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Strategies to grow the value of New Zealand's fine-wool sheep industry

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Abstract

The New Zealand Merino Company Limited is leading a programme to create new opportunities and value for New Zealand's sheep industry by transitioning growers to finer-wool genotypes and enhancing productivity on current and future fine-wool farms. This paper describes the approaches being undertaken to effect these changes and in doing so grow the value of the fine-wool sheep industry of New Zealand. A strategy has been developed that is focussed on changing the knowledge, attitude, skills and aspirations of producers and their key influencers. The strategy has a range of activities that can be grouped into the broad areas of development, awareness, recruitment and engagement. Importantly the on-farm strategy is matched with significant investment in careful product differentiation and improvement of the flow of information and value through the supply chain.

Keywords: transformation; genetics; footrot; fit-for-market; adoption; transition; practice change

Introduction

The New Zealand Merino Company Limited (NZM) is leading a programme to create new opportunities and value for New Zealand's sheep industry.

This programme has been instigated as the result of a Primary Growth Partnership with the government via the Ministry for Primary Industries. The programme is known as the New Zealand Sheep Industry Transformation project or NZSTX. It aims to increase market-driven production of sheep, shifting the balance between New Zealand strong and fine wool production, and using product differentiation to generate better grower returns for meat, wool and other products such as leather. The programme evolved in response to the decline in profitability in the sheep meat and strong wool sectors over recent decades, which has resulted in a large drop in the national sheep flock in favour of dairy and other production. However, at the same time, prices for fine wool fibre (less than 26 micron) have remained higher and demand from international markets for certain fine-wool types has begun to outstrip New Zealand supply. To address the growing demand for these wool types, such as those required for active outdoors apparel, there are two key objectives for NZSTX. Firstly, it aims to transition a significant portion of crossbred and mid-micron producers, to finer wool sheep that efficiently produce fibre and meat that is 'fit for market' (FFM); and secondly, it aims to improve the productivity and efficiency of production of fibre and meat within current fine-wool growers. Both avenues require significant attitude and behavioural change from many producers. This paper describes the approaches being undertaken to effect these changes and in doing so grow the value of the fine-wool sheep industry of New Zealand. It covers some of the enabling technology that is being developed as well as

the methods being used to allow this technology, as well as current best practice, to be adopted by sheep producers. NZSTX also has a large range of activities aimed at enhancing profitability of fine-wool production by careful product differentiation and improvement of the flow of information and value through the supply chain but these will not be discussed here.

Strategy development theory

The adoption of new practices and of a different sheep type required to achieve the two objectives of NZSTX are managed within the Production Science component of NZSTX. The project activity within this portfolio is quite broad; however, the underlying principles of extension theory and behavioural change theory apply commonly across the activities. In developing the strategy, we were aware that the dispersion of technology or knowledge from person to person among a producer community (information diffusion) is only an effective method of changing practice in homogenous groups of producers. Therefore, to enable widespread change to occur across a producer community or industry, deliberate efforts are required to engage each tier/type of producer being targeted. If the strategy was only targeting the highly innovative producers, that essentially volunteer to change, it would typically lead to limited community or industry-wide change. We were careful to include activities that encouraged participation from a wide range of producer types. We were also aware that when aspiring to bring about behavioural change among sheep producers, it is important, where possible, to deliver the technology or information in the same context with which they will have to apply it. They prefer information to be delivered in context and they typically learn by doing and are rarely effective abstract learners. Related to

this is a focus on effecting changes in knowledge, attitude, skills and aspiration which are all key components for enabling behavioural change. Finally, another underlying principle in this strategy is that, if producers are unhappy or discontented with their current situation (and can be shown a pathway to a different outcome), they are more likely to change behaviour. Effectively some activities were designed that allowed producers to see that there are opportunities to improve on their current situation in a non-threatening manner. The principles described briefly here have been incorporated into a variety of activities and tactics being used to enhance the production of fine-wool sheep.

The target audience

There are two broad target audiences that the adoption strategy considers: producers and key influencers of producers. Each of these broad categories can be divided into more specific components.

Producers

In developing the strategy, key changes in producer knowledge, attitude, skills and aspirations were considered. The common behaviours that NZM is aiming to effect across the entire audience of producers are that they will:

- Be more responsive to market signals.
- Be open-minded and willing to trial and act.
- Be willing to seek out knowledge from NZM beyond wool, and see NZM as a knowledge broker.
- Value information sharing and develop an open mind to benchmarking their business.
- Be driven by total profits made from both wool and meat, not just one component of the business or one measure of productivity.
- Have a clear breeding objective and a plan to achieve it, and a focus on breeding a balanced sheep that thrives in New Zealand conditions.
- Recognise they are part of a 'value chain' or partnership with NZM.

During this process, the different categories of producers that needed to be influenced were defined. The different categories of producers were defined as: strong wool producers (fibre diameter >30.1µm); mid-micron producers (fibre diameter 26-30µm); fit-for-market producers (fibre diameter 18-25.9µm); specialist wool producers (fibre diameter <18µm). For each of these groups, the nature of the change required to achieve the stated goals in fit-for-market production, and the key barriers to making such change were defined (table 1).

