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Farmer learning preferences

Around pasture and homegrown feed

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1 Executive Summary

The most profitable farm businesses in New Zealand value the utilisation of pasture and homegrown forage first and foremost. They understand the importance of feed grown and eaten at home, and they farm to get the most from this cheapest form of feed.

But what do we know about the learning preferences of our farmers to efficiently grow and harvest homegrown feed in their farm systems? The purpose of this report was to provide pastoral agribusiness with key insights, including feedback from farmers, around learning preferences and how they make decisions. Pastoral farmers are defined as those who primarily use animals to harvest homegrown forage from their land, turning this into saleable protein, that will ultimately be sold off farm.

Specifically, this report looked to address two research objectives:

1. To identify a clear and deep understanding of how and from whom (or what) New Zealand pastoral farmers learn about pasture and homegrown feed for their farm system(s).
2. Understand the main learning preferences and what is important to the New Zealand pastoral farmer making forage related decisions on farm.

The research used a **literature review**, fourteen **semi-structured interviews** (seven red meat sector farmers and seven dairy sector farmers), as well as an **example of farmer learning through extension** in a three-pronged approach to address the research objectives.

The literature review gave a theoretical base to current knowledge, focusing on research around learning preferences of farmers and how the social aspects of relationships, people and trust play into learning.

From the interviews, a thematic analysis of responses identified that there are two broad pillars (aspects) around farmer learning. Firstly, a pure **learning aspect**, and secondly a **social aspect**. Within each of these key themes were identified in the learning aspects **Awareness, Information** and **Decision making**, and in the social aspects **People** and **Trust**. The people theme is closely tied up with farmer networks.

For learning to occur, awareness of a concept, idea or management practice is always the first step. Awareness can often lead to 'seeking of more information' and/or a 'give it a go' approach, as our farmers are practical people. Other people/ networks play a major role in farmer learning, and most farmers prefer to learn from others and/or use other people or trusted networks to gain awareness, learn more and help make decisions. Trust over arches nearly all of learning. Farmers must trust in aspects such as information, people, companies, and the science - to be open to learn. And information presented must be relevant to farmers/farm systems, with many farmers preferring science or and data driven information.

Key recommendations for pastoral agribusiness to foster farmer learning are:

- To aim first to create an awareness of the forage related concept or practice.
- Ensure information provided is science-based or verified
- Know who the target audience(s) is/are, be clear on this. Break them into groups, ask questions, listen, deeply understand regional or system challenges and quirks.
- Information must be relevant to the target audience.

With this in mind, create a fostered learning environment, potentially through closed on-farm groups or any system that brings farmers together. Deeply understand that trust must be gained in order to succeed, that it takes time for this to build, but being part of this inner network is a golden place to be, and provides an opportunity for long-lived learning relationships.

2 Acknowledgements

Having aspired to do this programme for some years now, I am so grateful that I landed in K50 so firstly, I would like to thank the support of the New Zealand Rural Leadership trust for making this possible. Thank you to the rural leaders programme team including Scott Champion, Patrick Aldwell, Lisa Rogers and Annie Chant. The learning environment created within the phases of Kellogg uses many of the pillars discussed within this very report, and on top of this it has given me an empowered sense of self and a huge uplift in leadership capability; all whilst making friends and strong networks for life.

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Thanks to Aaron Meikle from Beef + Lamb New Zealand, having contacted a number of industry people it was your help specifically was invaluable; sending countless emails and resources around farmer learning and suggesting the Red Meat Profit Partnership (RMPP) work was a good real life example to use.

Fraser. Thanks for the huge support this past 6 months as I squirreled away so regularly and/or talked about my project and leadership things almost constantly for many weeks on end. I know you are now also an expert in half of the course material as well as farmer learning preferences! Thanks for always being there for me, and always folding the washing.

Finally, and importantly. Cohort 50! It was amazing to be part of this (best) crew, all those conversations and time spent together adding huge richness and layers to the total learnings throughout. I know we will keep in touch.

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4 Introduction

In New Zealand farm systems, pasture and homegrown feed remains the cornerstone of our ability to produce grass-fed protein, cheaply for both ourselves and our export markets (Stewart, 2022).

The most profitable farm businesses in New Zealand, value the utilisation of pasture and homegrown forage first (Addis et al., 2021; Neal & Roche, 2020; Stewart, 2022), from the land they are already the stewards of.

With this in mind, what are the learning preferences of our farmers to efficiently grow and harvest homegrown feed within their farm systems?

What do we know about how our farmers learn and gain knowledge about pasture and homegrown feed on their farm?

The purpose of this research is to get clear insight and understanding about how and from whom (or what) New Zealand pastoral farmers prefer to learn about homegrown feed for their farming businesses.

What are the learning preferences of New Zealand pastoral farmers?

What resources and who are they looking to for information to maximise returns from this cheapest form of feed?

We consider pastoral farmers in New Zealand as those whose primary day-to-day is using animals to harvest forage from the land they are the stewards of, with these animals turning this homegrown forage energy and protein into saleable protein that will ultimately be sold off farm. Red meat sector (sheep, beef, deer, wool), as well as dairy farmers in New Zealand are the focus of this research.

This report investigates the key learning preferences of farmers; what is important to them in their learning journey, how they get information and what may lead them to use that information. Findings from this report will help pastoral agribusiness understand the preferred ways farmers learn, and what influences them in making decisions around forage and management practice in relation to homegrown feed. The hope is that the key recommendations can then be on-boarded to help drive an end-user focused approach to the most wonderful and most cost effective resource in New Zealand farming - home-grown feed.

5 Research aims and objectives

The key objective of this research project focuses on gaining clear and up to date insight on pastoral farmer learning preferences in New Zealand in relation to home grown feed.

The specific aims of this research are to:

1. To identify a clear and deep understanding of how and from whom (or what) New Zealand pastoral farmers learn about pasture and homegrown feed for their farm system(s).
2. Understand the main learning preferences and what is important to the New Zealand pastoral farmer making forage decisions on farm.

6 Methodology

This research was investigated by bringing together insights from two broad angles, and a third lesser one.

1. A literature review covering the to-date research around farmer learning.
2. A thematic analysis* conducted on the results of fourteen semi-structured interviews of pastoral farmers from all around New Zealand.
3. A real-life example of fostered farming learning is covered. This relates to a formal extension programme in the sheep and beef sector in New Zealand; the Red Meat Profit Partnership (RMPP) work with the Action Network groups.

While the key focus remains the first two, the RMPP section is an example of a real-world programme, and is worthy of mention to tie in to the critical analysis.

*explained and referenced further below.

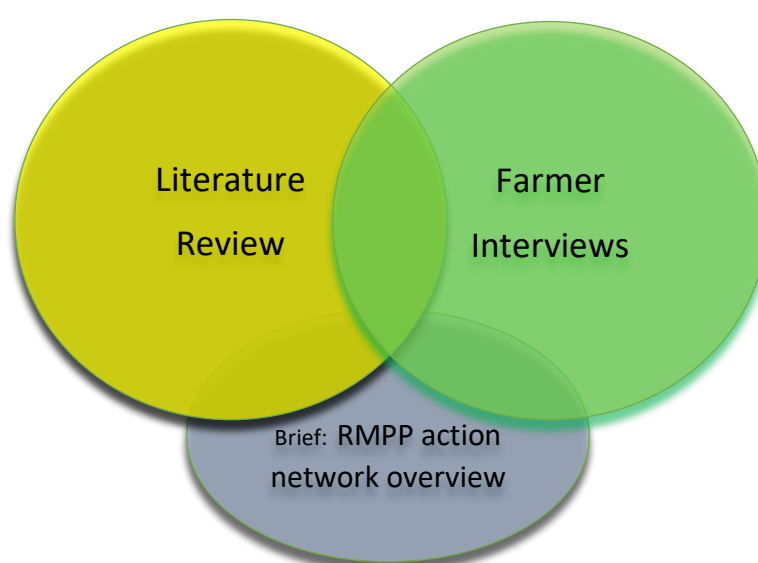


Figure 1: A three-pronged approach, with a focus on a literature review and real-life information from farmer interviews and work done in New Zealand, with critical analysis of the ‘cross-over’ points.

6.1 Literature review

The literature review provides key information and background on what we already know about farmer learning, both overseas and importantly in New Zealand.

Key insights within the literature reviewed offer an understanding around what happens on farm and what the learning preferences are for farming people. The social science aspect of learning is also important to understand, including the importance of networks, trust and the sharing of information.

Adult learning is a topic in its own right, and it must be noted that the focus of this literature review is on pastoral farmers in the first instance. There is some discussion around adult learning in general as it pertains to what may or may not be useful to be mindful of with regard to ‘how people learn’ and ‘how farmers prefer to learn’.

6.2 Interviews

Fourteen semi-structured interviews were conducted with farmers from across New Zealand. These were done over a three-week period with seven farmers from the sheep, beef, deer (red meat) sector and seven farmers from the dairy sector.

Nine interviews were conducted in person on or near to their farm, with the balance done on video call over Zoom.

The interview questions and broad farmer information (age, sector, region) can be found in Appendix 2. Farmers signed a disclosure form, stating only their age, farming sector and wider region would be discussed (in relation to their identity) within the report. Farmers are given a letter identifier (i.e. Farmer A-N) for referral.

Thematic analysis was applied to the interview responses to draw out key themes and insights. For details of thematic analysis, refer to the six steps outlined by Braun and Clarke (2006). Basically, this form of analysis is a qualitative method for looking at repeating themes within a data set (Braun & Clarke, 2006). The data set here, being the interviewee responses.

The overlaying key themes and sub-themes identified have then been mapped in 'Miro' software to show visually the findings. The thematic analysis outlined in Miro snips is critically analysed and discussed in the interview section.

The discussion and key findings section, further discusses these insights and also aims to draw out and marry the themes and similarities from what came out of the literature review.

6.3 Research information and limitations

The target demographic for this research is pastoral farmers in New Zealand who are the key decision maker around forage on farm, aged thirty to forty five. This age-range was targeted for the 'best bang for buck' in terms of the research aims.

It is recognised that an older or younger target audience could bring about slightly different results. Technology and social media, for example, may play more of a role to farmers in their twenties (Phillips et al., 2018). Aspects and details relating to this topic will always evolve, and finding farmers in charge of decisions on farm may often be older than in their twenties hence the target demographic of thirty to forty-five was chosen as focus.

The fourteen farmers were found randomly through my wider networks, often not closely linked, to come up with a short list. These people were then approached and asked if they were willing to participate.

The level of study or literacy background of farmers was not considered.

7 Literature Review

This review refers to 'pastoral farmers' frequently. This is the population we want to understand in terms of learning. Pastoral farmers can refer to sheep, beef and/or deer (red meat sector) and dairy (dairy protein sector) farmers, using pasture-based systems to produce saleable protein that is then sold off farm.

This review will firstly talk about what potentially goes on on-farm (with farmer learning) and how some of the past more formal learning structures have shaped where we are at today.

It will then go on to discuss what we know about the learning preferences of farmers from NZ research, and delve deeper into the social science around the importance of networks and building and gaining trust.

7.1 Farmer learning in the wild

It seems little is known about how our pastoral farmers learn about new and innovative evidence-based ideas (Sewell et al., 2014).

Every day activities, such as effective pasture management for successful utilisation of pasture by animals, is thought by many researchers to not always be well executed or understood by farmers (Nuthall, 2012). When it comes to pastoral farming, encouraging our farmers to do the right thing at the right time, whilst also understanding ‘the why’ is important. Yet, how do we teach and encourage this learning if we don’t understand farmer learning itself?

We can look to what was done in the past as a starting point.

When it comes to pastoral farming, on-farm extension activities have been a common part of farmer learning in the Southern Hemisphere in years gone by.

Extension, in this pastoral farming context, can be defined as a facilitation of awareness and knowledge around best practice in pasture and/or forage crop success. This is often around management or practice change (Hall et al., 2019a; Payne et al., 2016). Payne et al. (2016) describes successful extension as something that creates change when projects are designed to fit the issue and creates opportunity for technology to be implemented. In this context, therefore, well designed on farm extension activities where farmers learn from experts (i.e. scientists or advisors/consultants) and also from the experience of other farmers.



