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Investigating the research requirements of a dairy
farming community.

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Kate Aurelia Mirams

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ABSTRACT

Case studies, a formal survey and interaction with an industry liaison group were investigated and compared as techniques for eliciting information on farmers research needs. Dairy farmers in the Manawatu district of New Zealand and a Massey University dairy industry liaison group were involved in the research.

Farmer case studies provided contextual information on farmers' situations, defined the activities that farmers were investigating so as to achieve their goals, and outlined the problems and constraints farmers face in carrying out these activities. Few of the problems mentioned by farmers were of a technical nature. Case study interviews with DLG members provided a list of technical and managerial problems, with no context as to when and under what circumstances these problems occur.

The case study interviews with the farmers highlighted the importance of understanding farmer circumstances when collecting information on their research needs. Without this context there is no basis for understanding why issues are a problem on farm, and how they might be overcome. Conducting a formal survey was rejected as a technique for eliciting farmers' research needs in the wider farming community because of the limited amount of contextual information that can be collected through this technique.

A formal survey was used to compare farmers' and an industry liaison groups' perception of a range of specific issues. For some issues farmer perceptions were reflected by those of the industry liaison group, while for other issues they were not. In other cases there was a wide range of response from both farmers and industry liaison group members.

The dairy industry liaison group did not accurately reflect the farmers' perceptions on all issues. Thus where issues have important consequences for the industry or large investments are made, wider farmer consultation should be sought. The diversity of opinion amongst the industry liaison group suggests that group needs to be taken with group decision making.

The results of this study support a call for the further development of research methods which formally investigate the research issues that farmers face on their farm. Such efforts should complement traditional research activities carried out on University farms.

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TABLE OF ABBREVIATIONS

CIDR Controlled Intravaginal Drug Releaser

DLG Dairy Liaison Group

FFR Farmer First Research

FSR Farming Systems Research

LIC Livestock Improvement Corporation

CHAPTER ONE

INTRODUCTION

'Research levies collected from all farmers should fund research to benefit all farmers.'

1.1 Relationship between farmers and agricultural research and extension.

In New Zealand, as in many parts of the world, agricultural research and extension is organised within the transfer of technology model (TOT) (McRae *et al.* 1993a). Within the TOT model, research is structured within disciplines, and professional skills, funding and facilities are concentrated in research centres. These research centres generate new technologies and pass them on to extension workers to transmit to farmers.

Information on farmers' research requirements is collected by extension workers and scientists through consultation with 'leading farmers' with little understanding of other farmers' circumstances (McRae *et al.* 1993b). New technologies or solutions to problems are generated on research stations which are geographically, economically and sociologically remote from the farm. The extension process relies on communicating research results to 'leading farmers', to then be diffused from farmer to farmer.

1.2 The philosophy of 'user-pays' research.

In 1992 state funded research and extension in New Zealand was reorganised such that public good science funds (PGSF) are bid for by research organisations such as Crown Research Institutions (CRI's), universities and private research groups. State funded extension was restructured and replaced with a state owned fee-for-service consultancy business.

The PGSF is made available by the Government to 'carry out research and development and to transfer technology to research users for the benefit of New Zealand' (MORST, 1992). It addresses research opportunities which are 'unlikely to be funded by non-government sources' (MORST, 1992), and as such the benefits are not appropriable to specific groups in society (McRae, 1993).

By establishing the PGSF, Government has clearly signalled that it expects industry groups to meet the cost of research, where they are expected to benefit directly from the research, (McRae *et al.* 1993b). This includes agricultural production research. Funding for this research is often collected from all producers via an industry levy, as in the case of the New Zealand dairy industry where the New Zealand Dairy Board allocates research funds from trading proceeds before making payments to farmers.

The transfer of technology from the research centres to farmers is considered to be of vital importance, and is sometimes considered to be the 'weak link' in the process of the adoption of agricultural technology. This is evidenced by the reported increasing concern in New Zealand about the lack of uptake by farmers of research results, and about farmers' apparent lack of willingness to consider changes to their farming systems (McRae *et al.* 1993a). Non-adoption of technology developed via the TOT model is often attributed to farmer ignorance. This has led to the call for more, and better, extension.

