New Zealand Sheep Dairy Survey

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Contents

	Page
Introduction	3
Key findings	4
Global sheep dairy production	5
Survey results	7
Introduction	7
Farm characteristics	9
Sheep dairy establishment	10
On farm production and productivity	11
Challenges and opportunities	13
Advice for new entrants	14
Conclusion	15
References	16
Appendix 1 : Survey results	17
Appendix 2 : Individual farm profiles	24
Appendix 3 : Survey questions	30

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Introduction

Introduction

The New Zealand sheep dairy sector has undergone sustained growth and development over the last five years. As a result, it has received a significant amount of positive attention, driven by increasing media coverage. This has helped bring it to the attention of farmers, consumers, banks, industry organisations, and rural professionals.

This growing interest has helped change both public and private perception of the sector, from that of a novelty industry, to a serious diversification option for farmers. During this time, the Ministry for Primary Industries (MPI) has actively monitored the sector's progress and its potential as a sunrise industry for the broader primary sector.

This has included a $12.56 million investment over six years from MPI's Primary Growth Partnership[1] to help grow a high value and sustainable New Zealand sheep dairy industry by building a domestic milk farming system that is:

- suited to new imported genetics
- commercially viable
- environmentally sustainable
- replicable by other New Zealand farmers.

The insights drawn from this survey represent a comprehensive examination of the current opportunities and challenges facing the sector as a whole, with respect to on-farm production and further aspects of the sector's performance.

Objectives

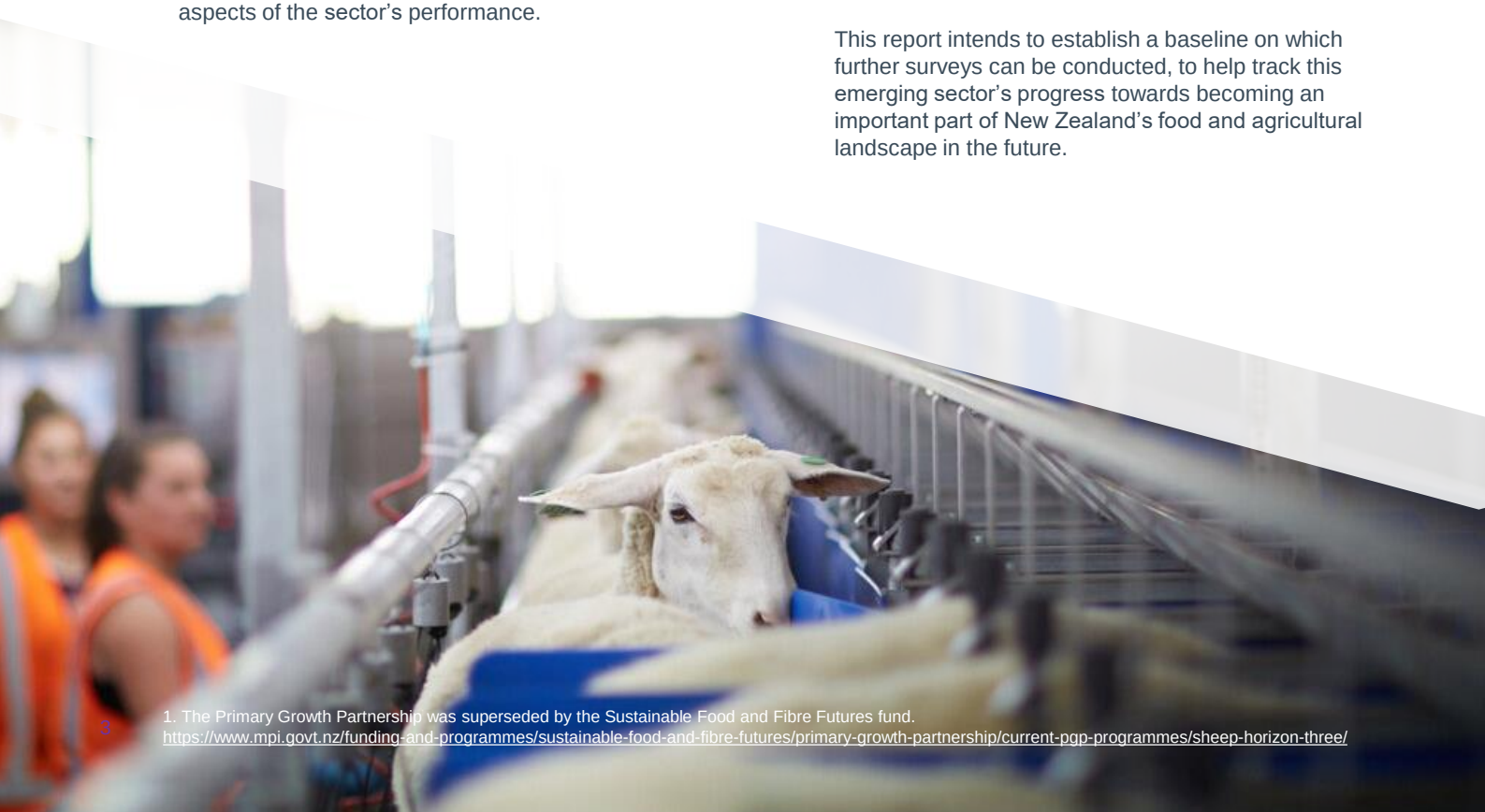
Recent media and anecdotal reports of the sector's progress, size, and challenges have been helpful in understanding the sector's evolution. However, both MPI and SheepMilkNZ, (the Massey University-based industry support body), saw there was also a need for a more structured account of the sector's current progress to date and possible future potential.

The aim of this report is to:

- Explore global sheep milk production and market trends to determine their implications for the current New Zealand farming sector.
- Provide businesses with insights from those New Zealand farmers currently operating in this sector.
- Provide data and analysis that can inform and support both existing sheep dairy farmers and other businesses considering converting to sheep dairy.
- Support MPI's understanding of the challenges and opportunities currently facing the sector, in order to inform potential future policy development that supports the sector's growth.

This is a collaborative report between MPI and Massey University based on survey work carried out between October 2019 and February 2020, that included interviewing (face to face in all but two instances) representatives from all of New Zealand's 18 commercial sheep milk producers.

This report intends to establish a baseline on which further surveys can be conducted, to help track this emerging sector's progress towards becoming an important part of New Zealand's food and agricultural landscape in the future.



1. The Primary Growth Partnership was superseded by the Sustainable Food and Fibre Futures fund. https://www.mpi.govt.nz/funding-and-programmes/sustainable-food-and-fibre-futures/primary-growth-partnership/current-pgp-programmes/sheep-horizon-three/

Key Findings

New Zealand's dairy sheep population has grown rapidly in the last few years increasing by 12 percent per annum since 2015. As of June 2019, there were 18 commercial sheep dairy farms in New Zealand, with the national flock totalling 12,345.

Total sheep milk production for the year ended June 2019 was almost 1.6 million litres (equivalent to nearly 300 tonnes of milk solids). For a third of the 18 surveyed farmers, the 2018-19 season was their first producing sheep milk.

Nationally, the average flock size is 690 ewes, farmed on a 50 hectare milking platform, and milked over a 170 day lactation. The size and structure of farms across the regions varies significantly. Aside from three large milking units (milking more than 2000 ewes), two thirds of farmers are currently milking 400 or fewer ewes.

Industry growth outside the Waikato region is currently being constrained by lack of access to large scale processing facilities.

Although the cost of farm conversion varies significantly, depending on the re-use of existing farm infrastructure and access to reasonably priced milking equipment, the cost of converting to sheep dairying is generally less than $500,000 for most new entrants ($8,000-12,000 per hectare).

Surveyed farmers expect that with improved genetics and continued focus on feed, forage, and lambing practices, average year on year per ewe milk production will increase by about a third over the next five years.

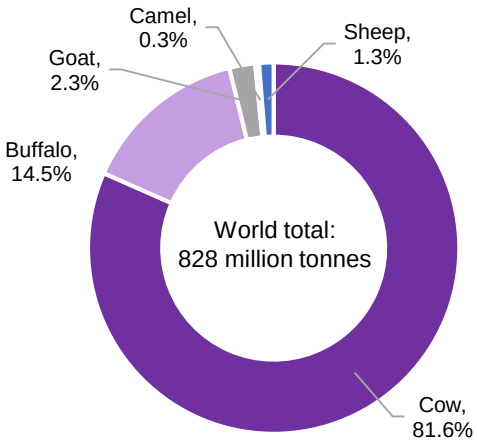
Surveyed farmers also reported a big gap between low producing ewes (180 litres per annum) and high performing dairy ewes (350 litres per annum). This is expected to compress over the next five years, as the productivity of the low performing ewes increases.

Global sheep dairy production

Introduction

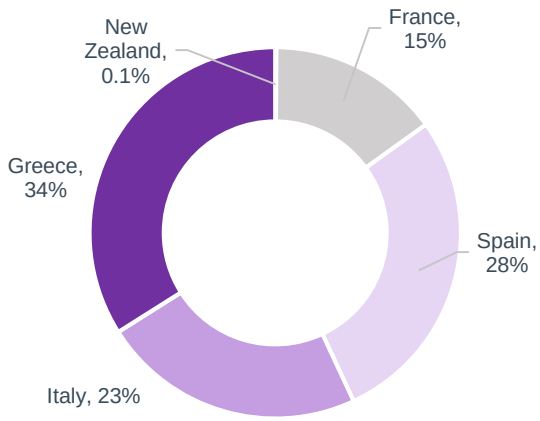
Sheep milk remains a niche product in the global dairy supply chain, representing just 1.3 percent of global production in 2017 (Figure 1). In the context of global production, New Zealand's current production of sheep milk barely registers (0.1 percent) when compared with the major sheep milk producing countries of the world (Figure 2).

Figure 1: Global animal milk production (2017)



Source: FAO (2019)

Figure 2: Global sheep milk production by nation (2018)

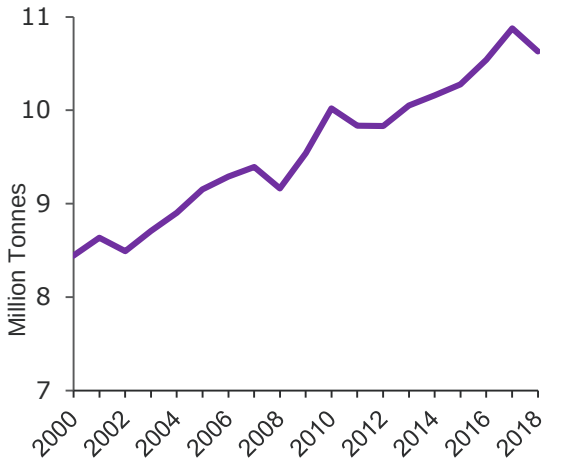


Source: Food South (2020)

Sheep Milk Product Launches

Despite relatively slow growth in global production (Figure 3), growth in consumer focused products has been rising rapidly in recent years, albeit from a small base.

