The Ram Selection Process: A Network Perspective

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Abstract

This exploratory research project used a pluralistic methodology, combining interviews and surveys to identify the selection factors and information sources utilised by farmers and processors when selecting a breed or breeder of rams. It has been suggested that the literature addressing these research problems is rare, and that by addressing these issues, a better understanding of this industrial agricultural net will result.

Processors seemed to prefer product consistency and quality, whereas fit with current practices, carcass quality and farm management seemed to be more important to farmers. However, neither farmers nor processors perceived significant differences between traditional breeds. As a result, reputation of the individual breeder and their flock characteristics were used to choose a breeder. Although processors believed in the effectiveness of a range of different types of information sources, farmers seemed to focus on personal sources.

However, as meat oriented farmers favoured imported meat breeds, they differ from dual-purpose farmers and represent a major threat to the Perendale breeder. Thus, breed switching needs to be encouraged in meat oriented farmers and discouraged in dual-purpose farmers. Breeders need to work on a personal level with these groups of farmers, developing a reputation for excellent quality rams. Thus, it is *breeder reputation*, rather than *breed reputation* that drives the selection of rams by farmers. Meat oriented farmers need to be convinced that the rams will fit with their current situation and that carcass performance will be superior. The positive implications for wool quality and farm management also need to be communicating to dual-purpose farmers. The breed society can add value to this relationship by educating processors regarding steps that have been taken to improve the consistency of the Perendale breed. Improving consistency is the ideal way to create positive word of mouth from a powerful advocate in another part of this industrial network.

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Chapter 1 - Introduction

1.0   Background

New Zealand's economy is dominated by agricultural strengths, particularly in the area of sheep farming (with exports worth almost $3 billion, or about 12% of *all* New Zealand's 2000 exports – Ministry of Agriculture and Forestry (MAF), 2001). However, the competitive position of this industry has been eroded to some extent, resulting in a decline in profitability of many sheep farms (Alexander, 1999; McKinsey & Co., 2000). To maintain the health of the New Zealand economy, it is essential to implement strategies that will reverse this trend, improving the performance of these farms. Although there are many drivers of on-farm performance, rams are responsible for up to 80% of the genetic improvements in a flock (Wools of New Zealand, 1996), which has implications for the overall financial position of these organisations. This suggests that ram breeders will need to occupy a central role in any strategy for improving the performance of this industry. Thus, the desired outcome of this study will to improve the performance of breeders by increasing their understanding of the purchasing behaviour of other organisations in their network.

To effectively comprehend the purchasing behaviour in this network, breeders need to understand:

1. The selection factors that farmers/processors use to choose a breed of ram,

2. The selection factors that farmers/processors use to choose a breeder of rams,

3. The information sources that are used in the purchase of a ram, and

4. The implications of a triadic net for the purchase of rams

This research has been commissioned by the Perendale Sheep Society of New Zealand, which represents a collection of Perendale breeders who wish to improve the competitive position of their breed. The Perendale breed represents about 7% of the sheep in New Zealand, and competes directly with other crossbreeds, such as the Romney (58%) and the Coopworth (10%). Traditional crossbreeds have historically been used as dual-purpose animals, producing both meat and wool (The New Zealand Wool Board, 2001). However, the poor performance of the wool industry in recent years has seen an increase in crossbreeding traditional with imported breeds, such as the Dorset, Southdown and Suffolk. Rams from these breeds are often used as terminal sires, to improve the quality of lamb carcasses a farmer's flock is able to produce. Consequently, imported breeds are often thought to complement traditional breeds, rather than replace them.

In this industry breeders transact directly with farmers, who in turn transact directly with to end-users such as meat, wool and leather processors. Breeders occupy a dual role, as they also sell stock directly to the processors mentioned above. Communication also connects each organisation *directly* with the other two, although the strength of these links is not well understood. Thus, for breeders to understand purchasing behaviour in this context, they will need to comprehend the activities of both farmers and processors. The proposed net of breeders, farmers and processors is illustrated in Figure 1 below:

Figure 1: The Proposed Agricultural Net
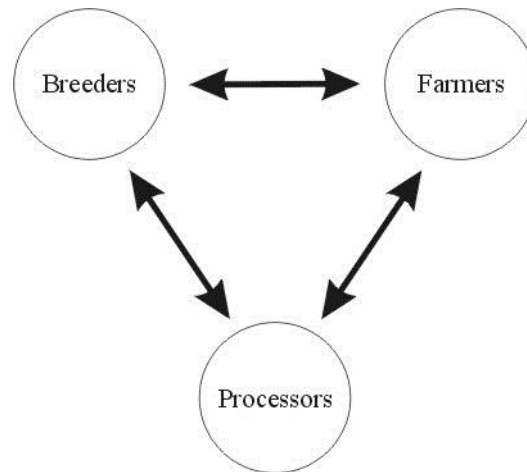
1.1 Synthesis of Pertinent Literature

The accompanying literature review to this project report has illustrated that an extensive body of literature exists in the three areas examined for the purposes of this project. Firstly, the pivotal role of selection factors in traditional models of industrial purchasing was identified. It was suggested that this involved two separate decisions, firstly selecting different product attributes, then deciding on a vendor able to provide these attributes (Johnston and Lewin, 1996). In particular, customer service and reliability seem to play a greater role in when deciding on attributes, whereas price, product quality and delivery policies seem to be of relative importance when choosing a vendor (Moriarty, 1983; Weber, Current and Benton, 1991).

Researchers have demonstrated that the importance of these factors depends on the context of the study. As these selection factor studies have not been replicated in an agricultural context, it is fair to assume that this context could influence the importance of various factors. For breeders to understand the purchasing behaviour of commercial farmers and processors, the factors important in the selection of a breed or breeder of rams needs to be identified.

It has been suggested that traditional models of industrial purchasing were not designed to explain the role of relationships and networks. Consequently, the traditional models have been criticised for being rather transactional, and unable to explain these important paradigms of industrial purchasing. It was noted that relationships were driven by both rational and sociological motivations. However, relationships seem to be governed by informal behavioural 'norms' rather than contractual obligations (Simpson and Wren, 1997). Network theory seems to have grown from the study of relationships, as it was realised that the interaction in each dyad has implications for the other relationships in which an actor is involved (Hakansson and Snehota, 1995). Finally, the difficulty operationalising networks, suggests much would be gained by focusing on a 'net' of particularly important relationships (Backhaus and Buschken, 1997; Axelsson and Easton, 1992). The smallest 'net' has been termed a 'triad' in the academic literature (Tahtinen and Halinen-Kaila, 1997; Havila and Sandstrom, 1992).

It seems apparent that breeders interact in a triadic net with farmers and processors. However, as much of the research on industrial networks focuses on large businesses in the United States and Europe, implications of a triadic net in an agricultural context remains uncertain. This study will therefore compare the purchasing behaviour of farmers with that of processors to understand the impacts of an agricultural network on industrial purchasing.

One of the implications of relations and networks that has been noted is the impact that these constructs have on the information sources preferred in industrial purchasing. The relative importance of personal forms of communication in industrial purchasing has been espoused (e.g. salespeople, members of the purchaser's organisation, etc). More importantly, it has been suggested that these communication methods alter in importance based on the stage in the decision process, the type of company and the product to be

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purchased (Moriarty and Spekman, 1984; Brossard, 1998). It has also been suggested that industrial purchasers increase communication with their informal network under conditions of increased risk and uncertainty (Bunn and Liu, 1996; Henthorne, LaTour and Williams, 1993). Additionally, researchers have suggested that the influence of industrial networks can depend on individual, organisational or situational differences (Money, 2000; Ronchetto, Hutt and Reingen, 1989).

However, few studies have attempted to identify the information sources appropriate in an agricultural context. Although McLeay, Martin and Zwart (1996) did identify the importance of field days (trade shows), agents, other farmers and personal records in an agricultural context, this study has not been replicated. Furthermore, this study did not focus on the implications that an agricultural network has for the information sources preferred. The current study will seek to replicate McLeay *et al.*'s (1996) findings, expanding upon these results by identifying the implications that an agricultural network has upon the information sources preferred. Consequentially, by identifying the information sources preferred by farmers and processors when faced by this purchase decision, breeders will be able to understand more comprehensively the workings of their industrial network.

As this section has illustrated, the quantity of research that has examined agricultural marketing is low indeed (Ritson, 1997). The literature that does investigate agricultural marketing tends to focus on the marketing of agricultural products to downstream groups in the value chain, such as wholesalers and end-consumers (Bateman, 1976). The absence of research in this area suggests that it is appropriate for the current research project to take an exploratory perspective, identifying the selection factors and information sources used by farmers and processors faced with this industrial purchasing decision. This will

allow breeders to understand actual buyer behaviour in their network, which will have implications for the marketing of the Perendale breed, and rams in general.

1.2 Overview

This report builds upon the findings of a literature review compiled for the purposes of this research project. In this initial section, the context of this project was described, as well as the research questions that have arisen from a synthesis of the literature on this topic. It was stated that much of the investigation into agricultural marketing has been inadequate. The methodology used to collect and analyse data will be described, and its limitations noted. The findings of this study will be discussed, and from this, conclusions drawn regarding the behaviour of purchasers in this industry. Finally, implications for breeders attempting to interact with farmers and processors are presented, and as a result, a more general conclusion regarding the implications for agricultural marketing is discussed. Possible directions for further research, based around the conclusions of this study are also identified.

Chapter 2 - Methodology

2.0   Introduction

This chapter outlines the methodology that has been used in the collection and analysis of data. Due to the network approach that this study has taken, qualitative semi-structured interviews and a structured survey were utilised for this project. Ten interviews were conducted with processor of sheep products, in addition, 300 surveys sent to farmers around New Zealand. The absence of prior research directly applicable for answering the research problems has suggested a rather exploratory perspective should be taken.

2.1   Justification for Research Methodology

The research problems for this project suggest that the selection factors and information sources used by both farmers and processors need to be identified. This has resulted in the employing a pluralistic methodology, with qualitative in-depth interviews to identify the selection factors and information sources of processors, and a quantitative survey to distil this information from farmers. Combining these methodologies harnesses the strengths of both positivist and phenomenological approaches (Easterby-Smith, Thorpe and Lowe, 1991). The interviews aimed to identify the factors and information sources of critical importance to processors, so that the survey could test the importance of these constructs to farmers. The remainder of this section will further justify the usage of interviews before expanding on the rationale to use surveys.