However, there is now much evidence in 'less developed' countries that farmer non adoption of technology is usually not from ignorance of the technology but because the technology does not meet their needs and their physical, social and economic conditions (Chambers and Ghildyal, 1985). This is supported by work with sheep and beef farmers in New Zealand (Brazendale *et al.* 1994), which found that farmers were generally aware of the particular technologies being investigated, but had not adopted them because either the technology was inappropriate for their circumstances, or the benefit was considered to be insufficient to justify the cost associated with the change.

Agricultural research designed to improve productivity or profitability only pays off if it generates knowledge or technology that can be, and is, used profitably by farmers in their farming systems (McRae, 1992). If farmers are not adopting newly developed technologies, funded from research levies to which they have contributed, and they are not adopting them because these technologies are not appropriate to their farming and family circumstances, then clearly the TOT model for the generation of research and extension has failed them.

For agricultural research to be relevant, adopted by farmers, and hence begin to pay for itself, it must take into account the context in which the research is to be applied which includes the diverse goals, constraints and circumstances that farmers face. However, currently there is very little formal knowledge of these.

1.3 Farmer consultation in prioritising agricultural research.

Farmers are rarely consulted in prioritising and conducting research, and if farmers are consulted usually only the so called 'leading farmers' are contacted (see for example Parker *et al.* 1993). Farmers in circumstances for which currently developed technologies are not appropriate rarely come and speak up, or sought out by scientists when establishing research priorities (Chambers and Ghildyal 1985). Few attempts have been made to determine farmers' research and extension needs, or to gain knowledge about farmer circumstances which prevent adoption of current technologies.

Two approaches to determining the research needs of farmers are currently being tried at Massey University. One approach has been the development of industry liaison boards, such as the **Dairy Liaison Group (DLG)**. Another approach is through direct farmer consultation within the **Farmer First Research (FFR)** framework.

1.4 Purpose of this research

This research investigates methods of determining the research requirements of the dairy farming community in the Manawatu district of the lower North Island of New Zealand. It seeks to provide some discussion on the way in which this information is best collected, and the limitations of the methods investigated.

1.5 Outline of research and report

Chapter Two describes the role of Massey University as an agricultural research organisation. It also outlines the development of an industry liaison group, the Dairy Liaison Group (DLG), and its function within the University structure. The objectives of the DLG and the purpose of involving them in this research is also explained.

In Chapter Three the research methodology, the use of case studies in agricultural research, and the role of survey technique in quantifying and broadening the coverage of research is discussed. It also gives an outline of how this research developed.

The results of the case study interviews with farmers and the DLG are presented in Chapter Four. The importance of an understanding of farmer circumstances for defining farmer problems is discussed. The inadequacies of survey technique as a method of determining farmer research needs is discussed.

The results of the farmer and DLG surveys are presented in Chapter Five. Comparisons are made between the industry liaison groups perception of the incidence and seriousness of certain 'technical problems' and the farmers experiences.

In the final chapter, Chapter Six, the findings and implications of the research are discussed. Some conclusions are drawn about the process of determining the research requirements of a farming population.

CHAPTER TWO

BACKGROUND TO FARMER FIRST RESEARCH AND THE DAIRY LIAISON GROUP

2.1 Introduction

The two techniques of farmer consultation investigated in this research are direct farmer consultation developed from the experiences of the Farmer First Research (FFR) group at Massey University; and indirect farmer consultation via an industry liaison group, the Dairy Liaison Group (DLG). The Farmer First Research and Massey University's involvement with land ownership and the development of the Dairy Liaison Group are outlined in this Chapter.

2.2 The Farmer First Research philosophy.

The FFR programme at Massey University is investigating an alternative model to the TOT model of agriculture research and extension. Farmer First Research has developed from Farming Systems Research (FSR), with particular reference to the **Farmer First and Last (FFL)** approach (Chambers and Ghildyal 1985). Merrill Sands lists seven key components of FSR:

1. *Farmer orientated*, viewing farmers as the clients of agricultural research and technology development, with the objective of developing technology relevant to their goals needs and priorities.

- 2 *Systems orientated*, viewing the farm in a holistic manner, focusing on interactions between components, rather than the components in isolation.