Extension was historically a big part of more formal information sharing in the pastoral farming community in New Zealand (Hall et al., 1999; Payne et al., 2016).

In New Zealand up until the 1980’s, the Ministry of Agriculture and Fisheries (MAF) was largely responsible for the deployment of extension services as a public good (Payne et al., 2016). When MAF ceased to exist in the mid 1980’s there was a fragmentation of the New Zealand agricultural extension system (Morriss et al., 2006; Payne et al., 2016). Extension did continue in other forms, often through private providers or by farmer funded producer organisations (Sewell et al., 2017). This created some problems in effectively teaching farmers and encouraging learning, as consultants often took on the task, many of whom lacked the ‘scientific’ knowledge required (Botha et al., 2008). On the flip side, scientists often held a lot of knowledge but could lack ability in terms of effective communication or networks to showcase their learnings and this lack of a combined approach is believed to have hindered extension-based learning from this time on (Leeuwis & Aarts, 2011; Morriss et al., 2006)

Given this, some research (2011) suggests that much of the agricultural extension in New Zealand has fallen short in driving the necessary conditions for farmer learning and changes in practice that may come if done well (Leeuwis & Aarts, 2011).

Often, the biggest gains can be made by our farmers adopting best practice, which requires management change to increase and sustain increases on-farm productivity and farm systems improvement over time

(Sewell et al., 2014). This requires farmer learning and understanding how our farmers learn, and what drives them, is key to this.

In recent years the Red meat profit partnership (RMPP) and Beef + Lamb New Zealand (B+LNZ) have focused on facilitated, regular group discussions and events (RMPP, September 2021). We will come back to this discussion, later in the report.

Extension activities on-farm, are not the only way that farmers learn about pasture, agronomy and homegrown feed in this day and age. We have more technology and more reach than we did in the 70's to 90's (Payne et al., 2016; Sewell et al., 2017).

That said, how do our farmers prefer to receive information? And learn?

7.2 The learning preferences of farmers

Farmers, like most people, often consider themselves lifelong learners (Kilpatrick, 2000).

Like any demographic of people in the workplace or community, learning can occur in the place of work in a day to day setting, which in the case of 'pastoral farming' - is often on-farm (Kilpatrick, 2000). This, of course, can be a significant contributor to learning in addition to what might be considered a more 'formal' approach (Kilpatrick & Johns, 2003).

Although farming can be at times isolating, Kilpatrick & Johns (2003) assert that there is huge social embeddedness in the learning process of farmers, as they look outward to those around them. Other people such as industry experts, family, and similar other farmers and workers, all form part of their social network for information and learning (Kilpatrick & Johns, 2003; Rust et al., 2022).

This review and project do not consider the effects and correlation in learning preferences as a result of farmers having a formal higher educational qualification, nor the difference in learning preferences between age demographics. Allan (2005) describes some research undertaken in this space.

An aspect that arises in learning, especially farmer learning, is the distinction between formal and informal learning. Many studies have described the array of unstructured types of informal learning in the pastoral farming community, including learning on the job, learning from other farmers or peers, and observations in a practical setting (Black, 2000; Hall et al., 2019a; Kilpatrick & Johns, 2003).

In the practical world, in which our farmers live, we understand that informal types of learning will be a large part of what occurs when farmers go from ideas to actions over time (Hall et al., 2019a).

We know that learning is often achieved through trial and error, we regularly see children displaying this in action. When describing farmer learning, one study described farmers are very practical people who usually learn from trial and error (Allan, 2005).

“Farmers are practical people who learn from trial and error”

(Allan, 2005)

This, although real in part, is simplistic. Another wider view is that farmer learning entails confirming established or previously validated knowledge under known conditions (Gray et al., 2003).

To discuss this further, Figure 2, from Gray et al. (2003) describes learning as potentially being a knowledge validation process and/or a knowledge creation process. This process may occur to validate new knowledge (which one could consider learning), which can then be associated with an innovation

or new management practice a farmer takes on board. Knowledge creation occurs through gaining an understanding and potentially innovating, or more simply “giving things a go”.

Interestingly, learning often comes when the validation process identifies the knowledge is invalid. As in, not what was expected. A farmer outcome of a practice change or management event on-farm maybe significantly different from his or her expected outcome – and they are unlikely to then forget this learning (Gray et al., 2003). All of this, is in fact learning this flow chart demonstrates well.

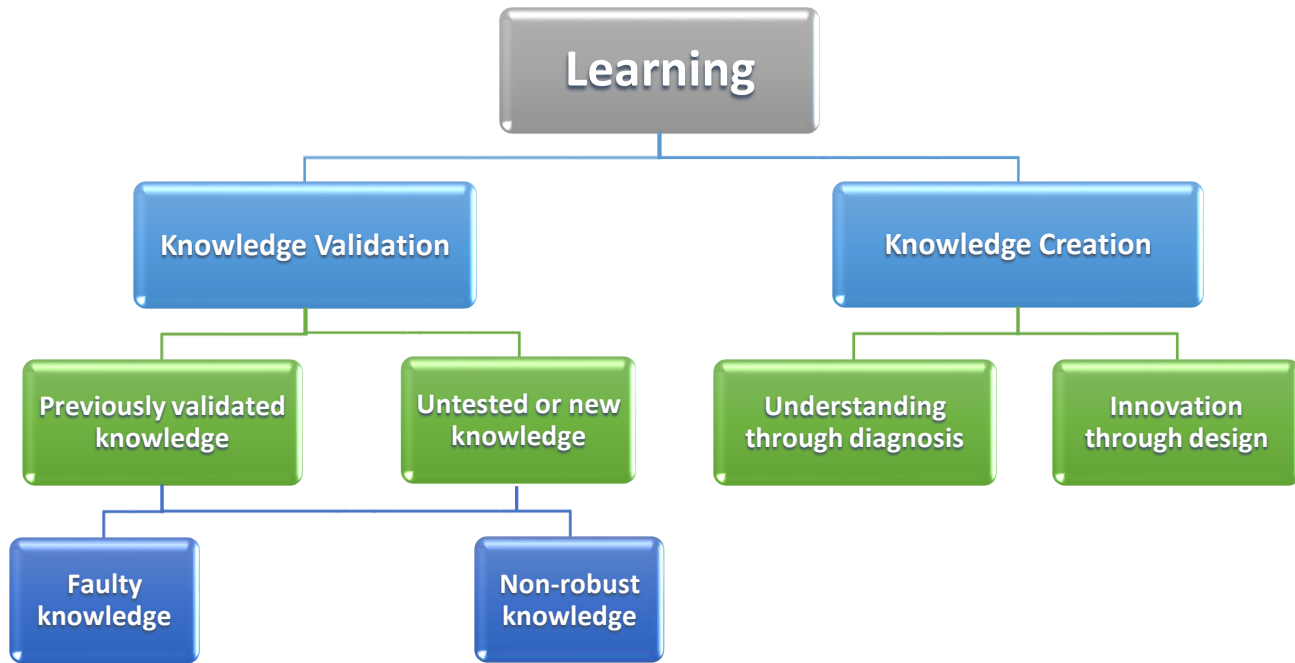


Figure 2: The typology of learning. Adapted from Gray et al. (2003)

The mode of farmer learning outlined in Figure 2 makes a lot of sense in practical application. To give a personal example, talking to farmers about the physiology of ryegrass growth in relation to pasture management. The farmers aim to validate their knowledge of this against the shared messages. They will often compare and contrast the ‘theory’ discussed to their own real-life experiences. In terms of the knowledge creation aspect, farmers may then need to understand the effects of their management against what they have learned around the physiology of the plant(s) and may then change or do things differently, now understanding the ‘why’. Seeing this play out in the real world, usually involves a lot of discussion.

Hall et al. (2019a) looked into other aspects of farmers learning. In the context to on-farm discussion groups run with farmers and an expert, one farmer was quoted as saying:

“...you go out to some other farms, especially a good farm, and comparing what grass they’ve got, or quality, what milksolids they are doing..... And you come home and you think well can we do that, bring us up”.

In terms of learning preferences and the creation of knowledge it has been found that farmers prefer to learn from other farmers in a practical on-farm setting – often in addition or separate to also learning from an expert (Hall et al., 2019a). The word practical jumps out here, farmers are practical people and thus it makes sense that seeing is believing and practice change can come about with learnings from peers in addition to ‘an expert view’.

7.2.1 Interest in learning

There is a suggestion in some research that people are not always interested in the same things or motivated in the same ways (Nuthall & Old, 2018; Sewell et al., 2014; Sewell et al., 2017).

In order to optimise and encourage active learning or practice change having farmers engage in a variety of activity types (i.e. written, oral, visual, and inquiry) can often lead to the best results (Sewell et al., 2014). This seems to speak to creating a learning environment where things may be written down, talked about, some visual / walk arounds done, with active encouragement for inquiry, questioning and discussion.

This is similar to the VARK model of learning, developed and first described by Neil Fleming at Lincoln University in 1995. It surmises the way people learn across different learning styles being Visual, Aural, Read/Write and Kinesthetic (Fleming, 2001a, 2001b).

There is some suggestion that there is little evidence for learning styles being important in helping people to 'learn better' (Willingham et al., 2015). VARK learning styles are not a focus of this project, but it is important to note that people may favour one or more of these approaches to learning, and normally it will be a combination or more than one (Fleming, 2001a; Zapalska & Dabb, 2002).

Offering a range of ways of sharing information, works well. There are vast differences in people, their background and the way they see the world, and therefore no two people will learn the same way. But understanding the key themes, drivers and what leads to learning can help (Willingham et al., 2015).

Thinking wide and outside the box is often key. More innovative and practical on-farm approaches can arouse the interest of the farmers in a group through experiences that replicate reality (Franz et al., 2010). For example, a walk and talk through the paddock is often done with farm visits. Again, using more than one approach, will encourage learning (Wood et al., 2014; Zapalska & Dabb, 2002)

Being very clear in understanding the target audience is of the utmost importance when it comes to farmer learning, and must not be overlooked. Multiple studies allude to this (Franz et al., 2010; Gray et al., 2003; Nuthall & Old, 2018; Sewell et al., 2014), which speaks to the point that no two people (or farmers) are the same, but there may be broad similarities between demographics or cohorts in terms of farm systems (Allan, 2005; Wood et al., 2014).

7.3 The power of a farmers' network

Understanding the importance of farmers networks is a worthy area of discussion in review of the literature.

Farms are not stand-alone entities dotted around the landscape in New Zealand. Land-based enterprises are part of an intricate social, cultural and environmental ecosystem, and the farmers who are stewards of this land are also not isolated individuals, they are part of many social networks (Phillips et al., 2018).



Research done on home soil in New Zealand submit that farmers exchange knowledge in densely tied and strongly interpersonal networks (Wood et al., 2014). To this end, it is important to recognise how imperative both existing networks and the potential for new networks are when it comes to farmer learning and what drives change.

Wood et al. (2014) discussed the idea that farmers have highly informal networks, and that these are often very long-term relationships. For example, some older farmers in their research had worked with the same seed merchant for over 20 years, and these longer-term relationships inevitably become highly personal.

7.3.1 Networks and shared experience

Farmers are thought to make contact with their social peers more than anyone else (Black, 2000).

In one example, where farmer networks were researched, a group of 17 farmers working with scientists on an 18 month summer forage programme shared the findings, learning and experience. They reported that they had talked through their learnings from the programme with an average of 73% of their fellow farming peers (total of their pre-existing network peers) compared to just 16% of their seed merchants (Wood et al., 2014). This study affirming the hypothesis regarding social peers.

Throughout the research on farmer networks, the power of farmer-to-farmer learning is based on the value of knowledge sourced in farming experience, both actual and ongoing in terms of learnings. Ideas are shared and discussed from lived experience and often closely relevant between farms or farmers (Wood et al., 2014).

Kilpatrick and Johns (2003) talk about the 'interaction with others' in relation to farmers' inner circle networks as vital in any decision to change, which includes learning.