Semi-structured interviews were conducted with meat, wool and leather processors to identify the selection factors and information sources of importance to these organisations. As there were only a small number of companies that held a rich amount of information on this topic, face-to-face

interviews were an efficient way of identifying constructs of importance to processors when faced with this selection decision. The interviews were semi-structured to communicate to the interviewee specific areas of interest to be addressed by the interview. However, this structure was relatively 'loose', allowing the discussion to progress relatively naturally (Easterby-Smith *et al*, 1991). Probing techniques were utilised to ensure that both interviewees and the interviewer had a consistent understanding of the constructs being discussed.

Self-completion surveys mailed to farmers were utilised in the second stage of the research for several reasons. Firstly, the key constructs were identified by the first stage of the research, suggesting that a more structured approach was appropriate to quantitatively test the relative importance of these constructs. As there are approximately 20,000 farmers, qualitative research methods would be ineffective and prohibitively expensive for the gathering of quantitative information.

Farmers also lead a lifestyle that would not be conducive to administering the research in person. Respondents are geographically spread, and have seasonally busy periods where finding participants would be exceedingly difficult. A self-completion methodology enabled farmers to complete the instrument in their own time. However, 32 surveys were also administered in person at an agricultural show, ensuring an appropriate level of responses for the data analysis techniques that were needed to provide an appropriate answer to the research questions. The surveys administered in-person also allowed for a deeper understanding of *why* particular responses were given.

2.2   Interviewee and Sample Selection

This section will illustrate the criteria that was used to select interviewees for the qualitative stage of the research, before describing the sample frame that was

used to select a sample of farmers. To identify the selection factors and information sources used by meat, wool and leather processors, it was believed that a 'cross-sectional' approach would need to be taken, to compare the purchasing procedures of different organisations within this sector (Easterby-Smith *et al*, 1991). Thus, it was believed that it would be theoretically useful to select interviewees that were:

1.   From each of the three major sheep processing industries, and

2.   From a range of different sized companies, and

3.   Mostly responsible for the purchasing of sheep (or sheep products)

However, the sample of farmers was selected in quite a different manner from the interviewees. The 300 farmers were divided into two samples of 150, randomly selected from two databases. The first database (N=800), supplied by the Perendale Sheep Society, represented current Perendale farmers, whereas the second database (N=16,000) supplied by WoolPro represented farmers who did not currently use Perendale stock. As such, although randomly selected, the sample was non-probabilistic as the sample contained a deliberately disproportionate number of Perendale farmers (47% instead of 7% nation-wide - The New Zealand Wool Board, 2001), allowing a comparison between Perendale users and non-users.

In industrial research, sample sizes of several thousand are often used to combat low response rates, which are often regarded as standard (e.g. Bunn and Liu, 1996: 12%; Henthorne, LaTour and Williams, 1993: 25%; Parasuraman, 1981: 27%). However, the only study remotely similar to the current research received a useable response rate of 72% (McLeay, Martin and Zwart, 1996), suggesting that a much smaller sample would be satisfactory. Thus, although a sample of 300 is relatively small in an industrial research context, it was decided

that this sample size would be ample, given the responses required for the data analysis procedures to be used.

2.3   Procedures and Protocol

It has been suggested triangulation should be used to overcome the difficulties in industrial research, using a combination of qualitative and quantitative methods (Tanner, 1999).   As a result, this section will firstly describe the qualitative research completed for this research project, before moving into a discussion of the quantitative methodology.

Participants in the interviews were identified through contacting focal companies in each of the three main sheep processing industries.   The researcher conducted the interviews between the 20th of November and the 6th of March, reflecting the difficulty involved in administering organisational research over the Christmas/New Year period.   Participants were emailed a document identifying the researcher, establishing the topics to be covered and reminding of the appointment prior to the interview.   The summer months represent a busy time for agricultural exporters in New Zealand, and as such, the interviews ranged in time from 20 minutes to approximately one hour.   The interviews were conducted at the participant's place of business.

The interviews involved a series of eight open-ended questions that focused directly on the current research problem (refer Appendix 1).   The order of the questions was altered for meat processors, as commenting on inter-breed differences is a sensitive issue, which may have caused interview termination. After asking each question, participants were 'probed' until no further responses were obtained by the researcher.   Further questions were used to clarify technical terms and concepts to ensure a congruent understanding between the participant and the researcher.   Notes were taken at each interview by the

researcher, to allow further analysis at a later date. Additionally, a tape recorder was used with permission to ensure that no pertinent information was obscured in the heat of the moment.

From the findings of the interviews, and given absence of an appropriate research scale (Bearden, Netemeyer and Mobley, 1993), it was decided that a survey instrument should be custom-built (refer Appendix 2). Fourteen items assessed to relative importance of information sources, with 22 items analysing breed selection factors and a further fourteen items evaluating breeder selection factors. The items were suggested in a synthesis of pertinent literature and the interviews mentioned previously. These 50 items utilised a 7-point likert scale, ranging from unimportant to important, with the centre of the scale being a neutral point. Although it has been suggested that in many cases seven point scales are unable to gather more precise information than five point scales, the former was favoured as it was believed to give a better indication of the relative importance of different items (Kinnear and Taylor, 1996). The scales were balanced and allowed a neutral response as it was believed that unbalanced scales would create unnecessary confusion for the respondent.

Respondents also had to rank the top five items in each section, to distinguish between items of very high importance. Extensive demographic information about the farmer and their farm practices was also collected. The instrument was pre-tested with local farmers and industry experts, resulting in minor changes of question wording and the inclusion of an example page to demonstrate how the survey should be completed. In all, the survey measured eight pages, including a covering letter and further information regarding the project.

As suggested by Paxson (1992) and Tanner (1999) low response rates in mail surveys has increasingly become a major issue in industrial research. To

address this issue, several courses of action were implemented. Firstly, the surveys were packaged in A4 white envelopes, which were personally addressed and had a University logo on the front. It is purported that an attractive presentation and the endorsement of a reputable organisation does much to encourage responses (Paxson, 1992; Kinnear and Taylor, 1996). The surveys were also accompanied by a covering letter explaining the rationale for the study, and a pre-paid return envelope. The covering letter also offered the chance to win a holiday in a New Zealand resort destination as an incentive for successfully completing the survey. Finally, a follow-up survey was posted to non-respondents four weeks after the initial mailing. As such, all four of Paxson's (1992) suggestions for increasing response rates were implemented.

The initial surveys were posted on the 19th of December, with the second mailing following four weeks later on the 22nd of January. To test for non-response differences, the means of the 50 variables were compared between these two mailings using a one-way ANOVA. As only three variables displayed significant mean differences, non-response bias was not considered to be an issue. 32 surveys were also administered in-person at a tradeshow on the 24th of January. The means of the surveys administered in-person were compared to those received in the mail, to test for differences resulting in the administration technique used. A few items differed significantly between the two techniques, with attendees at the tradeshow consistently rating items higher than mail responses. Thus, the relative importance of the items did not differ, but the in-person administration did cause slightly stronger responses.

2.4   Analysis Procedures

This section will describe the analysis procedures were used for the interviews and the surveys. Firstly, a 'grounded theory' approach was favoured for the analysis of the interviews. This analysis technique allowed the identification of cross-industry naturalistic trends, rather than imposing an external structure

upon the data (Easterby-Smith *et al*, 1991). Thus, groups of organisations will be used to illustrate the selection factors and information sources utilised by meat, wool and leather processors.

The aim of the second stage was to take the variables identified as important in the interviews and to quantitatively measure the differences in relative importance. As this purchase decision is relatively complex, with the survey containing 50 items, a factor analysis was used to reduce these variables to a discrete set of more manageable constructs that drive this purchase decision. Hair, Anderson, Tatham and Black (1998) imply that for a factor analysis with a sample size of between 150-200, an eigenvalue over one and a factor loading greater than .40-.45 are necessary to indicate statistical significance. As a result, an appropriate eigenvalue and factor loading was used in conjunction with face validity to indicate the number of factors to extract. It has also been suggested that ideally, factor analyses should explain 60% of the variance of the input variables, although often in exploratory research factor analyses explaining considerably less are acceptable (Hair *et al*, 1998).

It has also been suggested that the factors be rotated, to achieve a theoretically more meaningful result (Hair *et al*, 1998). As such, a VARIMAX rotational approach was used. From these rotated factors, summated scales were created by taking a weighted average of the factor loadings of the input variables. These scales were then used to reduce the number of input variables to a discrete set of factors. Cronbach's alpha was used to test the reliability of these scales, with values greater than .60 being desirable (Hair *et al*, 1998).

However, summated scales seem to imply that respondents are rather homogenous, when this is clearly not the case with farmers (McLeay *et al*, 1996). For this reason, cluster analyses have been used to identify groups of farmers that exhibit distinctive differences in their practices. Hierarchical clustering using

Ward's method was favoured over non-hierarchical methods, as the summated scales displayed a level of inter-correlation. Hair *et al.* (1998) implies this inter-correlation can be overcome by using the squared Euclidean distance, available in a hierarchical clustering procedure.

The responses were also standardised (using Z-scores) to negate response-style effects (Hair *et al*, 1998). As each variable used in this clustering procedure was a 7-point likert scale, it was not necessary to standardise by variable. The nature of these scales also suggested that the data would be less likely to be effected by outliers, a major weakness of this data analysis technique. Once the clusters have been established, the groups were profiled by examining the differences exhibited on various demographic variables. Mean comparisons (via ANOVA) were used to compare scale variables, whereas chi-squared cross-tabulations were be used to analyse significant differences amongst the ordinal or nominal variables.

Hair *et al.* (1998) also suggests that cluster analyses imply representativeness to the population being examined, making the sampling method of particular relevance. As this sample was drawn from two databases of Perendale and non-Perendale farmers, it is deliberately non-representative of the greater population. However, by randomly drawing respondents from each database, representativeness of the sample to these databases was maintained.

2.5   Limitations of Methodology

Although all research methodologies have different strengths and weaknesses, the current project attempted to negate some of these aspects by combining several types of method in a pluralistic manner (Yin, 1994).