Figure 3. World Sheep Milk Production (2000 - 2018)



Source: FAO (2019)

Much of the global demand for sheep milk product flows from its reported health benefits over cow and goat offerings. Although further work is still needed to support anecdotal evidence that sheep milk can address milk allergenic and intolerance issues (Shrestha et al, 2020), compositional and desktop analysis demonstrates sheep milk's value in delivering high value nutrition (Burrow et al, 2019; Moatsou and Sakkas, 2019).

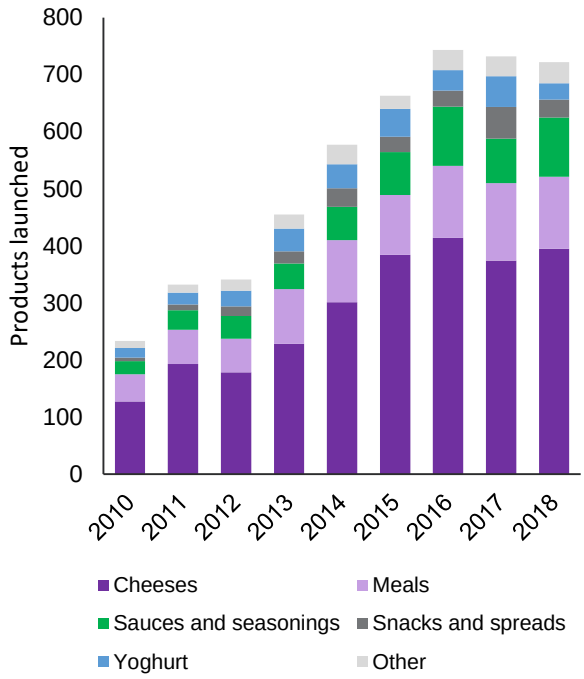
Between 2010 and 2018 annual consumer product launches containing sheep milk grew by 210 percent (from 233 to 722) (Figure 4). In 2018 traditional dairy products such as cheeses and yoghurts represented over 60 percent of the total product launches globally. However, sheep milk is also increasingly being used as an ingredient in sauces, prepared meals, side dishes, and snacks.

Global sheep dairy production

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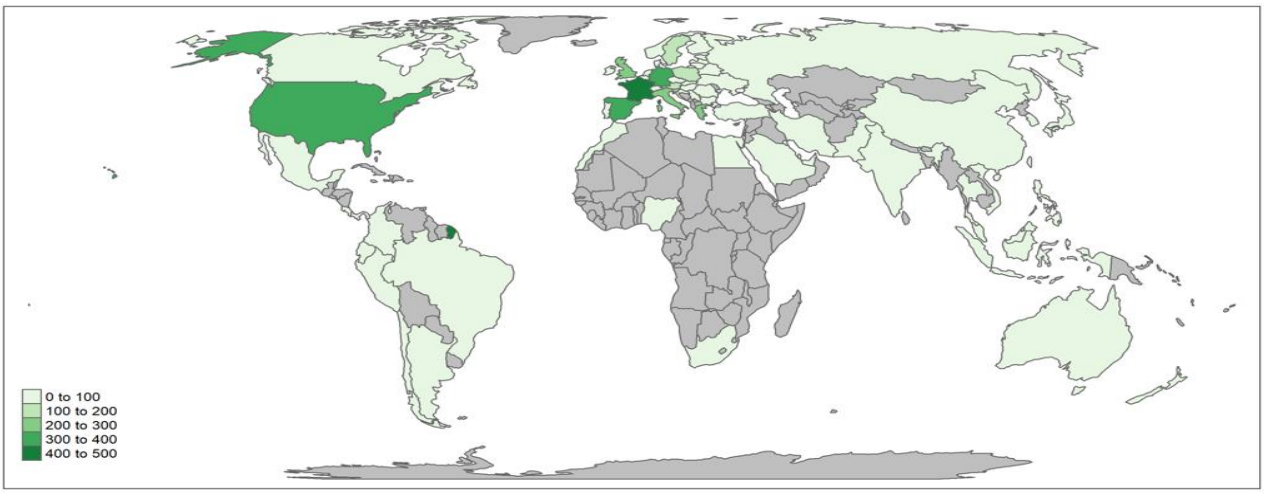
Europe and the United States remain the major markets for sheep milk-based consumer products, with these regions dominating new product launches (Figure 5). While sheep milk cheese is still the dominant product for the European market, ready-made food products using sheep milk/sheep cheese as an ingredient appear to be more common in the US. By contrast, product launches of sheep milk infant formula and milk powder products are more prevalent in the Asia Pacific region.

Figure 4: Global sheep milk-based product launches, (2010-2018)



Source: Mintel (2019)

Figure 5: Sheep milk-based product launches by region, 2015 – 2019



Source: Mintel (2019)

Survey results

Introduction

The New Zealand sheep milk industry is still in its infancy. However, in the last two years it has shown very positive signs of sustainable growth, albeit from a small base. This represents a substantial improvement from the difficulties that the sector experienced in 2014 when all four producers at the time were facing significant challenges.

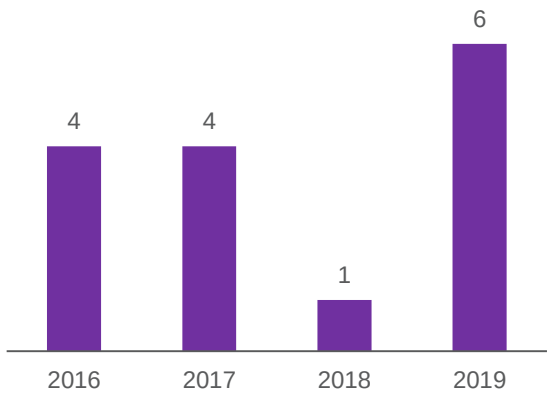
Sector has recovered from early regulatory and supply challenges

The largest, Southland's Blue River Dairy (which was milking around 11,000 ewes and producing infant formula, powder and some cheese), had been encountering market access challenges in its key China market due to a new infant formula registration process. In addition, the country's other large-scale sheep milk conversion, Waituhi Kuratau Trust's sheep milk operation near Turangi, didn't produce a drop of milk that year due to difficulties in meeting regulatory requirements over the sale of their frozen sheep milk to cheese makers in Australia.

At the same time, cheese and yoghurt makers Kingsmeade Artisan Cheese and Neudorf Dairy were also facing significant challenges. Kingsmeade was experiencing milk supply constraints. Despite buoyant sales, the artisan producer was selling out of its sheep milk cheeses each year and had been unable to secure contract supply from other Wairarapa farmers. As a result, the company was making cow milk cheeses in order to fill the gap. Meanwhile, Neudorf Dairy, an artisan producer based in the upper Moutere Valley near Nelson, was up for sale after a challenging year.

Five years on, as this report shows, the New Zealand sheep dairying industry is now an emerging agribusiness sector with eighteen producers. A third of these started milking sheep in the 2018-19 season (Figure 6). At the time of writing, a further seven Waikato sheep milk producers (not included in this survey) are about to start producing milk for the 2020-21 season.

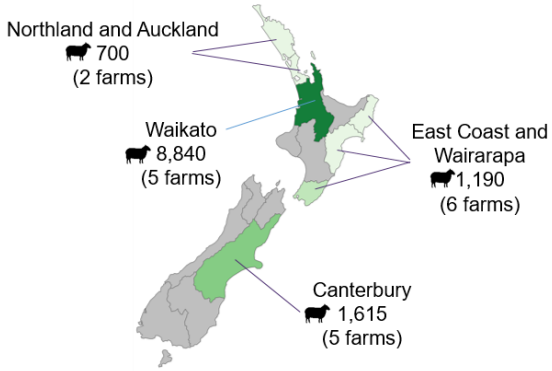
Figure 6: Yearly growth in number of New Zealand sheep milk producers



Flock numbers and production scale is still developing

The growth in total flock numbers has averaged 12 percent per annum over the last five years. As a result, by mid 2019 the total national sheep dairy flock stood at 12,345 head (Figure7). In addition, a further 4,200 ewes are expected to join in 2020, milking on seven Waikato farms.

Figure 7: New Zealand sheep dairy regional profile (2019)



Total milk production for the year ended June 2019 was nearly 1.6 million litres or the equivalent of just under 300 tonnes of milk solids[2]. The additional 4,200 dairy sheep joining the national flock in 2020 is expected to increase total milk production to around 2.5 million litres and push milk solids production to around 450 tonnes.

2. On average sheep milk is 18 percent milk solids.

Survey results

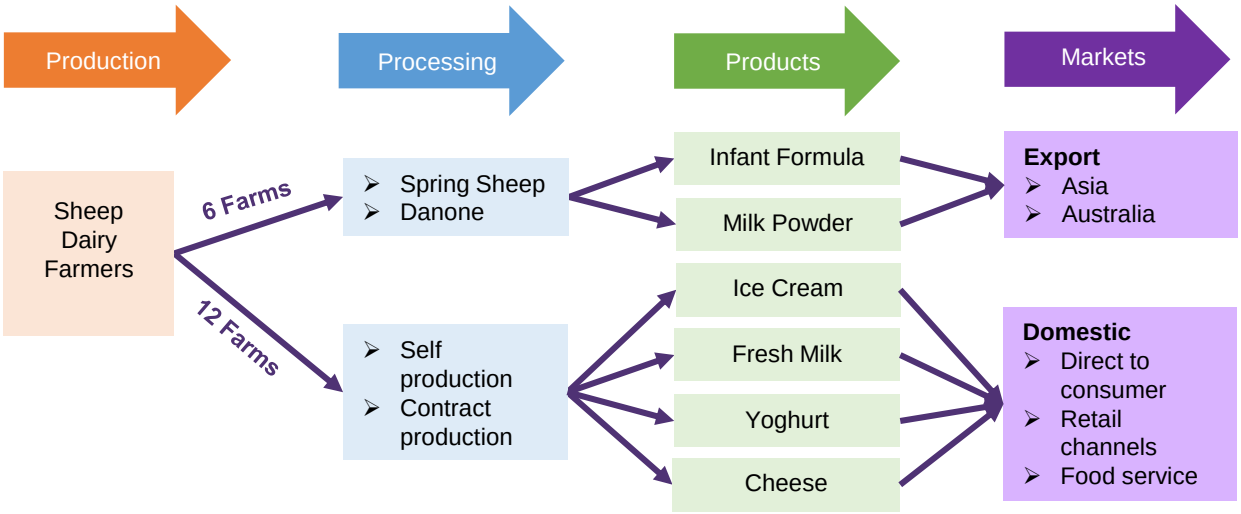
Processing capacity is driving regional differences in production

Global demand for sheep milk powder is the key driver behind the growth in New Zealand's sheep milk industry, particularly in the greater Waikato region. This region is home to two large export-oriented sheep milk powder and infant formula producers, Spring Sheep Milk Co and Maui Milk. Together they account for more than 70 percent of the national sheep dairy flock and a third of total number of farms. Both companies use Food Waikato's specialist milk drying capacity and have supported the installation of a second specialist dryer on the Ruakura site, which is due to be commissioned for the 2020-21 season. As a result, both companies have announced significant increases in supply for the 2020-21 season, with four new contract suppliers due to produce milk for Maui Milk and three for Spring Sheep Milk Co. Each of these seven farms is expected to milk around 600 ewes in their first season.

