesses are only viable if the woman is working at home to help make cheese, or she works off farm in the tourism industry. Regula does not believe any women would farm on their own as they don't possess the physical strength for some of the tasks involved.

To encourage more women into agriculture, Regula believes girls need to see in a family how farming works, so she stays at home rather than working off-farm. She believes girls need a good "vorbild" (role model) (and she hopes she is!) to her two daughters and son.

In this region, it is difficult to get into farming without being part of a farming family as land prices are frighteningly high, inflated by tourists purchasing chalets for the winter season. The price of land is a significant barrier to both males and females to get into farming.

Desiree van den Brink

Pig Farmer, The Netherlands



Figure 6: Erica Sage. Source: Randall Wilksch

Desiree van den Brink is a full-time pig farmer. Her brother works part-time in the business and part-time in a phosphorus extraction company. The van den Brink's father wanted to be an arable farmer but land is just too expensive in their region of the Netherlands for suitable expansion. The business focussed on building up various animal production units including chickens, cows and pigs. Desiree's father passed away six years ago, and the decision was made to keep the farm, but to focus on the pig enterprise, as it is a less physically demanding business than a dairy.

When Desiree attended university for her bachelor degree she was one of three females in a class of 30 students. She has very much enjoyed the challenge of becoming a farmer, even though thrust into it rapidly through the untimely passing of her father. Desiree feels there are an exceptional number of rules in the EU making it challenging to be a farmer.

The pig business in the Netherlands is relatively small and everyone knows each other. Desiree believes this has been an advantage to her as a woman coming into the industry as people have been very accepting of her and helpful. There are still many limitations to females in the pig industry, primarily relating to the physical strength involved. Desiree uses trolleys to help move feed around, but even the trolleys are built for large men, not petite females. She believes that to succeed as a woman in agriculture, you must really like your job, like animals, love a challenge and be able to put up with the difficulties while waiting for more secure times.

The business is now part of a benchmarking group that is specifically looking at women who manage pig farms, although generally women on pig farms work in the nurseries or do the

books - there are far fewer who run the whole business.

Overall, Desiree believes in having a passion for what you do and really enjoying being involved in your industry.

Henrike Lutke Willink

Dairy Farmer, The Netherlands

Henrike Lutke Willink's entry into farming came about in a very unusual way. Henrike is a dairy farmer on her mother's farm, which was passed on from her grandmother. She identified at 13 that she wanted to be a dairy farmer and came home at the age of 21 to manage the property. As an only child she was not forced to take over the property but encouraged, and she sees both her parents as being positive influences on her career choice. Not many women take over their parent's property, but Henrike pointed out, fewer men are returning to the farm too, as there is not much money in farming, given the workload involved.

Henrike believes that you go farming because of a passion you feel for it, not because of financial reasons. When Henrike first came home she certainly experienced sexism, as no one would assume she was the manager. The Dutch have a term for a female farmer which is a little derogatory; so many Dutch women prefer to see themselves not as 'female farmers' but agricultural entrepreneurs. Her former veterinarian would never acknowledge Henrike as the manager, so she employed a new veterinarian!

Henrike was a contestant on the television show "Farmer wants a Wife", an immensely popular program in the Netherlands with over 4,000,000 people tuning in. This was a confronting experience as her private life immediately became very public. The positive was that many women in a similar situation identified with the struggles Henrike was going through. It is very difficult to manage a dairy and make time to find a partner. There is always work to do; cows require milking every day. Urban people find it difficult to understand the commitment required.

In Henrike's experience, men always place their job at a higher importance than hers. Men seem unable to move from their current location to her farm, or they define themselves as a little bit more important than Henrike. Other men she has met believe their farm to be a little bit bigger, or their cow herd is larger, or more important in some way, and Henrike should give up her farm to commit to a relationship, rather than the man. Males need to see females as equal partners, capable of equal workload, not females as 'lesser' partners, and recognise that

women can be independent decision makers.

Annechien ten Have - Mellema

Pig Farmer and 2014 Nuffield Scholar, Netherlands



Figure 7: Annechien ten Have. Source: LinkedIn

Annechien ten Have-Mellema is part of a family partnership that raises pigs, wheat, sugar beets and corn in the Netherlands and is a member of the Global Farmer Network. The farm is 200 ha plus 70 ha leased, with a pig farm of 600 sows to finishers and a 0.7 megawatt biogas plant.