The importance of this is that:

- Views can be compared and discussed in terms of how information can be applied to their own situations.
- Farmers can test each other's values and attitudes in relation to the information at hand, which helps offer a fuller insight in terms of all the factors toward making a change.

Thus when implementing change, awareness often needs to occur first so there must be a learning source, and then the power of the network (both social and business) are important if the change is to be made (Kilpatrick & Johns, 2003).

Without often realising it, farmers informally seek to use their networks and share their learnings regularly. Farmers interviewed talk about directly sharing knowledge by visiting each other's properties - and can then take this knowledge back to their own farm (Rust et al., 2022; Wood et al., 2014).

Farmers seek knowledge that can be applied to their own individual farm and will be seen to contact individuals or peers who can share in their experiences and learnings for this information (Kilpatrick & Johns, 2003; Sewell et al., 2014; Sewell et al., 2017; Wood et al., 2014).

Therefore, it is important for a shared experience that farm systems and ideas fit the same environment to which the farmer in learning can relate. Relevance is key.

This implies that farmer-to-farmer networks will be more strongly held where the farmers as part of this network, are farming in similar environments or farm systems and thus can learn and tweak things from what others around them may be doing. The 'over the fence' approach is widely discussed in the New Zealand research, and how this plays out is mentioned in nearly all of the papers referenced in this section.

Observations on the theory of learning preferences in relation to networks suggests that communication of or about new agricultural knowledge is more likely in everyday conversations (i.e. farmer to farmer in the same district) than it is at professionally facilitated meetings and activities (Leeuwis & Aarts, 2011).

Collective learning in the sense of shared experiences is summarised well in Phillips et al. (2018). They suggest that the collective learning and a shared new competence will emerge from network groups who meet regularly. Within this, the common themes that lead to success are that these groups ask questions of each other, request information, seek experience and problem solve within their safe, network domain.

7.3.2 Power of the wider network

Networks that can relate to farmers fall into many broad categories. This includes fellow farming peers in the same district or same type of farm system, as touched on. In addition, there is a wider network that may include family, friends further afield or advisors that may have technical expertise in any area of the farm business, such as their agronomist, vet, accountant – among others (Kilpatrick & Johns, 2003).

Where an intimate partner exists in a farmer relationship, this has been shown to be one of the most important networks of all, in terms of the sharing of ideas and daily collaboration (Phillips et al., 2018). This fact alone, is important for all industry to be aware of in terms of linking in with farmers.

Wood et al. (2014) puts forth that our farmers, in the day to day running of their businesses, are embedded in many influential relationships with an occupationally diverse range of people. This sentiment is supported by earlier work (Oreszczyn et al., 2010). Both studies suggest that farmer networks are essential for innovation and learning as they provide a platform for social influence, knowledge sharing and the formation of opinions on new ideas or technologies to which they may not have been aware (Oreszczyn et al., 2010; Wood et al., 2014).

One farmer interviewed by Wood et al. (2014) described his knowledge over time as “tiny things picked up from everywhere”:

(My knowledge is)... “tiny things picked up from everywhere”

From a farmer in the Wood et al. (2014) study

Farmers indeed will take experiences across farms by comparing examples, drawing analogies and over significant periods of time recounting and recalling experiences. As part of their quest for knowledge, it is known that farmers will regularly contact numerous other people, within their network to discuss ideas (Kilpatrick & Johns, 2003; Phillips et al., 2018; Rust et al., 2022; Sewell et al., 2014; Wood et al., 2014).

Sewell et. al (2014) proffers that farmers will get their ideas from a multitude of sources. These could be all of, for example, private industry, agronomy or seed merchant specialists, bankers, other farmers, extension officers etc. and the key in these relationships is ‘two-way’ working *with* each other for a common goal. The common goal would usually be success in whatever aspect of the farm discussed, and that the people involved have to be ‘on that journey’.

Individual farmers are described in the work by Sewell et al. (2014) to use information from several sources which may include all or any of the following, this adopted to show visually in Figure 3 below.

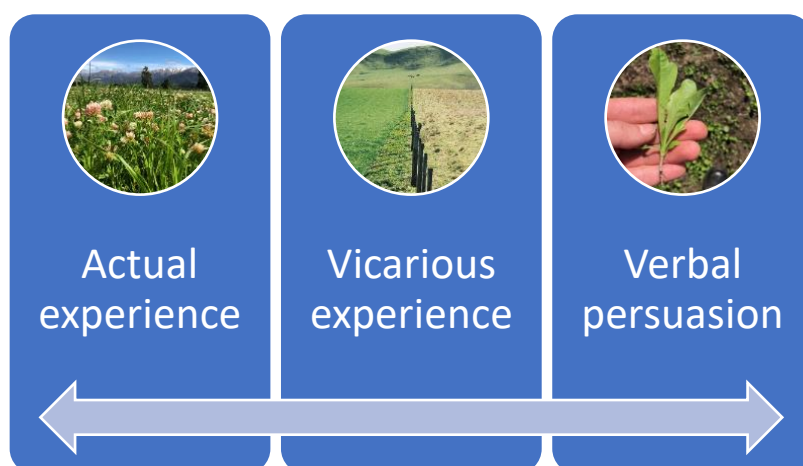


Figure 3: Common farmer sources of experience – adopted to show visually from Sewell et al. (2014)

Actual experience in farmer learning through success and failure can also be passed down through generations. Vicarious experience is essentially the observation of peers giving confidence to a farmer that they too could succeed at this, and verbal persuasion often includes a trusted person assuring a farmer they have what it takes to succeed (Sewell et al., 2014).

Farmer networks are complex, but also in a way perfectly simple when broken down. Human relationships are important in learning and thus a key part of understanding the learning preferences of farmers. Actionable knowledge happens over time due to exposure to knowledge, discussions on this within networks (both close and wide) and in the fact that to be a part of that network, a high degree of interaction must occur over time.

7.4 The importance of trust

An important area in farmer learning, is the aspect of trust.

Many studies have shown that adults learn best when there is a high degree of trust in the relationship (Franz et al., 2010; Rust et al., 2022; Sewell et al., 2014; Sewell et al., 2017).

In the realm of rural professionals it is a widely agreed sentiment, for anyone dealing with farmers, that building trust is a key part of a farmer relationship (Allan, 2005).

What do we know and what can some of the social science tell us? How is trust gained, built and maintained to foster healthy, learning environments between farmers and the 'trusted advisor' on-farm?

Sewell et al. (2014) showed that trust and respect was – and needed to be – mutual. In their study, farmers worked with scientists for 18 months creating a 'community' of farmers working on a similar management practice change (around herb pastures). Outcomes of their research showed trust and respect were mutual in that the farmers respected the wealth of knowledge and 'passion' that the scientists had with the herb pastures, and in return the scientists understood their shortcomings and thus valued the farmers feedback, input, experiences and localised knowledge to achieve greater learning in all directions.

The scientists worked with the farmers on the project, and rather than behaving as 'the experts' there to deliver one-way information on what to do, they built relational trust with the farmers as were just as interested in the feedback from them, their challenges and learnings as the project went on.

Much of the literature that touches on the aspects of trust discusses this idea of a learning community (Sewell et al., 2017). This suggests farmers and all participants have a sense of belonging for good knowledge transfer and 'learning' to occur trust in the respectful relationships within this community.

Building relational trust comes up in many farmer-advisor/scientist studies and Franz et al. (2010) suggested that this was one of the key aspects to promote learning in any ongoing learning relationship.

In the pastoral sense, this lends nicely into trust not necessarily being handed out to an 'expert' or any one person advising on farms, in helping farmers harvest more homegrown feed. The research does suggest that trust can be more easily gained when a farmer doesn't perceive the 'trusted actor' to be selling something (Franz et al., 2010; Rust et al., 2022). This point of a 'non-sales push' comes up frequently in farmer based social science literature.

Overall the research suggests that trust is not something you automatically have, but something that needs to be gained over time through strong interpersonal relationships (Franz et al., 2010; Rust et al., 2022; Sewell et al., 2017).

Traditionally in farming systems around the world, ‘experts’ who hold a high degree of knowledge (e.g. an agricultural scientist who specialises in a topic), have been considered to be trustworthy sources of information (Rust et al., 2022). In addition to this, farmers will usually not put any trust in the information coming from someone that they perceive to have limited experience in (Skaalsveen et al., 2020). This makes sense and also offers challenge in a New Zealand context, as in pastoral farming it takes years of experience and time on the ground to be able to offer real value to our farmers in the complex, temperate nation in which we work. Young agronomists, for example, can (in a non-literal sense) be eaten alive by a farmer who asks a merely technical question applicable to his unique farming operation or soil type (Nuthall & Old, 2018).

Given this, farmers often automatically have more trust in other farmers or peers (Franz et al., 2010; Rust et al., 2022; Skaalsveen et al., 2020; Sligo & Massey, 2007).

In a UK and Hungarian study, Rust et al. (2022) looked into how farmers navigate learning around soil management practices. The outcomes found that farmers in both countries placed more ‘trust’ in other farmers in learning about new practices than they did in ‘experts’ or government institutions who they perceived were not empathetic toward farmer needs.

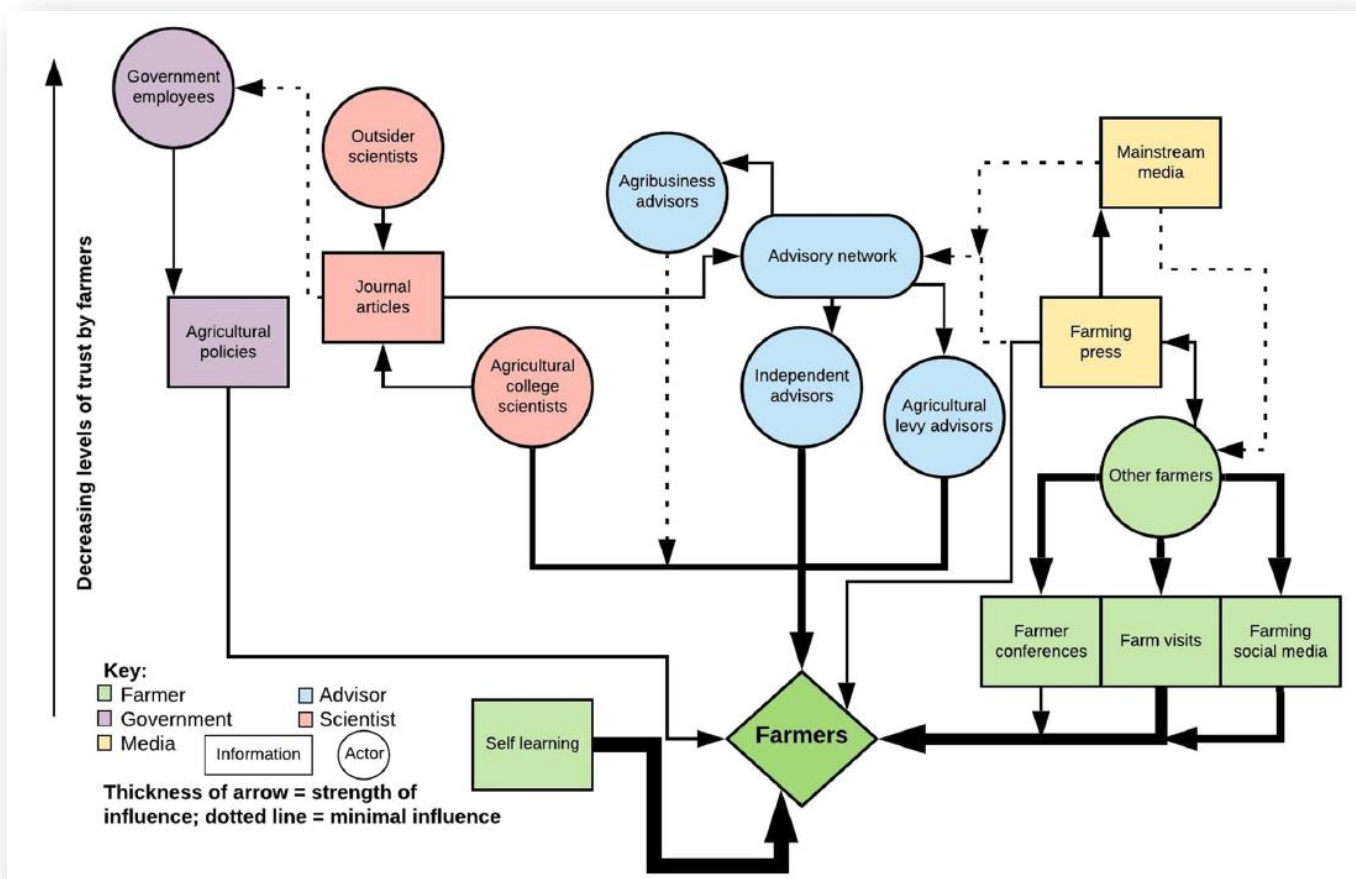


Figure 4: Farmer (UK and Hungary) responses around information sources and influence. Copied directly from Rust et al. (2022).