A disadvantage of in-depth interviews is that although interviewers must interact socially to establish trust and rapport with interviewees, this process can result in bias influencing the responses of the interviewee (Easterby-Smith *et al*, 1991). Although probing techniques were utilised to ensure that the rationale for a particular decision or course of action could be articulated, care was taken to ensure that these procedures did not lead the interviewee's responses. Thus, probing methods were used to ensure that both interviewees and the researcher were aware of the underlying meaning of particular responses (Easterby-Smith *et al*, 1991). Trust and rapport were built with interviewees by restating the confidentiality policies of the study and by making 'small-talk'. The interview started with highly relevant questions, leaving commercially sensitive questions until trust had been developed.

Moving from the interviews, Kinnear and Taylor (1996) suggest that the disadvantages of mail surveys include respondents' unwillingness or inability to provide data (non-response error) and the influence of the questioning process. An industrial setting seems to exacerbate these issues (Tanner, 1999; Paxson, 1992). Extensive pre-testing was used to ensure that respondents understood the terminology being used, and could provide the desired information. Pre-testing also resulted in the inclusion of a demonstration page, increasing the likelihood that respondents would be able to provide the required data. Additionally, as suggested earlier, a number of steps were taken to increase the response rate (hence decreasing non-response error). Kinnear and Taylor (1996) also suggest that administering the survey through the mail, rather than in-person or by the phone reduces the opportunity for bias due to researcher-respondent interaction. Additionally, pre-testing was used to ensure that the responses were not influenced by the manner in which the questions were asked. As such, this instrument has negated many of the critical weaknesses often associated with mail surveys.

2.6   Summary

This section has suggested that a pluralistic methodology utilising semi-structured interviews and a mail survey was the most appropriate way of collecting data for this research project. The justifications for this decision have been stated, and the limitations of the methodology addressed. This section also described how the data will be analysed, relating the implications of this factor into the design of the research method.

Chapter 3 - Findings

3.0 Introduction

This chapter serves several important functions in terms of this project. Firstly, the interviewees and survey respondents will be profiled. This will illustrate the types of companies represented, and the positions held by the interviewees. Descriptive statistics and frequencies will be given to illustrate pertinent characteristics about survey respondents. The results of the interviews and the survey responses will then be described, addressing the research problem of this project. As such, this chapter will illustrate the selection factors of farmers and processors when a breed or breeder of rams is chosen. The information sources utilised in this decision will also be examined. By addressing these issues from the perspective of both farmers and processors, the impact of this triadic net will become apparent.

3.1 Interviewee and Sample Profiles

3.1.1 Profile of Interviewees

The table below illustrates pertinent characteristics of the interviewees and the companies these individuals represent:

Table 1: Profile of Interviewees

Case	Participant's Title	Location	Company Size	Industry
A	Livestock Customer Services Manager	Auckland	Large	Meat
B	General Manager (Livestock)	Invercargill	Large	Meat
C	Procurement Manager/Company Director	Invercargill	Medium	Meat
D	General Manager (Livestock)	Ashburton	Medium	Meat
E	Owner/Manager	Christchurch	Small	Wool
F	Managing Director	Christchurch	Medium	Wool
G	General Manager	Christchurch	Large	Wool
H	General Manager	Timaru	Large	Leather
I	Owner/Manager	Dunedin	Small	Leather
J	Operations Manager	Oamaru	Large	Leather

As illustrated in Table 1, interviewees represented the three main industries involved with the processing of sheep products, namely meat, wool and leather processing. Although processors from a range of locations were represented, a clear preference is displayed for the lower South Island. This is both due to the location of these companies and their ease of accessibility for the purposes of this project. The companies ranged in size, although they were typically larger organisations in the context of the New Zealand commercial environment. The individuals interviewed from each of these organisations favoured a range of titles, although they were often in senior positions in their respective firms. This indicates the importance of this purchase decision to these companies.

3.1.2 Sample Characteristics

Of the sample of 300 surveys, 16 were returned either due to an incorrect address or because the respondent no longer sheep farmed.   From the remaining 284 surveys, a total of 132 were returned, resulting in a useable response rate of 46.5%. The 32 surveys administered in-person were added to this figure to give a total sample of 164 farmers. The remainder of this section

will profile the respondents in terms of their preferred breeds, sources of income, location and farm size. Further demographic information on the age, experience and role of respondents is illustrated in Appendix 3.

Table 2: Sheep Breeds

| Breed | Sample Composition | | NZ Flock Composition* (N= 45,679,891) |
	Rams (n=6,005)	Ewes (n=416,933)	
Perendale	44%	43%	7%
Romney	18%	26%	58%
Imported Meat Breeds (Dorset, Suffolk, Southdown etc.)	14%	3%	3%
Coopworth	12%	14%	10%
Fine-mid Micron Breeds (Merino, Corriedale etc)	6%	7%	16%
Other Traditional Breeds (Border Leister etc)	6%	7%	6%
Total	**100%**	**100%**	**100%**

Source – New Zealand Wool Board, 2001

Table 3: Sources of Sheep Income

Source	Sample Mean	Population Mean*
Meat	70.0%	62%
Wool	22.7%	38%
Skin/Pelts	7.3%	-
Total	**100%**	**100%**

Source – McKinsey & Company, 2000

Considering the origin of the databases used for this survey, it is of no surprise that respondents had a greater proportion of Perendale sheep than observed nationally. However, the extent to which imported meat breed rams are being used as terminal sires to improve the meat productivity of the farmer's flock was relatively unexpected. The role of imported breeds highlights the importance of meat as a source of income, as illustrated in Table 3. This table suggests that

meat contributed a great deal more income to sheep farmers than did wool or pelts. The differences in breeds and sources of income suggests that care needs to be taken before generalisations can be made from this sample to New Zealand sheep farmers as a whole. However, this group of respondents is thought to be representative of the databases which the sample was drawn from, suggesting that the opinion of these farmers will be useful for formulating solutions to the research problems.

Table 4: Location

Region	Sample	Population*
Otago	25%	17%
Southland	25%	15%
Lower North Island	18%	32%
Canterbury	14%	20%
Upper North Island	11%	13%
Other South Island	7%	3%
Total	100%	100%

* Source: MAF (2001)

Table 4 suggests that respondents came from a range of locations around New Zealand. Slightly more respondents came from South Island regions than may have been expected, although this was probably again related to the databases that were used. Alternatively, the prestigious reputation of the University of Otago may have increased the likelihood of farmers located in the South Island responding. These slight differences in location are not thought to reduce the representativeness of the sample to the population of New Zealand Sheep farmers.

Figure 2: Farm Sizes*

Figure 2: Farm Sizes*

Legend:
- ◆ Actual Farm Sizes
- ■ Sample Farm Sizes
- – – Trendline of Sample Farm Sizes
- ···· Trendline of Actual Farm Sizes

$R^2 = 0.4248$

$R^2 = 0.6948$

Y-axis: Percentage of farms

X-axis: Hectares
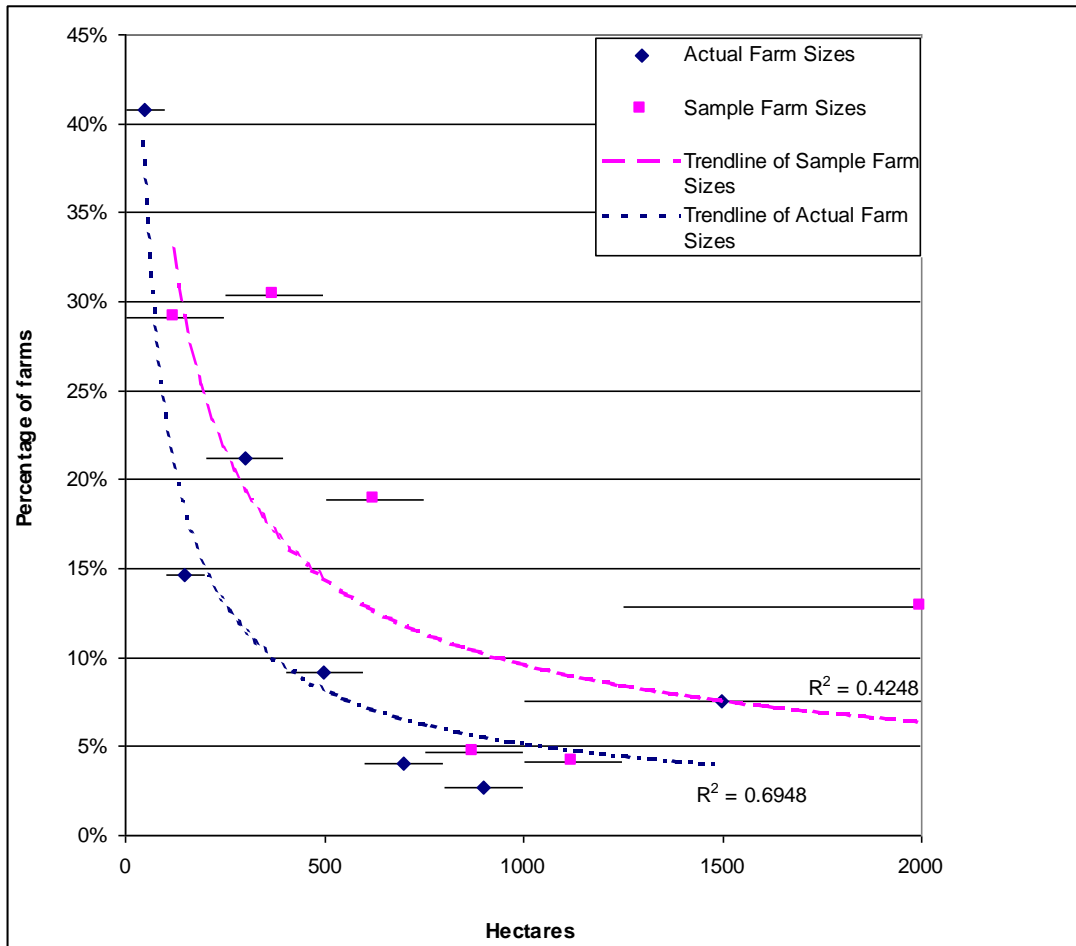
Figure 2 suggests that the majority of respondents' (and indeed *all*) sheep farms are relatively small in size, with most less than 750 hectares. As such, although this section has suggested differences in breeds preferred, the size and location of the farms still resembles distribution of the population.