Annechien is one of three children (a brother and a sister) and works on the farm with her husband, son and five employees. She is the only woman. She took over the farm from her parents in 1993.

Initially Annechein's parents did not encourage her into farming. She wanted to be a farmer and her mother thought not. She wanted to go to agricultural college, but her parents pressured her into teacher training and in her own words she was 'not a good teacher'. Interestingly other people knew from the beginning she was a farmer.

Annechein's husband Manu had a small dairy farm and worked as a teacher going to the farm once a week to help. His parents retired and the two farms were 20km apart. Her husband sold the dairy and bought land next door to Annechein's farm and put it into pig finishers.

In 2006, Annechein's son came into the farm business.

Annechein doesn't know other female arable farmers and has faced difficulties as a woman in agriculture. She is interested in farm policy, but nobody was interested in her. In 1982 she did a course on Women in Policy, interviewing a range of people from farmers and local organisations. She asked them what they thought of women in agriculture and did they have a role in industry or on farms. Sadly, their responses were that they could record the notes of a meeting but not work on farm.

Annechein's daughter works in a hospital and her son, Detmar, works on the farm; her daughter may one day be interested in becoming a farmer. Her son loved moving here (to the farm), he loved driving the tractors! Barriers or limitations to more women working on farm include:

- The work is too heavy.
- The management is too technical.
- The money; it is a big investment.

Annechien believes that a change in attitudes and belief is needed. Generally, men don't think that women have the capacity to farm. It is not always said outright, but men do not think women have experience. Women often have better communication skills and a better understanding of how people work.

The situation may be changing. Only two women at school with Detmar ended up in agriculture and they went into contracting.

Annechien is the first woman in a big sector of the economy. She has been chair of Dutch Pig Farmers for eight years. This is unusual because she is a woman and lives in the north while most pigs are in the south or east. She also started a blog as a way to get people to know what she thought and wrote regularly so members could know what was going on.

It is good for women to have experience and good for young women to have role models. Agriculture needs to invest in role models and promote an awareness that there are no women in arable farming. Annechein's suggestions include identifying role models or creating them, with focus on promotion and visibility to potential agriculture advocates to create awareness and engagement.

It is always positive when people believe in you and Annechien has had the belief and support of her husband Manu.

There needs to be an environment that encourages women in agricultural policy roles and they need to see an appreciation of their skills. In Brussels Annechien has been treated well but she was over 40 years old when she got there. She was also determined about what she wanted. She never aimed to be on Dutch Pig Producers but the previous chair had introduced her everywhere (a good role model) so she became chair when the previous one retired. Annechien had clear vision but it was big commitment.

Annechien's next project is starting a new website to market pigs differently. She wants her pigs to be differentiated from the majority. They are fed differently (lupins not soy, locally produced); a different race of pigs; and grown with a focus on better animal welfare.

Laura Laing and John Smith

Communications Business and Rancher, Alberta, Canada



Figure 8: Laura, John and Randall. Source: Randall Wilksch

Laura Laing and John Smith farm in Alberta with John's parents in Alberta. John's parents took over running the farm from his mother's parents when they were 30 (there were only daughters in the family) and share the workload very evenly. The family, including John's brother, is going through the process of succession planning and his parents are having a hard time letting go. John's mother worked harder than a man, and believed that work was her identity.

Laura was formerly a rancher but now runs a communications business. She doesn't drive tractors as that would take a job away from John's mother.

Laura has a background in marketing, people and communications with roles of General Manager, Chief Executive Officer and President, but is often asked about her husband or partner.

Laura and John are building a barn with an office, just away from house, to provide a physical distance between work and home. This will stop people just dropping in and not taking Laura's business seriously.

Laura has made the change from a leader in business in marketing to a ranch. People and the way they interact and feel is completely different in agriculture compared to the corporate

world.

Laura believes that women are not expected to contribute professionally to agricultural businesses, particularly from an operational standpoint.

Gender equality should enable farm partners to stand up for the excellence of the other person in the business. Laura stated that, in her opinion that women appear to hate gender equality more than men. What she was identifying was that not all women want to be recognised due to their sex, but rather through their ability and capacity to do the required job.