Figure 4 is a conceptual infographic from research by Rust et al. (2022) summarising the farmer findings from semi-structured interviews with 82 farmers around their soil management challenges and how they learned. The focus was to gain an appreciation of the relative importance of different networks in terms of influence on these farmers to implement a new soil management practice.

In this study farmers were said to have placed most trust in other farmers, with one Hungarian farmer quoted as saying:

*“I discuss our experiences with my fellow farmers. We are in continuous contact; we keep in touch but if some problem occurs then we can just call each other up like: *what did you do? How did you deal with it? How big is the yield? What is the quality?.* We can trust in each others experiences because we are friends ... we see the results on each others farms with our eyes”*

The bolded strong lines in Figure 4 show the strong influence within farmer (as in other farmer) networks when it comes to trusted sources of information. Advisors were deemed more influential and trustworthy if they were seen to be independent and used scientifically robust information (either scientific papers or research data).

It was noted, however, that when ‘experts’ or scientific researchers were not believed to be empathetic or have a full understanding of farmers practical needs, they were far less trusted by farmers (Rust et al., 2022). This is similar to other work that suggests expert educators need to have a broad base of knowledge and build a deep and trusting relationship with farmers over time (Franz et al., 2010). This is a nice segway into the next section.

7.4.1 Building trust through shared information

Trust not only applies to person-to-person relationships but also to the relevance and trust in information being shared or given out, for example by a brand or company.

An aspect of trust that came up repeatedly was for information to be well received and trusted, this information must be easily accessible and easy to understand (Rust et al., 2022). It needs to be simple.

Information that is too technical, or with a very high level in the messaging, will not be taken up and trust won’t be gained from the delivering scientist or other advisor on-farm (Kilpatrick & Johns, 2003; Rust et al., 2022).

Coming back to first principles, explaining the “what, how and why” to farmers is key to gaining their trust (Sewell et al., 2014; Sewell et al., 2017).

Showing understanding to what a farmer is going through is another aspect related to trust touched on by Rust et al. (2022). Someone sharing knowledge and aiming to create a trustful learning environment with farmers must have and show empathy for the farmer situation. Empathy must be at front of mind to build trust and relationships with farmers. Rust et al. (2002) stated that any outsider with no empathy will struggle to ever gain trust with the farmer they are attempting to work with.

This speaks to asking questions, seeking to understand the challenges our farmers are facing, what is the block for them? Do they understand the need to change and what the advantages might be in their own, personal situation.

Sewell et al. (2017) found that farmers liked to have a trusted person as assurance in the farmers ability to succeed, someone to discuss ideas, concerns, learnings with and this is also said to be why farmers trust other farmers – they know there is empathy there already as often these other farmers are facing the same challenges. And understand.

Franz et al. (2010) in work with farmers around their learning preferences in the USA outlined that some methods that can build trust with farmers including:

- Individual farm visits
- On farm focus groups
- On farm demonstrations
- Networking events
- Hands on workshops

A lot of research in this space leans to relational trust and to foster a learning community. These activities, usually held on farm, build an opportunity for trust to start and be fostered through time.

With all of this considered, trust must be front of mind when it comes to farmer learning. It takes time, and people must be aware of farmer learning preferences to gain trust – which in effect needs to happen before learning can start.

8 Interview analysis and discussion

This section outlines the results of the semi-structured interviews undertaken in this project.

These were highly informative and offer an insightful dataset in their own right, to glean some key understanding into the learning preferences of pastoral farmers (in this demographic) in New Zealand.

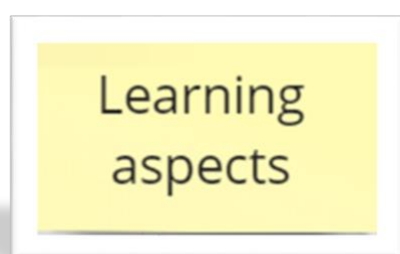
All themes are presented as one map (see Figure 5) as there are several crossover and sub-themes that link between both sides.

There is a huge aspect of social science in learning. Thus, overarching titles have been given to the key themes, these being the social aspects of farmer learning (shown on the right-hand side of the mind map in Figure 5) and the more learning-focused aspects (shown to the left).

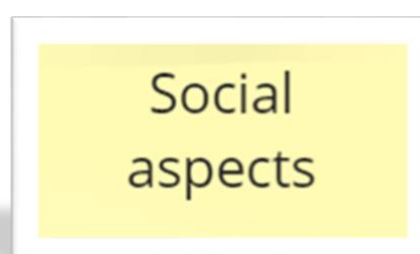
Critical analysis of all themes and subthemes and the insights from this will be outlined and introduced in this section. Snips of the relevant section of the Miro mind map are taken below each theme heading to show clearly, and more easily see the theme and sub-themes.

Further key findings that marry in with some of the information from the literature review, outlined in the methodology, are discussed in the Discussion and Key findings section.

To analyse the results, themes are broken down from the aforementioned overarching titles, from the mind map:



- Awareness
- Information
- Decision



- People
- Trust

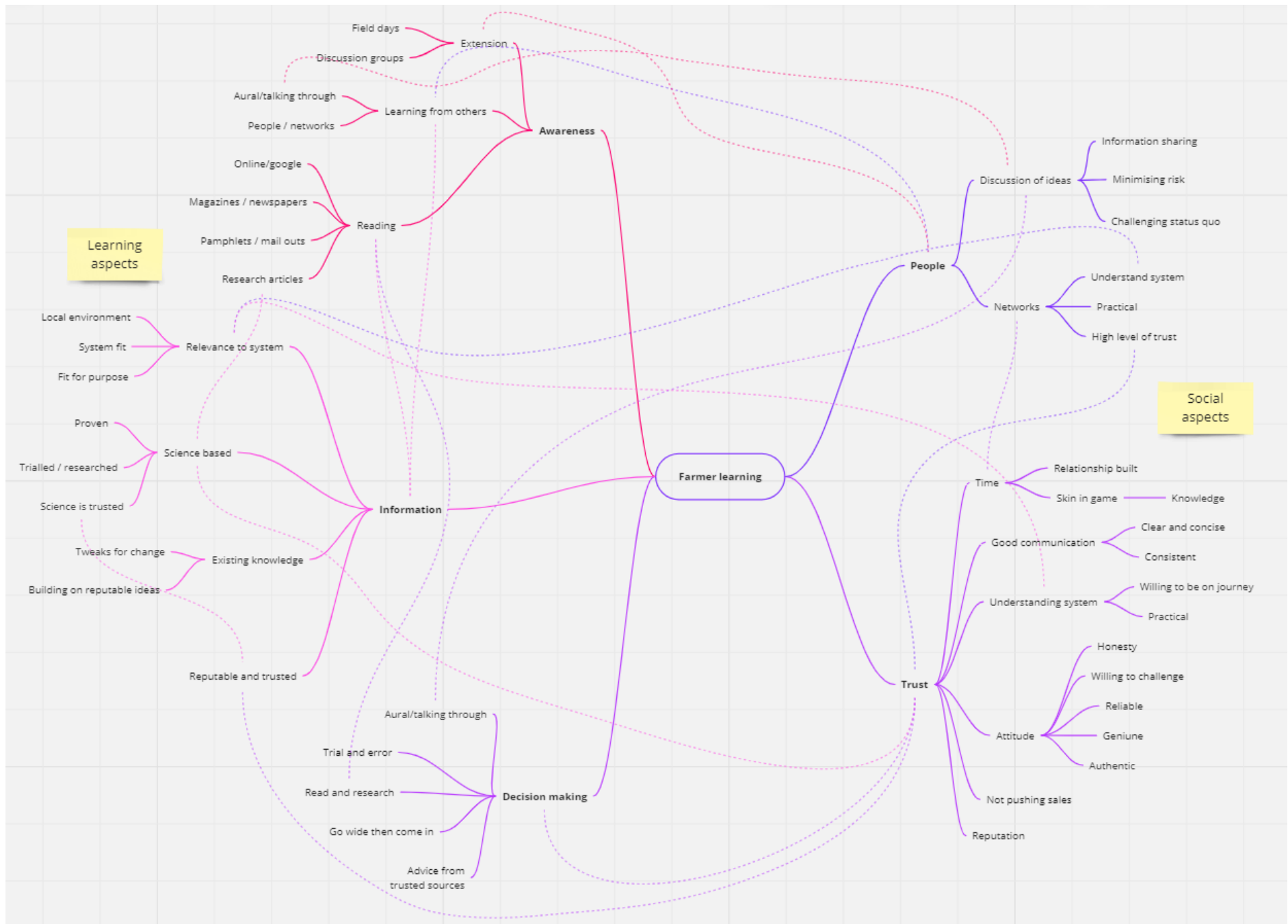


Figure 5: A mind map showing the high-level themes in farmer learning. These were distilled from the interview responses through thematic analysis processes as described by Braun and Clarke (2006). Dashed lines represent links between themes. (note these are enlarged to see more clearly below).

8.1 Learning aspects

8.1.1 Awareness

Awareness is a theme that repeated itself from early on in interviews. This theme was made clear by interviewee's as before learning or change can occur, there has to be some awareness.

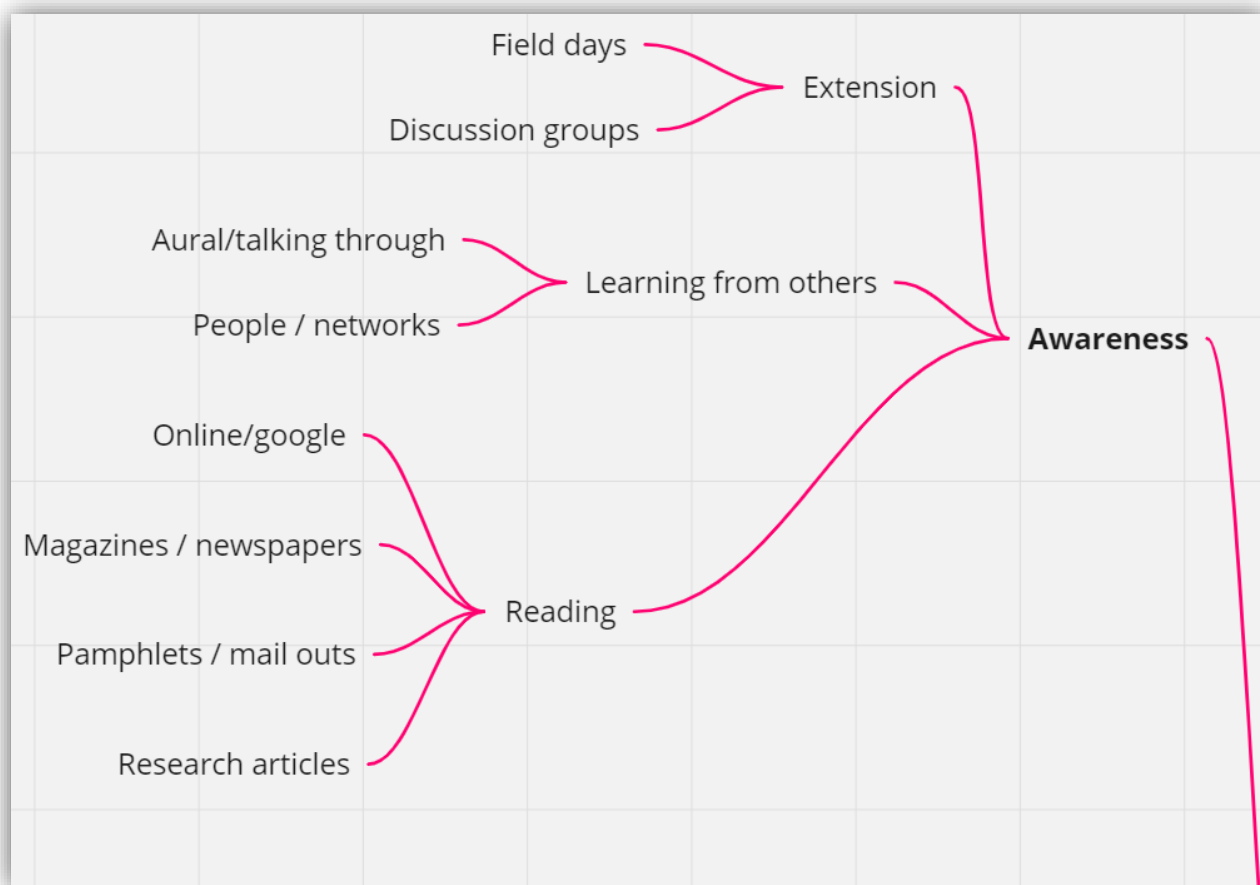


Figure 6: Enlarged snip from the mind map in Figure 5: Awareness aspects of learning.