3.2   The Processor Perspective

3.2.1 Breed Selection Factors

The companies involved with processing seemed to display intra-industry similarities and inter-industry differences. Thus, meat companies were similar to other meat companies, but differed to some extent from wool and leather processors. Processors of all sorts often referred to the differences between 'traditional' breeds (e.g. Romney, Perendale, Coopworth) and 'imported' breeds (e.g. Texel, Suffolk, Southdown, Dorset), although differences within these categories were not mentioned to any great extent. The perspective of the meat processors is illustrated by the quote *"there is more variation within a traditional breed than there is between (traditional) breeds"*, which was used by all four meat companies. Generally, it was believed that 'good' examples of most breeds could deliver the characteristics these companies desired, although there were also 'bad' examples of each breed.

Many of the characteristics assessed by meat processors were those that could be objectively measured, such as carcass weight (15-19.5 kg) and leanness (y-grade). These characteristics were favoured due to the demands of export markets, especially the United States, the United Kingdom and the European Union. Several meat processors paid a premium to farmers able to consistently supply this type of carcass. Although not explicitly stated to farmers, a further subjective measure was the conformation (consistency) of the carcass supplied. As one interviewee stated; *"…farmers think that we want big carcasses, but we don't. We would prefer carcasses of a consistent size…".* It was believed consistency increased the efficiency of the slaughtering operation, making it easier to fulfil large export contracts.

The meat processors stated that as farmers believed that they preferred larger carcasses, crossbreeding programs are often utilised to increase carcass weight. However, these processors believed that the overuse of crossbreeding

decreased conformation, creating issues for the fulfilment of export contracts. Thus, these processors recognised inter-breed differences between traditional and imported sheep breeds.

Meat processors viewed the wool and leather on the carcass as bi-products, to be disposed of as efficiently as possible. Companies that purchased these products had few options except to purchase the product in the form provided. Although leather companies had mostly subjective measures of quality (e.g. flatness, tightness and area yield), they were unable to distinguish between many traditional breeds of sheep due to the form in which they were supplied by meat processors (as pickled pelts). The only breeds that were recognisable were those with a fine wool influence, such as the Merino or Corriedale, due to the wrinkled nature of the pelt. Other traditional breeds were largely indistinguishable, although most supplied a high quality pelt. Additionally, it was thought that several imported meat breeds could decrease the quality of the pelt provided (e.g. Texel, East Fresian, Dorset and Suffolk variations).

However, wool processors differed significantly from those firms in the meat and leather industries. Perendale wool was believed to differ from that of other traditional breeds because of the wool's bulk, which was important in the manufacture of carpet yarns. Perendale wool often demanded a slight premium in price, but this was more related to supply availability issues than any inherent competitive advantage. Generally, important factors for selection by wool processors included wool colour, length, strength, fineness and the amount of vegetable matter, although these factors did not differ between traditional sheep breeds. Cross breeding with imported breeds was believed to reduce the quality of the wool provided, especially in terms of colour, which has traditionally been a competitive advantage of the New Zealand clip.

3.2.2 Breeder Selection Factors

Although there were inter-industry differences displayed with respect to the breed selection decision, a great deal more homogeneity was displayed by processors with respect to their relationship with breeders. As individual breeders are also commercial farmers, many processors felt that it was easier to treat these two groups as though they were the same. Many processors suggested that they interacted with farmers, not individual breeders, although these two groups actually overlap. This resulted in the same selection factors being used to purchase sheep products from both breeders and farmers, as outlined earlier.

However, a few processors did communicate directly with breed-groups, which were collections of breeders. One interviewee from a large wool processing company mentioned that they were increasingly communicating market trends to breed-groups, in the realisation that these groups would communicate with farmers. These breed-groups were selected based upon the interest that they displayed in communicating with the company, rather than any inherent objective rationale.

3.2.3 Patterns of Information Source Utilisation

Processors in each of the meat, wool and leather industries communicated slightly differently with farmers and breeders in this market. Firstly, meat companies often had regional buyers who purchased stock directly from the farmer, enacting the policies of the senior management team. These drafters were also responsible for communicating market trends directly to farmers and breeders. Meat companies also used a range of other communication media, including newsletters, tradeshows, the industry press, word-of-mouth and the publication of price schedules in the newspaper. Several companies also reported a desire to use email to communicate to farmers, as it was believed that

they were increasingly becoming on-line. As breeders were treated as being the same as farmers, these media were also used to communicate with breeders.

Leather companies often found it difficult to communicate directly to farmers, because of the dominant role played by the meat companies. These companies were often members of industry pressure groups that published articles (in the industry press or newspaper), that undertook research or liased with the meat companies to communicate indirectly with farmers and breeders. Consequentially, the communication by leather companies was less direct than that observed in the other processing industries.

Finally, the wool processing companies used a different technique for communicating with farmers and breeders. These companies often used trade literature, rural servicing companies and merchants to communicate directly to farmers and breeders. Although several companies used drafters to purchase directly from farmers in a similar way to the meat companies, many stated that they did not have the resources to directly communicate to farmers in this way. These companies often looked for external organisations (such as breeders) that could communicate their messages indirectly to a range of farmers.

3.3   The Farmer Perspective

3.3.1 Breed Selection Factors

Farmers had much stronger opinions regarding the variables important for selection of a breed of ram. These variables are illustrated in the table below:

Table 5: Breed Selection Items

Selection Items	N	Mean (SD)*	% Rating in Top Five (N=147)
Ewe fertility/mothering instincts	163	6.39 (0.99)	76%
Lamb Growth Rates	163	6.30 (1.07)	70%
Fit with land type/temperature	160	6.01 (1.22)	33%
Lamb weight	162	5.99 (1.15)	54%
Past experience with Breed	161	5.96 (1.17)	33%
Resistance to disease/parasites	164	5.87 (1.17)	32%
Fit with existing flock/ability to crossbreed	164	5.75 (1.41)	29%
Durability (life expectancy/survival abilities)	161	5.70 (1.46)	25%
Muscle Levels (e.g. eye muscle)	162	5.49 (1.32)	24%
Lamb leanness (GR levels)	163	5.30 (1.41)	15%
Sheep temperament (ease of managing)	162	5.15 (1.53)	19%
Wool length	161	5.09 (1.63)	5%
Wool bulk	163	5.04 (1.62)	16%
Wool colour consistency	162	5.00 (1.64)	10%
Lamb meat consistency (conformation)	154	5.00 (1.59)	9%
Ram service rate	161	4.97 (1.46)	10%
Wool strength	158	4.92 (1.71)	7%
Purchase price (per ram)	162	4.26 (1.81)	14%
Wool fineness (low Micron level)	159	3.97 (1.82)	7%
Amount of Vegetable Matter (in wool)	159	3.77 (2.02)	1%
Wool thickness (high Micron level)	151	3.67 (1.77)	2%
Skin/leather quality	159	3.51 (1.62)	1%

On a 7-point Likert scale where 1=Unimportant, 4=Neutral and 7=Important

Generally, this table implies that the most important factors in the selection of a breed were those concerned with ewe fertility, fit with land typology, lamb growth rates and weight. As most of the return per animal comes from their meat, it makes financial sense for farmers to be more concerned with these issues (McKinsey & Co., 2000). Wool and pelt issues typically seem to be of relatively low importance in this selection decision. However, as this is a complex decision it is difficult to identify the drivers of this purchase. As such, Table 6 illustrates a factor analysis, used to compress the 22 variables into four distinct factors.

Table 6: Factor Analysis of Breed Selection Items

Factors	Mean (SD)*	Variance Explained	Eigenvalue	Alpha
Fit with Current Situation	6.00 (0.83)	10.5%	2.0961	0.5841
♦ Fit with land type/temperature				
♦ Fit with existing flock/ability to crossbreed				
♦ Past experience with Breed				
♦ Ewe fertility/mothering instincts				
Carcass Qualities	5.58 (0.98)	13.7%	2.7471	0.7822
♦ Leanness				
♦ Muscle Levels				
♦ Lamb Growth Rates				
♦ Meat consistency				
♦ Lamb weight				
Farm Management Issues	5.42 (0.97)	12.3%	2.4694	0.6316
♦ Sheep temperament				
♦ Durability				
♦ Ram service rate				
♦ Resistance to disease/parasites				
Wool Qualities	4.51 (1.31)	20.7%	4.1324	0.8612
♦ Length				
♦ Bulk				
♦ Strength				
♦ Colour				
♦ Thickness				
♦ Fineness				
♦ Vegetable Matter (in wool)				
Purchase Price	4.26 (1.81)	-	-	-
Skin/Leather Quality	3.51 (1.62)	-	-	-
Total		**57.2%**		

On a 7-point Likert scale where 1=Unimportant, 4=Neutral and 7=Important

Table 6 further demonstrates that a breed of ram must fit with the current situation on-farm and address various farm management issues. Carcass qualities are also highly important, as most of the return per animal is from this

source. Wool qualities seem to be of lesser importance in the selection of a breed of ram. Purchase price and skin/leather qualities seem to be of least importance, and did not compress into the factor analysis described above.

3.3.2 Breeder Selection Factors

Farmers seemed to exhibit relatively strong opinions regarding the items appropriate for analysis in the choice of a specific breeder. These items are illustrated in the table below:

Table 7: Breeder Selection Items

Selection Items	N	Mean (SD)*	% Ranking in Top Five (N=145)
Rams that exceed flock performance levels	163	6.23 (0.89)	58%
Visual/physical assessment	163	6.13 (0.99)	61%
Breeder's reputation for quality	160	6.10 (1.04)	52%
Past experience with rams from breeder	161	6.02 (1.14)	57%
Breeder's existing stock characteristics	158	6.00 (1.13)	51%
Breeder's records	163	5.87 (1.27)	53%
Reliability of breeder	161	5.77 (1.24)	26%
Breeding Values/Sire referencing	160	5.61 (1.38)	41%
Experience of other farmers using rams from breeder	161	5.19 (1.58)	29%
Breeder's ram replacement guarantee	159	5.17 (1.32)	12%
Relative Economic Values	160	4.93 (1.53)	14%
Genetic Trend graphs	155	4.46 (1.77)	17%
Ram bureau records	151	4.41 (1.73)	10%
Convenience	161	3.90 (1.67)	6%

On a 7-point Likert scale where 1=Unimportant, 4=Neutral and 7=Important

This table implies that the most important methods utilised in the selection of a breeder are those concerned with the breeder's flock performance. However, many farmers seem to be concerned with the visual characteristics of the animal

supplied by the breeder. Intangible aspects such as past relationships with a breeder or the reputation of the breeder also seem to occupy a pivotal role. However, with 14 variables, it is difficult to identify if the observed differences are significant. As a result, Table 8 illustrates a factor analysis, used to reduce these variables into three distinct factors.