There needs to be a change in thinking that males should be the first to take over a farm. Countries such as France, Germany and some Arab countries maintain a law that requires sons to take over the rural land of their forefathers. This barrier alone causes incredible divide and inequality. Further, there is a difference between the perspective of how people interpret 'confidence' of men and women, as confident men are seen as assertive, but women are seen as aggressive, a word that immediately implies negative overtones.

Laura finds the only time she has seen women put down is in agriculture, on the ground (field). In business equality is better, although agriculture is way behind. Agriculture now has a technological focus and perhaps this may change opportunities for women. Laura identified some barriers to women moving forward in agriculture as a lack of intellectual conversation around the subject and industry attitude as a whole. She further stated that through her experience in media that women are better at marketing, stating that women have the ability to make decisions of change using effective communications.

When it comes to taking holidays; Laura says yes and John says maybe. The intergenerational challenges faced within a family business are that predecessors may not always see change as a good option and may have a different perspective on priorities and the work to do.

Lorilee Schultz

Dairy Farmer, Mil R Mor, Orangeville, Illinois USA



Figure 9: Lorilee Schultz. Source: R Wilksch

Lorilee Schultz grew up on a beef and sheep farm and always wanted to be in agriculture, not necessarily farming. With fortunate timing she had the opportunity to work on her grandparent's dairy. One of her four brothers worked on the dairy for a while, but in 2009 there was no money in dairying so he went truck driving.

Lorilee admits she could go elsewhere for more cash but she loves dairying.

In 2003, when Lorilee was at university she estimated that 41% of students were women; in 2016 there are 52%. In the agricultural business course, 80% were male while in animal studies 80% were female. Lorilee has many friends in the dairy industry and she has observed that there are more women than men. Yet, there are more men than women on grain farms.

Lorilee only learnt to drive a tractor five years ago, and lacks confidence with machinery so hires her brothers to take care of it. She is daunted by the crop side of the operation and observes inequality in the relationship between female managers and agronomy or grains industry representatives. Her agronomist is not used to women asking questions and he checks with Lorilee's boyfriend to see if she has made right decision. She finds in her situation that men do not trust a woman to make a good decision.

As for barriers to women moving into agriculture, Lorilee states, similarly to other women interviewed, that the sociocultural influences, male attitudes, physical strength in some instances, as well as machine maintenance and equipment and tools design.

- Tools (pliers and injection needles) often not designed for smaller hands.

There are some issues with using family as labour which require good people management skills. There are also pressures from previous generations to work harder.

As for holidays, Lorilee finds it difficult to walk away from the farm as it is hard to find someone else to do the job.

Animal production summary

Again, education had a strong theme amongst the livestock sector interviewees, noting that the number of women enrolled in Australian university agriculture courses has now surpassed that of male students (Pratley, 2017). There could be a flow-on effect into the industry of female students fulfilling senior management roles, which are currently male dominated.

Livestock is currently leading the industry in the participation of women in educational institution enrolment. The value of education may become apparent through development of machinery, implements and tools that facilitate better management and practicality components for women to work physically on the land. It was repeated many times by female interviewees that their real enjoyment lay in the care and nurture of their animals and therefore added to their satisfaction with their work.

Chapter 4: Agribusiness, University and Government

Maree Crawford

Technical Services Manager, Northern Region (NSW, Qld and NT), Elders, Toowoomba, Queensland, Australia

Maree Crawford is an experienced agronomist and passionate about women in agriculture. She was recognised for her efforts with an Elders National Operational Performance Award. At the 2016 Australian Summer Grains Conference, Maree spoke about how women are a powerful force for growth of the industry.

“Women don’t have adequate representation on rural decision-making and policy forming bodies. They are under-engaged in agriculture, particularly in grain,” said Ms Crawford.

“It’s not just a gender equity issue – it’s an issue for the Australian agricultural sector. Lack of influence and involvement from half of a potential resource is a lost opportunity for input and growth,” she said.

“This isn’t a male versus female thing – it’s about selling a message of sustainability.”

“For the industry to see growth and remain economically sustainable we need to enable women to have greater involvement in the running of the farm whilst still being able to meet domestic commitments.”