In addition to improvements in supply arrangements, farm systems, and genetic gain, both companies have made significant strides in the last three years in developing products and markets. Alongside a range of whole milk products, Spring Sheep began supplying the first of its infant formula products to key South East Asian markets in 2019. Meanwhile, Maui Milk revealed in 2019 that it had secured a long term supply arrangement with European infant formula producer Danone. At the time of writing, the Maui Milk-sourced sheep milk infant formula was available in Australia and New Zealand, and as supply volumes expand, all three stages of infant formula products will also be launched in Asia-Pacific markets.

By contrast, the lack of a comparable drying facilities outside of the Waikato has tightly constrained the size, scale, character, and growth of sheep dairying. Clusters of producers have however developed in the Wairarapa and Canterbury and in both instances supply groups have been formed to share manufacturing and transport capacity. These producers are currently focused on producing cheese, yoghurts, fresh milk, and other niche products for the domestic market. Of these twelve farmers, seven are makers of their own cheese, yoghurt, fresh and flavoured milk products for sale through retailers, farmers markets, and other direct sales outlets. The remaining five supply these and other sheep dairy product producers (Figure 8).

Figure 8: New Zealand Sheep Dairy Supply / Value Chain

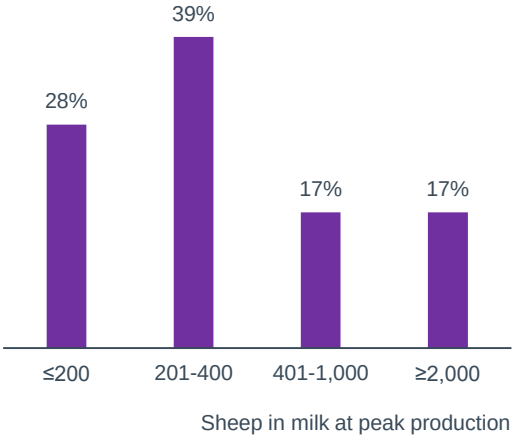


Survey results

Farm Characteristics

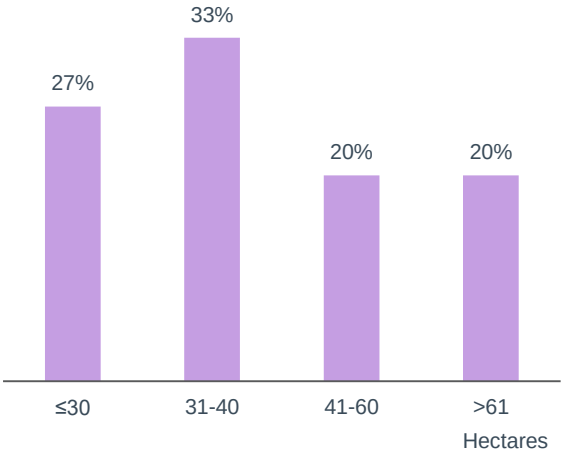
Nationally the average flock size per farm is 690 ewes farmed on a 50 hectare milking platform over a 170 day lactation (Figures 9 and 10). However, this average obscures big differences in the size, purpose, and the structure of farms across different regions. In the Taupo region, Maui Milk runs two large farms on the Western shores of the lake, Waikino and Waitui Kuratau Trust, milking more than 2,000 ewes each. Across the lake, Spring Sheep's St Kilda farm milks around 2,700 ewes each season. Spring Sheep's other two farms near Cambridge, (Monavale and Tauwhare Road) both milk around 800 ewes. This farm size is expected to become the norm for contract milk suppliers to Spring Sheep and Maui Milk. By contrast, those farmers focused on supply to artisan cheese makers are milking 400 or fewer ewes.

Figure 9: National distribution of farm size (stock numbers)



Source: EIU-Massey University NZ Sheep Dairy survey 2020

Figure 10: National distribution of farm size (hectares)



Source: EIU-Massey University NZ Sheep Dairy survey 2020

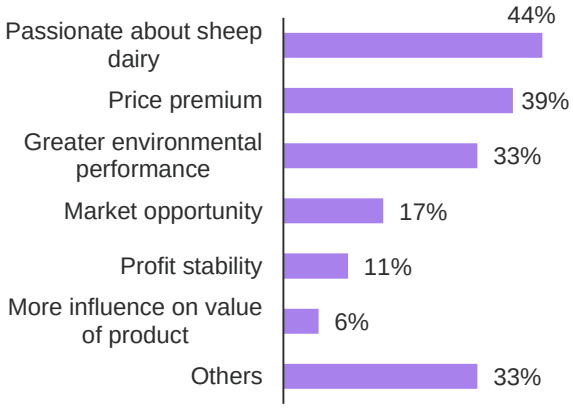


Survey results

Sheep Dairy Establishment

More than 80 percent of the current sheep milk operators joined the industry in the past five years, with a third starting production in 2019. One of the objectives of the survey was to understand the motivations of these new farmers. Given the challenges of getting started and the potential risks, the interviewed farmers ranked 'a passion for sheep dairying' as their key explanation for getting started (Figure 11). This reflects the nature of these new farmers as enthusiasts who welcomed the challenges of developing a new agribusiness sector. However, it is also clear that they have an eye on the new sector's potential economic gains and its environmental benefits.

Figure 11: Motivations for entering the industry



Source: EIU industry survey (2020) © all rights reserved

The ability of this new sector to potentially deliver both stable profits and above normal agricultural returns ranked second among the farmers surveyed. In addition, given the environmental regulatory pressures confronting the dairy and pastoral farming sectors generally, it is no surprise that the farmers also ranked the environmental performance of sheep dairy production as a key motivating influence.

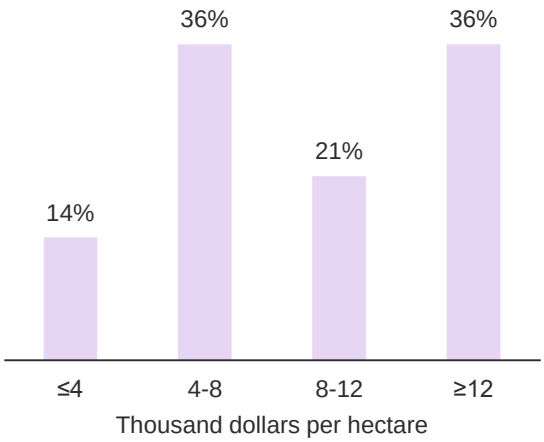
Conversion costs

Of the 18 farms surveyed, five had previously been cow dairy units, ten had been sheep and beef or deer units, and three had been used for cropping or wood production. Across all 18 farms, the cost of conversion ranged from about $80,000 to over $1 million in several instances.

However, ignoring the very large green field conversions from the sample data, average per farm conversion cost were around $290,000. On this basis, a little over half of the farmers interviewed paid between $4,000-12,000 per hectare and on average about $2,000 per milking ewe to convert to sheep dairying.

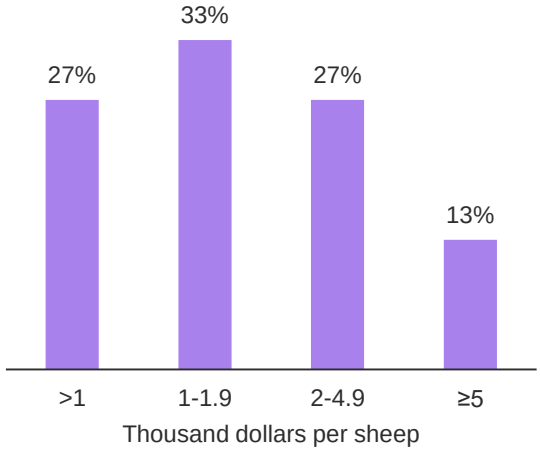
Assuming that the average future commercial milking platform is likely be around 40 hectares, then this implies that new entrants might well pay conversion costs per farm of $160,000-$480,000 to enter the industry (Figures 12 and 13). Despite expectations of a significant difference in the cost of converting existing dairy farms to sheep compared to green-field installations, this wasn't necessarily the case. Some green field developments, on land that had previously been used for sheep and beef farming or cropping, did not require large investments to convert. In such cases, the use of their own and family labour together with the purchase of second-hand milking units, allowed these sheep milk producers to keep conversion costs, even for large flock numbers, at around $300,000.

Figure 12: Farm conversion costs per hectare



Source: EIU industry survey (2020) © all rights reserved

Figure 13: Farm conversion costs per sheep



Source: EIU industry survey (2020) © all rights reserved

Survey results

On Farm Production and Productivity

A key theme that has emerged from the survey is the sector's focus on improving on-farm productivity. Currently, there are significant differences across the national flock. While this reflects differences in the average days in milk (Figure 17), it is primarily due to large variations in per ewe production (Figure 15). The national flock is currently a mix of animals from the original East Friesian breeds imported in the early 1990's and the recent importation of European genetics following the relaxation of controls on the importation of sheep genetics in 2016. Figure 14 gives an indicative overview of the make-up of the national flock based on breeds cited by the farmer respondents.

Surveyed farmers reported a large gap between low producing ewes (180 litres per annum) and high performing dairy ewes (at 350 litres per annum), with an average reported per ewe production across all flocks of 247 litres per annum. However, farmers do expect this gap between to narrow over the next five years (Figure 15).

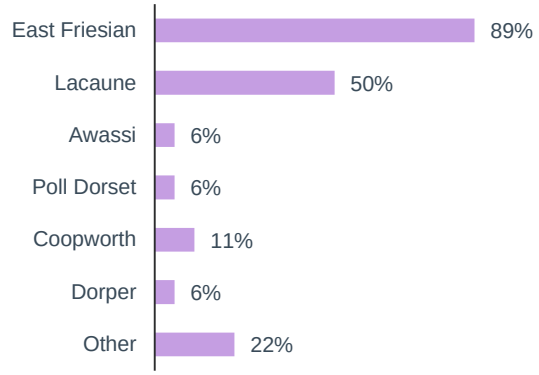
Over the next five year period, average annual production across all flocks is expected to be close to that of their current top ten percent of ewes: 380 litres per annum or 2.21 litres per day over an average 172-day lactation (Figure 16).

Of the 18 farms surveyed, 14 said they were attempting to extend days in milk through:

- improved genetics
- detailed analysis and adjustment of feed and forage practices to suit lactating ewes
- earlier lambing dates
- in some cases, through the use of feed barns before and after lambing.