Many of the farmers stated that awareness around anything that they didn't already know (i.e. around pasture or forage) was often gained by interactions with other people. These being either on the fly with peers/people in their network *and/or* often at extension events / field days / discussion groups.

The other vector to awareness came about through reading material, which can be things that came in the mail and "*landed on the coffee table*" or they came about online. Online also pertains to email in this sense.

"Brochures and stuff that arrive in the mail are a good to flick through over a cuppa and make a good starting point for me to raise some awareness". Farmer G, sheep and beef, mid-Canterbury.

This suggests reading or perhaps reading material can lead to a gained or initial awareness.

As to the 'learning from others', Farmer M, a young dairy farm manager part of a larger farming group in the South Island, suggested:

"ideas are often discussed in meetings at a wider level, these can sometimes be new things. I become aware of things this way, and then I can do a deep dive on the

management practice or idea (I learn from reading things you see) and then I aim to fill in the understanding where my knowledge may be missing”.

This quote implies awareness comes first, next steps may be about further learning often.

Farmer N, a sheep and beef farmer in the Wairarapa, talked about:

“getting new ideas from my mates and what they are doing” “we often have a yarn about different ideas, how it is working for them and what they do... it gets me thinking about how we could try that or make that work in our system, often I wouldn’t have known about it otherwise”.

Similar to this a dairy farm owner in the Manawatu relied heavily on “*local wisdom*” for his awareness to new ideas, and then followed up with his local rep to get more information on the topic.’

Farmer H, a large-scale red meat (and wool) sector farmer in Central Otago, said;

“awareness is the key starting point (and for this) reading widely is good... we are always curious”.

The idea of awareness in all of these examples suggest that learning must first start with awareness. And this is the building block or foundation of anything that goes on, on-farm.

As pertaining to pastoral farming and homegrown feed, examples that people needed awareness around were **cultivar options** (i.e. new varieties of grass, clover or crop on market), **crop types** and how **safe they are for animals** (one dairy farmer mentioned plantain as a spring and summer crop here), overall **farm system change** ideas, **soil structure** (drainage) and **soil fertility** information for their soil type and area, **weeds** and **weed control** and importantly; more awareness around **best management practice**.

All of the sheep and beef sector farmers mentioned **animals** and/or **animal health** as it pertained to feeding stock forage and any key ‘need to knows’ here. Not all dairy farmers mentioned their animals.

In terms of best practice in on-farm management, the farmers in this sub-set recognise they need support (or have needed support in the past) around this and often have to go hunting for it once they are made aware of it. And that sometimes they could do better.

The sheep and beef farmer cohort from the interviews, appeared to rely more heavily on their interaction with peers in terms of their awareness to pastoral farming practice. All seven mentioned that their local network interactions were often the key to finding new things that could lead to learning. They described that both informal catch-ups (i.e. neighbours getting together or locally organised farmer discussion groups) and more formal approaches (industry run field days etc) were great for this.

Within dairy, there appeared to be a more systematic and less complicated approach. Most said they rarely frequently DairyNZ discussion groups these days, however over half of the dairy farmers mentioning reading up online (DairyNZ, Pioneer or FAR websites were mentioned, or the Forage Value Index). For them, these acted as a key driver in awareness around pastoral / homegrown feed ideas and change.

8.1.2 Information

In terms of the gathering of information, around homegrown feed there were important and common themes across both dairy and the red meat sector farmers.

Rather than specific areas of information, this theme related more to how farmers look to get information that they may need, and how valuable they find it.

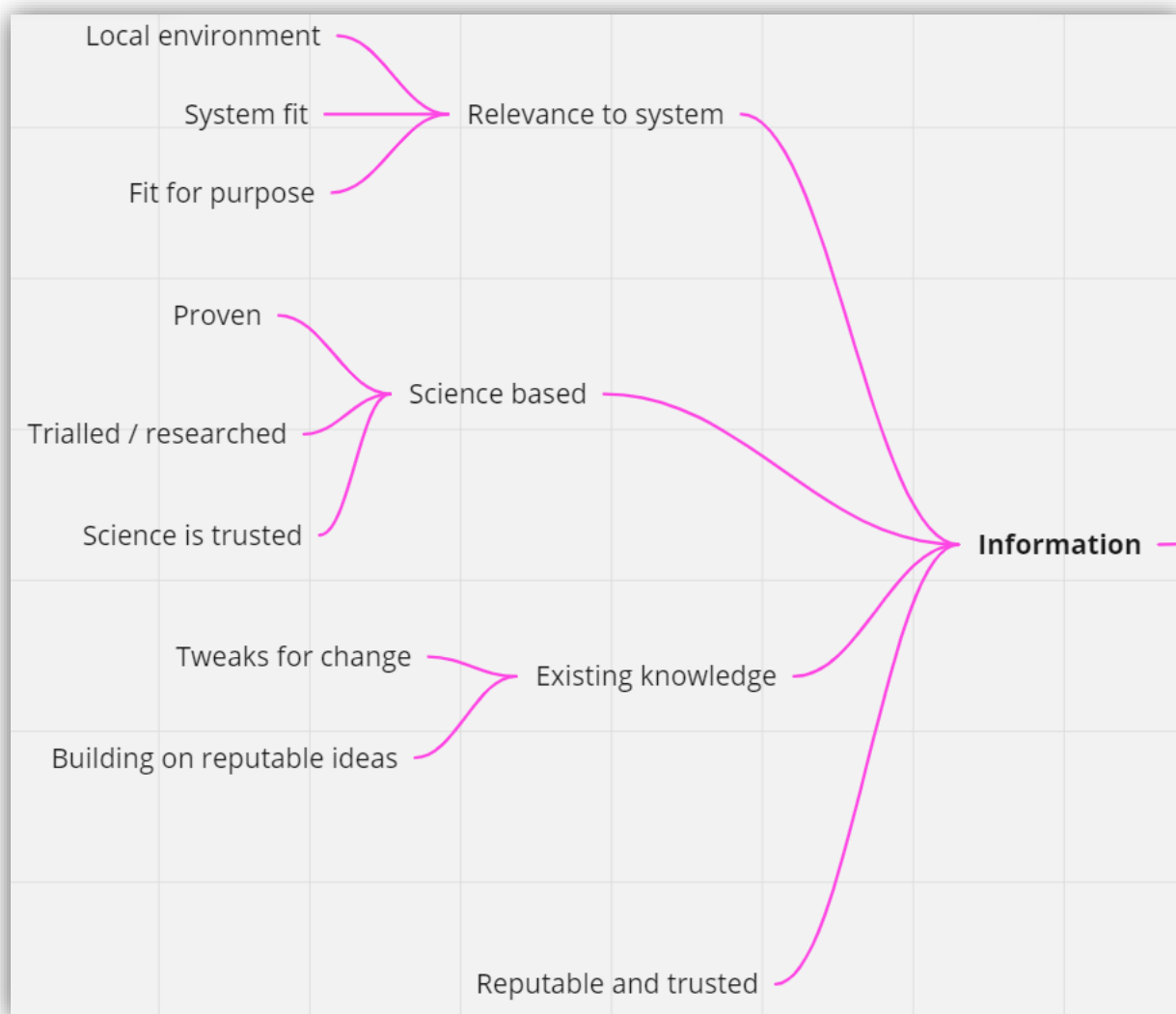


Figure 7: Enlarged snip from the mind map in Figure 5: Information aspects of learning

The key theme that was repeated, with all interviewees mentioned more than once, was that information had to be **Relevant**.

The theme is termed **Relevance to system** and information was deemed not appropriate unless it could relate reasonably closely in terms of any one more of the following; a **similar local area or environment**, the same type of **system**, if the product or practice change was **fit for purpose** for them. **System relevance** came up in 100% of interviews.

An example of this is from Farmer J, a sheep and beef in Central Hawkes Bay who suggested:

“We are early and we are mild here, so most grasses will work for us, but we want to know what is going to grow the most quality feed through winter and that very early spring period... we are unique and we want to know about options that will give us the best result before it gets dry”.

Farmer G, a sheep and beef farmer from mid Canterbury, had a number of insights:

“How something will fit in my system is most important” “we get the most insight by learning how something has performed in environments similar to ours”.

The importance of providing information that is relevant is front of mind for all farmers spoken to. And relevance mostly relates to *“similar to my farm system or area/farm type”* this being a generalised, re-worded quote from a number of interviews.

Similarities and relevance were seen as any one or more of the following being similar: **local area, soil types, growth pattern environments, farm system types, stock classes or pinch or challenge seasons.**

It makes sense that information needs to be relevant, and it is important to remember how different some farm systems are to each other. Farmers know there is no one-size-fits-all approach.

Science based information was also sought by the majority of interviewees. Twelve out of the fourteen farmers mentioning one of the following terms; **science, data, trial work, research, scientifically proven.**

Farmer A, dairy farming in the Waikato, said:

“We want to know what scientific evidence there is and we prefer information that is research and science based” “with anyone supporting us on farm too, we prefer them to be qualified and come at things from a science angle”.

Dairy farmers (F) and (M), both involved in larger scale dairy farming groups, leant heavily on *‘the science’*.

Farmer (F), from the Bay of Plenty, saying:

“We don’t need to reinvent the wheel... in New Zealand a lot of the science has already been done and we rely on this a lot in our system”.

Farmer H, large-scale sheep and beef in Central Otago, said:

“...science based stuff will always jump out to us”.

Science is seen as trusted and true information in their reasoning around this and once numbers or data could be shown, then an idea or concept was seen to be more *‘proven and trustworthy’*.

Existing knowledge is seen very much as a key source of information among many of the farmers interviewed. This involves both building on current knowledge with reputable new ideas, as well as making tweaks for change from what they already know is or isn’t working.

Reputable ideas were seen as new information or tweaks to current practice that was *‘trusted’* or came from a reputable source (this could be science based new information, or from a trusted network/peer).

Farmer (B), sheep and beef in Canterbury said:

“... there is lots of stuff we already know, but if we hear about a new idea - you know, from a discussion group or field day or something that sort of relates to it, we might tweak and change things over time”.

This reminds us farmers already have a lot of knowledge, and it may be up to us to influence this in the right way. They are the masters, especially as it comes to their own farm and farm systems and they know what works and what may not. The job of the rural professional at times, is to help create awareness and build on that.

8.1.3 Decision making

The third key theme in the learning aspects of farmers is the process around and all things related to **Decision making**.

