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# New Zealand Agricultural and Resource Economics Society (Inc.)

## **Pastoral Farmer Goals and Intensification Strategies**

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# PASTORAL FARMER GOALS AND INTENSIFICATION STRATEGIES

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## **Abstract**

Focus groups were held with four pastoral sectors (sheep, dairy, deer, and beef) to investigate intensification strategies available to each sector. Focus groups first identified drivers of intensification in their sector, then identified the strategies they perceived as available, and evaluated the identified strategies in terms of favourability. For a researcher selected intensification strategy in each pastoral sector, benefits, barriers and solutions, and the relationship between farmer goals and the selected strategy was examined.

The three main drivers of intensification in the sheep industry were profit, higher land values and return on capital. The researcher chosen strategy, high fecundity sheep, was viewed by the focus group as having benefits of increased financial security, increased profit, better return on capital and better land utilisation. However the strategy was seen as conflicting with other desirable goals such as lifestyle, social life, work variety, self reliance, environmental concerns and animal welfare.

The three main drivers of intensification in the dairy sector were declining market prices, need for increased profit and need for increased productivity. The researcher chosen strategy, robotic milking, was viewed as having benefits of: reduced labour requirements, enhanced lifestyle, greater job satisfaction, reduce operational costs and increased profit. Implementation cost was viewed as a barrier as was the need for new specialised technical skills.

The three main drivers of intensification in the deer industry were return on investment, competition from other land uses and returns per hectare compared with other pastoral sectors. The researcher chosen strategy, 100kg weaner by 1<sup>st</sup> June, had benefits of increased management options, increased profit, achievement of animals' genetic potential, better predictability and a higher kill-out yield. The strategy presents challenges to animal welfare – an important consideration for the group.

Three industry enterprises (dairy, calf rearers, and beef finishers) are involved in beef production. All three agreed that profit was the main driver for intensification. The

researcher chosen strategy was dairy/beef progeny. Benefits of this strategy for the industry were: increased profit, access to prime markets, higher yielding quicker growing animals, and better behaved animals. The primary barrier to the success of this strategy was the need for co-operation across the three industry enterprises and the processors, and the need to ensure increased profits are distributed to all parts of the chain. Dairy farmers (the source of 65% of animals farmed for beef) were particular concerned about animal welfare issues and the consequent financial risks presented to their operations by this strategy.

## **Introduction**

In the pastoral sector there are frequent calls for the need for industry intensification in order to maintain incremental productivity increases. There are numerous possible technologies and management strategies that may help enable pastoral farmers to achieve this aim. This paper reports research findings regarding, the drivers of intensification, and the types of strategies that farmers in four pastoral sectors (sheep, dairy, deer and beef) could harness to increase productivity. The data reported here is a part of a FRST funded project (C10x0319).

The main questions that are addressed in this paper are:

1. What are the drivers that are encouraging or forcing pastoral farmers into the adoption of technologies or intensification strategies to increase productivity?
2. What are the main intensification strategies/technologies that pastoral farmers see as being available to their industry and how do the farmers rate them in terms of favourability?

The project also examined two further questions regarding the farmers' choice of intensification strategies:

3. What barrier do they see to the adoption of these identified strategies/technologies?
4. What solutions do they see to the barrier identified?

These two latter questions are not addressed in this paper. For further detail on these issues see the project report (Small, Murphy-McIntosh, Waters, Tarbotton, & Botha, 2005).

Additionally, after consultation with industry analysts and representatives, the researchers selected one promising intensification strategy/technology from each of the four pastoral sectors. For these selected strategies we investigated potential benefits of adoption, potential barriers, potential solutions to the barriers and the fit of the strategy/technology with some common farmer goals for their business enterprise. These common farmer goals were adopted from earlier research by Parminter and Perkins (1997). The goals are predominantly either financial or lifestyle goals: building a valuable business; producing to maximise farming profits; looking after the welfare of livestock, creating increased opportunity for other farmers, paying off debts, maintaining a stable farming system; having time available

to socialise with family and friends; being self-reliant in decision-making; and having variety in their work.

