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How does Tracing a New Zealand Mid-Micron Wool Clip Impact a Grower's Farming System?

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Christie Burn

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Executive Summary

The New Zealand mid-micron wool industry traditionally was a major contributor to the economy. Today, the wool cheque often does not cover the shearing costs. Therefore, most growers are implementing this mainstream income as a yearly farming expense. With rising competition for cheaper apparel of plastics and synthetics, wool products have become targeted apparel for higher-end users due to price. With all this, it is putting pressure on the New Zealand wool industry, especially mid-micron, and strong wool growers.

The aim of this project is to understand the entire supply chain of mid-micron wool, and how growers adapt their business to suit this chain. The research seeks to establish if there is a premium for a traceable wool clip, and who in the chain absorbs the benefit if there is one. Having a passion for wool, a byproduct, which is continuously decreasing in value, it seems appropriate to dissect the supply chain and understand it from a grower's perspective and the impacts on their farming systems (positive and negative).

The literature review focuses on three main points consumer preference, supply chains, and value chains. Consumers are becoming more aware of prices, what products are made of, and where they come from. This is where the demand for traceability comes into place. The supply chain is complex and hard to trace which makes it difficult to give value back to growers. Icebreaker is used as a case study to provide an example of a supply chain that is creating value for its farmers by meeting consumers' demands. Interviewing industry leaders across the supply chain provided perceptions of each stage and their thoughts on the wool industry. The recommendations aim to support farmers capture value from their mid-micron wool through tracing and adapting farm systems.

1. Educate, educate, educate! Educating every stage of the supply chain will benefit by adding value back to growers.
2. Educating consumers on mid-micron woollen products through wool in schools' containers (Campaign for Wool), and marketing through social media and television.
3. Farmers move out of their comfort zone by embracing technology and meeting consumer demands.
4. Capturing the value and distributing it back to growers through meeting consumer demand.

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2. Introduction

The New Zealand Wool industry traditionally was a major contributor of the economy. Today, the wool cheque often does not cover the shearing costs (Taonga, N. Z. M. for C.& H. T. M., n.d.). Therefore, most growers are implementing this mainstream income to a yearly farming expense.

Sheep and Beef Farm Income Source

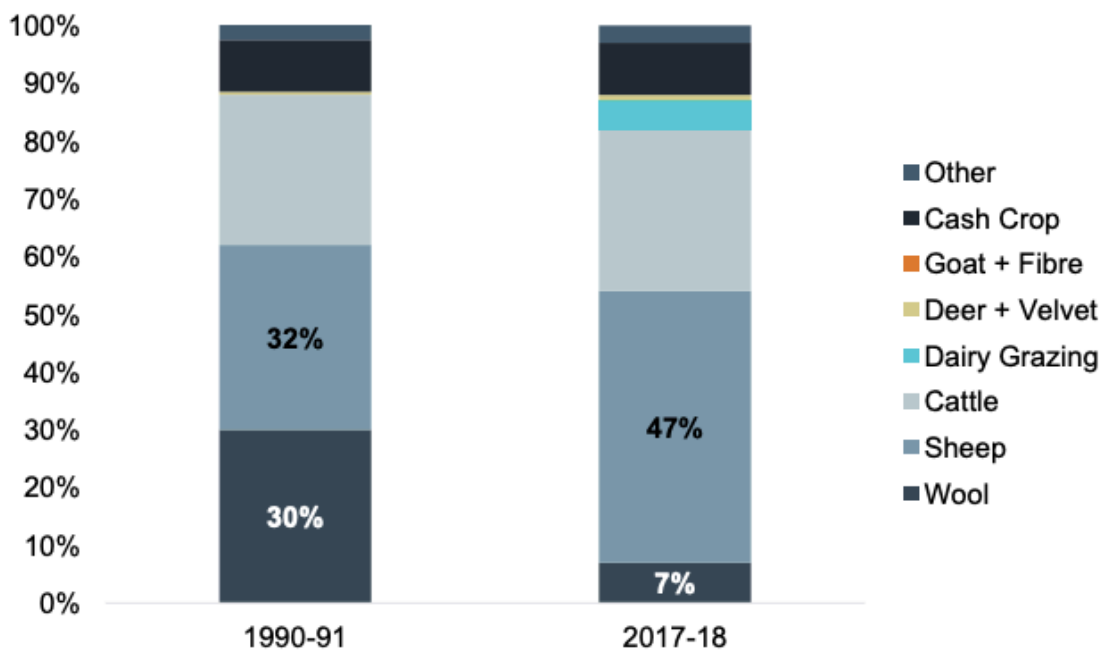


Figure 1: Sheep and Beef Income Source (B+L, 2022)

Since the economic boom from the Korean war in 1951, wool value has had a steady decline. (Taonga, N. Z. M. for C. & H. T. M, n.d.). For example, in 1969/70 New Zealand exported approximately 240,000 tonnes of wool (clean), whereas June 2002 New Zealand exported approximately 151,000 tonnes with a continuous decline. (Elisabet, L., & Bradford, A, 2009). With rising competition for cheaper apparel of plastics and synthetics, wool products have become a targeted apparel at higher end users due to price (Elisabet, L., & Bradford, A., 2009). These changes are putting pressure on the New Zealand wool industry, especially our mid-micron and strong wool growers to produce quality wool with a shortened income stream.

What is a micron?

A micron is a measurement used to express the diameter of wool fibre. The lower the micron the finer the wool (Helmenstine, A., 2020).

What is a mid-micron wool?

Typically, a mid-micron wool ranges from 25-32 micron. This is mainly your Corriedale breed (Macpherson, n.d.)

Mid- micron production grew in line with the development of the export meat industry when New Zealand growers started searching for a dual-purpose sheep breed (Taonga, N. Z. M. for C. & H. T. M., n.d.). A mid-micron breed was traditionally a fine merino crossed with an English Leicester or Lincoln. This produced what is now known as a Corriedale.

A typical farming system for a mid-micron wool farm is hill country sheep and beef. The land is tussock with low land flats for the finishing stock. (Dynes. Et.al, 2010). A Corriedale is a dual-purpose sheep found throughout the southland in lower rainfall areas (Corriedale – New Zealand Sheep Breeders Association., n.d.). Corriedales produce top quality with a big, bright, dense, bulky, and soft handling fleece.

With a picturesque hill country landscape, the growers can develop a story to create a symbol on their products they are producing. New Zealand is exceptionally good at telling a story about our products and showing off our beautiful country (Pawson, E., & Perkins, H., 2013b). With this, the wool industry has noticed tracing a product through telling stories. There are several methods for tracing a product. These are:

1. Blockchain- recording and storing information in a digital ledger.
2. QR codes- Quick Response Codes.
3. NZFAP- New Zealand Farm Assurance Programme- Linked to the meat industry also.
4. Telling a story- New Zealand has an image that can promote products to consumers all over the world.