3. *Problem solving approach*, by first identifying technical, biological and socioeconomic constraints, and then endeavouring to develop solutions that are appropriate for the management conditions of that system.

4. *Interdisciplinary*, through the collaboration of biological and social scientists in order to understand the conditions in which farmers operate, to diagnose constraints accurately, and to develop appropriate, improved, technologies.

5. *Complements mainstream commodity and disciplinary agricultural research; it does not replace it*, drawing on the 'body of knowledge' of technology and management strategies developed by commodity and disciplinary research, and adapting it to the specific environment and socio-economic circumstances of a target group of relatively homogenous farmers.

6. *On farm research is central to the research approach*, providing the context for collaboration between farmers and researchers, allowing researchers to gain a deeper understanding of the farming system and the decision making context of the farmers, while also permitting technology to be evaluated under the environmental and management conditions in which it will be used.

7. *Provides feed back from the farmers*, on their goals, needs, priorities and criteria for evaluating technologies to station based agricultural scientists and national policy makers.

The FFR programme at Massey University has the primary goal of 'complementing traditional agricultural research in the design and testing of relevant and appropriate innovations and strategies for change in New Zealand agriculture' (McRae, 1993). FSR is a problem solving approach aimed at generating technology relevant to farmers goals, needs and priorities (Reid *et al.* 1993).

2.3 Massey University land ownership and Commercial Dairy Farms

Massey University was originally established as Massey Agricultural College in 1927, and gained full university status in 1964. The University is now involved with teaching a number of other disciplines.

The University operates 5,350 hectares of farmland which is maintained for teaching, research and extension purposes, and of which 1,416 hectares is owned by the University. A wide range of farming enterprises and activities are conducted on the 900 hectares of land adjacent to the Palmerston North campus. About three quarters of this is on the terraces which are poorly drained. The remainder consists of river flats which vary from fertile silt loams and light sandy soils to river shingle. The 900 hectares comprises two dairy farms, (No. 1 and No. 4 Dairy Farms); Keeble Farm, (a 238 hectares sheep and beef farm); and a number of research units set up for intensive research in livestock, arable and horticultural industries.

2.3.1 Rational for land ownership

The underlying philosophy of land ownership by Massey University is outlined below;

1. The operation in real farm situations including an association with policy and seasonal management decisions, with subsequent benefits to the realism and applicability of teaching programmes.
2. The development of long term agricultural and horticultural research programmes with their considerable investment in planning and establishment, and requirement for continuity.
3. The initiation and detailed monitoring of whole farm systems studies including the collection of physical and financial information not normally monitored on a commercial farm.
4. Provision for the training of practical skill to meet course requirements.
5. Maintenance of strong links with the farming community and primary industries through demonstration of research and systems management with application to agriculture and horticulture.

6. Much of the land has been acquired adjacent to the central Campus thus being ideally located for intensive research and teaching programmes where, because of high usage and intensive monitoring, proximity is a vital factor.
7. The realistic basis for the operation of the “whole farm system” commercial units allows generation of profits for use by the University in furthering its’ objectives, Anon (1990).

2.3.2 The commercial dairy farms

Massey University owns and operates two commercial dairy farms in close proximity to the main campus in Palmerston North. The purpose in operating commercial farms is outlined below in the mission statement for the University’s commercial farms;

The commercial farms will operate to the highest standards of farm management and profitability through the application of an integrated approach to primary production. They will, notwithstanding, also provide on site opportunities and case studies for educational programmes both at the formal and extension levels and have a role in the overall research enterprise of the University. They will not only be at the forefront of innovation and technology transfer in the application of new knowledge and methodologies but they will provide the opportunities for the commercialisation of basic research, especially that undertaken on the research units. As part of this process problems and opportunities identified on the commercial farms will be returned to the units for basic investigation, (Anon, 1990).

The commercial farms are required to generate sufficient profit to cover supervision and Farms Administration overheads as well as their own operating costs. Full cost recovery is adopted to ensure that teaching and research associated with the commercial farms is not being subsidised by product earnings. Product earnings are used for maintenance of land and improvements, as well as supporting Farms Administration.