“The more we lead by example and have strong women in leadership roles mentoring those below them, the greater chance we have of building a sustainable industry with equal gender representation.”

Extracts from: <https://eldersrural.com.au/2016/06/14/passionate-pink-shirt-maree-crawford-wins-national-performance-award/>

Maree highlights the historic culture in agriculture where women never played strong role and have been in the background. The grains industry has a very high proportion of businesses where only one partner (often the husband) works on farm while the wife works off farm. And this follows on to the next generation where farmers expect their daughters to work off farm.

The grains industry has seen slow uptake of technology and is an island on its own.

Maree observes that many baby boomers have a general lack of appreciation of women and their skills. She also feels that some of the big agribusiness corporations are very macho, but sees a strength in Elders as she believes they are better (more balanced) than many similar agribusinesses.

Maree has a few ideas for encouraging women into agriculture:

- Raise awareness of gender equality both within agriculture, agribusiness and the wider sector.
- Recruit more ambassadors, role models and mentors.
- Training (female) agronomists.
- Ask male farmers, “Have you engaged the other half of the partnership?”
- Engagement of all business partners is necessary from agronomists, sales representatives and agribusiness advisors as it helps with a broader perspective, understanding and inclusion of all parties’ agronomists and other agribusiness advisers and sale representatives should not just talk to the male farmer in his shed. They should engage with both partners within the relationship.
- Engage women in forums, OHS, mental health and maintain knowledge of products and their uses.
- Make industry events more female friendly. Women participation in GRDC updates is limited. Solutions to this could be to provide child minding, removing some limiting the barriers to female participation.

Maree sees many advantages for agribusiness to promote themselves in a different light to advantage and be imaginative about engaging women at industry events. For instance, it should be possible to change perceptions and show that the grain industry is not all about tractors. Similarly, industry meetings should plan their sessions around broader topics which include women and which treat men and women equally and engage the whole family, starting with the children by sponsoring competitions in schools. The grains industry is lagging behind other sectors in Australia – women in grains are mostly invisible. Women are more visible in horticulture and beef, for instance Meat and Livestock Australia, Ausveg and Hort Innovation are all playing key roles in making sure women are engaged.

Maree likes to focus on the fact that ability has no gender and that encouraging women into the grains industry requires strong mentors, both male and female.

Carla Muller

Agricultural Economist, Dairy NZ, New Zealand (NZ)

Carla Muller grew up with a working mother (a midwife) and a stay-at-home father. She studied economics at Massey University but found pure economics boring. Agricultural economics was not available so she completed honours in environmental science. Carla works in environmental economics at Dairy NZ and her partner is a high-country shepherd.

Carla is passionate about next generation to solve the next set of issues in agriculture. She talks in schools and strongly believes in the need to convince people agriculture is important through education. She sees agriculture as an important profession, like any other occupation, and feels it is important to dress well to influence the next generation.

Carla observed a recent economics conference in Australia that only 5–10% of the delegates were young women. Industry needs recognise the importance of a role model and make women participants visible to the next generation, highlighting the fact that traditional farming is not the only way to be involved in agriculture. She highlights that you can't tell five-year-old girls they can be a farmer if they've never seen a female in farming.

At New Zealand universities the dynamics are changing slowly. In the scholarship program 43% are female, with more women applying than men and there are more women in internships although the principle science jobs are still dominated by men.

Carla suggests the ratios of women to men in NZ are:

- 50/50 in extension (often from farming background).
- 60/40 in development type roles (less from agricultural background (but Massey University and Lincoln University provide agricultural experience)).
- Research fields are dominated by men.

Her final advice was to always remember that there are great careers in the support services, not just in farming.

Minette Batters

Deputy President, National Farmers Union, London, United Kingdom



Figure 10: Minette Batters. Source: R Wilksch

Minette Batters is the first woman in the 106 years of the National Farmers Union (NFU) to hold an office holder leadership position. Even though the NFU has such a patriarchal history, Minette feels the gender equality issue is changing. Government has intervened by manipulating levies to force boards to look at gender equality and this in turn has changed the acceptance of women in agriculture. Minette believes a focus from the top down will encourage more women to become involved in agriculture at the grassroots level. The NFU now has six women in positions of responsibility (from a total of 90 positions). She strongly believes in doing the job well as an individual and never playing the feminist card. Empowering women, giving them genuine roles of responsibility, is a positive outcome for agriculture because Minette feels women are, in general, more trusted than men.