The selected strategy for the sheep industry was ‘high fecundity sheep’. This strategy pushes for greater productivity through the development and use of sheep that breed twins and triplets. The strategy encompasses a number of disparate elements such as genetics, vaccinations to increase ovulation (i.e., Androvax), scanning, animal health remedies, nutrition and pasture growth, monitoring and management. The selected strategy for the dairy industry was ‘robotic milking’. This technology is rapidly developing overseas and is being trialled in New Zealand by Dexcell at their Greenfield farm near Hamilton. Some implications of this strategy include effects on farm size, paddock layout, feeding systems and labour management.

The selected strategy for the deer industry was ‘100kg weaner by the 1<sup>st</sup> of June’. This strategy is aligned with Deer Industry New Zealand’s current Venison Strategy. The focus of this strategy is to create a shift in the seasonal production of deer by promoting rapid animal growth bringing the deer to slaughter weight before winter and thus extend the venison season. The selected strategy for the beef industry was ‘dairy/beef progeny’. This strategy involves the use of beef bulls or semen (e.g., Herefords, Simmentals etc.) over dairy herds for cattle for beef production. As 65% of New Zealand cattle farmed for beef are sourced from dairy industry surplus, the strategy has the potential to increase the number of higher value animals suitable for prime cuts of meat rather than the commodity meat markets for which non-beef animals are destined.

## **Method**

The project team decided to use a parallel process for each industry sector to gather research data. The major methodological tool used to gather original project data was focus groups of farmers and industry experts from each sector, thus this research is primarily qualitative. That is, it seeks to determine, through the use of knowledgeable individuals in group settings, the motivations and beliefs about intensification strategies held by farmers in the New Zealand pastoral sector. Research attributes of focus groups include the flexible interaction of the participants and researchers allowing the stimulation and ‘piggybacking’ of ideas, and the ability to explore in-depth and clarify participants’ ideas and perceptions (Krueger & Casey, 2000; Morgan, 1988). This research does not purport to quantify the representativeness of these beliefs in the populations of the various agricultural sectors.

During the focus groups participants also completed a short questionnaire adopted from previous research into farmers’ goals (Parminter & Perkins, 1997). The questionnaire asked participants to rate the importance, to themselves, of ten farming goals (see above), and then rate the degree to which the researcher selected intensification strategy either helped or hindered the attainment of each of these ten goals.

## Results and Discussion

### Sheep Industry

The sheep industry focus group included 12 participants from the King Country area. This group identified the top three drivers for intensification in the sheep industry to be (in order of importance): desire to increase profit, higher land values, and the need to obtain a good return on capital. In order to meet these needs several intensification strategies were identified by the group, with the top four being: nitrogen use to increase stocking rate, minimising inputs for maximising returns, DNA typing and marker assisted selection (e.g. eczema, Inverdale gene, twinning gene), better feed budgeting (using available grass feed software systems, quality of pasture /feed) and technology advances through information sharing.

The researcher selected intensification strategy for the sheep industry sector was 'high fecundity sheep'. The main benefits of the high fecundity sheep strategy were identified as increased financial security, more profit, better return on capital, better utilisation of pasture and better land use. Barriers and solutions to these barriers for the high fecundity sheep strategy are presented in Table 1.

Table 1: Barriers to the High Fecundity Sheep Strategy and Potential Solutions

Barrier	Solution
Farmer mindset (not ready)	Education, discussion groups
Lack of enabling technologies	Genetic research (animal resilience, improved grasses)
Lamb survival	Management practices, vaccines, nutrition
Lamb date not coinciding with grass supply	Management practices, feed budgeting, nitrogen application

.In general, the participants viewed the high fecundity sheep strategy as useful for helping to achieve the highly desired goals of increased profitability. However, it was also seen as conflicting with other desirable targets (particularly lifestyle goals), such as having time to socialise with family and friends, having variety in work, and being self-reliant in decision making. Concern was also expressed that this strategy might conflict with their goal of looking after the welfare of the stock. It was considered that genetic research and appropriate management practices might help make the strategy more successful. Discussion also indicated the farmers were concerned about how the strategy might impact on public perception of the sheep industry in regard to animal welfare and environmental issues associated with high nitrogen application.