Research projects may only be initiated on the commercial farms if they do not have a negative impact on the farms' management and profitability. Farm supervisors influence projects through comment on feasibility of implementation and cost of the project to the farm. Major projects require Farm Committee approval (see section 2.3.3).

No. 1 Dairy Farm (Winter Milk Production)

The Massey University No. 1 Dairy Farm is located adjacent to the Fitzherbert Bridge and Manawatu river, on a complex association of alluvial soils. The area of the farm is 115 hectares, of which 13 hectares is subject to infrequent flooding and 28 hectares is irrigated.

In response to the deregulation of the town-milk industry in 1988, and the payment of premiums for winter milk, Massey University adopted a winter milk production system on No. 1 Dairy Farm. A herd of approximately 200 cows is calved from 10 March, and is dried off in late December. The current quota for winter milk is 2300 litres per day over the months May, June and July.

The objective of the No. 1 Dairy Farm is to operate as a commercial and primarily winter milk producing dairy farm. Regular monitoring is carried out to: measure physical and financial inputs and outputs; identify problems inherent to the system; identify areas requiring further technical research; and provide information for No 1 Dairy Farm to be effectively used as a 'focus' winter milk production farm.

During the 1993/1994 period nine research projects were carried out on No. 1 Dairy Farm, involving six Massey University Departments, and Nufarm, (a veterinary pharmaceutical manufacturing company), see Table 2.1 below.

Table 2.1 Research Projects carried out at No. 1 Dairy Farm

Project Organisation	Massey Department or Research
Heifer Synchronisation Trial.....	Dept Veterinary Clinical Sciences
Milk production response to Lasalocid.....	Dept. Animal Science and Nufarm
Teat Spray Trial on Milking Cows	Animal Health Services Centre
Dairy Calf Leptospirosis Vaccination Trial	Animal Health Services Centre
Nufarm Rumen Capsule Evaluation.....	Farms Administration and Nufarm
Serological Response of Calves Vaccinated for BVD	BVSc Student Project
Techniques for Stress Reduction in Calf Dehorning... ..	Dept. Physiology and Anatomy and
.....	Dept. Veterinary Clinical Science
Evaluation of Calf Milk Replacers for Dairy Calves.....	Dept Animal Science, and Farms
.....	Administration
Pasture Quality Assessment.....	Dept Ag/Hort Systems Management

No. 4 Dairy Farm (Seasonal Milk Production)

The Massey University No. 4 Dairy Farm is located adjacent to the University, and is composed of three main soil types (Tokomaru Silt Loam, Ohakea Silt Loam and Shannon Silt Loam). The total area of the farm is 190 hectares, which is divided in to two farm units, (the Lovelock Farm and the Brogden Farm, each of 90 hectares), each carrying 260 cows. Herds begin calving in early August and cows due to calve later than September 30 are induced to ensure calving is completed by September 30.

The Lovelock Farm has been established as a teaching farm to provide resource material for undergraduate studies. The farm aims to be a high producing seasonal supply farm, and is intensively monitored. The Brogden Farm provides resources for herd scale experiments and as a resource for innovative dairy systems development.

During the 1993/1994 period five research projects were carried out on No. 4 Dairy Farm, involving three Massey University Departments and Landcare Research, (Table 2.2).

Table 2.2 Research Projects carried out at No. 4 Dairy Farm

Project Organisation	Massey Department or Research
Spring Dairy Grazing Management Trial	Dept. Plant Science
Milk Production Response to Mg.....	Dept. Animal Science
Calf Meal Evaluation Trial	Dept. Animal Science
Pasture Quality Assessment.....	Dept Ag/Hort Systems Management
Coppice Willows for Effluent Disposal.....	Landcare Research

In February 1994 a Field day was held at No. 4 Dairy Farm, with the aim of presenting and discussing the results of research and practical management experience from No. 4 Dairy Farm, at a public forum.

2.3.3 Management structure of commercial dairy farms

Massey University's policies for the use of its land are administered on behalf of the University Council by the Farm Committee. The commercial units are regarded as a general University resource, rather than a resource for any particular department, and as such administration is carried out through the Farms Administration section under the control of the Director of Farm Services. The Director of Farm Services is responsible to the Vice-Chancellor and Farm Committee. Supervisors of the commercial farms report to the Director of Farm Services. The Farms Administration section provides a secretarial and accounting service for the commercial farms. The management structure of the commercial dairy farms is outlined in Figure 2.1 below.