‘Women (farmers) appeal more to consumers, because they (the consumers) are most often women’.

Agriculture, in general, is poor at engaging with the wider population, and has not sold its story well. The greater population of the UK has turned against farmers, as agriculture has a unique position in society where people are farmers by birthright, rather than ability.

Dean Helene R Dillard PhD

College of Agricultural and Environmental Sciences, University of California, Davis, California, USA



Figure 11: Dean Helene Dillard and Randall at UCD. Source: R Wilksch

Dean Dillard met the author in a very limited time window, but the discussion was so robust the time was extended after she generously bumped her next meeting!

This was held at University of California, Davis (UC Davis) where the author was an agricultural exchange student in 1997, and it was enjoyable coming back to the campus nearly 20 years later.

Back in 1997 at UC Davis there were approximately one third women, but Dean Dillard confirmed that the veterinarian courses now have 90% female students. Across the College of Agriculture and Environmental Sciences there are 62% women enrolled. There is a greater proportion of women in the animal science degrees; women seem to be more accepted in ranching than crop farming. Dean Dillard doesn't quite understand why this is, but suggests, 'Grain businesses need to look at ranching businesses to work out why they've done it (engaged more women) better.'

There are still barriers for women to get into agriculture, including the sheer cost of the asset required, and not being taken seriously by banks and other agricultural businesses. People still assume you cannot be a farmer if your parents were not, which is a bias Dean Dillard finds curious, as the same bias does not occur in other careers. For example, a child can readily be

accepted to study medicine and become a doctor, even if her parents were not. Parents who are farmers often discourage their girls from becoming farmers, as they do not see agriculture as a viable financial business.

Jennifer Wright

Canadian Agricultural Human Resource Council, Toronto, Canada

Jennifer Wright is originally from a family farm and machinery dealership business, where her parents were equal partners in the selling of tractors and in farming. During the 1980s her mother was often criticised for attending machinery dealership meetings, as she was the only female in attendance.

She feels that attitudes are gradually changing as the younger generation of women (aged in their early 30s) from the larger farming properties are more involved than the previous generation.

In part, grain businesses have two very intensive periods, planting and harvest, but are less busy for the remainder of the year, so women look for work off-farm, find permanent jobs and do not return. This is different to beef businesses of similar scale, where the workload is more continuous through the year, so women are less tempted to look off-farm for work.

In Canada in the late 1990s to early 2000s, agriculture took a 'bit of a dive' and required a significant turnaround. Positive lobbying turned this around and made agriculture into a positive story with a very successful "Agriculture - more than ever" campaign, among others. This helped promote food safety of Canadian produced food. There have been issues around food incorrectly branded as organic, but uncertified, and sold to consumers, although alleviation of major issues with incorrectly labelled product has been driven by producers educating consumers, primarily female.

The 'foodie' culture has also helped raise awareness of women in agriculture and has had positive flow-on to the export commodity markets too. Women have been primary drivers in this field, helping rebrand agriculture as 'commodity producers involved in food production'.

Jennifer stated that "there is a serious sex issue". The issues she identifies are primarily sociocultural issues that seem outdated but are still apparent in some areas of agriculture worldwide. Issues around getting more women into the grains business are as diverse as, but certainly not limited to:

- Machinery salesmen ignoring women farmers;
 - Male sales people feeling uncomfortable visiting female farmers.
 - Female salespeople can't ride in the tractor with male farmers (as wives become jealous).
 - Female farmers feeling intimidated being the only female at farmer meetings.
 - Male farmers can't visit female farmers (as wives become jealous!)
- Sales meetings held in places like Las Vegas with culture derogatory to women.
- 'Millennial' young women assume that soon 'the old boys club' will retire, but if sons are influenced by their fathers, the myth self-perpetuates.
- Home duties are not done equally, women do more at home, and expected to do more in the field.
- Women who succeed are often denigrated by other women! "Who does she think she is?"
- Female farmers have difficulty accessing the same financial packages as male counterparts. This culture is changing in Australia, in part as the major (5) banks in agriculture are now employing female business managers, facilitating the ability for women to speak to women.