Key influencers of producers

The adoption strategy also intends to reach the key influencers of target producers, to improve their advocacy of fit-for-market production and ability to

recruit producers into NZSTX initiatives, particularly production science activities. There are a number of influencers of the broader producer community that were identified in the adoption strategy development. The influencers that were deemed to have potential for assisting NZM by guiding/recruiting producers into fit-for-market production include: wool classers, veterinarians, rural accountants, bank managers, agricultural consultants, stud breeders, pregnancy scanners, chemical and fertiliser representatives, Beef and Lamb NZ and agricultural universities. These influencers are being targeted for some of the awareness activities and, where appropriate, are being encouraged to participate in some of the engagement activities.

Adoption strategy

The overall strategy being employed to develop new information, and extend it to the target audiences, is based around overcoming the barriers to change that were identified. The strategy is divided into four key areas of activity: Development, Awareness, Recruitment and Engagement.

Development Activities

The development activities have been largely instigated since 2011 although the phasing of various activities differs across the portfolio. The activities that have been completed or are currently underway include:

1. Market Research
 - a. Compilation of a database of producers in target areas that currently do not produce fit-for-market wool.
 - b. Conduct phone interviews to define: likeliness of changing; barriers to changing that need to be overcome; and strategies that are likely to encourage them to change.
 - c. Define those that are most likely to change and therefore should remain in the database for future information.
2. Genetics
 - a. Establish a central progeny test site for fine-wool rams to demonstrate the exploitable genetic variation available and to provide genetic linkage across New Zealand as well as between New Zealand and Australia.
 - b. Work with stud breeders to transition their data into performance recording systems and encourage the adoption of estimated breeding values to assist ram selection and sales.
 - c. Establish a producer-owned nucleus flock dedicated to breeding fit-for-market sheep that are capable of maintaining a high health status and are economically competitive on non-traditional fine-wool country.
3. Nutrition
 - a. Pilot the successful Australian extension program Lifetime Ewe Management (Trompf

et al. 2011) in a New Zealand context and modify for New Zealand conditions.

4. Feedbase
 - a. Research and demonstration around successful establishment and management of lucerne in a high country setting.
 - b. Research into the suitability of Russell Lupins as a perennial legume in low pH, high Aluminium, high country soils.
 - c. Investigate the potential for annual legumes in the over-sown, top-dressed pastures of the high country.
5. Animal Health
 - a. Define and demonstrate the role of genetics in combating footrot by running a site where rams are challenged for footrot.
 - b. Test and validate the Lincoln footrot gene-marker test (Hickford et al. 2006) in Merinos
 - c. Develop a genomic informed breeding value for footrot.
 - d. Investigate the role of Ovine Johne's disease (OJD) on mortality in adult Merino ewes.
6. Financial
 - a. Instigate a discussion and benchmarking group of fit-for-market sheep producers to generate a database of current performance across a range of zones.
 - b. Develop a tool that can demonstrate the financial implications of moving toward a fit-for-market sheep. This software is known as Discovery.

Awareness activities

There is a range of activities that we are conducting to build awareness around the new information being generated and the opportunity of moving toward fit-for-market sheep. As part of this process, more detailed phone interviews are being conducted with sheep producers. The role of these interviews is twofold, firstly to gather information about the enterprises but secondly to provide an opening to have a discussion about the opportunities and build awareness. Awareness is also being built through a series of field days across a range of geographic locations. Although we do not expect these events to result in practice change, they are good forums to refine the database of people interested in transitioning to fit-for-market production. These field days allow us to demonstrate that the concepts we are promoting are real and are being implemented by other producers.

In addition to direct face to face contact with farmers, a range of communication activities are being undertaken to build awareness, as well as provide a forum where more detailed information can be accessed. By nature these activities are more passive and it is difficult to determine the value to the overall strategy; however, it is considered important to cater to a range of learning styles. These communication activities include a regularly updated website

www.perfectsheep.co.nz, email news flashes and telephone seminars on relevant topics.

Recruitment activities

Recruitment activities are centred on enhancing the engagement of producers in the various strategies. All of the recruitment activities involve direct contact with producers in relatively small groups or individuals. Recruitment activities include one day workshops aimed at motivating producers to consider changing practice. This includes a workshop on breeding ewe genetics and nutrition, called 'Bred Well Fed Well', as well as a workshop called 'Healthy Ewes Healthy Profits' which is focussed on management of animal health issues and particularly footrot. Demonstration farms are also used to recruit interested producers and are used to take small groups to. These demonstration farms are used to showcase both feed-base systems as well as the opportunity that superior genetics provide. This 'witness factor' cannot be underestimated in terms of its power for generating a change in mindset.

The most important recruitment activity that has been piloted and will soon be rolled out is the on-farm 'catalyst' visit from team members with specific skills. These on-farm visits take approximately two hours per farm and are completed with producers that have been identified in the awareness activities. Linked to these catalyst visits will be the development of a database of physical and production benchmarks for each farm visited to enable some reporting back to participants. This is a key component of helping to build discontent with the status quo, as producers are able to see their strengths and weaknesses compared to similar production systems. As a result of the catalyst visit, the producer will be signposted to one or more of the engagement activities that is likely to be of the most interest to them. The skill set of the individual carrying out these on-farm interviews is critical to its success.