Table 8: Factor Analysis of Breeder Selection Items

Factors	Mean (SD)*	Variance Explained	Eigenvalue	Alpha
Breeder's Reputed Performance	5.88 (0.77)	20.5%	2.6605	.6704
♦ Breeder's reputation for quality				
♦ Reliability of breeder				
♦ Past experience with rams from breeder				
♦ Rams that exceed flock performance levels				
♦ Breeder's ram replacement guarantee				
Characteristics of Breeder's Flock	5.56 (0.87)	13.8%	1.7955	.5312
♦ Experience of other farmers using rams from breeder				
♦ Breeder's existing stock characteristics				
♦ Visual/physical assessment				
♦ Relative Economic Values				
Numerical Records	5.07 (1.26)	22.3%	2.8932	.8136
♦ Ram bureau records				
♦ Breeding Values/Sire referencing				
♦ Genetic Trend graphs				
♦ Breeder's records				
Convenience	3.90 (1.67)	-	-	-
Total		**56.5%**		

On a 7-point Likert scale where 1=Unimportant, 4=Neutral and 7=Important

Table 8 further demonstrates the importance of reputation and performance in the selection of a breeder. The characteristics of the stock were also of moderate importance, with numerical quantitative records occupying a lesser

role.   Convenience did not compress with the other variables, although this variable seems to occupy a relatively minor role.

3.3.3 Patterns of Information Source Utilisation

Farmers had relatively weak opinions regarding the information sources important in this purchase decision. This obviously has implications for the effectiveness of the marketing programs of both processors and breeders. These variables are illustrated in the table below:

Table 9: Information Sources Utilised in the Ram Purchase Decision

Information Sources	N	Mean (SD)*	% Ranking in Top Five (N=149)
Other farmers/Word of Mouth	164	5.30 (1.41)	68%
Breeders	164	5.28 (1.62)	70%
Farm Open Days	163	4.64 (1.71)	42%
Industry Guides/Publications	163	4.63 (1.61)	46%
Stock agents/rural servicing firms	164	4.49 (1.61)	44%
Meat and/or Leather Processors (Drafters)	155	4.42 (1.89)	41%
Pamphlets/Newsletters	163	4.28 (1.73)	34%
Wool Processors (Drafters)	157	4.25 (1.75)	33%
Trade Shows/Fairs (Field Days)	160	4.20 (1.82)	34%
Family/Friends	163	4.09 (1.79)	23%
Vets	162	3.98 (2.02)	21%
Mass Media Advertising	163	3.46 (1.87)	23%
Bank Representatives	161	2.20 (1.62)	2%
World Wide Web	158	1.97 (1.49)	3%

On a 7-point Likert scale where 1=Unimportant, 4=Neutral and 7=Important

This table suggests that breeders and word-of-mouth are of particular importance to farmers making this purchase decision. However, with the exception of industry guides, impersonal sources of information such as mass

media advertising seem to be relatively unimportant. As this table suggests, farmers considered themselves to be relatively autonomous decision-makers, which explains the relatively low rating of each information source. Respondents may have felt that most other organisations were not likely to understand the specifics of their farm, and as such retained a very active role in this purchasing decision. This makes communicating with farmers more difficult, increasing the importance of the information sources that did exhibit a strong rating. To identify the underlying importance of these information sources, a factor analysis has been used to identify four distinct types of information.

Table 10: Factor Analysis of Information Source Preferences

Factors	Mean (SD)*	Variance Explained	Eigenvalue	Alpha
Personal Sources	4.84 (1.14)	16.6%	2.1593	.6438
♦ Breeders				
♦ Other farmers/Word of Mouth				
♦ Farm Open Days				
♦ Family/Friends				
Industry Sources	4.36 (1.40)	15.6%	2.0272	.6905
♦ Wool Processors (Drafters)				
♦ Meat and/or Leather Processors (Drafters)				
♦ Recommendations of stock agents/rural servicing firms				
Impersonal Sources	4.09 (1.35)	15.7%	2.0348	.6729
♦ Industry Guides/Publications				
♦ Pamphlets/Newsletters				
♦ TV/Radio/Newspaper Advertising				
Indirect Influencers	2.63 (1.33)	13.8%	1.7897	.6743
♦ World Wide Web				
♦ Vets				
♦ Bank Representatives				
Trade Shows (Field Days)	4.20 (1.82)	-	-	-
Total		**61.6%**		

On a 7-Point Likert Scale where 1=Unimportant, 4=Neutral and 7=Important

This analysis suggests that personal and industry sources of information are of greater relevance to farmers than impersonal or indirect sources. Trade shows (field days) did not compress with the other variables in this analysis, although they also seem to occupy a relatively important role. Impersonal and indirect influencers seem to occupy a rather unimportant role in this purchase decision.

As has been previously mentioned, the selection factors and information sources utilised by farmers are likely to vary between groups of farmers due to the practices of each respondent. As a consequence, the following section illustrates a cluster analysis that seeks to identify these differences in selection factors and information source preferences.

3.3.4 The Ram Purchasing Process: A Cluster Analysis

The section seeks to identify relatively heterogenous groups of farmers that differ with respect to the selection factors and information sources utilised when purchasing rams. The practices of these groups will be profiled by comparing their responses on the factors identified above. Various demographic comparisons will be made so that these groups can be more easily identified.

Table 11: Cluster Analysis of Farmer's Purchasing Processes

Variables	Mean (SD)		F-Value
	Dual-purpose Farmers (N=68)	Meat-oriented Farmers (N=46)	
Wool Qualities	5.15 (0.78)	3.39 (1.25)	**85.380*****
Carcass Characteristics	5.57 (1.01)	5.51 (1.09)	0.107
Farm Management Issues	5.52 (0.90)	5.17 (1.05)	**3.682***
Fit with current practices	6.02 (0.82)	5.84 (0.93)	1.162
Purchase price	3.72 (1.77)	5.30 (1.24)	**27.586*****
Numerical Records	5.39 (1.03)	4.68 (1.26)	**10.868*****
Breeder's Reputed Performance	6.02 (0.75)	5.74 (0.85)	**3.323***
Characteristics of Breeder's Flock	5.62 (0.78)	5.67 (0.98)	0.100
Convenience	3.34 (1.59)	4.59 (1.26)	**19.935*****
Personal Sources	4.86 (1.21)	4.98 (0.86)	0.327
Impersonal Sources	4.02 (1.43)	4.41 (1.10)	2.441
Industry Sources	4.48 (1.32)	4.30 (1.29)	0.503
Indirect Influencers	2.59 (1.30)	2.88 (1.29)	1.395
Trade Shows/Fairs (Field Days)	4.40 (1.80)	4.24 (1.63)	0.209
Hill Country Typology	31.40 (37.78)	33.72 (37.35)	0.103
Rolling Hill Typology	29.07 (37.91)	35.09 (35.95)	0.715
Flat land Typology	32.43 (38.56)	26.80 (33.08)	0.651
Romney Ewes	749.70 (1322.13)	627.39 (874.94)	0.302
Coopworth Ewes	321.49 (979.66)	571.20 (1389.81)	1.256
Perendale Ewes	1662.31 (2576.06)	428.76 (855.27)	**9.783****
Fine-mid Micron Ewe	238.81 (1107.54)	26.09 (148.23)	1.672
Meat Breed Ewe	57.61 (372.03)	15.24 (103.21)	0.565
Other Traditional Ewe	33.88 (268.78)	15.54 (103.17)	0.194
Traditional Cross Ewe	31.64 (165.87)	247.39 (644.33)	**6.875****
Meat Cross Ewe	20.90 (171.04)	86.96 (326.33)	1.965
Romney Rams	7.24 (14.16)	4.65 (10.84)	1.094
Coopworth Rams	3.67 (10.49)	7.13 (23.05)	1.162
Perendale Rams	19.66 (30.81)	4.59 (11.45)	**10.03****
Fine-mid Micron Ram	2.87 (12.58)	0.00 (0.00)	2.381
Meat Breed Ram	2.04 (4.83)	5.85 (8.61)	**9.019****
Other Traditional Ram	0.69 (3.27)	0.37 (1.60)	0.370
Traditional Cross Ram	0.33 (1.89)	3.26 (8.72)	**7.122****
Meat Cross Ram	1.07 (5.16)	1.35 (3.25)	0.101
Flock Size	3107.52 (2438.57)	2045.76 (1416.40)	**7.089****
Ram Potency (average ewes serviced)	90.23 (49.51)	73.90 (32.69)	**3.782***
Number of Ewe Breeds	1.33 (0.66)	1.70 (0.94)	**5.961****
Number of Ram Breeds	1.70 (0.85)	2.30 (1.35)	**8.479****
Wool Income	26.79 (9.82)	18.28 (13.28)	**15.155*****
Leather Income	1.01 (2.93)	2.20 (4.58)	**2.794***
Meat Income	72.05 (9.83)	79.52 (14.91)	**10.215****

* Denotes Significance at the 10% Level, ** at the 5% Level and *** at the 1% Level

Fit with current practices and carcass characteristics seemed to occupy a dominant role in the breed selection decision for both dual and meat oriented farmers. However, the practices of meat-oriented farmers in particular seemed to suggest that carcass characteristics were of central importance. Meat-oriented farmers seemed to crossbreed with a range of traditional and imported breeds to improve flock performance. Meat-oriented farmers were also more preoccupied with price, probably due to the lower potency rates of these imported breeds. Income from meat sources also seemed to be significantly higher for meat-oriented farmers than their dual-purpose counterparts. However, wool qualities and farm management issues seemed to be of greater importance to dual-purpose farmers. The importance of wool quality probably explains the lower incidence of crossbreeding with imported breeds, with the larger flock size of dual-purpose farmers explaining the importance of farm management issues. The importance of farm management is probably also related to the higher incidence of farmers utilising Perendale rams and ewes, as this breed is often promoted as an 'easy-care' animal.