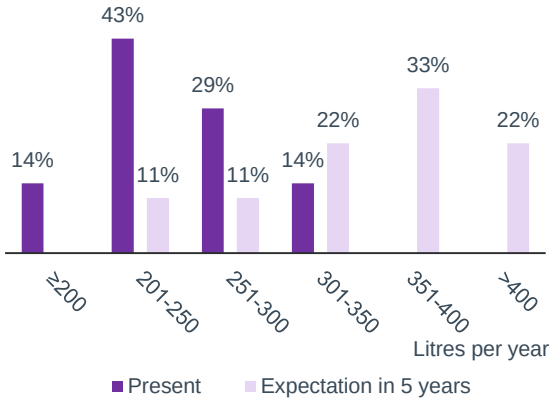
Currently all respondents lamb their flock seasonally, however 45 percent of farms were lambing multiple flocks at different times of the year to maximise total milk production. Two farms were using this method to maintain year-round supply in order to meet market and manufacturing obligations.

Figure 14: NZ sheep dairy flock genetics (breed types cited by respondents)[3]



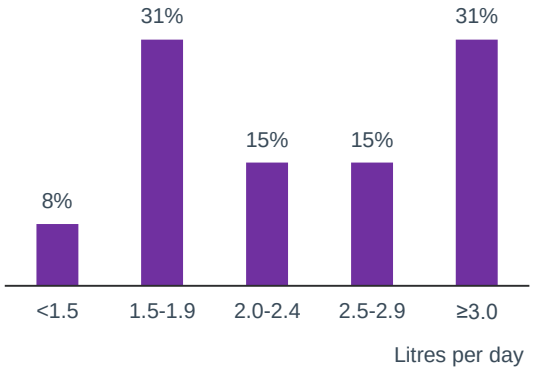
Source: EIU-Massey University NZ Sheep Dairy survey 2020

Figure 15: Current and expected growth in per ewe yearly milk production



Source: EIU-Massey University NZ Sheep Dairy survey 2020

Figure 16: Milk production per ewe (Top 10% of flock)



Source: EIU-Massey University NZ Sheep Dairy survey 2020

3. This is not a representation of the percentage make up of the national sheep dairy flock, just the breed types cited by respondents in their existing flocks

Survey results

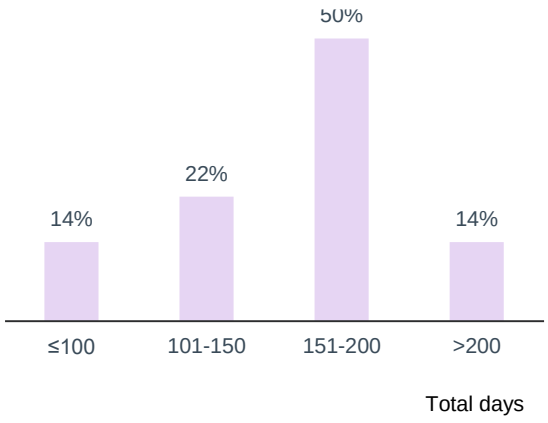


The majority of farms are milking between 150 and 200 days a year (average of 172 days). However, there are significant differences in lactation length between farms (Figure 17).

The expected growth in average per ewe productivity over the next five years has the potential to transform on-farm returns and the sector growth prospects as a whole. For example, with no increase in the national flock size, each 50 litre increase in average yearly production per ewe would add a further 620,000 litres to New Zealand's total production base. At the current average farm gate milk price of $2.75 per litre, this increase would add an additional $1.7 million to the industry's total revenue, or an average of $95,000 in gross income per farm.[4]

However, assuming the number of farms continues to increase at the current rate of growth of four per year, then the total number of farms could reach 38 by the 2024-25 season. Based on the current average farm flock size of 690 ewes on a 40ha milking platform, and assuming the industry achieves the expected annual average production figure of 375 litres per ewe, then total industry production for the 2024-25 season could potentially reach around 9.8 million litres. This would be nearly six times the 2018-19 figure. At today's average farm gate price of $2.75 per litre[5], this increase would imply a gross industry return of $27 million or a gross income of $710,000 from milk alone for each of the 38 farms.[6]

Figure 17: Days in milk per year



Source: EIU-Massey University NZ Sheep Dairy survey 2020

4. The survey was unable to collect sufficient data to provide any indication of the ranges of profitability levels within the industry as a comparison to other land uses. However, this would be a useful addition to future surveys.

5. This compares to an average milk price payout of $0.57 per litre for bovine dairy farmers in the 2019 season.

6. It is acknowledged that such projections are hypothetical. In particular, they assume that the demand for sheep milk products (powder products particularly), over the next five years, will be ahead of the implied production increase and there are no unforeseen events. Such estimates also do not take into account the fact that many of those enterprises involved in sheep dairying are integrated businesses that include farming, manufacturing, and the sale of products direct to consumers. It is expected that such entitites will likely exceed the returns from supplying a processor with sheep milk for powder or cheese or yoghurt production.

Survey results

Challenges and Opportunities

This survey also sought to understand the key challenges facing the sector at present and what industry participants were doing to address them. Five broad themes emerged from the discussions.

Building supply

The big challenge for both large North Island sheep milk producers, (Maui Milk and Spring Sheep Milk Co) is signing up new and suitable contract milk suppliers over the coming years to meet commitments they have made to their customers. To achieve this, both companies have run regular farm open days to actively engage with interested farmers. In addition, they have worked closely with agricultural consultants and rural accountants to verify financial models for sheep milk conversions. Funding from MPI's Primary Growth Partnership programme has also been key to support this effort. As mentioned, a group of seven new entrant farmers, (three for Spring Sheep and four for Maui Milk) are expecting to start supply to both companies in the 2020-21 season.

Raising per ewe production

Improving the per ewe productivity will be crucial to increasing the profitability of individual producers and the viability of the sector as a whole. As discussed above, surveyed farmers intend to achieve this through year-on-year importation of European genetics, careful analysis and repurposing feed and forage for their dairy flocks, as well as improving their lambing programmes.

Access to processing capacity

Outside of the Waikato, there are no large scale sheep milk processing facilities that could provide the infrastructure needed to facilitate rapid scale-up of sheep milk production from current levels. In the North Island's East Coast and Canterbury, new entrant sheep milk farmers currently rely on specialist cheese and yoghurt producers supplying product to the domestic market as their main commercial option.

However, in response, some producers have formed groups to supply cheesemakers or to share factory and transport facilities. Despite this, there are limitations to the scalability of this model. In order to facilitate industry growth in these regions, milk producers will need to develop and manufacture products destined for export markets (including powders). This will require larger scale export certified processing infrastructure in order to give farmers the confidence to invest in further production.

Identifying new product options for larger scale production

Notwithstanding the potential domestic impacts of COVID-19, there is a clear demand in New Zealand for sheep milk cheese and yoghurt via the food service and specialty retail sectors. Major specialist cheese makers report strong domestic sales of sheep milk cheeses.

But while New Zealand's consumption of these products remains relatively low by international standards, there are obvious limits to the size of the local market. Consequently, the challenge for new producers (particularly those without access to specialist milk drying capacity) is in identifying product options that meet the needs of new consumer groups both onshore and potentially offshore.

As the data above suggests (Figure 4), there has been significant growth in the number of consumer-focused sheep milk products in recent years, and this should provide opportunities for New Zealand producers in the years ahead. This could potentially include the opportunity to develop a commodity levy to focus collective resources and increase energy on market development.

Improving access and margins in supermarket supply chains

Publicly, the managers of the dairy and fresh food sections of New Zealand's major supermarkets are open in their encouragement of local small scale producers. However, the producers themselves have found that supermarket margin requirements, their returns policies, and the control that major bovine dairy brands have over supermarket shelf space, make supplying supermarkets very challenging. While some are persevering with this distribution model, others are instead increasingly focused on supplying food service and specialist grocery stores.

Survey results

Advice for new entrants

The survey also asked each of the 18 respondents what advice they would pass on to new entrant farmers, investors, and marketers hoping to enter the sheep dairying industry. For those that had themselves only recently joined the industry, this question helped them reflect on the challenges they had recently faced as they worked to establish their businesses. In this regard, one of the new entrants warned that such work is likely to 'take longer and be harder than you imagine'. Many of the farmers also offered pragmatic advice that included the following steps:

1. Line-up the market and the product
2. Choose a high value farm location if possible, with good access to production facilities
3. Start building your flock from the best possible genetics
4. Talk to the right people and if possible, work with a group.

However, one of the respondents advised prospective new entrants to first ask themselves some probing questions. They suggested new entrants should first ask themselves what they wanted out of the business and what were they getting into it for? In particular, the respondent advised that new entrants ask themselves if they were looking to become 'price takers' or 'price makers'. If the latter, then they were advised to 'control as much of the process as possible and to have an exit strategy'. This respondent also suggested that whatever products new entrants developed, these needed to strongly reference the distinguishing features of sheep milk over market alternatives.



Conclusion

New Zealand's sheep dairy sector has been growing steadily in recent years from a small base, supported by global demand for non-bovine powder products and the continuing diversification of specialist dairy consumption (i.e. specialty cheese, yoghurt, flavoured and fresh milk products). As a result, the sector presents an innovative opportunity for existing farmers with land, capital, and some existing infrastructure. While the current annual growth rate of 12 percent in sheep numbers is expected to continue in the coming years, growth outside the Waikato region is currently constrained by the lack of large scale manufacturing options.

In Canterbury and the North Island's East Coast there are therefore, opportunities for public and private organisations, (including existing and new food manufacturers, product developers, food marketers and agribusiness investors) to work with current and new sheep milk producers to increase the scale of the industry. This could be achieved by building new manufacturing capacity in powder production and/or working with producers to develop new product offerings that build on and extend consumer awareness of sheep milk's unique characteristics.

At the same time, the profitability of individual farms and the sector overall is currently constrained by the national flock's average annual per ewe production. Achieving a level of performance currently being attained by the top 10 percent of the national flock, (around 350 litres or 70 Kg/MS per year), is likely to be profitable for most farmers.

However, the key challenge facing the sector is to move the national flock's production average as quickly as possible toward these levels, which are close to the production efficiency of European producers. Despite the ambitious nature of this target, there is however, confidence amongst the surveyed farmers that this can be achieved. Production per ewe is expected to increase by a third over the next five years through improved genetics and feed systems.

Although further work is still needed to support the reported health benefits of sheep milk over cow and goat offerings, there is significant market potential for these products.

Therefore, in order to realise this opportunity, there remains a compelling need to translate sheep milk's positive nutritional and consumer credence attributes into new food products (e.g. fermented, frozen, dried) and formats (e.g. prepared foods, snacks and drinks). This needs to be done in ways that meet the needs of particular consumer groups (especially in offshore locations) but also in ways that further distinguish sheep milk from cow and goat alternatives.