Traceability definition

Traceability is defined as the capability to trace something. In this case, from the sheep's back to the woollen jacket purchased. (Keyence, n.d)

Visibility from grower to garment-New Zealand Merino, ZQ

The wool industry is focusing on consumer demands and adapting to the requirements (Rennie et al., 2020). Overtime, consumers are sustainably and ethically more aware prior to purchasing. This means, tracing a product back to the grower is what the consumers require. Other wool companies that are using types of traceability and now have well-known products in New Zealand:

- Icebreaker:
 - Merino outdoor clothing wear
 - QR Codes and telling a story
 - Contracted growers throughout the world
- Davvar and Co:
 - Mid-micron woollen jersey range
 - Telling a story
 - New Zealand made
 - All mid-micron wool is from Davvar and Co Station in the South Island
- Honest Wolf:
 - Mid-micron woollen bags.
 - Telling a story
 - All wool used is from one station in the North Island
- Exquisite Wool Traders: –
 - Mid-micron woollen throws and bed blankets
 - Traced through using one wool broker and two mills
 - All New Zealand wool sourced from the Canterbury region

“Over the next decade, the New Zealand wool sector should commit to capturing the hearts, minds and values of consumers who love natural, sustainable materials.”-Wool Industry Working Group,2021.

Now with having a steady decline of the wool value, mid-micron wool growers are now facing responsibility to create a sustainable competitive advantage for their product in the market.

So, how does tracing a New Zealand mid-micron wool clip impact farming system? Throughout the research, having a logical and useable answer to encourage consumers and growers to have pride in this natural fibre has proven to be difficult.

3. Aims and Objectives

The aim of this project is to understand the entire supply chain of wool, and how the growers adapt their business to suit this chain. Comparing a traceable and non-traceable mid-micron wool clip will give feedback to see if there is a premium for a traceable wool clip, and who in the chain absorbs the benefit, if there is one. Wool continuously being grown and a byproduct, which is continuously decreasing in value, it seems appropriate to dissect the supply chain, and understand it from a grower's perspective and the impacts to their farming systems (positive and negatives).

Four objectives form the basis of this report. They are:

1. Understanding Consumer preferences, supply, and value chains.
2. Overview successful and current traceability schemes which add value to growers.
3. Analyze the current mid-micron supply chain readiness for pursuing value add strategy.
4. Identify and discuss key requirements to create value throughout the mid-micron wool supply chain.

4. Methodology

The Wool industry is an old industry that in recent times has started to modernize and help a quality product gain value again and the recognition it deserves.

To complete this project, the four methods used are:

- A literature review
- A case study
- Semi-structured interviews with eight industry leaders.
- A thematic analysis on the semi structured interviews.

A literature review has been done to gain an inside and background knowledge of the wool industry, then narrow my findings based on the aim of this report. Narrowing the literature review down to the three sections to explore that have the biggest impact on the grower and traceability.

A case study on Icebreaker is done to compare an already thriving merino brand that has been traced to implement the mid-micron range and how they can do the same. This gives a good insight into merino wool and how icebreaker/New Zealand merino has set up their growers and the supply chain. The icebreaker brand is a good example to go by to start the process of traceability.

Semi-structured interviews were used to develop an understanding of traceability and how it applies to the interviewee's businesses. Interviewing a wide range of people from the sector created whole perspective, not just aimed at growers. This process helps to understand the supply chain and how different the views were throughout the chain.

Lastly, a thematic analysis has been done throughout the report to dissect my data and findings to common themes throughout the semi-structured interviews.

Basing the analysis off Braun and Clarke (2006) report help identify themes across the interviews. The steps used are:

1. Familiarizing myself with the data
2. Generating initial codes
3. Searching for themes
4. Review themes
5. Defining and naming themes
6. Producing the report

These methods are used to understand the wool industry from distinct aspects. Icebreaker are using traceability to consumers' demand and gaining knowledge and thought throughout the supply chain from interviews. It shows the variation of thoughts and knowledge of the wool industry.

5. Literature Review

When it comes to a high value product, most consumers want to know all about the status of the material throughout the entire supply chain, grower to customer (Jegethesan, K., Sneddon, J. N., & Soutar, G. N., 2012). The review will investigate what impact traceability has on growers farming systems and how this influences the value they capture on farm.

i. Consumer Preference

Consumers are becoming ethically, environmentally, and socially aware of where their products are coming from and how these products are processed from raw material to apparel (Jegethesan, K., Sneddon, J. N., & Soutar, G. N., 2012).

Mid-micron products are used most of the time in the manufacture of apparel: forty percent knitwear, forty percent men's and women's wear and twenty percent interior textiles. (Stevens. A., 2007).

Mid-micron value has been declining since the 1990's as a global issue, not just New Zealand. (Stevens. A., 2007).

There are several reasons indicating this decline:

- Unfavorable exchange rates
- High oil prices
- Low cotton prices
- Increased production of synthetic clothing

Another contributing factor is mid-micron can be perceived as 'prickly' on the skin compared to a fine merino micron.

Traceability of mid-micron wool products has become a major interest for consumers in recent times.

Traditional traceability focused-on loyalty and word of mouth. With advertising through the radio and television (Rennie et al., 2020). Today, research by consumers is undertaken online and then either purchased online, or consumers request what they have researched at the

appropriate store. As, the trend continues the advertising is all online through social media and upgraded marketing (Rennie et al., 2020).

From a wool perspective, consumers are price aware as wool is a more expensive product. But the older generation consumers prefer to look at the product before buying due to price, and quality. For example, they want to see if the product fits the décor of the house (blanket). They will buy the blanket no matter what the price is, as you will only buy once, rather than several synthetic products.

Younger people buy online due to convenience. They will buy online at home rather than look at the products in person. Most consumers have a process they go through prior to purchasing apparel. The five steps to consumer decisions are: (Rennie et al., 2020).

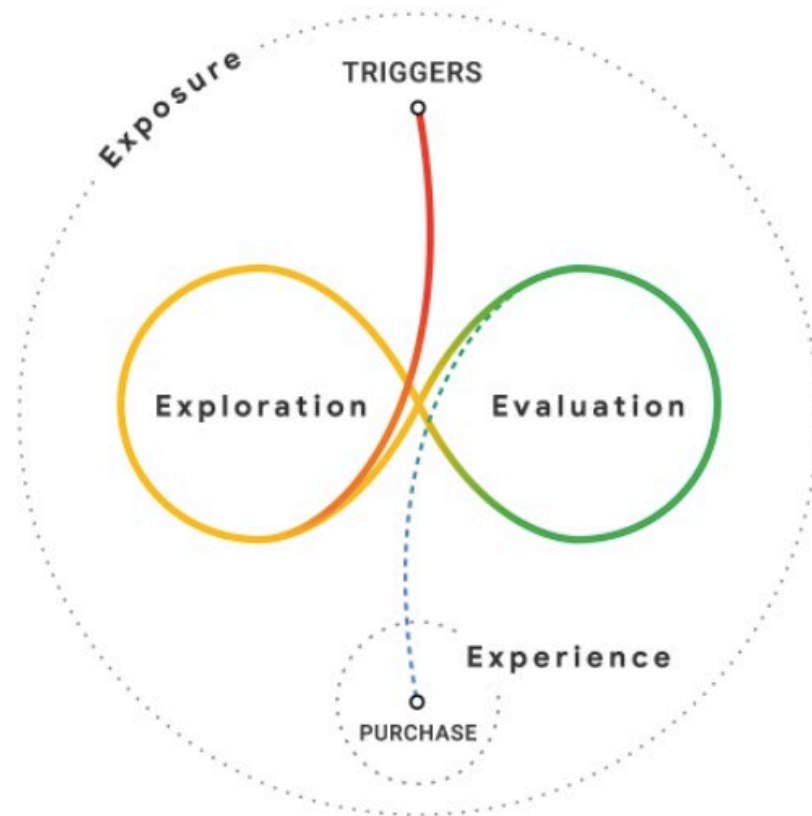


Figure 1: A consumer decision process diagram (Rennie et al., 2020).