Farmers in both groups seemed to select breeders on their reputation, with flock characteristics also remaining important. However, dual-purpose farmers seemed to rate reputation and numerical records significantly higher than their meat-oriented counterparts. This is probably in some part related to the role of convenience, which was more important to meat-oriented farmers. Perhaps then, meat-oriented farmers are less loyal to their breeders as they use a variety of ram breeds to improve flock performance. Similarly, dual-purpose farmers may be more likely to work with a single breeder following their genetic improvement objectives. This would explain why the dual-purpose farmer more extensively used reputation and numerical records.

Interestingly, there were a number of areas in which the two groups did not differ significantly. Firstly, both groups seemed to favour personal information sources, although impersonal and industry sources were of greater importance to meat

and dual-purpose farmers respectively. Although these differences were not significant, meat-oriented farmers may have used impersonal sources as a matter of convenience, whereas dual-purpose farmers may have consulted industry sources to gauge the reputation of different breeders.

The dual-purpose farmers also exhibited higher numbers of most traditional sheep breeds, with the exception of the Coopworth. This animal seemed to be more popular with meat-oriented farmers, perhaps due to its high carcass-weight. As these differences were not significant, it is fair to assume that most traditional sheep breeds are suitable for both dual and meat-oriented farming. The farm typologies of the two groups also did not seem to differ, suggesting that both dual and meat-oriented farming can take place on either hill country or flat land farms. Finally, time variables (age and experience) did not seem to vary between the two groups. Perhaps this is due to the decline of the wool industry has impacted on all farmers, no matter how long they have been farming.

Table 12: Inter-cluster Location Differences

Location		Dual-purpose Farmers	Meat-oriented Farmers	Pearson Chi-Square
North Island	Count	14	18	5.027**
	Expected Count	19.26	12.74	
South Island	Count	54	27	5.027**
	Expected Count	48.74	32.26	

*** Denotes Significance at the 5% Level*

As Table 12 illustrates, the meat-oriented farmers seem to be more located in the North Island, whereas the dual farmers seem to be more located in the South Island. This is probably a function of the production seasonality in each of the two islands. A meat processor suggested that an advantage held by North Island companies over their South Island counterparts was the ability to slaughter year-round, implying that the season was shorter in the South. For this reason, wool may continue to be a relatively important product for South Island

farmers as there are times during the year when the return from meat is relatively low.

3.4   <u>Summary of Overall Findings</u>

This research project has sought to examine the purchasing of rams from a network perspective. As such, it has been appropriate to examine the selection factors and information sources utilised from both the perspective of processors and that of farmers.

Differences between processors often seemed to be related to the industry in which the firm was active. Meat processors purchased stock because of conformation, size and leanness, whereas wool processors were concerned with wool length, strength and colour. Leather processors focussed on yield, flatness and tightness. Processors did not believe that there were significant differences between traditional crossbred animals. As such, few recognised the pivotal role that breeders play, with only one wool processor communicating directly with breed-groups. This resulted in many processors utilising a variety of information sources, with little evaluation of their effectiveness.

Several differences were observed between the view of processors and farmers. Farmers purchased rams because they fit with their current situation and because of the carcass qualities of the animal. In particular, carcass weight and leanness seem to be more important than conformation. Wool concerns were relatively unimportant for farmers. The reputed performance and flock characteristics of the breeder seemed to play the most major role in this selection decision. Farmers seemed to focus on personal and industry information sources when purchasing rams, with impersonal sources being of lesser importance. However, the importance of these selection factors and information sources seemed to vary based on whether the farmer was dual or

meat-oriented, rather than because of the traditional breed they preferred. These differences have implications for organisations seeking to communicate with these groups, as will be discussed further in the following section.

Chapter 4 - Discussion

4.0   Introduction

In the previous section, the findings of this research project were presented with respect to the selection factors and information sources that are used by farmers and processors when selecting breeds or breeders of rams. This section will compare these findings with existing research that seeks to understand product attribute and vendor selection factors and the information sources preferred in an industrial purchasing situation. Implications for managers and suggestions for further research will be presented.

4.1   Discussion of the Industrial Purchasing Process

4.1.0   Product Attribute Selection Factors

As has been mentioned earlier, the product attribute selection factors seem to vary based on the context of the organisation, and the industrial purchase to be made. As such, it was expected that the selection factors used to decide upon an agricultural industrial product could vary from those suggested in the academic literature. For example, it has been suggested that service, reliability and manufacturer stability are of importance (Moriarty, 1983; Moriarty and Reibstein, 1986). These constructs seem to be of particular relevance for processors purchasing sheep products, as many of these organisations mentioned that consistency of supply was a key issue.

However, these constructs seem to be of limited applicability to the decision to purchase a breed of ram by farmers. It is also suggested that compatibility is a moderately important aspect of industrial purchasing (Moriarty, 1983), although this construct seems to be of greater importance to farmers than suggested by the literature. As a result, organisations such as breeders should recognise

farmers' on-farm situation, illustrating how their product is compatible with this environment.

Further, this research project has suggested that product performance issues, such as carcass characteristics, are of importance in the decision to purchase a breed of ram. This finding supports Cunningham (1989), who suggested that product design and performance issues were of primary importance in the purchasing of industrial products. Processors of sheep products also expressed the importance of meeting certain performance specifications.

Additionally, the results of this study were largely consistent with the industry reports on breed selection factors. Processors and farmers did not perceive differences in the performance of various traditional breeds on the selection factors that were identified. Interestingly, both farmers and processors seemed to suggest that imported meat breeds altered the importance of different selection factors. To some extent, this is consistent with publications by Geenty (1997; 2000) and Kerr (2000), that also imply that imported breeds can lift flock performance in a number of areas. However, this research project has also suggested that these crossbreeding regimes can reduce flock performance, especially in the areas of ram potency, conformation, wool and skin quality. Crossbreeding regimes therefore need to be used carefully by farmers, balancing flock performance objectives with the requirements of meat, leather and wool processors.

4.1.1 Vendor Selection Factors

The selection of a specific vendor able to satisfy product specifications also seems to be beset with a level of controversy. This is in some part related to the context of the industrial purchasing decision, and the product to be purchased. Thus, agricultural vendor selection may differ somewhat from that displayed in

other industrial purchasing scenarios. For example, a number of studies have focused on the role price, product quality and delivery policies have on the decision to use a specific industrial vendor (Verma and Pullman, 1998; Bunn and Liu, 1996; Weber, Current and Benton, 1991; Dempsey, 1978; Luffman, 1974; and Patton, 1996). By illustrating the importance of reputed performance and existing stock characteristics, the current research project supports the role of product quality in vendor selection.

Although consistent with this existing body of literature, greater support is given to Menon, McGinnis and Ackerman (1998) and Dawes, Dowling and Patterson (1992) who suggest that perceived supplier performance and capability, reputation, and past experience drive vendor selection. The importance of reputation suggests that source loyalty will be a key issue in this industrial purchasing decision (Vyas and Woodside, 1984). Certainly, breeder reputation seems to be a key aspect to farmers' vendor selection decision. Processors also seemed to value past experience and vendor capability to supply consistent products, although breeders are often treated as being the same as farmers.

Interestingly, industry publications that seek to guide the vendor selection of farmers seem to focus on the breeder's numerical records, suggesting that these indicate product quality (The Perendale Sheep Society, 1999; Geenty, 1997; 2000; Kerr, 2000). Whilst this may be the case, it appears as if both farmers and processors use existing relationships and reputation to select vendors. Farmers also seemed to use physical characteristics as an indicator of quality. This may be due to the abstract nature of numerical indicators, and the extensive level of experience that many farmers seem to have. Perhaps then, farmers only believe numerical records if there is an existing level of trust with the breeder. However, if this level of trust exists, farmers and processors may assume their vendors utilise numerical records to the best advantage of their customers.

4.1.2 Patterns of Information Source Usage

The literature on industrial purchasing overwhelmingly suggests that personal sources of information are of greatest relevance to organisational buyers (Moriarty, 1983; Moriarty and Spekman, 1984; Brossard, 1998; Jackson, Keith and Burdick, 1987). Similarly, McLeay, Martin and Zwart (1996) suggest personal sources are utilised in agricultural markets, regardless of organisational strategy. The current research project supported the importance of personal information sources, with word-of-mouth and breeders being of particular importance to farmers. Additionally, farmers and processors believed industry sources were of moderate importance, with processors also purporting the importance of a range of other information sources.

The industrial network of an organisation has also been treated as a source of information (Henthorne *et al*, 1993; Bunn and Liu, 1996; Bunn and Clopton, 1993; Katrichis, 1998; Money, 2000; Homburg *et al*, 1999; Ronchetto *et al*, 1989). Consistent with this existing body of literature, members of the processor's industrial network seemed to exhibit individual differences. Those members with a direct involvement or stake in the decision seemed to have greater influence in the decision. These individuals were usually members of the organisation in positions such as the senior management team.

Similarly, farmers favoured the only internal member of their organisation (themselves). External influencers were utilised due to their expert knowledge on the purchase decision, rather than actually being internally involved in the decision. Those external sources that were important were usually boundary spanning individuals, such as drafters and breeders that were thought to be knowledgeable on this particular purchase. As such, the influence structure differed somewhat between the purchasing behaviour of farmers and processors. However, this was also expected as the existing body of literature

suggests that structural differences between organisations will have implications for the sources of information favoured in industrial purchasing.

Finally, farmers and processors seemed to exhibit situational differences. Farmers seemed to display preferences for personal informal components of the network, similar to Japanese industrial purchasers, whereas processors also believed in the influence of impersonal formal aspects, in a manner similar to American purchasers (Money, 2000). Perhaps this was due to the more corporate orientation of the processors, leading these organisations to use a variety of sources of influence. Alternatively, a lack of monitoring regarding the effectiveness of information sources may lead processors to choose low cost-per-contact media, rather than those of most potency.