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INDUSTRY PROFILE

Figure A1: New Zealand sheep dairy profile (December 2019)

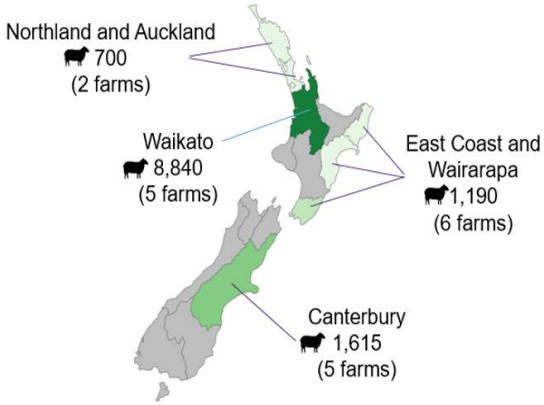


Figure A2: New sheep dairy farms established (2016-2019)

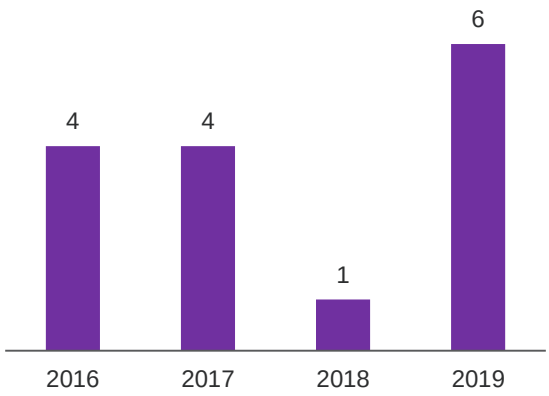


Figure A3: Soil profile

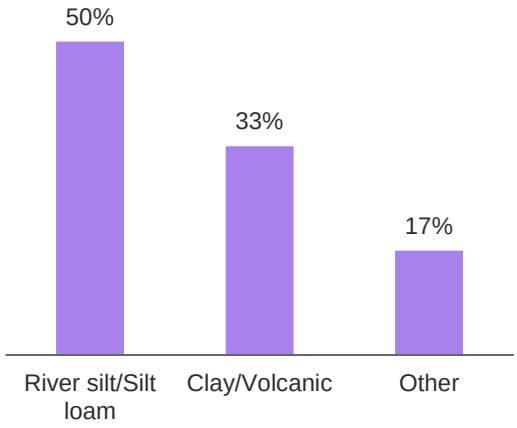


Figure A4: Predominant geography contour

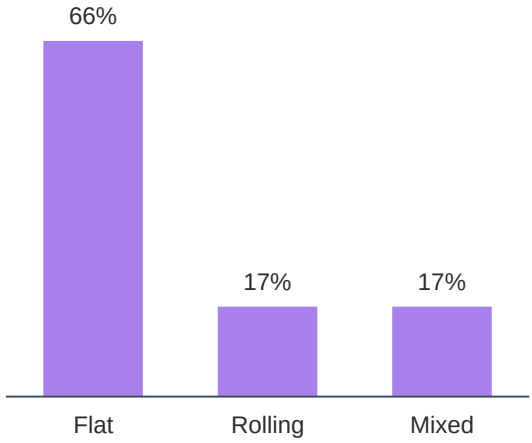
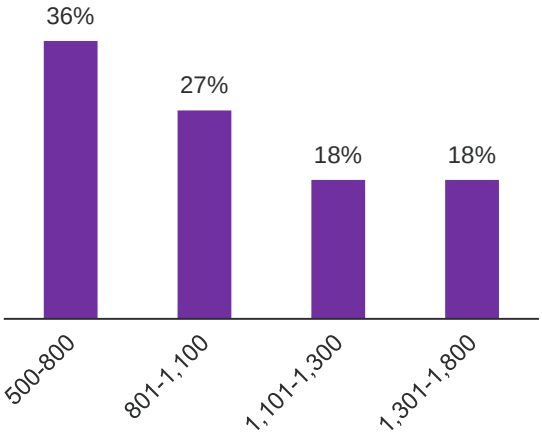
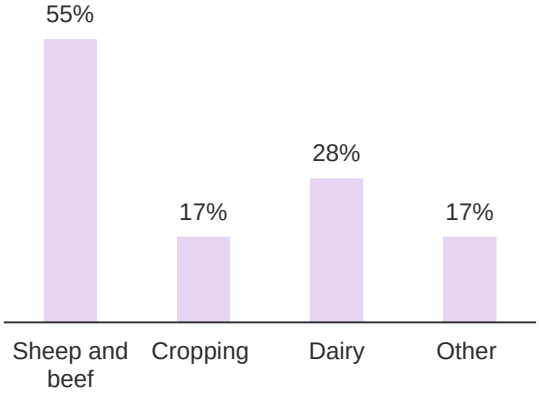


Figure A5 : Average rainfall



(mm per annum)

Figure A6: Previous land use



INDUSTRY PROFILE

Figure A7: Farm size

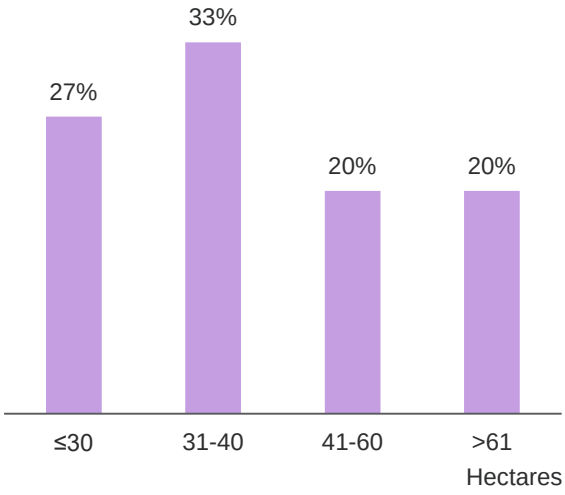


Figure A8: Dairy shed size

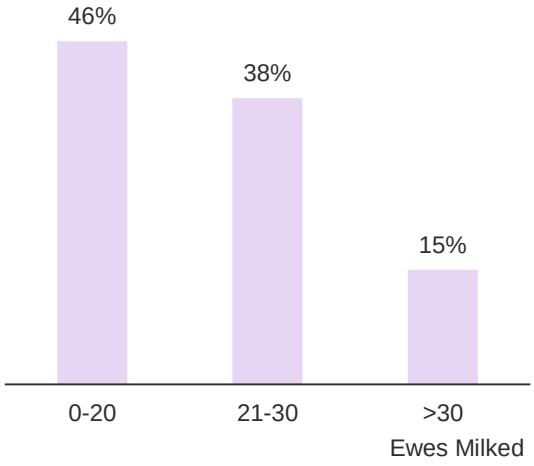


Figure A9: Number of ewes in milk peak production

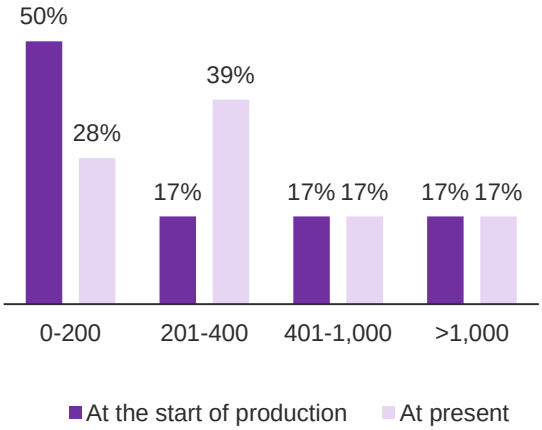


Figure A10: Milk solids production (2019)

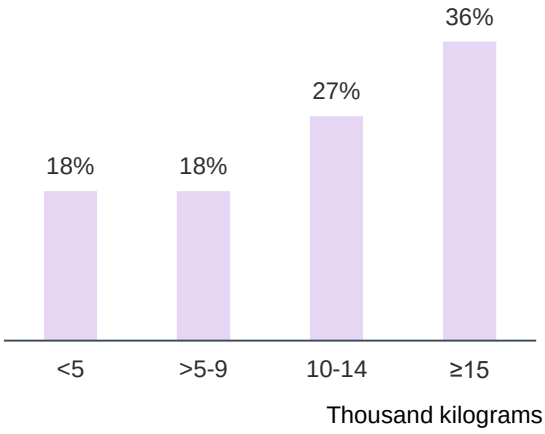


Figure A11: Total milk production - Litres (2019)

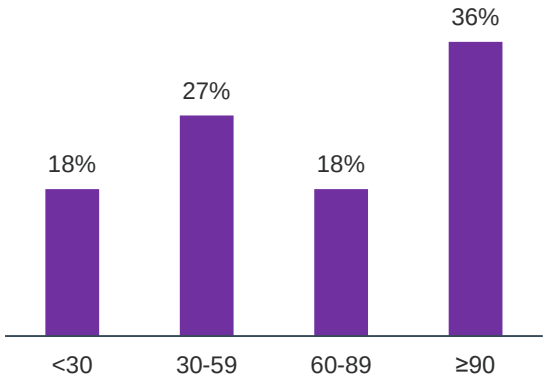
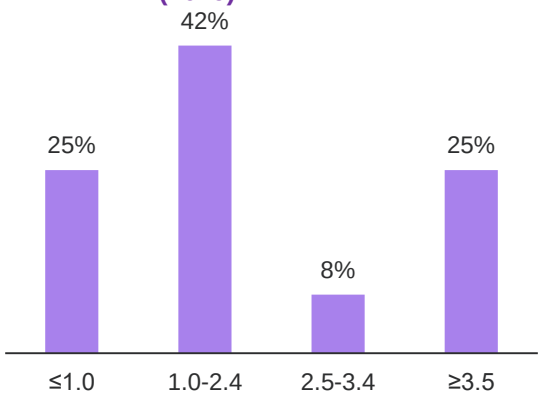


Figure A12: Milk production per hectare (2019)



FARM OPERATIONS

Figure A13: National flock genetics (Breed types cited by respondents)[1]

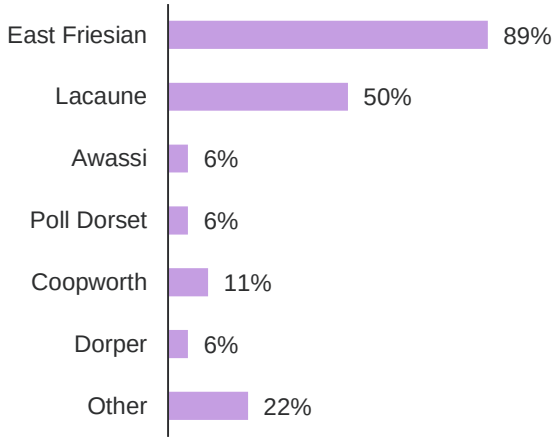


Figure A14: Milk production per ewe

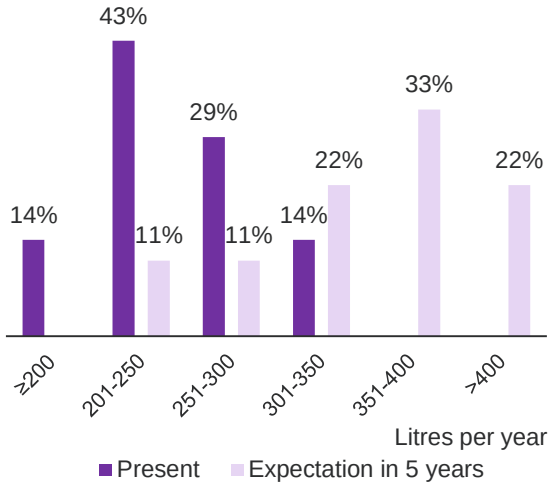


Figure A15: Milk production per ewe (Top 10% of flock)