1. Need recognition:

- a. Consumer identifies an unmet need that needs to be fulfilled. A need is something that a consumer needs to live and function. A want is a means to fulfill the need.

2. Information Search:

a. A consumer recognizes a specific problem or need will then likely be persuaded to search for information, internally and externally.

3. Evaluation of Alternatives:

a. Consumers evaluate all their product and brand options on a scale of attributes which can deliver the benefit that the customer is seeking.

4. Purchase decision:

a. Once consumers have gathered all the facts, including feedback from previous customers, consumers should arrive at a logical conclusion on the product to purchase.

5. Post purchase evaluation:

a. This is the final stage of the consumer decision making process. This is the stage after a product has been purchased and used in which the consumer reflects on whether the product met expectations, exceed them or was disappointing.

The diagram above interprets the consumers decision making process, and what they are thinking when buying products. As you can see, exposure to the product is a big trigger for a consumer to consider the products. If the consumers are not exposed to the product, they will not be going through the decision-making process.

For a wool apparel, most consumers want to see the benefit to themselves and the environment. The main benefits are: (Benefits., n.d.)

- Sustainable
- Renewable
- Durable
- Microplastic Free

Consumer preference of a woollen product is heavily focused on the skin contact and how it feels against the skin. (*International Wool Textile Organisation | Global Authority | IWTO., (n.d.)*). Study has showed that most consumers have a point of view that wool is an allergy. Over one hundred years of analysed research has shown that it is in fact the diameter fibre that causes the itchiness. (*International Wool Textile Organisation | Global Authority | IWTO.,*

n.d.). This signifies why fine wool apparel is in high demand and mid-micron wool and strong wool are in a depletive state.

Consumer preference is all about the consumers wants and needs. The woollen industry is an industry that need to listen to the consumers demand to create demand for the products. This is where knowing the wool supply chain of each mid-micron item gives the product a competitive advantage.

ii. Supply Chain

Supply Chain definition:

A supply chain is the network of all the individuals, organisations, resources, activities, and technology involved in the creation and sale of a product. (Lutkevich, B., n.d.).

In the past, most growers concentrated on the physical aspects of the farm, such as inputs and outputs, animal health, breeding and quality of wool and meat produced. (Elisabet, L., & Bradford, A., 2009). The wool supply chain is the most complex agricultural chain, traceability throughout becomes a major aspect of the process. (Elisabet, L., & Bradford, A., 2009). Tracing a wool clip can benefit the grower and consumer in many ways.

- Monitor the product to protect the grower and consumer.
- Enables improvements along the supply chain.
- Better decision making for grower on the farm and for the consumer when purchasing products.
- Also gives the products a reputation through traceability.

As the figure below indicates the wool industry supply chain is large and complex.

The entire chain involves: Woolgrowers - Shearers and Classers - Wool Brokers - Wool Scourers - Spinners - Weavers, Knitters, or Carpet Manufacturers - Retailers - Consumers (IWTO, 2022). For Mid Micron woolgrowers, the traditional supply value chain structure means that their wool makes up a small proportion of the final product value due to the many steps required to make a finished product.

The Wool Industry Supply Chain

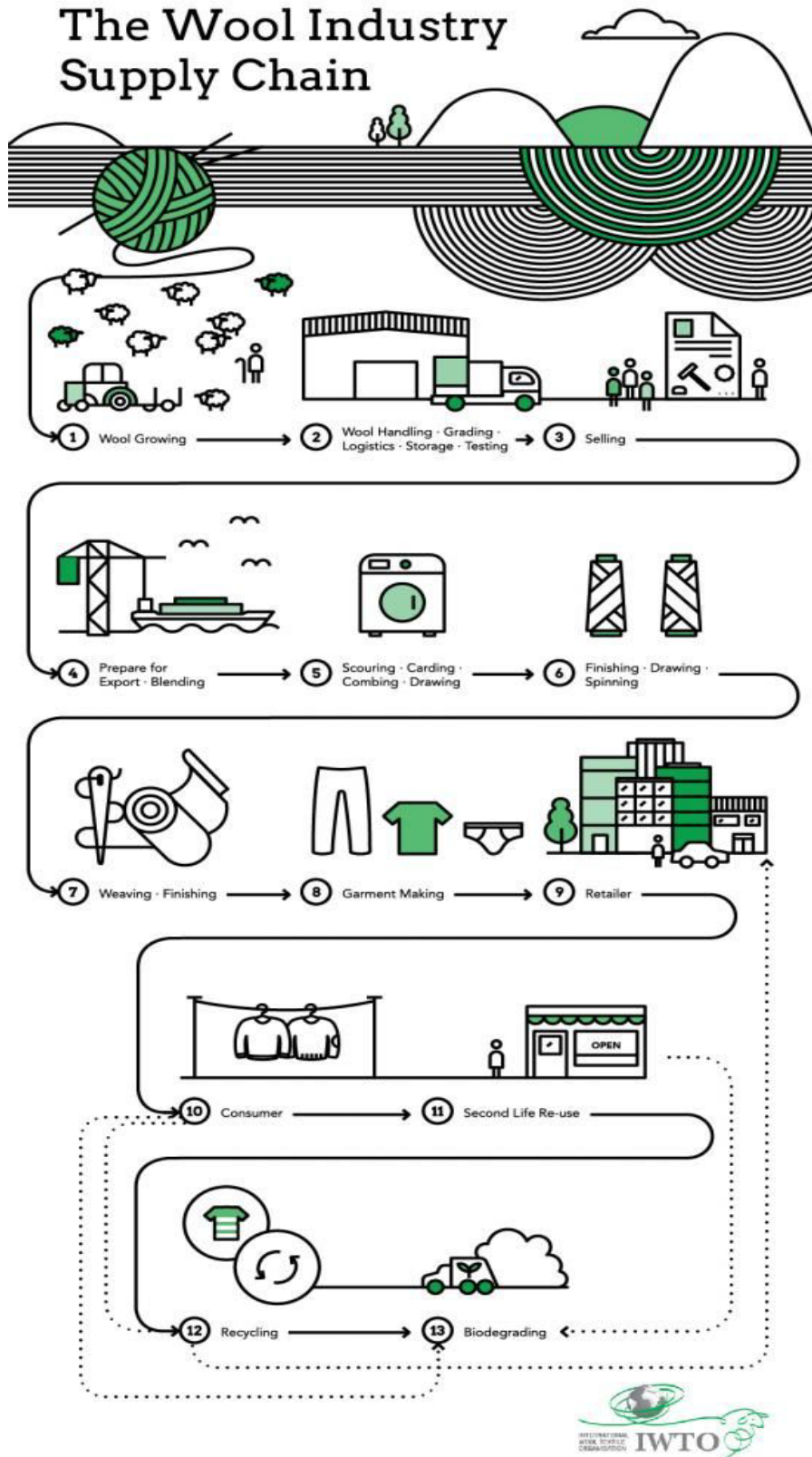


Figure 2: Wool Supply Chain (IWTO,2022)