4.2   Discussion of the Industrial Network

By examining the purchasing of rams from the perspective of both farmers and processors, the patterns of influence within this industrial network can be established. Figure 3 below depicts this agricultural industrial network:

*Figure 3: The Agricultural Industrial Net**
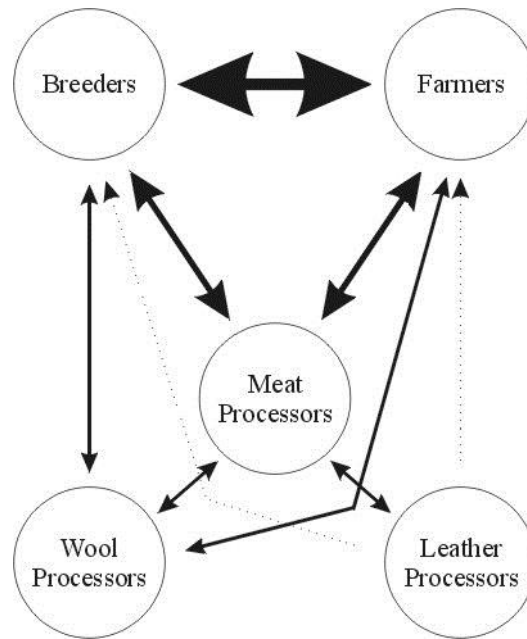
As this diagram implies, this study has suggested that Breeders seem to hold a significant influence in this industrial network, particularly over farmer's ram purchasing decisions. However, this influence refers to the role that individual breeders play in this purchase decision, rather than collaborative breed-groups. Although breeders exert the most influence on this purchasing decision, meat processors seem to occupy a more focal role than either wool or leather processors, and also seem to exert more effort in communicating directly with breeders and farmers.

This model of an agricultural triadic net seems to support much of the existing body of industrial net theory (Larson, 1992; Havila and Sandstrom, 1993; Axelsson and Easton, 1992). The current study has illustrated that for a particular industrial purchase, only some components of an organisation's network seem relevant for examination. This study has also suggested that different organisations exert varying amounts of influence in an agricultural triad.

This is largely related both to the stake that individuals are perceived to have in the industrial purchase, and the level of expertise that they bring to this situation. Finally, as farmers and processors differ significantly from the traditional organisations studied in industrial research, this enhances the generalisability of triadic net theory.

4.3   Conclusions

This chapter has examined the differences between the literature on the topic of industrial purchasing and the findings of the current research project.   This analysis suggests that although some of the existing research can be applied to an agricultural context, much is not relevant for the understanding of the selection factors of this decision. In particular, the existing research seemed to be more useful for understanding the perspective of processors, rather than that of farmers.   This is probably because much of the existing literature was conducted in a 'big-industrial' setting, rather than in 'small-agricultural' organisations.   Although more similarities existed in terms of the information source preferences, it is important to note the adaptations that need to be made in an agricultural context.   Thus, it is necessary to understand the selection factors and information sources utilised by farmers and processors so that these groups can be successfully targeted.

4.4   Implications for Managers

4.4.0 Strategy for Perendale breeders

As the wool industry in New Zealand has continued to decline, the majority of sheep farmers have refocussed their activities towards more profitable areas such as meat production. The previous section suggested that two types of sheep farmers were emerging, the dual-purpose and meat-oriented farmer. It is fair to assume that the growth of this second group has come as a reaction to the performance of the wool industry. However, the Perendale breed seems to be perceived as a dual-purpose animal, rather than solely for meat production. As a result, the growth of meat-oriented farmers represents a real threat to Perendale breeders, as farmers substitute imported breeds reputed to have better performance on various carcass characteristics.

To counter this threat, Perendale breeders need to adopt a multi-faceted strategic approach. Existing dual-purpose farmers need to be defended to discourage switching behaviour.   Meat-oriented farmers also need to be encouraged to switch back to the Perendale breed. Breeders need to work on a personal level with these groups of farmers, developing a reputation for excellent quality rams. Thus, it is *breeder reputation*, rather than *breed reputation* that drives farmers' selection of rams. Processors also need to be lobbied so messages from breeders to farmers are supported from other areas of the farmers' industrial network. These organisations are also unconcerned with *breed reputation*, suggesting that breed-groups will only be valuable for individual breeders if they are able to educate processors regarding improvements in product quality and breed consistency.

Discouraging the potential switching of existing dual-purpose farmers can be achieved in several ways. Firstly, breeders should continue to work closely with their existing clients, forging strong relationships over time. It will be particularly

important for these farmers to perceive that utilising their Perendale breeder has positive implications for the performance of their flock. Breeders should educate farmers about their objectives, and when flock improvements will start to be noticed. Superior performance with existing clients will be used to enhance the reputation of individual breeders in the client's community.

Perendale breeders should also aim to identify non-Perendale dual farmers who communicate with current clients. These farmers are likely to be friends, neighbours, relations or other associates of existing clients. By establishing a strong relationship that delivers superior performance to existing clients, positive word-of-mouth can be used to access these non-Perendale dual farmers. Once these farmers have been accessed, breeders should communicate personally to promote the benefits their rams. In particular, messages should focus on the quality of the carcass and the fit with current practices on the farm. Although of secondary importance, these farmers are also interested in farm management and wool quality issues.

Meat-oriented farmers seem to represent a real threat to Perendale breeders. Perendale breeders should identify farmers with a relatively small flock, and a variety of imported breeds. Again, these farmers will need to be convinced that the breeder's rams will fit with the current on-farm situation, and deliver superior carcass performance. Perhaps this can be achieved by working with meat processors, as will be described later in this section. Breeders will also need to compete on price with alternative breed options. This can be addressed by illustrating the potency of each ram, suggesting that fewer rams are required to service the farmer's flock. These breed characteristics need to be communicated personally, both by the breeder as well as industry sources.

It is also important to create positive word-of-mouth with meat processors, as these companies will communicate with meat-oriented farmers. Breeders should

therefore lobby meat companies illustrating the superior performance of the Perendale breed on characteristics important to these organisations. As such, meat companies should be educated regarding the typical weight, leanness and conformation supplied by the Perendale breed. This advocacy strategy is only likely to be effective if breeders work together to improve consistency across all breeders. This will lift the performance of the breed from the perspective of the meat processor. By ensuring that these companies are aware of improvements that are being made, positive word-of-mouth will be created that will be highly effective in influencing all farmers (and meat-oriented farmers in particular).

4.4.1 Strategy for the targeting of farmers and processors

Generally, organisations seeking to communicate with farmers and processors will need to interact on a personal level with each of these two parties to effectively influence their decisions. Messages aimed at farmers will be particularly effective if they are able to demonstrate consistency with the current practices on-farm and improvements in flock carcass characteristics. As a result, farmers often take a product or production orientation towards their business. However, processors seem to balance production with marketing orientations, suggesting messages should focus either on operational improvements or market trends.

Farmers seem to be influenced by third parties, including breeders, processors and other sources of industry information, whereas internal sources of information are relevant for influencing processors. Internal advocates should therefore be used to influence the decisions of processors. A multi-dimensional communication strategy is desirable as messages from commercial sources stand a greater chance of acceptance if trusted members of the agricultural community reinforce them.   Creating positive word-of-mouth is of utmost importance when communicating with farmers as these organisations seem to evaluate quality on the reputation of the person espousing the message, in

addition to observable characteristics. As such, combining a strong reputation with observable results is an effective way to win over farmers.

4.5 Directions for further research

This research project has suggested that much of the academic literature on industrial purchasing has not been replicated in an agricultural context. As a result, there are many research topics that could be further explored in this area. In particular, researchers could attempt to identify the selection factors and information sources that are important in other agricultural purchases. Researchers should also attempt to replicate these studies in other geographic locations, where the structure of the agricultural sector may differ from that of New Zealand. This replication would allow a further understanding of how industrial purchasing theory can be applied to agricultural contexts. Researchers seeking to understand each of these areas should be aware of the industrial network within which agricultural organisations interact, and identify the resultant implications for organisational behaviour.

Additionally, this research project has taken a rather exploratory view of the selection factors and information sources used in the purchase of rams. As such, replication should seek to verify and further quantify the selection factors and information sources identified in this analysis. This replication should aim for larger, more representative sample sizes that are able to validate the findings of this project. Replication over time is also desirable as the relative strength of meat and wool processors appeared to vary over the past 30 years, and it is fair to assume that this fluctuation will continue into the future.

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Appendices

Appendix 1: Semi-structured Interview Guide and Accompanying E-mail

♦ **Wool Processor Interview Guide**

1. What technical factors are preferred when your organisation purchases sheep wool?

2. What non-technical factors does your organisation consider when purchasing sheep wool?

3. How does the Perendale sheep breed compare with other breeds on the technical and non-technical factors mentioned in questions 1 and 2?

4. Which members of your organisation are involved with the decision to purchase sheep wool?

5. Are there other members of your organisation that influence the sheep wool purchase decision?

6. Does anybody outside your organisation influence the sheep wool purchase decision?

7. What other information sources are used by your organisation to communicate with members of the value chain?

8. Where do you consider the future of this industry is going?

♦ **Leather Processor Interview Guide**

1. What technical factors are preferred when your organisation purchases sheep pelts?

2. What non-technical factors does your organisation consider when purchasing sheep pelts?

3. How does the Perendale sheep breed compare with other breeds on the technical and non-technical factors mentioned in questions 1 and 2?

4. Which members of your organisation are involved with the decision to purchase sheep pelts?

5. Are there other members of your organisation that influence the sheep pelt purchase decision?

6. Does anybody outside your organisation influence the sheep pelt purchase decision?

7. What other information sources are used by your organisation to communicate with members of the value chain?

8. Where do you consider the future of this industry is going?

♦ **Meat Processor Interview Guide**

1. Which members of your organisation are involved with the decision to purchase sheep/lamb meat?

2. Are there other members of your organisation that influence the sheep/lamb meat purchase decision?

3. Does anybody outside your organisation influence the sheep/lamb meat purchase decision?

4. What other information sources are used by your organisation to communicate with members of the value chain?

5. What factors does your organisation consider constitute 'the perfect lamb'?

6. Where do you consider the future of this industry is going?

7. How does your organisation decide which components of the lamb schedule are particularly desirable?

8. How do Perendale lambs compare to other breeds with respect to the lamb schedule your organisation sets?

♦ **Accompanying E-Mail**

The Department of Marketing

University of Otago

PO Box 56

Dunedin

November ??, 2000

Dear ??,

As discussed on the ??th of November, I am writing to confirm our interview on the ?? of November. As stated in our earlier discussion, I am a Masters student from the Marketing Department of the University of Otago, researching the factors that are important to purchasers of sheep in New Zealand, as part of my Masters thesis. As such, my research will involve two stages, firstly interviewing meat, wool and leather processors, and secondly, sending a survey to farmers around New Zealand.