It became apparent throughout the interviews, that firstly farmers gained awareness on a topic, then set about gathering new information to understand this topic. The final straw to bring this together was a decision-making process that then may, or may not, lead to change.

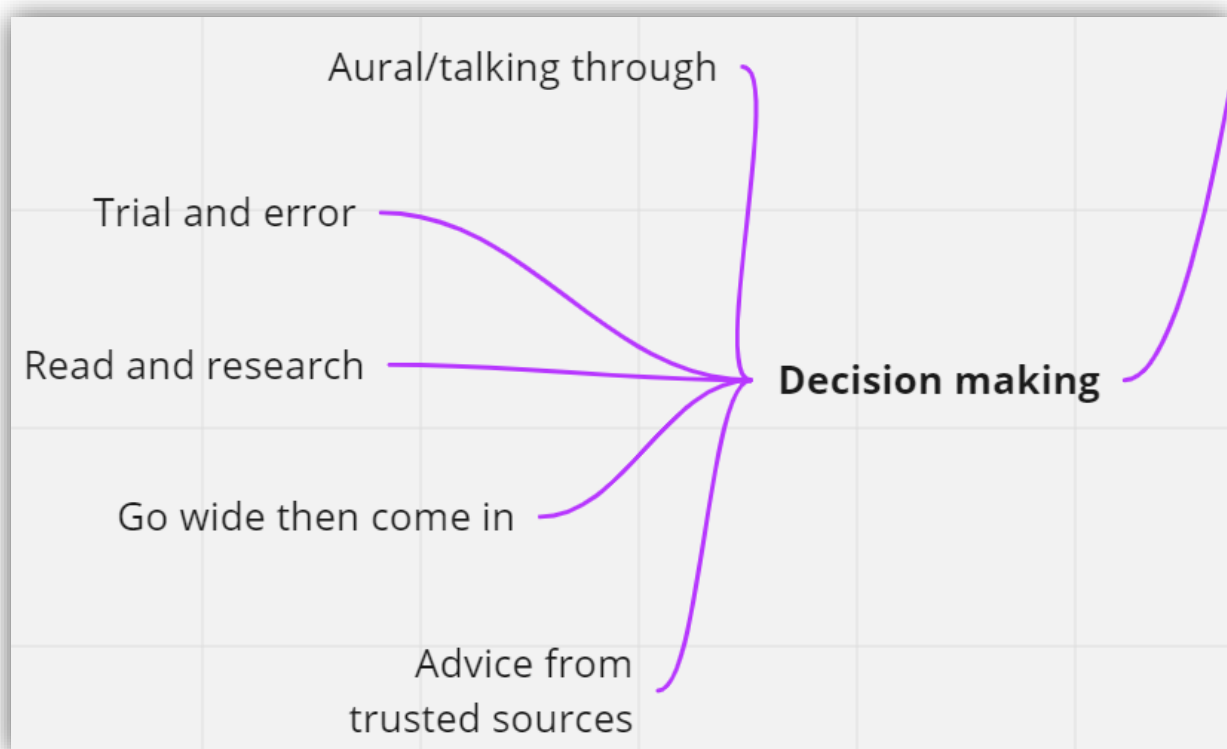


Figure 8: Enlarged snip from the mind map in Figure 5: Decision making aspects of learning

The biggest repeating theme here was around the ‘talking things through’ in order to help make a final decision on something new they have become aware of. The people involved in this, in terms of the forage side of the farm, varied but included one or more of; peers, neighbours, merchant rep, agronomist, family, spouse, mentors or specific expert advisors. Anyone trusted was someone that could or would be a sounding board.

In terms of decision making, talking through ideas to gain further insight on the decision to be made, and potential pros and cons, as well as *“learning from others’ mistakes”*. This was quoted by over half of the farmers, mainly from the red meat sector, this perhaps most likely due to more complex systems and more varied stock classes in this cohort.

Farmer (C), sheep and beef in Northern Manawatu said:

“Learning from others’ learnings can save a lot of short fallings”.

He gave an example about how he talked to his neighbour and watched closely their choice of summer crops over a few years. Due to the weather conditions being really wet in one year – one particular type of crop really didn’t work well. So now famers in the district tend to avoid this option if a wet summer is predicted. They all talk about it. It helps in their decision making but general consensus here agrees that

weather makes things difficult in farming most of the time and learnings here can be slow, as weather patterns are inconsistent.

Trial and error is something within decision making too, and the farmers in this study seemed to generally see themselves as lucky in this regard. Farmer (J) from Central Hawkes Bay:

“We can take an idea and try it ourselves and just see what happens”

Who went on to say:

“... we don't procrastinate with our decisions, we will just give it a go, take the learnings and decide what to do again next time based off that”.

He pointed out that he was not a risk averse person and this potentially played into things. Reminding us, everyone is different and has a different way of approaching things.

Business is often about giving things ago and making a decision to give it a go will give learnings either way, through trial and through error. Farmer (G), also in the sheep and beef sector, in the South Island had a more cautious approach saying:

“We learn by doing but try to avoid failure ... we will be pretty well researched before we make a decision and talk to people who have done it first, so we can hit the ground running”.

This farmer, in contrast, said he didn't like taking big risks.

When making a decision, around half the farmers talked about 'going wide and then coming in'. Going wide, in the first instance varied in meaning between the interviewees but could include: **reading widely** in **magazines** or **online, Google, “reading research articles”, calling mates/peers**, talking to mentors, **“asking Mum/Dad/uncle/neighbour what they did”**, calling or having a merchant **rep or agronomist** or a farm **advisor** visit.

Coming in usually then involved coming back to their own farm system or themselves plus someone else closely involved over time with the farm/business and making a call on what to do and how it would be done.

Advice from trusted sources plays a huge role in decision making. In relation to decision making, most farmers (nine out of fourteen) suggested that they could more easily *“skip to a quick decision”* if someone whom they trusted and who knew them/their farm well suggested that the concept was a good or bad idea to follow through on.

This theme of trust and what it takes to be trusted on farm, will be discussed more in terms of the interview results in the Trust section.

8.2 Social aspects

This section outlines the social aspects of farmer learning. These being **People** and **Trust**.

There are many interlinking themes, and this section will focus in on the importance of people in farmer learning preferences and how trust is a key part of everything,. Here there is more of a social science focus.

8.2.1 People

A key theme that all participants mentioned repeatedly was the importance of other people in their learning journeys.

This theme was strong in both the red meat sector and dairy, and came up in different iterations in the answers to nearly all the interview questions.

Sub-themes to this were both in terms of **Networks** and also the aural aspect of **Discussion of ideas**.

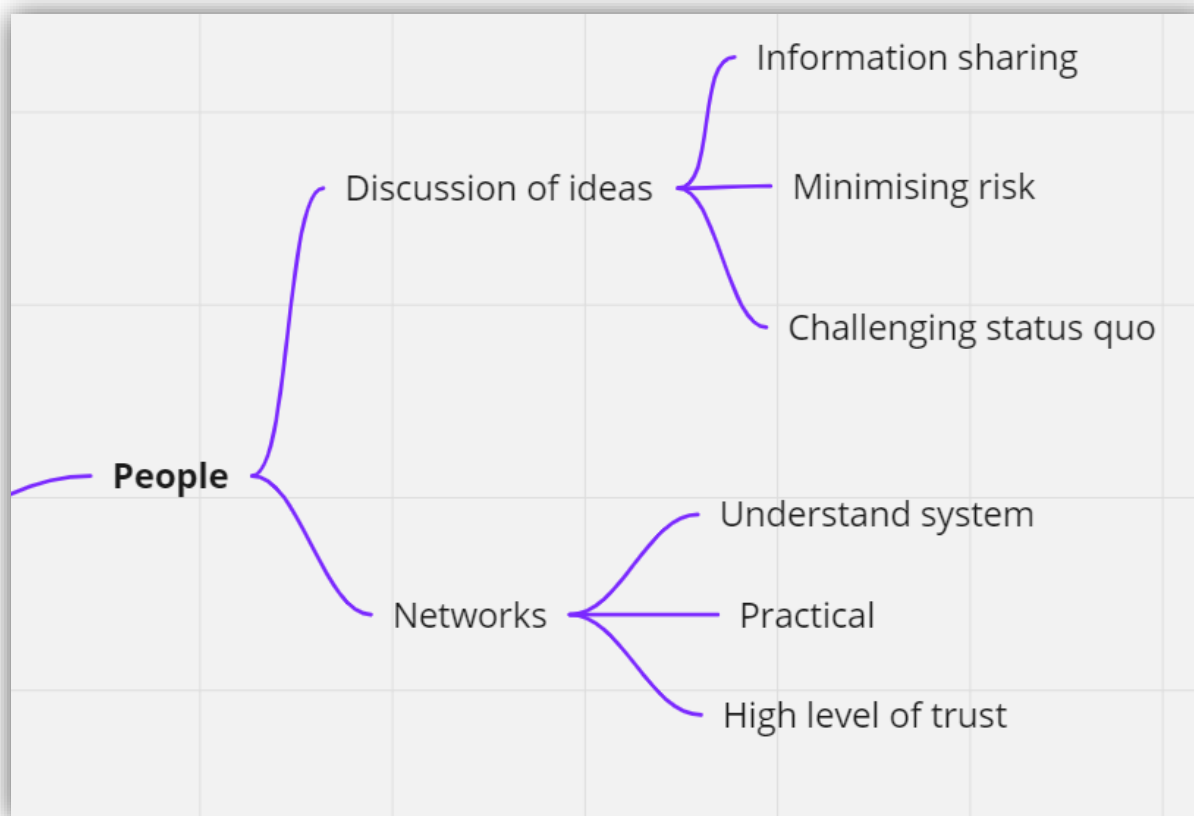


Figure 9: Enlarged snip from the mind map in Figure 5: People aspects of learning

Networks were wide and well considered by the group of farmers interviewed.

Key networks mentioned were and included any of; **peers, friends, family, spousal partners, partners in business – either past or present, farm advisors or consultants, agronomists, merchant reps, store staff merchant, accountants, bankers, vets, livestock reps or genetic reps.**

In the general sense, a person was seen as more valuable than a brand when it came to networks. This is an important insight. Farmer (G) said:

“We will follow the person not the company and we have done this in the past”.

There was one outlier here not mentioned in the list above, in the Dairy sector, where five out of the seven farmers mentioned Fonterra in a network sense. In this, they alluded to trusted information/networks coming from here almost no matter what. This may be to do with the structure and perhaps being Fonterra shareholders in these cases. But overall network related to people.

For a network to be valid to a farmer the 'person' (network) had to understand their farm system. On top of this they must have a practical understanding of outcomes to be achieved and what is appropriate and have empathy to this. They must be trusted.

A beef farmer in the Manawatu, Farmer (D) said:

"my friends and mentors are huge for me, they also put me in touch with their own networks and that is how I've found my most useful contacts I go to twilight cricket in town, there is heaps of banter here and we mostly talk about farming as most of us are either farming or in the industry here locally".

This also shows the importance of gaining new networks, and that these more easily come from trusted networks that already exist.

Networks in terms of friends, peers and family were another one that came up time and time again. And in terms of farmer learning preferences all of the interviewed farmers said learning from other people within their network was one of their most preferred ways to learn.

Farmer (D) also said:

"friends as mentors are my best source of information" "we go around each other's farms 3-4 times per year and they will do the same with me. We talk about things, ask each other questions, get out and walk around... it is a sanity check on ideas and I get to see what others are doing and how it might apply to me".

Farmer (A), dairying in Waikato, talked about their farm equity partner (who used to 100% own the farm and knows the farm very well) as being a:

"constant sounding board and someone who opens other doors for us too".

This alludes to the empathy and understanding of system and farm piece also – due to the equity partner knowing the farm well and what works. This same farmer also talked about their own reseller rep who was a *"one stop shop for information and support on farm"*. He went on to say that they will also stay loyal to who they already know if they support us in a positive way and become part of our network.

Both these examples allude to the sourcing information through others and coming back to the same people due to a depth of understanding over time, and the results impacts of previous interactions.