Information sharing is an essential element of communication across the supply chain. In New Zealand's wool industry there is often a perception that shared information within the sector will inform competitors and may disadvantage the business. Despite being able to synthesise information from wool auctions and export tariff data, members of the wool industry do not necessarily allow others to easily access their data. Contrary to some assumptions that information sharing may create mutually beneficial outcomes, the wool industry views this as an avenue for some contenders to gain a competitive advantage. (Saunders, C. M., McDonald, H., & Driver, T., 2011).

Figure 2 above, indicates an overly complex supply chain, which becomes longer wool's biodegradability are considered. (International Wool Textile Organisation | Global Authority | IWTO., n.d.). Wool is first assessed in its rawest form 'greasy wool.' It is called the greasy state as the first process in the supply chain is washing.

and removing the grease/lanolin. Lanolin is then processed into personal care products. The last stage of the supply chain is biodegrading. This is where the wool can be broken back down and either used in soils or back into woolen products at a lower value.

The supply chain is so long and complex it is difficult for all stages to communicate. This makes it difficult to produce a mid-micron product. It also makes it difficult to get value back to the grower who has grown the natural fibre.

iii. Value chain

Value Chain Definition:

A value chain is progression of activities that a firm operating in a specific industry performs to deliver a valuable product to the end consumer. (Stobierski, T., 2020).

Porter (1985) promoted the value chain concept to describe a firm's internal value-adding activities. The agriculture value chain has devalued over time for the focus on the supply chain and getting the product from growers to consumers as efficiently as possible to fulfill the demand for products. (Mcintyre et al, 2019).

There are three different forms of value that occur. (Feller et al, 2006).

1. Technical value- Essential to the resources provided and occurs in all exchanges.

2. Organisational value- Built upon the context of the exchange and derive from a range of factors (ethical, reliability, association, brand image).
3. Personal value- Personal experience and relationships involved in the exchange of resources and the benefits provided.

The wool industries value chain is more a land-based chain where the grower has little control, if any, over the value of the product on the market. (McIntyre et al., 2019). Ninety-five percent of New Zealand's wool exports are strong wool, with only five percent of fine wool (Merino) (Pawson & Perkins, 2013b). The mid-micron range of sheep was used for the dual purpose of wool and meat to add value into the farming system. With mid-micron wool aimed at the medium knitwear and fabrics, the value throughout the system was spread evenly, and the grower was able to make a profit off wool and meat. Seventy-five percent of the grower's income was from the wool check, today only fifteen percent of the income is wool (Pawson & Perkins, 2013b). For the wool industry today, it is a matter of how to get the supply chain and the value chain connected and 'working together' to have a consistent value across the supply chain.

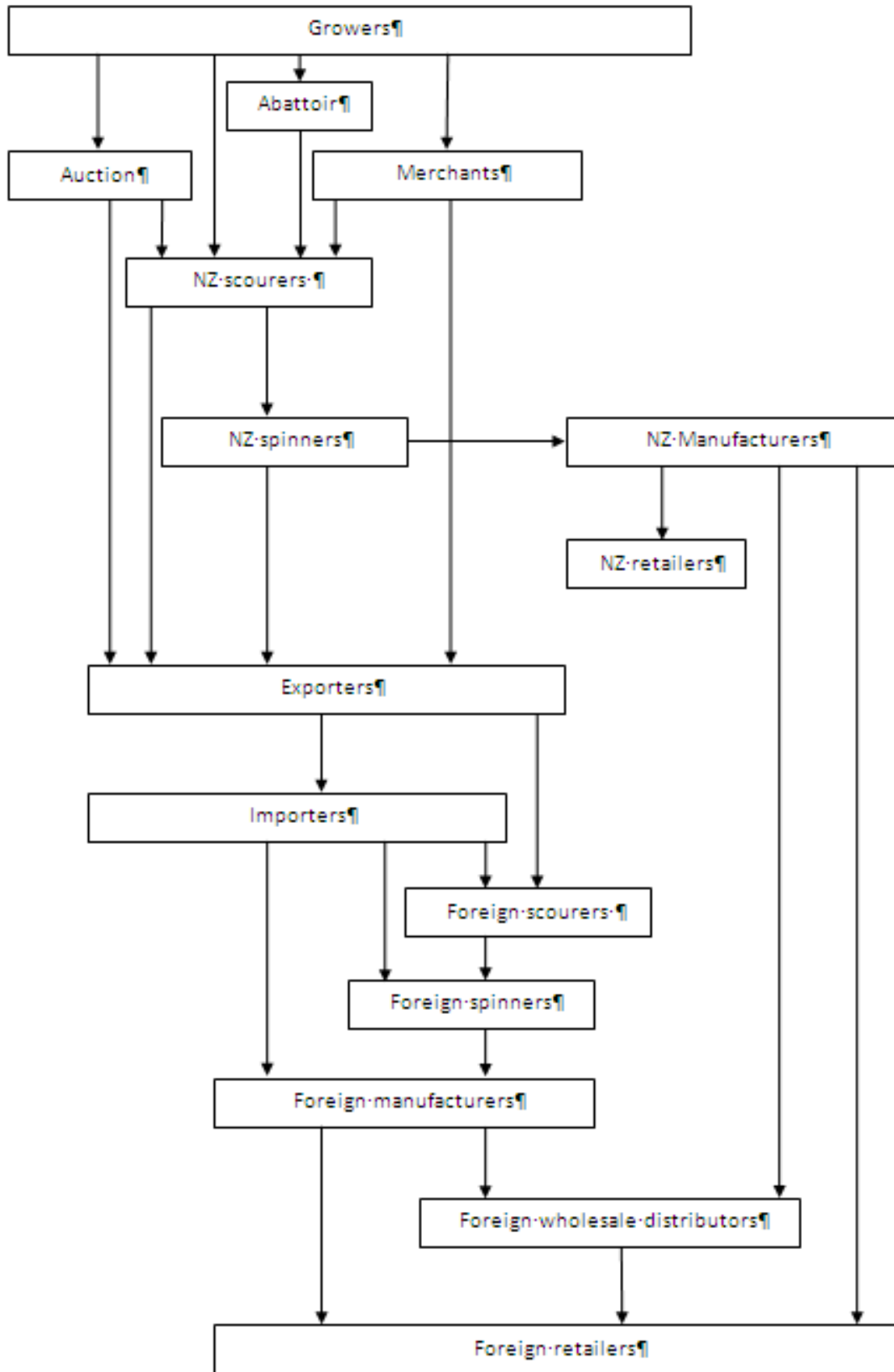


Figure 3: New Zealand Wool Value Chain (ResearchGate n.d.)