Some of the positives to encourage women into agriculture have been the setup of social media groups. Jennifer spoke of examples, such as:

- A Facebook page began as a social networking/discussion group in Guelph that has grown to over 1,200 members.
- A Saskatoon women's network on social media that has had massive expansion.
- A horticultural program in Ontario that helps women from difficult/underprivileged backgrounds to get involved in food production. Not broad scale grain, admittedly, but women helping other women to get involved in a traditionally male dominated business.

Alanna Koch

Deputy Minister to the Premier and Cabinet Secretary, Saskatchewan, Canada

Alanna Koch has a background in grains and cattle and has had a career in agricultural policy. Early in her career Alanna was regularly the only woman in the room; it is now more common to have more.

In Saskatchewan, 65% of university students are women, while on farms there has been a shift but there are still barriers, particularly from the historical belief that ‘Dad never thought that a woman could do it’.

Alanna believes women need encouraging; they can farm. Technology has transformed the opportunity but they need to remember not to whine.

There is the obvious physiological difference between men and women. Women carry babies. There are options available to manage childcare with local day care and carers coming to the home. Women need to drive this change; get it pushed through. Women are the ones who will come up with innovative solutions, but the reality of cash may inhibit change as in general, women are more risk averse.

Angel Terrell, Linda Cole and Amy Roady & Craig Rataczyk

Illinois Soybean Association, Illinois, USA



Figure 12: Amy Roady, Randall, Linda Cole, Craig Rataczyk. Source: R Wilksch

The Illinois Soybean Association (ISA) is an agri-political body representing the soybean growers of the state of Illinois. They oversee \$US 40 million budget, raised from a levy on soybean sales.

The board of ISA is made up of 24, with six of those women. This change to female directors is a very recent one that has had positive outcomes for the organisation.

CEO Craig Rataczyk said, ‘The association can’t influence the seed breeding companies (Monsanto, Pioneer etc.) or the marketing companies (Cargill, ADM etc.) but it can influence Mom’s in Chicago’.

Illinois has approximately 13 million people, with ten million living in Chicago. The urban

population has a strong influence on rural legislation and associations such as ISA do their best to advocate strongly for agriculture.

The ISA decided the board needed greater diversity of members, and without enforcing a 'quota' type system, specifically targeted women who could be influential in the direction of the board. This has required a behaviour change in the board structure.

Typically, women:

- Don't identify themselves as principal farmers.
- Have constraints such as time and family that restrict them from holding board positions.
- Are less likely to put themselves forward to fill positions.

The ISA has had to specifically target some women, hand-picking and encouraging them to apply for a position, and being prepared to be flexible to fit work/life balance around board members. Occasionally there is a level of jealousy that manifests itself against women who rise to the top (known as the tall poppy syndrome in Australia). 'The women need to be extra special to deal with jackasses!'

The ISA has been concerned about the lack of women in farming but says this is part of a greater trend that globally, less people wish to be involved in agriculture. People want to be involved in food production, but not agriculture. People outside agriculture often seem to be very vocal on issues pertaining to agriculture. There is a stereotypical view of the dress code and attitude of a farmer and it has been difficult to change public perception that sitting on a tractor is only a minor part of running a farming business.

Women moving into agriculture traditionally have been somewhat restricted in their ability to borrow money, but a series of banking and financial reforms has meant that it has been less of an issue than it used to be. The cost of private health insurance in the USA has also meant that frequently women work off-farm to obtain company health insurance benefits.

A STEM (Science Technology Engineering Mathematics) focus in schools and universities has been a positive, with more women identifying career paths that lead from an interest in STEM subjects (including agriculture). ISA has identified that to correct the lack of interest in agriculture by those leaving the workforce, grade school children (and particularly girls) need to be targeted to influence them positively about agriculture.

Women are passionate; indeed, Craig feels they are more passionate than men, but they need to be encouraged, and need to hear that people are interested in them.

Madeline Schultz

Program Manager, Women in Agriculture, Iowa State University, USA

Madeline Schultz grew up on a farm as one of five and it appears there has been no gender bias here. Two sisters work off farm, her brother farms and one sister helps Madeline on the farm. She has four sons, two running silage contracting and haulage businesses and two are livestock truckers. Madeline's daughter Lorilee always wanted to be the farmer and graduated Woman of the Year at university. She asked her grandfather, Bob Miller if she could take over his dairy.