The **discussion of ideas** is the other key sub-theme with people. This theme was given its own branch on the mind-map, as it came out in the interviews that discussion of ideas does not have to always be with people in 'the existing farmer network'.

This learning branch is more about sharing of information, challenging the status quo and farmers looking to minimise their own risk profile by getting a wide view from others – some of whom they may not know before. An example may be at a discussion group, where a key expert speaks on a topic of farm system change and there is a facilitated discussion from farmers present around how it may work in the local area.

Farmer (I), dairying in North Waikato, said he would often find himself discussing ideas at pasture focused field days with a wide range of people in attendance, and this would often lead to new ideas or learnings he hadn't considered and sometimes challenged his status quo, which he liked. This is a good insight, in that challenging farmers around the fact that they *'don't know what they don't know'* is key in farmer learning.

8.2.2 Trust

Trust is one of the most important overall themes this research. Almost all other aspects of learning preferences somehow link in with this and it is a key driver in the way farmers, in this subset of interviewees, think, behave and learn.

There are a number of key themed elements that need to occur for trust to be gained by farmers, and without trust in either a person or a brand/industry/company farmers are less likely to go on a learning or change journey.



Figure 10: Enlarged snip from the mind map in Figure 5: Trust aspects of learning

Trust takes time. A lot of interviewees mentioned this. It's both a relationship built (slowly) over time and having skin in the game (i.e. knowledge gained over time).

Farmer (F), dairying in the Bay of Plenty, talked about trust having to be “*earned*” and that often starting from a point of distrust and moving along from there will be the only way to do this and trust can be for both person and brand/company.

Farmer (N), a sheep and beef farmer in the Wairarapa, talked about a younger inexperienced rep being sent out in lieu of his normal agronomist on one particular occasion but because he:

“didn't seem to have any skin in the game and made some stuff up”

This young rep wasn't invited back, and the farmer instructed his normal agronomist to be the one to come out from now on. Farmers are a loyal bunch, and they want to know and trust the person giving them advice.

Good communication is another key aspect of trust and within this people must be clear, concise and consistent. Farmer (J) in Central Hawkes Bay said:

"... they have to have good communication and keep in touch, just like they are part of the team. We need to know what they are up to and that they are on this journey with us".

This one also links in a bit with being a part of the farm system, being on that journey and understanding all aspects of the farm business whilst communicating well, and help in the learnings.

Farmer (H), the large scale sheep, beef and deer farmer from Otago, agreed with above too saying:

"in order to trust someone coming on farm they have to have good communication and seek to understand us and what we are doing... it's an old school mentality really".

This 'old school' mentality is more good basic first principles. As in, trust can only be gained with good, effective communication and this involves also listening and 'seeking to understand'.

Farmer (F) talked about a lot of attitude / personality traits that will help lead to trust, these being *"consistency, attitude and honesty"*.

Attitude came up a lot and thus forms one of the sub-themes. The key attitude traits mentioned by three or more farmers were; **honesty**, a **willingness to challenge** – even if the farmer didn't agree- being **reliable** and people that were both **genuine and authentic**.

"You can pick up pretty quick when someone is not being genuine" was a sentiment that came up more than once. **Positivity** also came up as an important attitude that made trust easier to gain.

Trust was gained more easily if someone or something is **not seen to be pushing sales**. All fourteen farmers mentioned that a hard sales push was more likely to threaten trust and 'turn them off' a person or idea. This theme makes sense and is commonly considered in farmer interactions around learning.

Because farmers are so influenced by their networks, as mentioned in Section 8.2, trust can be gained quickly if the reputation of (a person or brand) is recommended or mentioned by other people already in the 'trusted network'. **Reputation** is a clear guide to trust, and this can go in the other direction too, in that distrust in a person or brand can occur if the reputation is not favourable in the district.

Farmer D said:

"I got recommended both my soils guy and my agronomist by some mates up the road, they came with pretty good reputation around the district, and now they are two of my most trusted supporters. Everyone round here uses them, they are good".

This sentiment speaks for itself in terms of reputation, and this is also obviously linked to performance over time, the right attitude and consistency which cements trust and a good reputation. This is an important point for discussion later on.

Companies wanting farmers to trust them, need to have good, reputable people on the ground and a low turnover of staff if possible, due to the time taken for trust being gained and the idea farmers may follow the person not the brand.

Things that could mean trust was destroyed or threatened were somewhat but not exclusively the inverse of the themes above, these being; arrogance, not being clear in communication and not listening, not being positive with Farmer (M) saying:

“we already have enough going on, we want positive people around”.

Someone pushing things that don't fit our system but push the idea anyway with Farmer (B) stating that when they do this:

“... it could be damaging to our business as often there is often a lot of time and money involved”

The final one was around a lack of competence due to not enough experience. This one speaks to industry needing thriving early career development of their people, fostering talent and allowing experience to flourish.

Companies with high turnover of staff was also mentioned by three of the farmers as a reason that trust may be threatened over time with Farmer (E) saying:

“it is always a real shame when one of the real good ones disappears”.

Trust is built over time, and can't be taken for granted. It requires a few key metrics to be gained and a brand or person must aim to be 'on the journey' with the farmer.

9 Extension work in New Zealand (RMPP)

There is an opportunity within this research project to discuss some of the formal work done in the recent past in New Zealand in extension, and farmers learning from other farmers in a safe, facilitated environment.

This section is brief, but aims to give recognition and discuss some of the important learnings and undertaken action during the Red Meat Profit Partnership (RMPP) Action Network Programme. This is worthy of mention and shows some very good collaborative work that is to the credit of RMPP and Beef + Lamb NZ (B+LNZ).

Many of the principles discussed around adult and farmer learning were put into practice throughout the formal seven-year programme, and alongside the literature review and insights from the semi-structured interviews it makes a nice third point of referral within this research for the discussion section.

This report focuses in on the key insights around farmer learning and the networks that exist and were created through this programme.

9.1 Background

To give context, the Red Meat Profit Partnership programme was a successful collaboration between farmers, B+LNZ, meat processors, ANZ, Rabobank and the Ministry for Primary Industries (MPI) and ran from 2013 through 2021 (RMPP, September 2021).



Early on, an extension pilot programme kicked off the early thinking in this space. This ran for 3 years testing approaches and small group learning was identified as the key 'gap' or need (personal communication, Aaron Meikle, October 2023).

A nice quote from a King Country farmer during the pilot period identified a key reason this programme was set up (RMPP, December 2015):

*“Farmers are always looking over the fence at the next-door neighbours and people down the road. And if it turns out to be a good idea they will do it. **They have to be left to make up their own minds because they are stubborn and independent. You can’t tell them something they have to absorb it”.***

The pilot programme also identified that farmers need to own the ideas and that the goal would be to make implementation (i.e. for change) easier (RMPP, December 2015).

Following on and taking the learnings from the pilot programme a model was set up in 2017 (publicly) and landed on a base of seven to nine farm businesses working together in ‘Action Groups’ (RMPP, December 2020). The idea aimed to link these sheep and beef farmers up with rural professionals (acting as facilitators) from around New Zealand in a support network with a goal of helping farmers put their good ideas in to action and make positive and informed change on farm (RMPP, December 2020). It was to be a farmer led programme with the facilitator there to help identify experts to come in are share knowledge and ideas so that farmers can need achieve their goals (RMPP, December 2020).

A nice quote from Aaron Meikle, B+LNZ (personal communication, September 6, 2023), who has done a

lot of work in on-farm extension was: *“We don’t spend enough time thinking about how as opposed to what – extension is a skill, it’s not just who knows the most technical info that is best at it. A key for me is that ‘quantity has a quality all of its own’ in extension, the search for the ‘best’ method can lead us astray. There is no one best method because we have 10,000 or so unique farm businesses and 20,000 or so unique human beings – we need a range of methods.”* A hugely valid point in the complexities of on-farm farmer learning. Figure 11 shows the key outcome(s) that were decided at the putting together of the programme.

B+LNZ have done a large amounts of work around adult learning and played a key role in the setup of this programme.

We know from the research that farmers do have a strong

preference to learn from other farmers as well as and often in conjunction with the advice of trusted and other independent experts (Rust et al., 2022; Wood et al., 2014). Figure 11 shows that the action network aimed to bring a lot of this together and that in doing so, some of the key outcomes around building networks, growing skills through awareness and helping farmers in their decision making processes be bought together. In this, farmers are supported to have confidence to go where they need to go and improve profitability (RMPP, December 2020) and that quoted King Country farmer might just



Figure 11: Key outcomes of the RMMP action network programme (RMPP, September 2021)

be more on board with practice change as the process is smoother and tailored through listening and learning (RMPP, December 2015). They farmers are now one and part of the learning process.

9.2 Extension and adoption

The 2020 Programme Summary document identified that 1,868 farm businesses (approximately 20% of NZ sheep and beef farmers) joined the RMPP Action Network. The initiative played a critical role in increasing that all important connection piece with farmers, as well as marked increases in farmer-wellbeing and practice change on farm that was sustainable to farmers (RMPP, December 2020).

In follow up from some of the outcomes and learnings from the programme, RMPP and the partners in the programme found six key factors that contributed to the scale of the positive practice change that occurred and this is outlined in Figure 12 below which comes directly out of the 2020 summary report.



Figure 12: Connection for farmer learning in the RMPP Action Network groups. From 2022 RMPP summary report.

Figure 12 summarises the links between connection (the social aspects) and learning with a farmer-led focus and this shows that in the real world, these concepts and principles can play out for success.

It is important to see that all the links coming off that connection piece may be important. The effective facilitation, in that conversations can be kept on track but also in that experts can be bought in when needed and in an appropriate way, is assuming that the farmers in the group ultimately drive the information or support that they are after. It is ‘farmer-led’ but has flexibility, is supported and offered that all important ability for peer-to-peer learning.

There was an obvious feedback loop ability within this programme to dive deep in terms of some of the actual benefits being seen on farm (both in terms of bottom lines and the added social benefits) (RMPP, September 2021). What can be said is that they RMPP Action Network was seen to represent somewhat of a transformation in the extension model. This was shown through the flow on effects to the wider sheep and beef industry due to the productivity, profitability and sustainability benefits seen coming out

of many of the action network groups (RMPP, December 2020). Actual numbers and performance indicators are summarised in the 2021 final report.

To date, B+LNZ still supports the programme but there is no direct fundings available now to support groups however in-kind support still exists in terms of the resources to support running groups.

During the course of the programme a number of tools and resources were developed, of course with farmer collaboration. In this, there was an overall goal to help sheep and beef farming businesses to be more productive and profitable through making more informed decisions by helping them to measure what they are doing and/or see where they could improve (RMPP, December 2020).

10 Discussion and key findings

This section aims to bring together and articulate all the themes and insights from the literature review and the semi-structure interviews, with the research aims and objectives in mind. The RMPP model will also be discussed where it relates.

Much of the literature review and the thematic analysis of the semi-structured interviews discussed and touched on useful ideas, preferences and practical applications of the ways and means by which our pastoral farmers learn.

10.1 The different aspects of learning

What became clear in this project is that there is are two main pillars deeply linked and intertwined in the way farmers prefer to gather information, understand it, and potentially use it for change.

These are, the **learning aspect/s** as well as a deeply ingrained **social aspect**.

For learning to occur, it is clear through both the literature and the interviews that awareness is always the first step. The *farmer learning in the wild* section of the literature review reminds us that formal extension is somewhat of a lost art in New Zealand, however RMPP and B+LNZ programmes like the RMPP Action Network groups have recognised the recent need for this, in the red meat sector at least. We know these on-farm extension activities are good places for farmers to get that initial awareness of new ideas, technologies or practices that work within their region or type of farm system.

There is a strong link between awareness (the start of learning) and the social side, as in *learning from others*. The on-farm extension work with RMPP and B+LNZ successfully created an environment for this. Many of the farmer interviewees mentioned 'talking to or calling up mates/peers/mentors/family' or 'going to discussion groups' as an important piece in not only opening their eyes to new ideas, but understanding things once they were aware, and helping to make decisions for change.