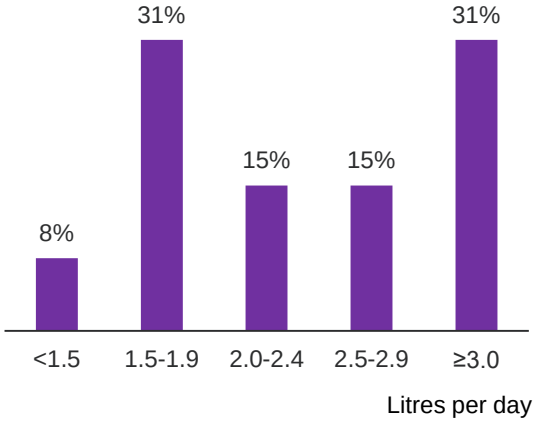


Figure A16: Days in milk per ewe

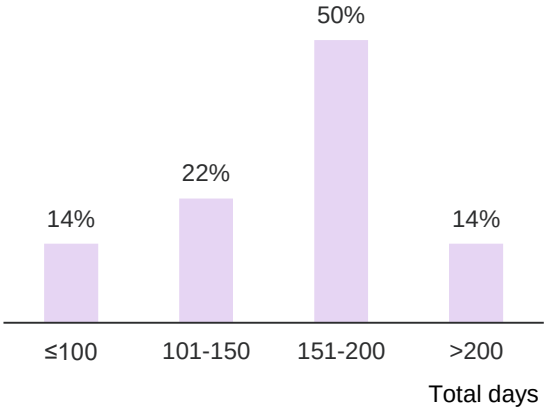


Figure A17: Intention to extend days in milk

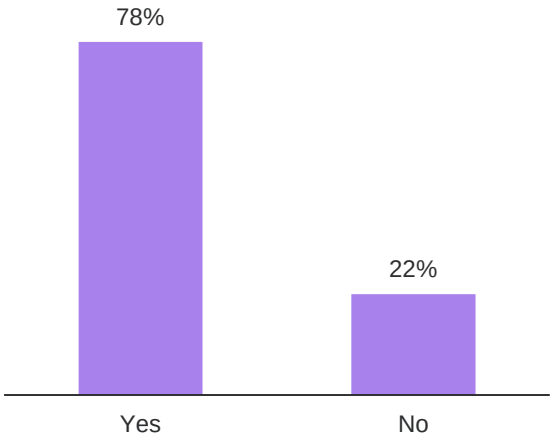
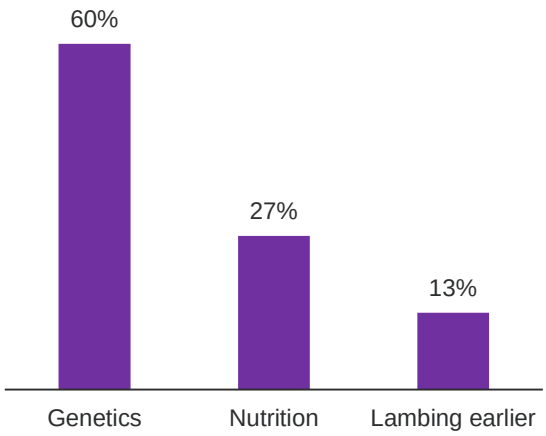


Figure A18: Methods of extending days in milk



[1] This is not a representation of the percentage make up of the national sheep dairy flock, just the breed types cited by respondents in their existing flocks

FARM OPERATIONS

Figure A19: Seasonal versus year round milking

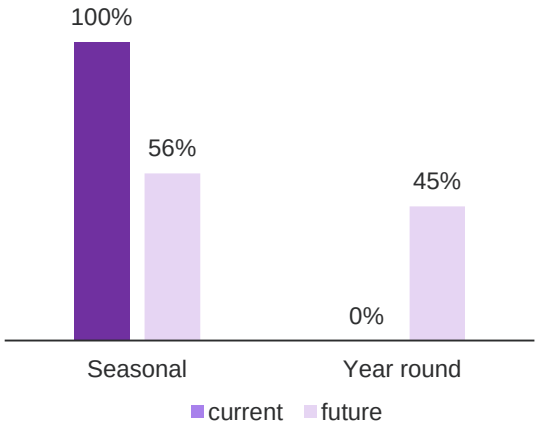


Figure A20: Motivations for entering the industry

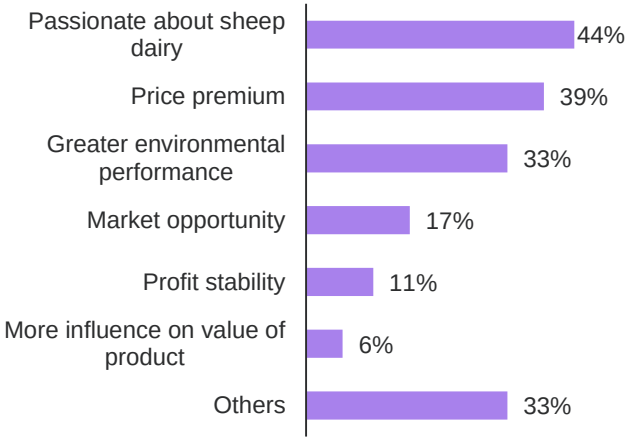


Figure A21: Stock housing (time spent indoors)

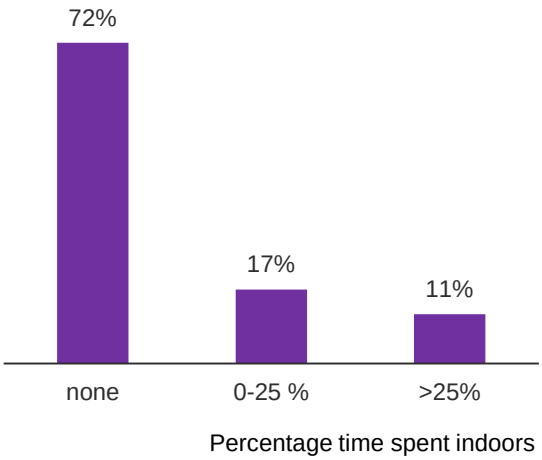
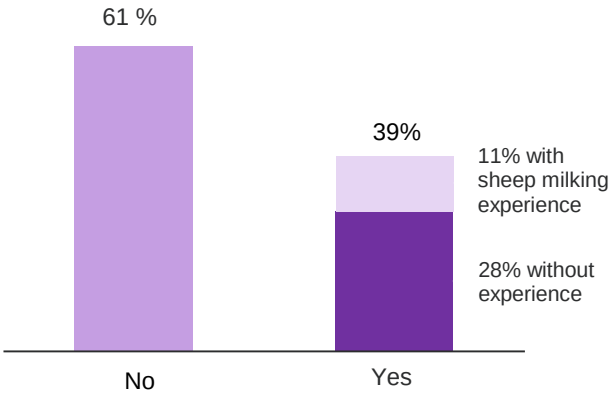


Figure A22: Use of farm consultant/adviser



FARM FINANCE AND SUPPLY CHAIN

Figure A23: Farm conversion cost (per head at start of production)

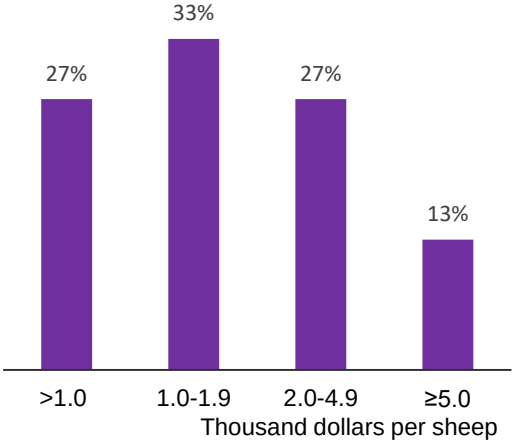


Figure A24: Farm conversion cost (per hectare)

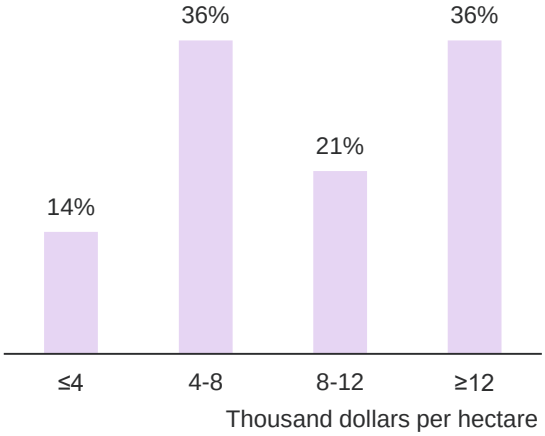


Figure A25: Number of employees



Figure A26: Farmer perception on barriers to increase profitability

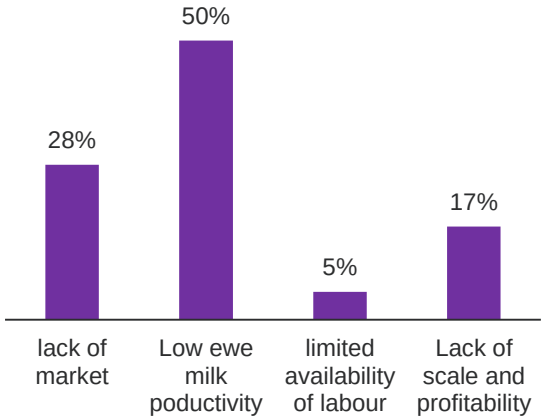


Figure A27: Sale of the milk to manufacturing firms (% of farms)

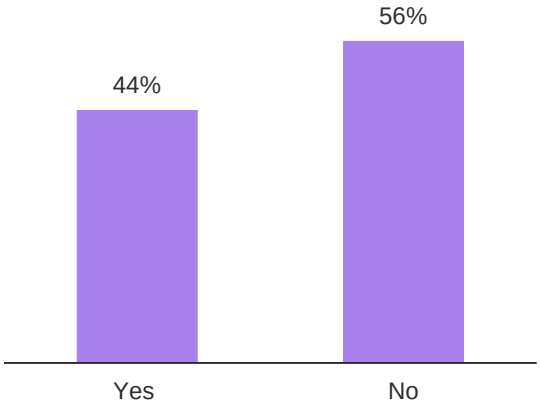
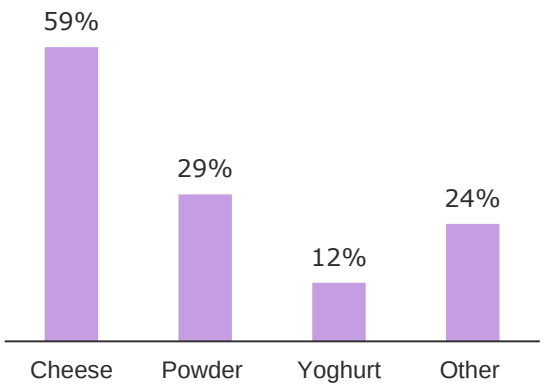


Figure A28: Main products milk is used to produce



CHALLENGES AND OPPORTUNITIES

Challenges that sheep dairy farmers are currently confronting

- Developing new products.
- Access to a milk dryer.
- Milk supply.
- Marketing the product in Auckland.
- Recruiting farmers (to milk sheep).
- Unique products that are not infant formula.
- The goal is to create a food company and move from farming to food production.
- Educating consumers.
- Processing capacity.
- Developing partnerships/ working with new partner.
- We are trying to sell a premium experience.
- Young people seem to be 'anti cow'.
- Explaining the nutritional value of sheep milk.
- Manufacturing options in Canterbury currently dependent on the supply group.
- Better deal with supermarkets over margin.
- Finding the right price point.