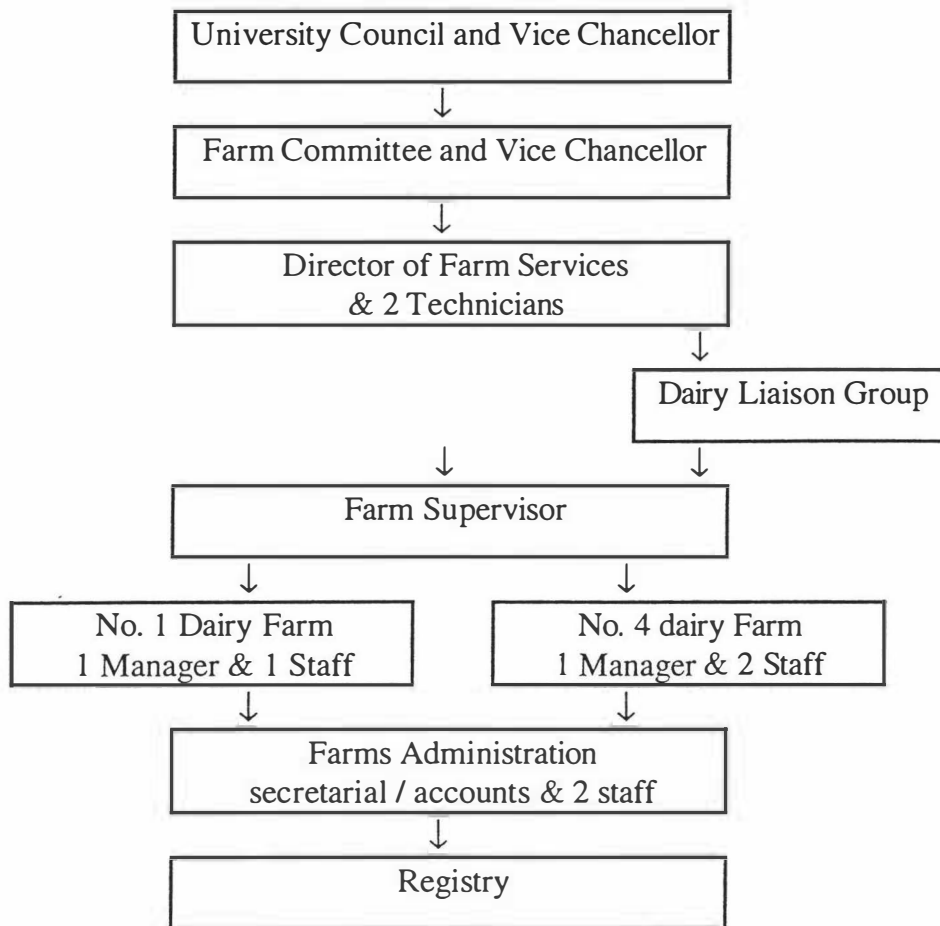


Figure 2.1: Administration structure of the Massey University commercial dairy farms

2.4 Dairy industry liaison group

In 1993, farms administration established an industry liaison or networking group. The group was formed primarily to provide a link between Massey University and the wider dairy farming community, using the University's commercial dairy farms as a basis for discussion.

The initiative for forming the Dairy Liaison Group (DLG) came from a former manager of the No. 1 Dairy Farm. The Farms Administration recognised that a broader support for the Massey commercial dairy farms would help justify Massey's ownership and running of commercial dairy farms.

The objective in forming the DLG was to broaden the support base of the commercial dairy farms, by getting key industry people involved in discussing the use of the farms, and in doing so form a communication network between Massey and the dairy industry.