The young farm manager in Canterbury, Farmer (M), enjoyed their weekly catch-ups with the wider farming group as it offered a chance for conversations and anything he didn't know about he could then read up on. Figure 2 was a useful visual way to help comprehend the complexity of learning, and differences between knowledge creation and knowledge validation (Gray et al., 2003), which are intrinsically linked.

Many of the interviewees talked about liking some of the 'hard copy mail-outs' that arrived to the coffee table; as it created that first awareness. Some farmers also suggested they could never find the mailings when they actually wanted them, but it did help them become aware.

Therefore, awareness for brand, or intellectual property (in terms of technical knowledge and support on farm) must be front of mind for those supporting farmers and helping them learn or for them to possibly be open to the idea of practice change.

The type of information farmers are seeking is touched on in **Section 8.1.2** and keeping this in mind is important so information is relevant.

The literature review suggested in no uncertain terms that knowing the key target audience is of the utmost importance in farmer learning (Franz et al., 2010; Gray et al., 2003; Nuthall & Old, 2018; Sewell et al., 2014). The target audience in this research has been pastoral New Zealand farmers aged 30-45. To take this further, we also then have dairy farmers, sheep farmers, beef farmers, breeding and finishing, dairy grazing, wool and cropping. There is a real need to know what these sectors are, what they want, what information they are seeking and how they want to learn about homegrown feed options and best management practice.

To further reinforce this idea, within the farmer interviews the *'relevance to my system/farm'* came up repeatedly and aspects of trust and becoming part of that 'inner network' will not occur without a real empathy and understanding of each individual farming system.

That *'old school mentality'* that Farmer (H) alluded to wasn't a silly thing to say. For anyone wanting to help farmers learn and make change, they need to have a desire to seek to understand what the farmer/s are doing and what they want to achieve, so in them they will trust. They must be *'on the journey'*.

“The key is to get to know farmers, find out what interests them and then be responsive to their needs ”

Sewell et al. (2014)

As was stated in the research by Sewell et al. (2014), the key is to get to know farmers, find out what interests them and then be responsive to their needs.

Recognising the diversity of farmers across the different sectors of dairy and sheep and beef, and their diverse motivations which need to be met, as they are all different - farmer to farmer or farm to farm. Offering a variety of opportunities for awareness and learning experiences is key and being very clear about knowing who the target audience is.

Science and evidence-based information, data and trial results based on real on farm experiments is more trusted by farmers. This was clear within the cohort of farmers interviewed, such as with Farmer A stating *'we prefer information that is science based'*. This thought is common in much of the literature but with some key provisos. Rust et al. (2022) showed scientific information is only trusted and useful to farmers if it is shared or acknowledged in a way that suggests some independence and has a relatable deep and empathetic understanding of the farmers and/or their farm system. It has to be relatable, so the trust in science also links in with the relevance to farm system, and both must occur.

The ideas farmers build on their existing knowledge and learn from their mistakes (and others' mistakes) is clear. Many farmers interviewed saw their existing knowledge as a key source of their own information, but they were still open to new ideas and 'tweaks for a change'. Varying sources of experience and information also relates to Figure 3 in the literature review.

Bringing the learning and social aspects together, it is obvious that farmers will gain awareness and get ideas from a multitude of sources. These sources may be one or many of, for example, reading materials from private industry, research results, scientific papers, and on the people side agronomy or seed merchant specialists, bankers, vets, other farmers or extension facilitators.

What is at play here is the social interactions aspect requires a ‘two-way’ working *with* each other for a common goal.

If we think about forage and home-grown feed as an example, a relationship between a farmer and a seed merchant agronomist needs to be a two-way street. This is in terms of the agronomic support that farmer is getting from that person as well as the agronomist understanding the farmer's goals and desired outcomes. On top of this, a farmer may also sanity check any ideas or discussion with this agronomist – or with one of his/her fellow farming peers to see if they've ever tried it, or if there is someone else within the trusted network they can talk to.

In terms of the learning aspect, decision-making processes were reasonably similar among all farmers interviewed. There is a common idea of ‘going large then coming in’. Going large can be reading, googling and asking others. Coming in usually involves looking to the inner close network and/or self to ultimately make the final call.

It was intriguing to hear different farmers talking about their different appetites for risk, and that this sometimes made decision making easier or harder! But most agreed there is learning through doing, learning from mistakes and learning from others' mistakes, which speaks to the practical nature of pastoral farmers.

In view of decision making, the literature commonly talked about trust playing a big role (Kilpatrick & Johns, 2003; Nuthall & Old, 2018; Rust et al., 2022; Wood et al., 2014). The link here is in that for information to be on-boarded by a farmer to make change (i.e. a decision is made to make a change), then he or she must trust this information and where it is coming from. Which leads nicely into the final section of this report.

10.2 Networks and trust

The importance and impact of farmer networks and trust on learning preferences were prevalent throughout the literature. Thus, both of these were asked about within the interviews (see Appendix 1).

Trust can be for person or brand.

Because people (networks) and trust intertwines so closely with the learning aspects of the findings many insights already offered relate to this.

Something that jumped out on the social side of things was the difference between the red meat sector farmer cohort and the dairy from the interviews. The sheep and beef farmers appeared to rely more heavily on the interaction with peers in terms of their awareness to pastoral farming practice. In answer to almost every question, the farmers interviewed mentioned regularly calling others, meeting together for ‘farm tours’ and other informal aspects of social learning as they talked through their ideas or visions.

Dairy was a little different as there appeared to be a more systematic approach that did not always involve others. The possible explanation here is because the dairy system are less complex in a sense to the juggling act of stock classes and land areas in sheep and beef. Many of the studies in the literature focused on red meat sectors farmers and agree with the need and importance of social interaction in learning, decision making and change for this sector of farmers.

How networks are formed and survive and thrive over time, was described the same way in the literature and interview responses. All interviewees said they relied heavily on existing networks when it came to anything to do with learning or management around homegrown feed topics. They were all also open to new networks with the proviso that trust existed with the person or brand in the first instance.

Trust is the key building block and foundation for any learning or interaction to occur with farmers. They will simply not engage if trust does not exist, with many saying they will start from a place of 'dis-trust' and go from there. The literature agrees, saying learning can only occur where there is a high degree of trust in the relationship (Franz et al., 2010; Rust et al., 2022; Sewell et al., 2014; Sewell et al., 2017).

Fostering a learning community is way to build a trusted network. The RMPP action network groups did this successful through small farmer cohorts in the same district/systems, meeting regularly and learning farmer to farmer, and farmer to expert (and back again). These activities, usually held on-farm, are an opportunity for trust to be built and fostered through time. The literature, and a lot of our farmer interviewees, suggest this is the right environment for positive learning.

Understanding farmer networks, their complex social interactions and how and why trust is so key to all of this is a key part of understanding the learning preferences of our pastoral farmers.

11 Conclusions

The goal of this project was to gain insight into how and from whom or what our New Zealand pastoral farmers learn about forage and homegrown feed within their farming businesses. What their learning preferences are in this space.

The results of the research undertaken align well with what the literature and previous work done in this area has found, which helps get a clear picture on how our farmers learn at this day in time.

To learn farmers need to trust the source of information, and these trusted people or brands must show they understand the farmer, what drives them, what their challenges are and how they are all different to each other.

Gaining trust takes time, involves good communication, always, shows an empathy of understanding towards farmers, has specific positive attitude attributes, is well reputed and is not seen to be pushing sales. Trust can be for person, industry or brand. Without trust, there is no engagement and learning is unlikely to occur.

We know that for learning to begin there must be an initial awareness and, in the most basic sense, many farmers will then lean straight to the social aspects of learning by drawing on those around them. This may also occur with a bit of trial and error or 'reading up' on a topic. The farmers inner networks play into the awareness, learning and decision-making journey, and to be part of a farmers inner network, trust must exist and be fostered over time.

For anyone supporting farmers, on-farm, they need to have a high degree of understanding and empathy around the farmer, farm system and farm business. They need to know their audience, very well. They also need to be competent in their chosen space. And there needs to be understanding around what drives the farming business, the specific unique quirks of the region or system type and where the challenges lie.

Everything must be relevant, and the farmer must perceive the person or brand to be 'the journey with them'.

No two farms nor farmers are the same. Their learning preferences also differ, but there are key themes that the majority will allude to, and it is by offering a range of options within this that we can support our farmers on a learning journey, when and if they need it.

11.1 Recommendations

So what are the key recommendations to pastoral agribusiness that come out of this research?

To recap, there were two initial research objectives for this project:

1. To identify a clear and deep understanding of how and from whom or what our New Zealand pastoral farmers learn about pasture and homegrown feed for their farm system(s).
2. Understand the main learning preferences and what is important to the New Zealand pastoral farmer making forage decisions on farm.

As stated in the introduction, these recommendations are written with the objective that businesses dealing in homegrown forage (i.e., a proprietary seed company) can take on board.

These recommendations could in fact apply to anyone supporting New Zealand farmers in profitably producing protein from pasture and crop.

11.1.1 Create awareness around the practice or concept

- To gain initial awareness around brand, product or management practice, a wide range of differing approaches may be needed.
- Different approaches to gain awareness could be any or all of: written mailouts, online information, scientific papers, email, forums for discussion, being visible/present or speaking at industry events or field days and discussion groups.

11.1.2 Know the target audience

- Be clear about the key target audience/s and the different 'cohorts' of New Zealand farmers.
- Understand the variability of farm systems around New Zealand and have empathy to the unique challenges and quirks faced.
- Seek to fully understand the main types of information farmers may be looking for:
 - ask farmers why, how and in what ways they can be supported to learn, adopt and/or make change if required. Listen.
 - make sure information is relevant to the target farmer / farm system.
- Ask many questions of farmers, in any forum, whenever possible. Be interested and seek to go on a journey with them around their farming business.

11.1.3 Create a fostered learning environment for farmers

- Recognise that building and gaining trust is of the utmost importance:
 - Learning or engagement will not occur without trust.
- Understand the importance of networks and aim to join these and in all ways possible to become a part of them:
 - Farmers prefer learning from others in their trusted inner network.
- Foster early and later career development within internal business, so longer term relationships can be built with farmers within farming regions. It takes time.
- Create a learning environment that brings farmers together, where learning can occur in many directions i.e. organised 'pasture' discussion groups held regularly in local districts and/or similar farm systems.
 - The key trusted advisor/facilitator could be someone from within the supporting business, and can draw on their own wider networks to bring 'experts' in.

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13 Appendix

13.1 Appendix 1: Semi structured interview questions

Farmer Interviews Jen – farmer learning preferences around pasture homegrown feed	
1.	Please tell me a bit about your farm system and yourself/your role on the farm?
2.	What type of information may you typically seek in relation to homegrown feed on farm?
3a.	What are the best sources of information that you have used when learning about pasture, crop or management (of these) for your system?
3b.	Why were these sources of information preferred and useful to you?
4.	How do you decide where to look for information (about pasture or homegrown feed) for your farm system?
5.	What have been the most helpful channels for you in terms of going from an idea to action / full implementation on farm?
6.	To what extent do you rely on your existing networks to help in your learning about pasture or crop (i.e. agronomy support)?
7a.	How do you come to a point of trust with someone supporting you on farm?
7b.	Who are your most trusted advisors on farm?
7c.	And what sort of things may destroy or threaten trust?

13.2 Appendix 2: Farmer interviewees, broad background information

Farmer	Age	Region	Sector
A	43	Waikato	Dairy
B	35	South Canterbury	Red meat: Sheep & Beef
C	37	Manawatu	Red meat: Sheep & Beef
D	38	Rangitikei	Red meat: Beef
E	37	Waikato	Dairy
F	32	Bay of Plenty	Dairy
G	37	Canterbury	Red meat: Sheep & Beef
H	39	Otago	Red meat: Sheep/Beef/Deer
I	32	Waikato	Dairy
J	37	Hawkes Bay	Red meat: Sheep & Beef
K	34	Tararua	Dairy
L	40	Central Plateau	Dairy
M	30	Canterbury	Dairy
N	40	Wairarapa	Red meat: Sheep & Beef