### Dairy Industry

This focus group included nine dairy producers from the Waikato region. They identified the top three drivers for intensification in the dairy industry as being:

declining market prices, the need for increased profitability and productivity and the increasing capital value of land. In order to meet these needs, several intensification strategies were identified by the group, with the top four being: improving the genetics of cows and grass, improving the value of milk (e.g., through niche products such as nutraceuticals), more intensive use of labour and fourthly, the use of genetic engineering. Although genetic engineering was the fourth most favoured strategy of the group, it was emphasised that the most favoured strategy, improved genetics of cows and grass, should be achieved through the use of marker assisted selection rather than genetic engineering because of unfavourable public and consumer attitudes towards genetic engineering. Public and consumer concerns regarding dairying's environmental impacts and animal welfare issues were viewed as posing problems for industry efforts regarding intensification.

The researcher selected intensification strategy for the dairy industry sector was 'Robotic Milking'. The main benefits of the robotic milking strategy were identified as reduced labour requirements, enhanced lifestyle and greater job satisfaction due to reduction of mundane and monotonous tasks, reduced operational costs and increased profits, ability to separate specialised milk products at the shed, and communication technology that calls the operator when required rather than needing that individual present all the time. Barriers and solutions to these barriers for the robotic milking strategy are presented in Table 2.

Table 2: Barriers to the Robotic Milking Strategy and Potential Solutions

Barrier	Solution
Cost of changing to robotic system	Time for technology development, critical mass of users (demand and availability)
Farm labour impact – new skill sets may be required	Education and retraining
Unreliability of the technology	Time for the technology to mature
The need for technical support	Robust systems, service contracts with technology providers

In general, the group felt that robotic milking has great potential to significantly enhance the lifestyle of dairy farmers and their farm workers. However, before becoming viable, considerable alterations to current farming systems may be necessary. The group considered that it may only be suitable for farms with appropriate topography and re-fencing may also be necessary to achieve maximum utility. The implementation of such major overhauls to the farm system may be very costly. Therefore, at least in the early stages of the development of this technology, it may only be appropriate and cost effective for farms which are being newly set up or for operations which have reached the end of their physical life and require rebuilding. High technology associated with the system including animal health monitoring may require new skills and specialised technical skills for maintenance and repair.

The robotic milking strategy was viewed as enhancing lifestyle goals, giving dairy farmers greater freedom and more control over their time and reducing drudgery. However, the technology was considered expensive to set up, relatively untried in the New Zealand setting and was not seen as contributing to the important farmer goals of financial security and profitability.

### Deer Industry

The deer industry focus group included eight producers from the lower south island. The group identified the top three drivers for intensification in the deer industry to be: return on investments (land and stock), competition from other land uses, and returns per hectare compared with other pastoral industries. In order to meet these challenges several intensification strategies were identified by the group, with the top four being: selecting for most efficient hind size to suit the farm; a focus on breeding operations; intensive summer cropping strategies and conservation; and specialist pastures for other than winter feed.

The research selected intensification strategy for the deer industry sector was the ‘100 kg weaner by June 1<sup>st</sup>’. This tactic impacts on a range of farm practices. There is no one particular technology that is the focus of this strategy, rather, it will require a number of different technologies (most of which are currently being researched) such as genetics, nutrition, extended venison shelf life, etc.

The main benefits of the 100 kg strategy were identified as the provision of increased options for management, increased profit because more animals could be slaughtered during the premium meat price period, achievement of the animals’ genetic potential earlier, increased ability to estimate numbers of animals ready to kill and a higher kill-out yield. Identified barriers and solutions to these barriers for the 100 kg strategy are presented in Table 3.

Table 3: Barriers to the 100Kg Weaner by 1<sup>st</sup> June Strategy and Potential Solutions

Barrier	Solution
Finding markets for extra meat production	The Deer Industry strategy is working on the issue
There is a small window for the premium – this strategy will place it under greater pressure	Extending the premium shoulders
Animal health and welfare issues	Research on diet and nutrition
Clean green image of industry could be compromised	Codes of practice for farmers. Education and increased environmental awareness

In general, the participants viewed the 100 kg strategy as a useful approach in helping to achieve three of their farming goals in the most important area of finance:



‘building a valuable business’, ‘producing to maximise farming profits’ and ‘paying off debt’. The group felt that this strategy may present some challenges in the area of animal welfare – an important consideration to them as looking after the welfare of livestock was rated as their second most important farming goal. Also animal welfare and environmental considerations are important issues for the major venison markets such as Germany. The strategy was regarded as neutral in relation to the deer farmers’ lifestyle goals.