Farmer's advice to new entrants

- Select your starter flock carefully, East Friesian are not made for outdoors.
- Invest in good quality sheep, then wait till there's a processor in place.
- Make sure you have proven ewes to milk.
- Get good genetics and line up the market.
- Start building a flock, know where your milk will go, good genetics.
- Quality sheep and location.
- Secure high yielding sheep, get proven genetics, take some time to set up the facilities, good sheep.
- New genetics but use the NZ sheep breeds as a base (to address weaknesses of imported genetics) & market before product.
- Product and market first.
- Market first and then buy best ewes you can.
- Learn to understand the pasture farming industry.
- Join a supply group, be cautious.
- Support a lower North Island dryer.
- Just do it, talk to the right people.
- Streamline the procedures to make it easier to fill in the forms.
- Lower compliance costs and train more staff to do compliance work.
- Location, higher value location.
- Give it a go!
- Don't go just yet, wait for manufacturing options emerge.
- Things will take longer and be harder than you initially imagine, particularly with fresh produce.
- What do you want out of this business, to be a price maker you have to have control of the process, and have an exit strategy.

NOTES

Number of responses

Figure A1: New Zealand sheep dairy profile (December 2019) 18
Figure A2: New sheep dairy farms established (2016-2019) 15
Figure A3: Soil profile 18
Figure A4: Predominant geography contour 18
Figure A5: Average rainfall 11
Figure A6: Previous land use (% of farmers) 17
Figure A7: Farm size 18
Figure A8: Dairy shed size 13
Figure A9: Number of ewes in milk peak production 18
Figure A10: Total solids milk production (2019) 11
Figure A11: Total milk production (Litres) (2019) 11
Figure A12: Milk production per hectare (2019) 13
Figure A13: National flock genetics (Breed types cited by respondents) 18
Figure A14: Milk production per ewe (present) 8
Figure A14: Milk production per ewe (next five years) 10
Figure A15: Milk production per ewe (Top 10% of flock) 15
Figure A16: Days in milk production per ewe 18
Figure A17: Intention to extend days in milk 18
Figure A18: Methods of extending days in milk 18
Figure A19: Seasonal versus Year round milking 18
Figure A20: Motivations for entering the industry 18
Figure A21: Stock housing (time spent indoors) 18
Figure A22: Use of farm consultant/adviser 18
Figure A23: Farm conversion cost (per head at start of production) 15
Figure A24: Farm conversion cost (per hectare) 14
Figure A25: Number of employees 18
Figure A26: Farmer perception on barriers to increase) profitability 18
Figure A27: Sale of the milk to manufacturing firms (% of farms) 18
Figure A28: Main products milk is used to produce 17

INDIVIDUAL FARM PROFILES

Talla Farm



Owners
Jill and Art Eastham

Location
Wairarapa

Milking Flock Size
200 in milk

Milking Platform
40ha

Jill and Art Eastham (pictured) are seasoned commercial sheep farmers having run flocks in the UK, Canada and New Zealand before purchasing a run-down former dairy and dry stock farm near Masterton. After four years of hard work they now have an impressive property, redeveloped for sheep dairying, that includes a 12 aside dairy shed and are breeding a highly productive line of EF-Lacunae cross sheep.

Waimata Cheese



Owners
Rick and Carole Thorpe

Location
Gisborne

Milking Flock Size
400 in milk

Milking Platform
80ha

Well-known and respected cheese makers Carole and Rick Thorpe (pictured) of Gisborne's Waimata Cheese converted their cow dairy to sheep milking sheep and in 2019 produced the first batches of five sheep milk cheeses. These are now available in about 30 select New World Supermarkets around the country alongside their cow milk cheeses (they now buy their cow milk from other farmers in the district).

Craggy Range Sheep Dairy



Owners
James and Kate Clairmont

Location
Havelock North

Milking Flock Size
100 (and growing)

Milking Platform
60ha

Former chef, corporate sales executive, Waiheke Cheese maker and now Havelock North Sheep Dairy farmer James Clairmont (pictured) started milking in late 2019 with his starter flock of 100 East Friesian cross sheep. Primarily aimed at the food service market in the Hawkes Bay, well known Hawkes Bay cheese producer, Hohepa, is providing production facilities for James and Kate Clairmont's Craggy Range Sheep Dairy cheeses which are matured on-farm. Their property is overlooked by the famous Te Mata Peak.

INDIVIDUAL FARM PROFILES

Spring Sheep Tawhare Road



Owner
Spring Sheep Milk Co

Manager
Felicity Cameron

Location
Matangi, Waikato

Milking Flock Size
800 in milk

Milking Platform
50ha

Spring Sheep's leased Tauwhare Road farm has become the standard bearer for the future of the industry in the Waikato. The 50ha property owned by well-known Waikato farmer and director Mark Dewdney is milking 800 ewes this season through its GEA-sourced 24 aside parlour under the expert supervision of farm manager Felicity Cameron (pictured).

Waikino Station



Owner
Maui Milk

Manager
Katey Day

Location
Waihaha, Taupo

Milking Flock Size
2,000 in milk

Milking Platform
150ha

Maui Milk's impressive Waikino Station, the company's breeding and demonstration operation on the western shores of Lake Taupo, began milking 2000 ewes through its 64-bail rotary milking palour in 2017. The farm, which includes two large barns used for lambing and protection of its flocks from inclement weather is the company breeding hub for its imported Lacaune sheep. In 2019 Maui revealed that it will be supplying milk to European dairy product giant Danone who will be producing sheep milk infant formula for the Australian market.

Kingsmeade Artisan Cheese



Owners
Janet and Miles King

Location
Masterton, Wairarapa

Milking Flock Size
170 in milk

Milking Platform
24ha

It impossible to underestimate the contribution that Janet and Miles King (pictured) have made to sheep dairying in Aotearoa. They began milking in 1998 with a flock based on the East Friesian genetics imported a couple of years previously. Since then they have built an award winning cheese business with the factory next to their home just out of Masterton. In 2018 they registered their flock as New Zealand first unique dairy sheep breed under the name 'Dairymeade'.

INDIVIDUAL FARM PROFILES

Neer Enterprises



Owners
Sandi Shivas and Family

Location
Masterton, Wairarapa

Milking Flock Size
300

Milking Platform
40ha

Sandie Shivas (right) is managing director of a family owned farming business based just south of Masterton. In 2016 the comapny converted one of its cow farms to sheep dairying in an effort to diversity business income and to improve that farm's environmental performance. Sandie hired Brazilian sheep dairy specialist Caio Rocha (left) to develop the farm's milking flock and manage the operation as they develop product and manufacturing options.

Wairere Creamery



Owners
James Wallace and John McLaughlin

Location
Karaka, South Auckland

Milking Flock Size
600

Milking Platform
65ha

James Wallace (right) and Johnny McLauglin (left) are joint owners of Wairere Creamery which in late 2019 became the first contract supplier of sheep milk to Spring Sheep Milk Co, the large Waikato-based sheep milk powder and infant formulat producer. Their converted cow dairy farm near Karaka in South Auckland milks 600 ewes but also 300 dairy goats. The latter's milk is processed on farm and sold to supermarkets in the Auckland area.

Monavale



Owner
Spring Sheep Milk Co Ltd

Location
Cambridge, Waikato

Milking Flock Size
800

Milking Platform
50ha

In 2017 Spring Sheep Milk Co opened Monavale the company's breeding and demonstration farm on a 50 hectare block of leased land near Cambridge. The hydrid farm which includes a large indoor barn area and specialist lamb breeding unit, milks around 800 ewes and is managed by Scottish sheep milk guru John Ryrie.

INDIVIDUAL FARM PROFILES

Winsam Farm



Owners / Managers
Rod Clarke and Cathy Oakley

Location
Keri, Northland

Milking Flock Size
80

Milking Platform
26ha

Cathy Oakley won the NZ Specialist Cheese Makers Association 'Cheese Maker of the Year' award in 2016 and picked up a gold medal for her 'Just Ewe' farmhouse sheep milk cheese. She and partner Rod Clarke have been milking 40-50 ewes on 26ha near Keri since 2014 and built an enviable reputation with Northland locals particularly for the quality of their hard cheese product. They retired from the business in early 2020 and their flock and milking plant was sold to Central Otago farmers who plan to have the sheep and shed in place for milking for the 2020-1 season.

St Kilda



Owners
Spring Sheep Milk Co Ltd

Location
Taupo, Waikato

Milking Flock Size
2,700

Milking Platform
160ha

Built in 2016, Spring Sheep Milk Co's St Kilda hybrid dairy sheep farm sits on 160ha of Pamu's 25,000ha Wairekei Pastural site near Taupo (Pamu is a 50-50 partner in Spring Sheep). The farm milks around 2700 ewes each season through a double 24 aside herringbone parlour. It includes two large barns used for lambing and to maintain feed supply and feed quality to milking flock during the season.

Lonsdale Sheep Dairy



Owner
Rod and Heather McMillan

Location
Springston, Canterbury

Milking Flock Size
300

Milking Platform
37ha

In 2017 the McMillan family from Wellington bought and converted a 37ha former cow dairy farm near Lincoln in Canterbury to sheep dairying. They currently milk 300 ewes and are part of The Sheep Milk Supply Group that sells sheep milk to South Island cheese makers. As well as this they have been developing a range of other products including a popular sheep milk soaps.