Engagement Activities

There is a range of ways that producers can engage in NZSTX activities across the areas that development investment has been made. In the genetic area, we are working directly with the stud sector to assist with data entry and support to enable the generation of estimated breeding values on stud and sale sheep. We are also working with the stud sector to provide them with the necessary information and tools to implement a genomic breeding value for footrot once it is available. Furthermore, we are working directly with commercial producers to assist them to clarify their breeding objective and assist them to get into meaningful conversations with their ram breeders. In the nutrition area, a number of Lifetime Ewe Management groups (Trompf et al. 2011) have been established. This is being expanded shortly after a successful prototyping process. We are also encouraging producers to engage in Stockcare where appropriate/applicable. Engagement in the investment

Table 1 The target producer audiences, change required for fit-for-market production and likely barriers to change.

Target Audience	Change required	Barriers for change
Strong wool producers (fibre diameter >30.1µm)	<p>Aware of ‘new’ fine wool genotypes that are easier to farm.</p> <p>Aware and seeking engagement in the NZM model and offering.</p> <p>Transition to a ewe type that has an adult fleece fibre diameter less than 26 micron.</p>	<ol style="list-style-type: none"> 1. Motivated by tailing %, turn-off time, hogget lambing performance. 2. Perceptions of finer wool sheep are: <ol style="list-style-type: none"> a. feet issues- will not handle footrot b. low lamb survival and growth rate c. require more management d. do not suit the country e. poor doers, poor foraging ability 3. No appreciation for potential profit. 4. Lack of clarity of transition pathway. 5. Long transition lag time. 6. Passion for current ewe type. 7. Not aware of potential fine-wool genotypes available. 8. Not aware of NZM model and offering.
Mid-micron producers (fibre diameter 26-30µm)	<p>Aware of fine wool sheep that are easier to farm.</p> <p>Aware and seeking engagement in the NZM model and offering.</p> <p>Transition to a ewe type that has an adult fleece fibre diameter less than 26 micron.</p>	<ol style="list-style-type: none"> 1. Belief that processing innovation will improve value of wool type. 2. Not aware of potential profit improvement from moving finer. 3. Perceptions of finer wool sheep are: <ol style="list-style-type: none"> a. more footrot issues b. poor lamb survival and growth rate c. more management required 4. Not aware of potential fine-wool genotypes available.
Fit-for-market producers (fibre diameter 18-25.9µm)	<p>More efficient and profitable production by:</p> <ol style="list-style-type: none"> 1. Improving ewe nutrition 2. Improving feed-base 3. Using more productive genotypes 4. Better sheep health- feet, worms, fly, ovine Johne’s disease (OJD) <p>Understand pathways to increase profit.</p>	<ol style="list-style-type: none"> 1. Do not recognise the opportunity, via genes, nutrition, or health to- <ol style="list-style-type: none"> a. improve lamb survival and growth b. increase wool production c. lift robustness of ewes and hoggets 2. Lack of skills to drive productivity. 3. Habit and heritage 4. Comfort zone- FFM so we are there. 5. Lack of initiative to get involved. 6. Intimidated by others’ results. 7. Past relations with NZM only wool.
Specialist wool producers (fibre diameter <18µm)	<p>Transition some of the ewe flock to fit-for-market types to capture current market conditions and/or</p> <p>More efficient and profitable production by:</p> <ol style="list-style-type: none"> 1. Improving ewe nutrition 2. Improving feed-base 3. Using more productive genotypes 4. Better sheep health- feet, worms, fly, OJD 	<ol style="list-style-type: none"> 1. Sporadic large premiums for these wool types 2. Past investment and years of effort in developing sheep type 3. Heritage- family history/classer input. 4. Prestige- better quality wool. 5. Focus on wool style and colour. 6. Do not recognise potential via genes nutrition and health to- <ol style="list-style-type: none"> a. improve lamb survival and growth b. increase wool production c. lift robustness of ewes and hoggets

in the feedbase is largely facilitated by on-farm visits from our Agronomist who provides one on one advice as required.

If producers are considering transitioning to a fit-for-market sheep type, there is a range of support

services that are available and offered to these producers. This includes a visit to go through the Discovery software which compares their current production system with a range of potential production systems. They also will receive farm-specific advice

on the genetic pathway options that are available. They also receive specific advice on animal health management plans that should be considered as part of the transition to the new genotype.

Rubber on the road

The program has completed the majority of the development activities but some of the key barriers are still being worked on. The economic case for transitioning to finer-wool genotypes is favourable based on modelling completed and the summary of a range of Discovery visits already completed. Based on the work to date and the transition that has already occurred there will be an additional 100,000 stock units producing fit-for-market wool and meat. The continuation of the strategy is envisaged to result in considerably greater transition once more of the barriers to change are overcome. The greatest barrier is footrot and development work is very encouraging, but it will be a number of years until footrot resistant fine-wool genotypes are widely available. It is expected that transition to finer-wool production will not be widespread until these are available.

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