“The Adoption of the New Zealand Farm Assurance Programme (NZFAP) as a National Standard for wool will also help to drive the consistency in grower standards and provide a platform for the standardisation of New Zealand wool, which can command a price premium for the benefit of growers and accredited companies in the value chain”- Nick Beeby Chairman of New Zealand Farm Assurance Incorporated (NZFAI).

“This provides the value-chain assurances we need around land management, origin, traceability, animal health and welfare and gives us the ability to work with the red meat sector to make this happen.”-Craig Smith Chairman of New Zealand National Wool Interest (NCNZWI).

The wool industry has little to no value over the price of mid-micron wool at raw status. The value is determined on consumer demand. This illustrates the supply chain, of mid-micron wool need to market and promote the mid-micron wool clip and apparel to consumers. The mid-micron wool clip should investigate the fine wool sector, like Icebreaker to get ideas of successful marketing.

6. Icebreaker Case Study

Ice breaker is a merino wool outdoor and natural performance clothing range developed in New Zealand. Icebreaker began its journey to success in 1995, in Wellington by Jeremy Moon. Since then, Icebreaker has gone from strength to strength. Icebreaker got its name from Jeremy Moon, with the meaning of innovative ideas and hidden stories, of which it lives up to its name. Today, an American company VF Corporation (Formerly Vanity Fair Mill until 1969) own Icebreaker. It now offers more products to consumers, underwear, mid layers, outer wear, socks, and accessories.

Below is a timeline of the formation of Icebreaker.

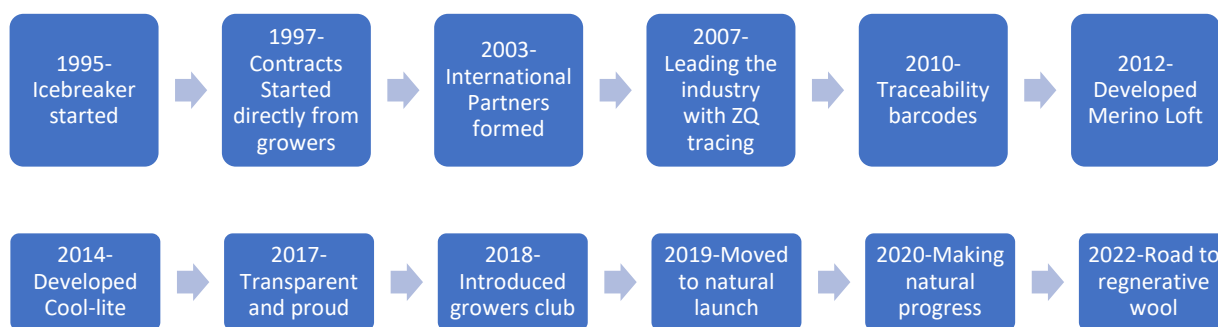


Figure 4: Timeline of Icebreaker

Throughout the development of Icebreaker, they have authored a biannual report for growers through to consumers to read and understand their plans and visions for the product. This keeps the entire supply chain in communication to meet consumer demand preferences.

Icebreaker has the same competitors as mid-micron wool; synthetic brands and there are over one hundred diverse types of merino brands. But other merino brands are not seen as competitors, they are seen as being in the same team as icebreaker, as they are wanting and working towards the same end goal of using a quality product.

“How do we build an international brand from NZ, and what does that look like” -Jeremy Moon Founder

“How to be an alternative to synthetic Clothing”-Greg Smith CEO

“We are Icebreakers, it is who we are, who we have, who we attract as customers and how we work together”-Jeremy Moon

With knowing the consumer demands of Icebreaker, they worked in with New Zealand Merino Company in 2007 to create a ZQ brand.

ZQ is a wool certificate developed by New Zealand Merino. Every ZQ-certified grower adheres to the requirements laid out in the ZQ grower standard.

- Fiber Quality

- Animal Welfare
- Health
- Environmental Care
- Programme Management

ZQ represents the wool of choice for world class brands that are serious about producing natural products. ZQ is only available through long term contracts which are set up and agreed on with the grower and ZQ brand partner.

All growers are accredited yearly to make sure they have met the ZQ standards. The audit will also allow farmers to know areas they are doing well in and areas where more work is required.

Collaborating with growers gives icebreaker transparency and the growers can share their stories from the land. This is a powerful marketing tool that New Zealand can maximize and use to brand our products.

With growers it is hard to put things down on paper regularly. Most farmers are transparent and regenerative but having to highlight this to the world is what they now must do to maximize their products.

“Kiwis are always good at telling a yarn! We have nothing to hide and are always honest!”-
Icebreaker Grower

Icebreakers current project is regenerative wool. Regenerative is to regrow or to be renewed or restored, especially after being damaged or lost. Icebreaker are wanting to move with the consumer demand of wanting to see the growers’ farming systems use majority natural products. With this occurring, they are then able to call wool regenerative. Regenerative wool will come under the code ZQRX. This will prove to consumers the product has come from a farm that is doing the correct practices within the farming system.

Icebreakers goals are:

- Pioneer regenerative wool
- Use retentive and responsibly sourced renewable fibres
- Invest in repairing and rehoming products

- Work with renewable energy and water efficiency

Icebreaker is a good example to display for mid-micron wool. They have shown how to incorporate what consumers want in a product and marketed to what the world would want to see. They have showed the benefit of wool products especially in outdoor wear. The benefits they really promote are:

- 100% natural product
- Biodegradable
- Breathable- can be worn in winter and summer
- Sustainable
- Renewable

For the mid-micron to gain more value in their products, mid-micron growers are going to have to think of alternative ideas (like icebreaker has done) to make their product stand out in a competitive market.

Icebreaker have demonstrated how marketing the natural product with the advantage of our South Island landscape has capture the attention of consumers. This indicates the power of marketing through what consumers want to see has paid off.

7. Semi-Structured Interviews

Throughout the interviews, themes were coming through from the questions asked that helps support the literature review and case study. Interviewing well-known industry leaders throughout the supply chain to gain a broad understanding of the supply chain thoughts and opinions.

Key themes through the eight interviews were:

- Tracing the woollen products
- How New Zealand can tell a story
- Mid-micron wool marketing and demand
- Traceability schemes for mid-micron wool
- Passion and pride in the product

What does traceability mean?

Across the supply chain, it is understood the importance of tracing wool from grower to consumer. Everyone in the supply chain deserves to know where the wool comes from and ends up, especially if they are all putting money into the supply chain to get the product to consumers.

“Wool is one of the simplest things to trace, we need to know where every kilogram of wool has come from to pay the grower.” -Industry Leader

How is New Zealand able to tell a story so well?

As a country, we have an image the rest of the world perceives as a beautiful, clean, and green. There are high ethical standards that the agricultural industry adheres to, not just sheep and beef. Therefore, New Zealand can market woollen products through consumers perceptions of our landscape and clean green image.

“Kiwis are always good at telling a yarn, we have nothing to hide.”-Wool Grower

How will mid-micron wool succeed?