After 42 years, the farm was sold for residential development and the family reinvested in farmland ten years ago. Madeline's daughter manages the dairy (1400 acres, 160 cows, four full time workers) with seven family members (granddaughters, nephews etc) working on the farm part time. Lorilee has the reputation as the best skid steer loader in region!

Madeline saw no problems with a girl getting involved in the farm but is concerned that financial returns at the moment are poor. Lorilee is highly educated and could have done anything and her brothers say she works too hard. Bob says mechanisation has helped, removing many of the physical strength limitations.

Madeline runs a Women in Ag program in Iowa, now fully funded, which is growing. The Iowa Farm Progress Show aims to bring women to the forefront of a male dominated industry. Some examples:

- April, a crop farmer whose husband works off farm.
- Jean was an equal partner who runs her farm following the death of her husband.
- Amy is a fourth-generation farmer, passed down from mother to daughter.

Videos - www.extension.iastate.edu/womeninag

The Women in Ag program is an educational program run across 38 states (to date) started in 2003. They establish a local network, run courses (succession, grain marketing, cost of production, balance sheet, etc.) and encourage the social side of things. The program uses peer to peer mentoring and introduce the groups to key outside people (USDA, attorneys, other professionals from the community). The women determine their own learning preferences and learn from other women in a welcoming environment conducive to learning.

About one third of the participants are new to farming (less than ten years).

Cathy Brown

Dairy Women's Network, New Zealand

Cathy Brown came to New Zealand from a large extended family in Canada where girls were let in, partly out of necessity. She now lives on an orchard of 1.2 ha with 120 avocado trees and kiwi fruit.

Her partner Pete was confident in his right to allow her to be part of the family business. Both Pete and Cathy have their own skill set; she is good at the books and animals, but not machinery so they complement each other.

When coming from another country, there are no paradigms to overlap which may be an advantage. In Cathy's experience, most men have been very good and have not balked at teaching her and answering her questions. She didn't know anything about avocado and kiwifruit and has been taught by men who helped her.

In 2010 Cathy was involved in a Women in Leadership program but she says not all women want to be in a leadership role or on a board. It is important to value everyone's potential and realise that millennials want instant gratification; they want to be instantly successful.

The Dairy Women's Network started in 1998 and has been pivotal in her life through people being willing to share, the power of sharing and being able to help.

The Dairy Women's Network was a woman only board but now has man on board as they required greater diversity within the group.

Dr Pamela Ronald

Professor, Plant Pathology, and Director, Institute for Food and Agricultural Literacy, University of California, USA

Dr. Pamela Ronald is a plant pathologist and geneticist while her husband, Raoul Adamchak, is an organic farmer. In the general population, people trust farmers and organics but don't trust geneticists, driven from the anti GM movement. So, together Pamela and Raoul wrote a book 'Tomorrow's Table'.

Raoul is from an organic farm and his nieces and nephews are anti-science. There appears to be something very different about agriculture and the tendency for people not to trust science. The community tends not to listen to the scientists, resulting in a lack of objective

information. While 30% of the population won't change their minds, 70% remain unsure and can be influenced.

The Institute Food and Agricultural Literacy at UC Davis develops tools to enable scientists, farmers and journalists to engage with the public. There is a lot of interest in food and science but the challenge is to keep the public engaged.

'Tomorrow's Table: Organic Farming, Genetics and the Future of Food' argues that a judicious blend of two important strands of agriculture – genetic engineering and organic farming – is key to helping feed the world's growing population in an ecologically balanced manner. The book has been translated to Chinese, Japanese and Korean.

Agribusiness, university and government summary

The discord between the general population's understanding of agriculture and the wider farming community seems to be evident in all countries visited. It is apparent that technology is beneficial to agriculture and the implementation of further equipment development and advances will decrease barriers to women in agriculture. The fundamental drivers of agricultural diversity and sustainability is the underlying education of the workforce. Agriculture has the capacity for growth purely through encouragement and equality of both genders, increasing the talent pool by nearly 50% in the last 50 years. The diverse workforce will create a better understanding of all issues along with a diverse and beneficial outcome to agriculture.