### **Beef Industry**

The beef industry strategy is slightly more complicated than the other sectors because three industry business enterprises are involved: 1) dairy farmers who supply 4 day old calves, 2) calf rearers who grow the calves until they are 100 kg weaners and 3) beef finishers who grow the weaners until they are ready for sale to the processor. A mixture of all three industry sectors from throughout New Zealand participated in a 12 member focus group. All of the different industry sectors agreed that the primary drivers for intensification in the beef sector were the desire to increase profit, increasing land values, and competition from other land uses.

Several different intensification strategies were identified by the different beef sector groups to meet the above challenges. For the beef rearers the most favoured strategies were: the use of dairy/beef progeny; use of beef breeding cows, the use of sexed semen (to produce dairy replacement heifers for the dairy farmer and beef bulls from the rest of the herd for the beef industry); and diversifying into new markets. For beef finishers the favoured strategies were: improved farm management practices; improved grass species; use of dairy/beef progeny; and intensive feedlot systems.

The researcher selected intensification strategy for the beef industry sector was ‘dairy /beef progeny’. This approach involves the use of beef bulls or semen (e.g., Hereford, Simmental, etc.) over dairy herds for the production of cattle for beef production. This strategy could provide increased numbers of higher value animals suitable for prime cuts of meat rather than the commodity meat markets for which non-beef animals are destined.

The main benefits for dairy farmers included easily identified calves, better quality calves with superior growth rates, calves worth more money and increased cash flow income in the spring when income is limited. Calf rearers’ benefits included the potential for better margins and increased profits, better quality meat leading to access to prime markets, a better quality, faster growing, and higher yielding animal with better survivability characteristics. Beef finishers identified benefits of higher yield, quicker growth, higher conversion factors, better final product composition and hardier more docile animals. Identified barriers and solutions to these barriers for the dairy/beef progeny strategy are presented in Table 4.

Table 4: Barriers to the Dairy/beef Progeny Strategy and Potential Solutions

Barrier	Solution
Insufficient incentive for dairy farmers	Premium for beef calves
Calving problem -risks outweigh benefits (longer gestation period, bigger animals)	Better bull selection for ease of calving
Dairy farmer fear of not enough replacement heifers	Use of sexed semen and Artificial Insemination
Processors not paying premium for beef progeny – meat destined to commodity markets	Payment for yield - not carcass weight as current. Choice meat cuts to high end markets

The focus group indicated that calf rearers and beef finishers are convinced of the merits of the dairy /beef progeny strategy. However, with 65% of all beef originating from dairy herds, dairy farmers are key to the successful implementation of this strategy. Contrary to the rearers and finishers, this strategy is not part of the core activity of dairy farmers and offers them minimal returns. The dairy farmers in the focus group indicated their concern for the substantial animal welfare and financial risks presented to their operations by this strategy. These included calving problems, increased need for veterinarians, not enough replacement heifers, and damaged or empty cows. The current high price for colostrums and heifers bound for the Chinese market are competing strategies (often viewed as more favourable) for many dairy producers.

Achieving good margins is a particularly important goal for rearers and finishers. In order for the calf rearer to pay more to the dairy farmer for a beef calf the rearer must receive more from the beef finisher who in turn must receive more from the processor. While beef is headed to low value commodity markets and finishers are paid by processors on carcass weight alone, increased margins are not available to be transferred back along the chain. Currently, for the beef industry, the bottle necks to the dairy/beef progeny intensification strategy appear to rest with dairy farmers and meat processors.

## Conclusion

Farmers from all the industry sectors studied were experiencing pressure to intensify their operations and increase production. The principal pressures for intensification were similar across all four pastoral sectors: increasing land values and the need for return on investment, alternative competing land uses, local and international product competition, and unstable or declining market prices /rising NZ dollar. They all saw a range of intensification options open to their industries to meet these challenges.

However, all expressed concern about some potential effects of intensification – such as negative environmental impacts and animal welfare issues. They were also concerned about both the New Zealand public's and overseas consumers' perceptions of their industry in regard to these issues. Traditionally, for many New Zealand farmers, farming is as much a choice of lifestyle as it is a business. While

intensification options are available to meet their business goals and challenges, some of the available options do not fit comfortably with the traditional New Zealand farmers' lifestyle goals.

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