Marketing and demand are the strongest themes in the research and findings. All the interviewees believe mid-micron should be traced due to them wanting to know where their wool goes, and for consumers to know where it has come from. But there needs to be a demand for the product for tracing to succeed. Marketing the product to the correct consumers creates demand. This is where merino/Icebreaker has succeeded so well.

“I have always believed mid-micron wool should be traced and the growers deserve to know what their fibre has been used for. I just do not think the demand for mid-micron wool is there for traceability systems/schemes to be implemented.”-An industry leader

Will traceability schemes work?

There are traceability schemes in the mid-micron sector that have varying degrees of success. New Zealand Farm Assurance Programme (NZFAP) has aligned with the meat companies for a grower to have one traceability scheme number. For example, a NZFAP number which only requires one yearly audit. Industry bodies believe there needs to be demand in mid-micron

wool for these schemes to be able to work. For success, everyone in the supply chain needs to utilize the schemes to provide the most value to consumers. This is where contracts have been suggested as it has been proven they work for fine micron wool.

“Margin is greater where the market is worse”-An industry leader

How do you get growers to have passion and pride in their product?

Because there is no value for their mid-micron wool clip, growers have lost their passion and pride. For example, growers are now consider shearing an on-farm expense in contrast to previous generations where seventy five percent of their income was from mid-micron wool. All the interviewees believe they still have pride and passion in their wool, but it is the returns that give the growers ‘false hope.’

“Passion is an important thing. Growers need to be inspired by what their wool clip can go into.” -Industry Leader

The interviewees demonstrate hope and pride for the mid-micron wool sector, there just needs to be demand created for the products. The research demonstrates how important creating demand and education is when competing against low cost, readily available synthetics. The mid-micron wool industry needs to continue to educate and promote the benefits of the natural product.

8. Analysis

The wool industry is a very traditional sector that in recent times has started to change. The industry has a lot of innovative ideas and groups in place but is struggling to connect the supply chain from growers to consumers. Will this create demand?

Figure 5 summarizes the different views within the industry and how tracing a mid-micron wool clip impacts the grower’s farming systems. Growers are willing to change, but do not have the resources and coordination between all supply chain actors to earn the most from their on-farm system changes.

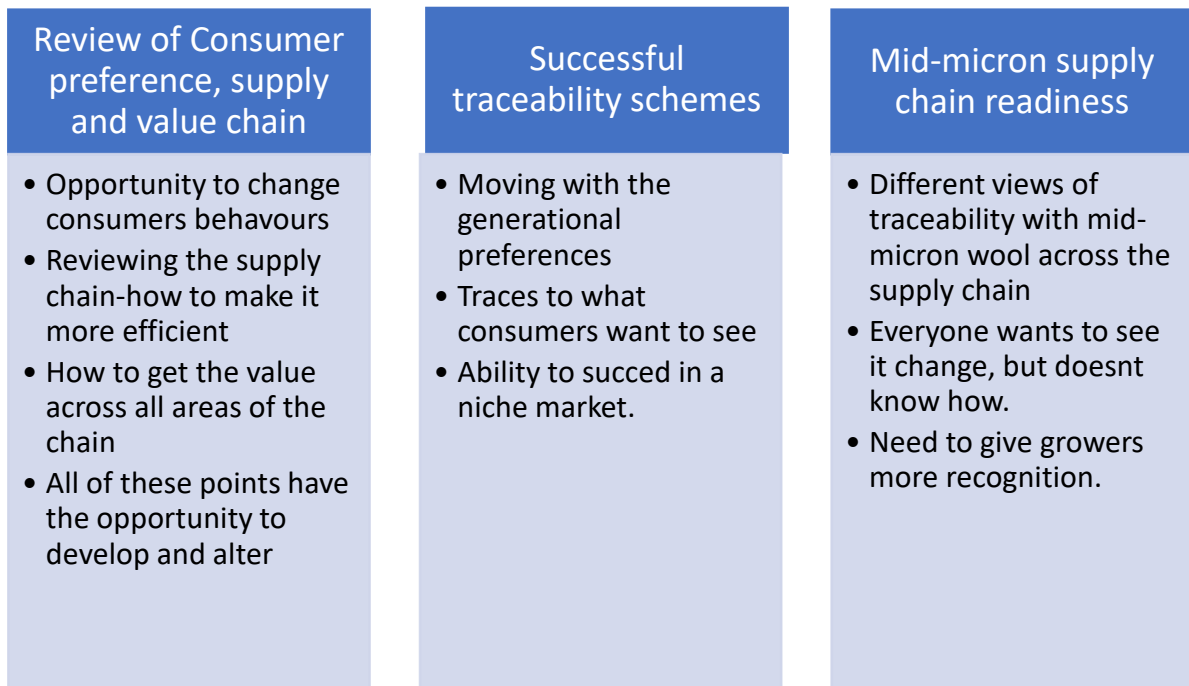


Figure 5: Analysis Interpretation

Interviewing industry leaders across the mid-micron supply chain gave a perspective of leader's thoughts throughout. Figure 6 Gives four key words that all leaders had in common regarding how tracing a mid-micron wool clip impacts grower farming system. Four key themes came from the data analysis and describes a pattern.