INDIVIDUAL FARM PROFILES

MacDonald's Farm



Owner / Manager
Ian MacDonald

Location
Clarkville, Rangiora, Canterbury

Milking Flock Size
300

Milking Platform
21ha

Working with Read Industrial, Ian MacDonald has pioneered the mobile milking platform option for sheep dairy producers. The current version (pictured) is a 20 bale milking trailer set behind small truck that carries a chilled vat and transports the milk. Ian leads The Sheep Milk Supply Group that supplies a number of South Island specialist cheese makers. He and members of his family milk 300 Lacaune-cross ewes on his 21ha property near Rangiora in Canterbury.

Charing Cross Sheep Dairy



Owners
Guy and Sue Trafford

Location
Charing Cross, Canterbury

Milking Flock Size
245

Milking Platform
38ha

Sue and Guy Trafford are pioneers of sheep dairying in Canterbury. Over the last five years they have set up a farm and factory near Charing Cross in mid-Canterbury and in 2019 opened a retail outlet in the Riverside Market in central Christchurch (pictured). There they sell cheese, yoghurt and their sheep milk gelato icecream. The former Lincoln University farm management and communications lecturers first began investigating sheep dairying many years before when they managed a sheep and beef farm near Gisborne where they have connections with Waimata Cheese.

Kirwee Holdings



Owner
Matt and Tracey Jones

Location
Kirwee, Canterbury

Milking Flock Size
370

Milking Platform
40ha

Matt and Tracey Jones are agricultural entrepreneurs who own a series of agribusineses based in New Zealand and offshore. In early 2019 they bought sheep milking equipment from Julie Brownlee's operation near Nelson when it closed and installed this on their farm near Kirwee. They now supply milk to Thorvald, the Nelson-based sheep cheese and yoghurt producer.

INDIVIDUAL FARM PROFILES

The Birches



Owners / Managers
James and Lisa Thomson

Location
Harewood, Canterbury

Milking Flock Size
400

Milking Platform
36ha

James and Lisa Thomson are experienced sheep and beef operators who farm a large leased property near Christchurch Airport where they run a 2400-head flock of Ile de France sheep. With the help of family, farm staff and Read Industrial the couple completed their 12 aside milking palour in late 2019 and started milking a mix of East Friesian and Ile de France sheep. They are part of The Sheep Milk Supply Group.

Waituhi Kuratau Trust Farm



Managers
Doreen and Ross Dellaway

Location
Turangi, Taupo

Milking Flock Size
2,600

Milking Platform
Traditional sheep and beef farm

Starting in 2007, William Konui pioneered large scale sheep dairying in the North Island on his whanau's Waituhi Kuratau Trust (WKT) farm near Turangi. The WKT farm includes an 80 bail rotary shed and milks more than 2000 ewes over a season. Waituhi Kuratau Ltd is a 40 percent shareholder in Maui Milk along with 60 percent shareholder Super Organic Dairy who own Maui Milk's Waikino Station.

Fernglen Farm



Owners / Managers / Staff
Ravenswood Familly

Location
Riverdale, Wairarapa

Milking Flock Size
200

Milking Platform
30ha

The Ravenswood family are agriculture entrepreneurs who farm a large sheep and beef farm near Riversdale on the Wairarapa Coast. In early 2019 the family began producing flavoured and (more recently) fresh sheep milk for sale in specialist retail, cafes and supermarkets in the lower North Island. Their operation, which includes a processing and bottling plant in a part of the Kingsmeade Artisan Cheese factory near Masterton, has featured extensively in farm and agriculture media include in a *Country Calendar* programme in November 2019.

SURVEY QUESTIONS

New Zealand's sheep dairy sector is undergoing unprecedented change and growth. As a result farmers and businesses are showing increasing interest in the sector and its developments.

The aim of this survey is to support the growth of the sheep milk industry in Aotearoa by:

1. Determine how MPI policy can support this industry further by gaining insights from the key businesses currently in this sector
2. Compiling information to inform and support existing sheep dairies and businesses considering converting to a sheep dairy.

The results of this survey will be used for two key purposes:

1. To develop the first sheep dairy sector report by MPI and Massey University (to be released in 2020). If successful, this will become a regular report on the sector and the people working in it to help pass on information to interested parties.
2. To support MPI and other research groups to learn more about the sector so that policies supporting the growth of the industries are better informed.

Any results provided will be anonymised and an advanced copy of the report will be provided for feedback before any public release.

For those interested, surveys will be conducted either via phone or person to person interviews. This is an advance copy of the survey so that you can prepare for the interview.

We would like feedback on this survey on what you believe would be beneficial for a long term survey of the sector. We are asking quite specific farm information and understand if you would prefer not to share the data.

If you have any questions regarding the report, please feel free to contact either one of us.

Thanks,

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FARM PROFILE

Farm Profile – This information is used to capture your farm profile and contact information.

1. Please provide the following details relating to the sheep dairy farm(s) you work on//for:

Survey respondent name:

Survey respondent role:

Farm name:

Physical or postal address:

Owners:

Manager(s):

Estimated rainfall per year:

Soil profile:

Farm size (ha):

Predominant geography contour (flat, hill country):

Dairy shed type and size (i.e. 50 bail rotary):

Total milk production in the year ended June 2019: (L) (kgMS)

Farms previous land use (prior to sheep milking):

In which year did you start this sheep dairy farm:

Number of sheep in milk (at peak production) when started:

Number of sheep in milk (at peak production) at present:

MOTIVATIONS

Understanding Motivations – This section is seeking to capture information on skills, background and business motivation.

1. What was your background before entering the sheep dairy industry?

2. Please rank the following reasons for why you started a sheep dairy from your operation. Please only rank reasons that were important to you.
   - Perceived price and profit stability of sheep dairy industry.
   - Perceived price premium of sheep dairy products.
   - More influence on value of product once it leaves the farm gate.
   - Greater environmental performance for land use.
   - Passionate about sheep dairy.
   - Identified opportunity in market.
   - Other (Please specify)

3. Would you be interested in having your business as a case study in the final report? (Please refer to MPI's report with ANZ titles "New Zealand Food and Agri – Tourism here for the style of case study we would like to include. Note: it would not include a detailed financial analysis of the business but more on the motivations of the farming business.)
   - Yes
   - No

FARM OPERATIONS

Understanding Farm Operations – This section seeks to understand your herd profile.

1. Genetics: What is the composition (percentage) of sheep dairy breeds in your breeding programme?
   - East Friesian
   - Lacaune
   - Poll Dorset
   - Coopworth
   - Awassi
   - Dorper
   - Other (Please specify)
   - Unsure

2. Genetics: Where do you source your genetics?
   - Southern Cross
   - Dairymeade
   - Farmgene
   - Talla Farm
   - Other (Please specify)

3. Production: What are the top 10% of your flock achieving in production (litres per sheep per year)

4. Production: How many litres per sheep per year do you currently produce?

5. Production: What production (litres per sheep per year) are you realistically expecting in the next 5 years ?

6. How many days in milk per ewe do you currently achieve each year?

7. Are you trying to extend the days in milk per ewe?
   - Yes
   - No

8. If yes to the above question, how do you plan on achieving this?

9. Is your aim to milk sheep seasonally or all year round using various mobs?

FARM OPERATIONS

Understanding Farm Operations Continued

10. How many times do you lamb your total flock per year?
    - Once
    - Twice (Half in Spring, Half in Autumn)
    - Other (Please specify)

11. What was the driver for the decision to lamb this way?
    - Maximise total yearly milk production?
    - Maximise the length of time milk is being supplied over the year?
    - Lifestyle decision
    - Other (Please specify)

12. Stock Housing: What percentage of time does your flock spend indoors in feeding barns as opposed to grazing?

13. Stock Housing: What times of the year do they spend indoors?

14. Stock Housing: Are you currently using barns to house sheep? Please state why or why not?

15. Stock Feeding: What is the total dry matter to feed sheep per year?

16. Stock Feeding: What is the makeup of the sheep's diet in term of % of total?
    - Pasture - Cut and Carried
    - Pasture – Grazed on Farm
    - Silage/Bailage
    - TMR
    - Lucerne
    - Other (please specify)
    - Summer Crop 1 [enter crop]
    - Summer Crop 2 [enter crop]
    - Summer Crop 3 [enter crop]

17. Stock Feeding: What percentage of the diet is grown on farm?

18. Do you use Overseer or have a farm environmental plan?

19. What is the N/P (nitrogen/phosphorus) leaching rate on farm? How would you think this would compare to the farm's previous land use?

20. Do you use a farm consultant/ adviser?
    - Yes.
    - No

21. If yes, do they have sheep milking experience?

FARM FINANCES

Understanding Farm Finances – This section seeks to understand the costs to invest in a sheep dairy operation.

1. What was the approximate cost to finance the conversion of your sheep dairy farm?

2. Was there any unforeseen capital expenditures that you faced?

For the following questions on cost of production please note that the cost of production excludes interest and principal repayments on loans.

3. What are the approximate costs on farm per kgMS? What would you like it to be in 5 years?
    1. *Current:*

    2. *In 5 years:*
4. What are the approximate costs on farm per ha? What would you like it to be in 5 years?
    1. *Current:*

    2. *In 5 years:*
5. What are the percentages of total costs spent of the following?
    - Fertiliser
    - Labour
    - Feed (made, purchased cropped)
    - Breeding e.g. AI
    - Animal Heath
    - Transport
    - Shearing
    - Energy
6. How many full-time employees does the farm require? What roles are these people currently providing?

7. What are the largest barriers to reach or increase profitability on your farm (if multiple please rank)?
    - Low milk pay out by supplier
    - High cost structure
    - Unexpected costs converting farm dragging performance
    - Low per ewe milk production
    - Ability to attract the right staff
    - Development of product in market
    - Other (Please specify)

6. How are you looking to address these issues?

SUPPLY CHAIN

Understanding the Supply Chain – These questions are intended to examine the sheep dairy supply chain.

1. Is the bulk of the milk your farm's sheep produce bought by another firm for manufacturing into final products?
   - Yes
   - No

2. If yes, what milk company are you supplying?

3. What are the main products your milk is used to produce?

4. If yes, is the bulk of these products for export beyond New Zealand?
   - Yes
   - No

5. Which export markets do those products go to?

6. For those products which you produce, which of the following sales channels do you use?
   - Own sales direct to final customer
   - Sales via distribution partnership to retailer and final consumer
   - Sales to retailer for their sale to final consumer
   - Sales to marketing and distribution firm for sales to retailer and direct to consumer.
   - Other (comments)

7. What are the key challenges your firm is confronting in connecting with consumers of your existing or future sheep milk products?

8. What do you see as the key challenges your business is confronting in developing markets for your products?

CONCLUDING QUESTIONS

1. If you were to advise new entrants aiming to enter the sheep milk industry, what would your advice be?

2. What other questions do you think would be useful to include in this survey?

3. How do you think MPI can best help provide support into this industry?

Ministry for Primary Industries
Manatū Ahu Matua



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