During the interview I hope to cover the following topic areas:

♦ Establishing the factors that are important in the purchase of sheep products
♦ Identifying the members of your organisation that are involved in the sheep product purchase decision
♦ The information sources that processors use to communicate with other members of the value chain (farmers and breeders)

In accordance with University of Otago's ethical guidelines for research, the information obtained during the research process will remain confidential and anonymous. Responses will treated in aggregate, individual opinions will not be linked to your company and participants hold the right to discontinue at any stage. Any enquiries regarding this project can either be directed to the academic staff member supervising this research or directly to the researcher (contact details below).

Finally, the Marketing Department will hold the ensuing data from this research in a secure file following the completion of this research.

Thank you again for your involvement with this research,

Yours faithfully,

Researcher:

Chris Thomas (cde_thomas@yahoo.com)

Supervisor:

Derek Nind (dnind@commerce.otago.ac.nz)

Lecturer

Phone: 034797690

Department of Marketing

University of Otago

PO Box 56

Dunedin

Appendix 2: Survey Instrument and Accompanying Letter

The Department of Marketing

University of Otago

PO Box 56

Dunedin

December 19, 2000

Dear Sir or Madam,

I am a Masters student from the Marketing Department of the University of Otago, researching the factors that are important to purchasers of sheep in New Zealand, as part of my Masters thesis. As such, my research will involve two stages, firstly interviewing meat, wool and leather processors, and secondly, sending a survey to farmers around New Zealand.

In the survey I hope to cover the following topic areas:

♦ The information sources that farmers use when purchasing rams

♦ Establishing the factors that are important in the selection of a breed of ram

♦ Establishing the factors that are important in the decision to use a particular ram breeder

In appreciation for participating in this research, I am pleased to announce that I have secured a weekend holiday package for two at the Millennium hotel (in either Queenstown, Christchurch or Rotorua). The package includes accommodation for two people for one night, as well as an evening meal. The winner of the holiday weekend will be drawn from the surveys received, which is the rationale behind asking for your name at the conclusion of the survey.

In accordance with University of Otago's ethical guidelines for research, the information obtained during the research process will remain confidential and anonymous. Responses will be treated in aggregate, individual opinions will not be linked to you, and participants hold the right to discontinue at any stage. Any enquiries regarding this project can either be directed to the academic staff member supervising this research or directly to the researcher (contact details below).

Your name and address has been obtained either from a database of the Perendale Sheep Society, or Wool*Pro* and will not be kept on file subsequent to the completion of this research. Finally, the Marketing Department will hold the ensuing data from this research in a secure file following the completion of this research.

Thank you for your involvement with this research,

Yours faithfully,

Researcher:

Chris Thomas (cde_thomas@yahoo.com)

Supervisor:

Derek Nind (dnind@commerce.otago.ac.nz)

Lecturer

Phone: 034797690

Department of Marketing

University of Otago

PO Box 56

Dunedin

Wool*Pro* Contact:

Richard Gardner

General Manager

Ph: (04) 4714694

Mob: 025 249 8820

Instructions

The purpose of this survey is to determine the factors that influence **you personally** when purchasing rams. For each of sections A-C could you please complete the following tasks:

♦ Firstly, **_circle the importance_** of each item on the scale provided (where 1 = unimportant, 4 = neutral and 7 = important)

♦ Secondly, **_rank_** the five most important items in each section (where 1 = the most important item)

Example:

	Unimportant Neutral Important	_Rank_
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	
	1 2 3 4 5 6 7	

Section A: Important Information Sources

	Unimportant Neutral Important	Rank
TV, Radio or Newspaper Advertising	1 2 3 4 5 6 7	
Industry Guides or Publications	1 2 3 4 5 6 7	
Pamphlets or Newsletters	1 2 3 4 5 6 7	
World Wide Web (WWW)	1 2 3 4 5 6 7	
Trade Shows or Fairs (Field Days)	1 2 3 4 5 6 7	
Meat and/or Leather processors (Drafters)	1 2 3 4 5 6 7	
Wool processors (Drafters)	1 2 3 4 5 6 7	
Recommendations of stock agents or rural servicing firms	1 2 3 4 5 6 7	
Bank representatives	1 2 3 4 5 6 7	
Breeders	1 2 3 4 5 6 7	
Vets	1 2 3 4 5 6 7	
Family or friends	1 2 3 4 5 6 7	
Other Farmers (Word of mouth)	1 2 3 4 5 6 7	
Farm open days	1 2 3 4 5 6 7	
Other (Please state) _____	1 2 3 4 5 6 7	

Section B: Factors Involved With Ram Breed Selection

	Unimportant — Neutral — Important (1–7)	Rank
Muscle levels (e.g. eye muscle)	1 2 3 4 5 6 7	
Lamb weight (at weaning)	1 2 3 4 5 6 7	
Lamb leanness (GR levels)	1 2 3 4 5 6 7	
Lamb growth rates	1 2 3 4 5 6 7	
Lamb meat consistency (confirmation of meat cuts)	1 2 3 4 5 6 7	
Ewe fertility or mothering instincts	1 2 3 4 5 6 7	
Ram service rate (amount of ewes serviced)	1 2 3 4 5 6 7	
A low Micron Level (Wool fineness)	1 2 3 4 5 6 7	
A high Micron level (Wool thickness)	1 2 3 4 5 6 7	
Wool colour consistency	1 2 3 4 5 6 7	
Wool bulk	1 2 3 4 5 6 7	
Wool length (absence of breaks)	1 2 3 4 5 6 7	
Wool strength	1 2 3 4 5 6 7	
Amount of Vegetable Matter (in wool)	1 2 3 4 5 6 7	
Durability (life expectancy or survival abilities of sheep)	1 2 3 4 5 6 7	
Purchase price (per ram)	1 2 3 4 5 6 7	

Section B Continued

	1 2 3 4 5 6 7	
Past experience with breed	1 2 3 4 5 6 7	
Fit with existing flock or ability to crossbreed with existing flock	1 2 3 4 5 6 7	
Fit with land type or temperature	1 2 3 4 5 6 7	
Resistance to disease or parasites	1 2 3 4 5 6 7	
Skin or Leather Quality	1 2 3 4 5 6 7	
Sheep temperament (ease of managing)	1 2 3 4 5 6 7	
Other (please state) _____	1 2 3 4 5 6 7	

Section C: Factors Involved With Ram Breeder Selection

	Unimportant			Neutral			Important	Rank
Breeder's existing stock Characteristics	1	2	3	4	5	6	7	
Breeder's records	1	2	3	4	5	6	7	
Breeding Values or Sire referencing	1	2	3	4	5	6	7	
Ram bureau records	1	2	3	4	5	6	7	
Genetic trend graphs	1	2	3	4	5	6	7	
The experience of other farmers using rams from breeder	1	2	3	4	5	6	7	
Visual or physical assessment of individual rams	1	2	3	4	5	6	7	
Convenience of using breeder	1	2	3	4	5	6	7	
Relative economic values	1	2	3	4	5	6	7	
Past experience with rams from breeder	1	2	3	4	5	6	7	
Breeder's reputation for quality or high performing stock	1	2	3	4	5	6	7	
Reliability of breeder (delivering on promises given)	1	2	3	4	5	6	7	
Ability of breeder to provide rams that exceed current flock performance levels	1	2	3	4	5	6	7	
Breeder's ram replacement guarantee	1	2	3	4	5	6	7	
Other (Please state) _____	1	2	3	4	5	6	7	

Section D: Demographic Information

Current Farm Location (Please circle one)			
Northland	Taranaki	Wellington	South Canterbury
Auckland	Hawkes Bay	Marlborough/Nelson	Otago
Waikato	Manawatu/Wanganui	West Coast	Southland
Bay of Plenty	Wairapa	North Canterbury	Other (Please state)
King Country	East Coast	Mid Canterbury	_____

Breed Types	Current Flock Makeup	
	No. of Ewes	**No. of Rams**
Romney		
Coopworth		
Perendale		
Corriedale		
Merino		
Halfbred		
Crossbred (please state combinations) _____		
Other (Please state types) _____		
Total		

	Please Circle Appropriate Cells					
Your age	>20	20-29	30-39	40-49	50-59	59+
No. of years farming	>5	5-9	10-19	20-29	30-39	39+
No. of years on current farm	>5	5-9	10-19	20-29	30-39	39+
Current Farm Size (Hectares)	>250	250-499	500-749	750-999	1000-1249	1249+
Your Role	Owner/ Manager		Farm Manager	Stock Manager	Other (Please State) _____	

Farm Typology	%
Mountainous or Tussock Country	
Hill Country	
Rolling Hills	
Coastal Sand Country	
Flat land or Plains	
Other (Please state)_____	
Total	**100%**

Income Makeup	% of Revenue/Profit
Wool	
Leather/Pelts	
Meat	
Total	**100%**

Name (Required for entry into the prize draw)	

Appendix 3: Demographic Profile of Respondents

Table 13: Age of Respondents

Age	Percent (N=160)
0-19	0.0%
20-29	5.0%
30-39	14.4%
40-49	33.1%
50-59	25.6%
Over 60	21.9%
Total	**100.0%**

Table 14: Experience of Respondents

Years	Farming (N=146)	On Current Farm (N=139)
Less than 5	2.1%	12.2%
5-9	9.6%	18.7%
10-19	11.6%	15.8%
20-29	30.8%	22.3%
30-39	24.7%	15.1%
More than 39	21.2%	15.8%
Total	**100.0%**	**100.0%**

As these tables illustrate, the respondents were relatively mature, with 80.6% of the farmers over 40. The respondents also had a great deal of experience with 76.7% having farmed for over 20 years. However, 47.8% of respondents had been on their current farm for less than 20 years, indicating that some switching behaviour does occur between farms. This could be a result of a farmer running the family farm until they had enough capital to purchase their own property.

Table 15: Role of the Respondents

Role	Percent (N=154)
Owner/Manager	83.8%
Farm Manager	5.2%
Stock Manager	1.3%
Other	9.7%
Total	**100.0%**

83.8% of the respondents were owner/managers of the farms, suggesting that these individuals occupied a central role in the ram purchase decision.

Table 16: Respondents' farm typology

Typology	% of Respondents with Typology (N=158)
Rolling Hills	57%
Flat land or Plains	55%
Hill Country	50%
Mountainous or Tussock Country	11%
Coastal Sand Country	4%
Bush	1%

Columns do not total to 100% because respondents had multiple land types

Table 16 suggests that respondents' farms usually had a combination of rolling hills, flat land and hill country. A relatively small number of respondents had mountainous, coastal or bush country on their farm.