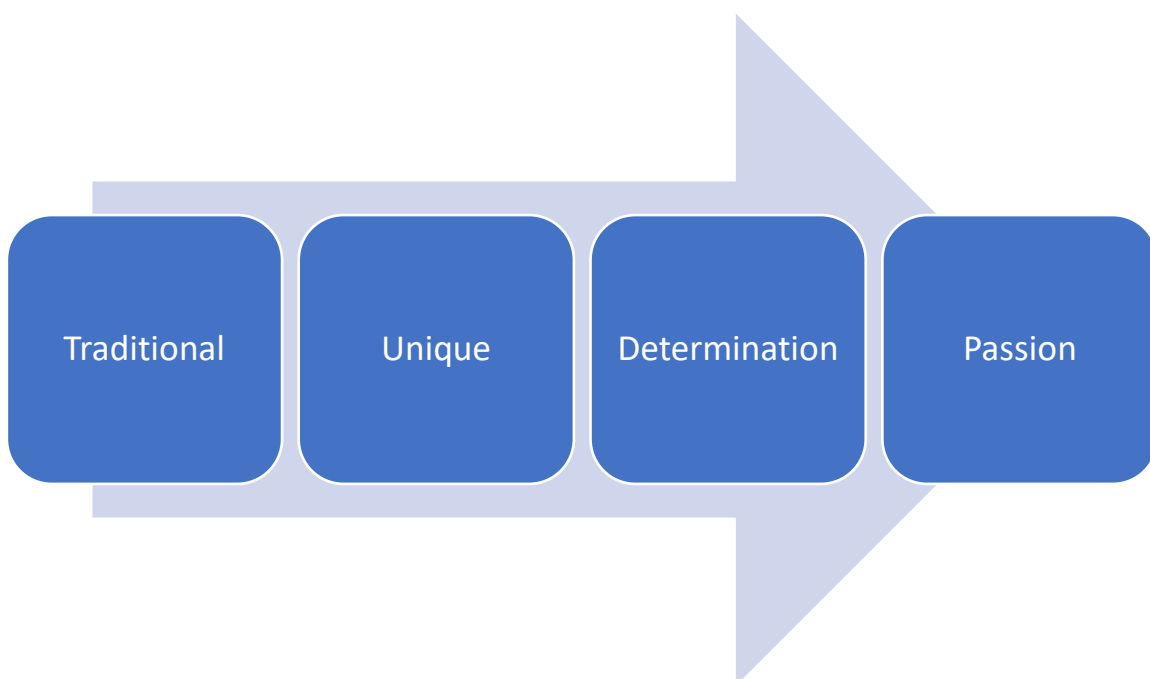


Figure 6: Key themes from interviews

1. A culture of tradition:
 - a. New Zealand growers are very traditional on how they run their farming systems which reflects throughout the supply chain of the wool industry. Growers ensure the animals have a stress-free life in our pristine climate and making sure our ecosystem is protected. (*Benefits.*, n.d.). The tradition also carries on throughout the supply chain and to consumers. The product is a visual product which demands people to look at the wool daily for flaws.
“Don’t change what works well.” -Industry Leader
2. A unique country:
 - a. New Zealand is one of the kindest environments for sheep to live in to grow healthy (*Benefits.*, n.d.). As a country we produce the largest amount of mid-micron/strong wool in the world. We are a population of 5,124,100 people compared to Australia 25,890,773 and South Africa 60,600,000. (*Statssa*, 2022). This shows we as a small country are unique in our climatic, sustainability and ethical approaches in our agricultural industries.
3. A determined supply chain:
 - a. The wool supply chain is determined to get the mid-micron wool increased in value through several ways. One way is offering contracts to growers with a guaranteed price, another is through education. Educating the country and world on the stronger wools and not focusing on the Merino. To get the product moving again, there needs to be a demand. Therefore, the wool industry is determined to create the demand and increase the value of wool (will not happen overnight).
4. Passionate growers:
 - a. Growers have not lost the passion in the product they produce, as they still want to get high value for what they want, the issue is, how do you create a demand for the product? With the shearing cost becoming an expense more than a profit, growers are beginning to cut costs around shearing time to try and have fewer expenses. This is understandable, but also not helping the

issue of preparing your wool clip for the exporters to value. Less preparation at the shearing time will devalue the wool clip.

All these points above I have found interesting throughout my project and workforce to compare and analyze each situation, and this helps with my research of where the industry needs to aim for in the future.

9. Findings and Discussions

This research has given a better understanding of the complexity of the wool industry supply chain. Consumer preferences have a bigger influence across the supply chain than recognized by growers. The way the current supply chain is structured show that growers have little to no control over the value of the mid-micron wool. It is the end consumers who increase the demand for the product which creates supply driven value. Value is only driven by supply and demand which is why growers struggles in the current supply chain.

The wool industry is starting to move with generational changes and become more aware and focused on the background of the product and how the animals have been ethically treated. The traceability of a wool clip is becoming a priority in attempting to increase the value of wool to help the depletive product.

Figure 6 is an indication of the price difference between the wool microns. As it illustrates, Strong and mid-micron wool are to be price cautious rather than natural fibers versus synthetics.

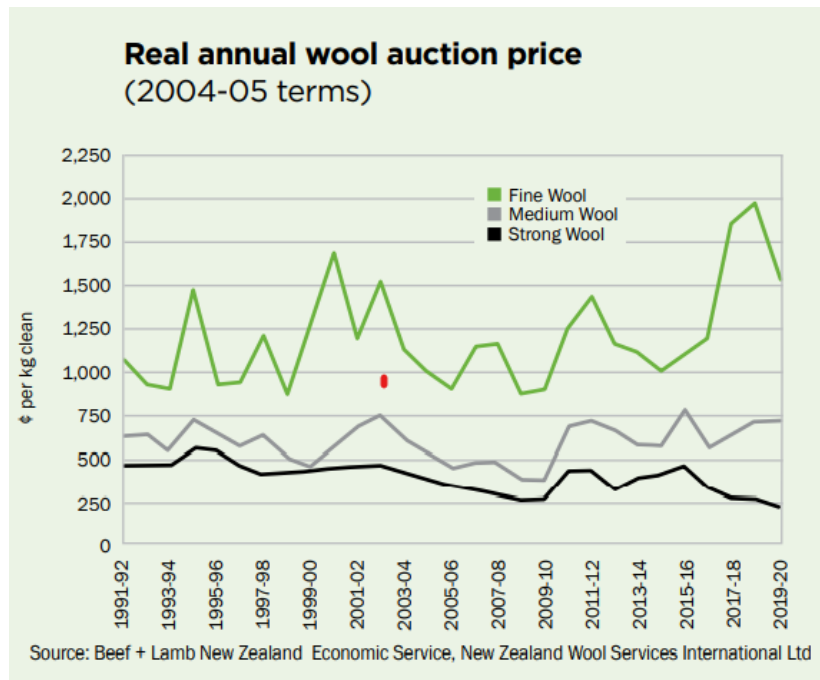


Figure 7: Real Annual Wool Auction Price

Fine wool is only produced in a short growing period which limits supply. Limited supply increases demand which adds to perceptions of it being a valuable product.

Figure 7 demonstrates how long and complex the wool supply chain is. Communication is required between all actors for the chain to work efficiently. The current supply chain has a lot of value leakages which means growers do not earn high monetary value for investments. A typical commodity supply chain has several partners with only having a relationship with the close contacts for information sharing (Denitsa, 2009).

Figure 7 shows there is no direct contact from grower to consumer nor customer to wool buyer. This indicates a weakness in the chain. All parties within a chain should have the ability to discuss issues or future products with each other. Open communication enables everyone in the chain to work together productively and capture the most value for everyone.

Growers are concerned about the value they are getting for their annual clips. Concern is



Figure 8: Wool supply chain

growing with increasing costs, high ethical standards, and increased variation in

environmental fluctuations. As a result, farmers have become frustrated and concerned for the future of the mid-micron wool industry. Wool is a natural product with many benefits that icebreaker has proven consumers are willing to pay a higher price for. The marketing of mid-micron wool uses language such as:

- Naturally breathable
- 100% natural
- 100% renewable
- Durable
- Innovative
- Sustainable

Consumers create demand as they are the ones that they choose what they buy. However, they will only buy products they know that exist. So, marketing needs to be used to educate and therefore stimulate demand. An example of this is woollen carpets when synthetic carpets are sold the broker receives a higher premium. This results in carpet shops prioritising the marketing and display of synthetics over woollen carpets. As consumers do not see woollen carpets marketed, they are not demanded and therefore carpet shops do not push woollen carpets. This is an example of a negative feedback loop.

Consumers have become aware of their impact of their purchase decisions such as environmental impacts. Trends include switching to natural products over synthetics a market that woollen products can thrive in. Consumers are more frequently doing research they are purchasing. Therefore, to meet the demand of these consumers they need to be provided with accurate information so they can make informed decisions.

Is traceability really impacting growers farming systems?

The short answer is no.