Conclusion

Over the course of eight weeks the author spoke with almost 70 people, from organised formal faculty and governmental meetings, to casual conversations in McDonalds in the USA, to a woman walking her dog past a field the author was standing in, in Ireland!

The nature of this topic meant dealing with huge generalisations, and this is difficult with those who may be seeking specific outcomes.

Many have asked to summarise why there are less women in the grains industry than other areas of agriculture. While there are very specific answers to this question that exceed the size of this report, there were some general themes.

1. Culture and history

If coming from a country that has a very long history for passing the farm to the eldest son, (for example Ireland or Switzerland) then it is very unlikely for a daughter to become a farmer.

2. Parents

If parents say, either consciously or through their actions, to girls that they cannot be farmers repeatedly, then over time it is very unlikely that the girl will become a farmer. Conversely, fathers who encouraged girls as equal to boys and capable of anything, had a higher likelihood of daughters entering agriculture.

3. Machinery

It was stated repeatedly that girls don't become grain farmers 'because girls don't like machinery' and while this can be seen as a sexist generalisation, it does seem to be based on some truth. In general, women nurture - and favour agricultural industries where nurturing (primarily of animals) is required. Nurturing grain crops or a tractor is not quite the same.

The grains industry in Australia has the highest percentages of partners, predominantly women, working off-farm. The grain business, by its very nature, requires large, expensive machinery. This depreciates rapidly, requiring replacement, and while the farm can usually look after its own cashflow, in the grain business, cash is often short, so partners, predominantly wives of farmers, work 'off-farm' to provide income for a family.

Where is cash in grain businesses? It is often tied up in refinancing machinery. This leads to daughters seeing mothers work off-farm, not as farmers - and the role self-perpetuates. This

is not true for each family business but is a generalisation that seems to ring true with many spoken to as part of this research across several countries.

Children from rural areas are often sent away to school in urban centres and rarely return to live where they grew up, more so in the case of females than males.

However, there is evidence this is changing. When the author came home from university, it was rare to see women directly involved in agriculture, but now they are far more visible.

By the next generation there may be a far more even ratio of men and women. This is to be desired for diversity of opinions and different perspectives on how to feed an ever-increasing global population profitably. It is a very desirable target.

Recommendations

- Education. Include in the current school curriculum agricultural subjects that are not just focused on the practical orientation of agriculture but to include business practices.
- Social complexities pertaining to gender-specific roles are innate in agricultural production and need to be challenged by both parents playing an active role in development of a child's love of the land.
- Create awareness and advocacy that women already are farmers and can become more visible in public roles. Assist women to become increasingly confident to take on leadership roles.
- Governmental policy change – that women can be seen in all roles - from equality in government cabinet to boards of ASX listed companies. This visibility of females in leading roles will work and is slowly changing societies perspective of non-gender roles.
- Massive machinery costs need to be lowered, minimising financial stress on family wealth. This may come about through refinancing options and changed interest rates, or a move to smaller, robotic sized modules.

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Plain English Compendium Summary

Project Title: Encouraging more women into broad scale agriculture: Where are the females in the grains industry?

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Objectives Determine how to encourage more women into agriculture in the Australian grains industry. Identify the issues that restrict women entering agriculture and find ways to change the current ratio of men and women in agriculture. Explore the benefit to agriculture if women become more actively involved from the farm to industry or governmental positions.

Background Being a father of two girls, I have always been acutely aware that either of them may be interested in an agricultural career. Curiosity then led me to ask why there are less women visible than men in agriculture, and particularly in my field of grain production.

Research Participation in the Contemporary Scholars Program and the Global Focus Program, along with eight weeks personal travel, visiting women in all aspects of farming and agriculture, totalling more than 65 interviews globally. Countries visited were Ireland, England, France, America, Mexico, New Zealand, Canada, Switzerland, Netherlands and Australia.

Outcomes Women in agriculture need to be more visible and vocal, to create a better alliance between food producers and food purchasers. By the next generation there may be a far more even ratio of men and women. This is to be desired for diversity of opinions and different perspectives on how to feed an ever-increasing global population profitably. It is a very desirable target.

Implications Increased trust with consumers will improve issues allowing open discussions around the right to farm.

Publications Verbal presentation at Nuffield National Conference, Darwin, September 2017