Grower's products are already being traced because the farming systems require them to do so. The audits stated below are an indication of tight restrictions for the growers to sell their products through schemes.

- NZFAP Audit- Wool and meat
- Chemicals/drenches
- Health and Safety

However, this is currently not translating to higher value to the farmer. Growers can only trace their wool to the wool broker, and then they do not know where it goes. With consumers being able to trace a product back to a region, growers should also be able to trace their products to the country their wool ends up. The only way to add value back to the grower is to create demand for the mid-micron wool sector. There is currently not enough demand for the product, so as an industry we need to work together to educate the consumers on wool again and make mid-micron wool valuable.

Upon accomplishing this report, understanding the entire wool system through three main points and how the traceability of the wool is carried out is vital. Being able to create a demand for the mid-micron wool sector, so growers can put their wool cheques back into income rather than expenses. Growers should be able to enjoy their passion without having to battle with a byproduct. After researching and interviewing industry leaders, educating consumers on mid-micron wool will give them an understanding of the wool industry through the eyes of knowledgeable leaders. Grower farming systems are always changing to the market requirements through consumer demands. Therefore, I think adding value back to growers is important for the wool industry.

“Educate, Educate, Educate!!!” Industry Leader

10. Recommendations

Below are four key recommendations that the industry needs to work simultaneously, to achieve the goal of adding value to mid-micron wool growers’ clips.

1. Growers to adapt and change with developing times (move out of their comfort zone).
 - a. Many growers are very traditional and will stick to generational farming. With the rapidly moving world today, fast-paced environments are hard for growers to comprehend. Therefore, adapting their farming regularly is daunting, but also hinders the ability to create higher values.
 - b. adapting to change in today’s world is:
 - i. Attend discussion groups regularly

- ii. Do more short courses to upskill yourself
- iii. Do regular budgets on the computer (rather than books)
- iv. Carry your phone with you around the farm with all the apps on your phone to help you with day-to-day farming practices.

2. Educating consumers on mid-micron woollen products.

- a. Woollen products for mid micron wool are:
 - i. Carpets
 - ii. Apparel
 - iii. Insulation
- b. Show consumers what to look for when purchasing products:
 - i. Where the materials come from and how they are produced
 - ii. Labels/tags
 - iii. Quality of the product
 - iv. Where the product will end up once it is at end of use.
- c. Continue to market the products through platforms that are extensively used.
 - i. Facebook
 - ii. Instagram
 - iii. Newspaper/magazines
 - iv. Internet

3. Understand the wool supply and value chain

- a. Have knowledge of the chain to understand how the pricing of the end products are decided.
- b. To do this:
 - i. Ask questions to local wool buyers
 - ii. Read on internet about the wool
 - iii. Ad\gain, industry days

4. Educate, Educate Educate!!!

- a. Educate from school ages
 - i. Wools in Schools Campaign for Wool container

- ii. Have sections in agriculture classes at high school
- iii. Promote wool courses at university
- iv. More industry days for wool-for everyone to attend not just the wool industry.
- v. Have open days throughout the wool supply chain to show consumers how the wool is grown to manufactured.

“Demand is a long-term game!”-Industry Leader



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12. Appendix

i. Interview list

I would like to thank all my interviewees for taking time out of their busy schedules to help me with my project. It was a privilege to meet you all and discuss a topic we all have a passion for.

Kate McDonald- Founder of Davvar and Co

Carlos Bagrie- Royalburn Station and Royalburn Farm shop

Phillipa Wright- Owner of Wright Wool

Duane Knowles- CEO of New Zealand Wool Testing Authorities

Phillipa Cameron- Otematata Station Icebreaker contract

Nigel Burn- Hawkes Bay mid-micron wool grower

Polly McGuckin- Founder of Exquisite Wool Blankets and Throws

Monica Schwass- New Zealand Merino Company

ii. Interview Questions

Nigel Burn and Carlos Bagrie

How have you set up your farming system for consumer demand?

Why cross-bred sheep? Especially when the wool is low value and in Merino country?

What does traceability mean to you?

Why do you think tracing wool is of importance to consumers?

How do you think tracing a mid-micron wool will succeed? Why/why not?

Have you as a grower been involved in any traceability schemes?

How do you know if the traceability scheme is working?

Why does New Zealand accomplish marketing our produce through telling a story so well?

Do you think contracts for mid-micron wool is the answer? Why/Why not?

Is shortening the supply chain through contracts going to increase the value chain? Why/why not?

Do you think traceability Schemes like New Zealand Farm Assurance Programme will work?

Is our wool system too 'broken' for traceability schemes?

With having a Royalburn Station Farm Shop, have your consumers purchased produce based on knowing where the meat, woollen blanket and fresh vegetables are grown?
How do you get mid-micron growers to have pride in their product?

Kate McDonald and Phillipa Cameron

How have you set up your farming system for consumer demand?
What does traceability mean to you?
Why do you think tracing wool is of importance to consumers?
How do you think tracing a mid-micron wool will succeed? Why?
Have you as a grower been involved in any traceability schemes?
How do you know if the traceability scheme is working?
Why does New Zealand accomplish marketing our produce through telling a story so well?
Do you think contracts for mid-micron wool is the answer? Why/Why not?
Is shortening the supply chain through contracts going to increase the value chain? Why/why not?
Do you think traceability Schemes like New Zealand Farm Assurance Programme will work?
Is our wool system too 'broken' for traceability schemes?
How have your consumers shopping preferences changed knowing the entire supply chain of the Jersey? (Davvar and Co)
Do you think more mid-micron growers will benefit producing their own woollen products? Why/why not?
How do you get mid-micron growers to have pride in their product?

Philippa Wright and Monica Schwass

How have you set up your business in the supply chain to help growers as well as consumers?
What does traceability mean to you?
Why do you think tracing wool is of importance to consumers?
How do you think tracing a mid-micron wool will succeed?
How do you think joining New Zealand Farm Assurance Programme will benefit New Zealand's primary sector?
What traceability schemes in the past have been used?
Why did these schemes succeed or fail?

Why does New Zealand accomplish marketing our produce through telling a story so well?

Do you think contracts for mid-micron wool is the answer? Why/Why not?

Is shortening the supply chain through contracts going to increase the value chain? Why/why not?

How do you get mid-micron growers to have pride in their product?

How to you make the growers wool clip more appealing to themselves?

With all your involvement in the industry and owning a business, how do you think mid-micron wool prices will increase?

Polly McGuckin and Duane Knowles

How have you set up your business to meet consumer demand?

What does traceability mean to you?

Why do you think tracing wool is of importance to consumers?

How do you think tracing a mid-micron wool will succeed?

Have you thought of putting your beds on a traceability scheme? Would it benefit you and the growers?

Do you think traceability Schemes like New Zealand Farm Assurance Programme will benefit the wool sector?

Why does New Zealand accomplish marketing our produce through telling a story so well?

What do you think will increase the wool price?

How have your consumers shopping preferences changed knowing the entire supply chain of the throws?

Do you think more mid-micron growers should do their own woollen products with their wool clip? Why/why not?

How do you get mid-micron growers to have pride in their product?