Representatives with active involvement in the dairy industry were identified by the Director of Farm Services and the Dairy Section of Federated Farmers from the following bodies, (number of people from each body shown in parentheses):

New Zealand Society of Farm Management, (1)

Livestock Improvement Corporation consultants, (1)

Dairy Division of Federated Farmers, (4)

Local dairy company Production Officer, (1)

Dairy Research Corporation, (1)

AgResearch, (1)

Massey University Departments of:

Animal Science, (2)

Plant Science, (1)

Soil Science, (1)

Clinical Veterinary Science, (1)

Agriculture and horticulture Systems Management, (1)

Farms Administration, (2)

Massey University commercial dairy farm Managers, (2)

There is total number of 19 people on the DLG. Their core responsibility is to promote a two way flow of information and ideas between the regional dairy industry and Massey University, using the Massey University dairy farms as the vehicle for the process. The five stated objectives of the DLG are outlined below:

Objective One: To critically evaluate the production systems in place and the physical and financial performance of Massey University No. 1 and No. 4 Dairy Farms.

Objective Two: To identify specific research and extension needs of dairy farms within the region for consideration by Massey University Farms Administration and appropriate Massey University Departments.

Objective Three: To facilitate teaching and extension programmes associated with the Massey University Dairy Farms

Objective Four: To identify and facilitate sources of funding for such research and extension projects.

Objective Five: To evaluate the effectiveness of the Dairy Liaison Group.

(A full report on the Dairy Liaison Group Strategic Plan is given in Appendix 1).

Much of the work of the DLG has been focused on developing a systems demonstration or comparison for No. 1 Dairy Farm. The DLG has also been involved in setting the discussion topics for annual field days at No. 1 and No. 4 dairy farms, in February each year.

During 1994 the DLG were involved in collecting information on the research and extension needs of the local dairy industry. Information was collected by asking each member to list six current opportunities or problems facing dairy farmers. An LIC Consulting Officer also asked the farmers of five Dairy Discussion Groups to list farm and industry factors affecting production, and suggestions for research.

The similarities between the objectives of this research and the DLG's Objective Two, (to identify specific research and extension needs of dairy farms in the region) suggested that collaboration with the DLG would be a useful way to proceed with the research. Further, such collaboration would broaden the researchers experience and contribute to the stated purpose of the DLG.

CHAPTER THREE

OBJECTIVES AND METHODOLOGY OF RESEARCH

3.1 Research Objectives

The initial objective of this research was to investigate different methods for determining the research requirements of a dairy farming community and to compare the types of information collected by each technique. The methods to be examined included a more traditional TOT approach using an industry liaison group and formal surveys and a FFR approach through open-ended questioning of a small group of case study farmers.

This research was also carried out to provide the researcher with some experience in both the use of open ended semi-structured interview technique, through case study research, and the development and carrying out of formal surveys.

3.2 The role or case studies in agricultural research

The case study approach was selected as a research method because it provides qualitative in depth information, to " grasp the natives point of view, relation to life , vision of the world," (Galdwin *et al.* 1984 after Malinowski, 1922). Recognising that a thorough understanding of the farmers situation is critical to forming a basis for improving their welfare, thus case study interviews were carried out with five dairy farmers in the Manawatu.

A case study is defined by Maxwell, (1986) as:

'the detailed study of a small number of units selected as representative of the group or groups relevant to the issue under consideration, but not necessarily representative of the population as a whole.'

Case study research may possess multiple objectives, uses mixed techniques in obtaining in depth qualitative information, and the cases are non-randomly selected (Maxwell, 1986). Case studies are particularly appropriate if the data to be collected require open ended questioning and unstructured interviews. Case studies allow the researcher to gain a deeper insight into the interrelationships between the environment and the objectives and constraints which affect the case study farmers than would be possible through a formal survey techniques.

The case studies were also carried out to form a basis from which to develop a formal survey. To formulate valid questions for a formal survey, precise knowledge of the farmers terminology, way of thinking and production conditions are necessary (Doorman, 1990). Case studies can provide this background as a means of preparing for formal survey work.

3.3 Semi formal interview technique

"Informal interviewing is a dynamic process in which important information develops out of casual conversation," (Rhoades, 1986). An informal interview, if properly conducted, can give a rich description of life in the farming community, how farmers or other groups perceive farming conditions and how they make decisions, (Rhoades, 1986).

Informal interview technique was used to collect information from both case study farmers and DLG members. Once it was decided what type of information was required from the case study farmers and DLG members, sub-topics were decided upon but not actual questions, as described by Grandstaff and Grandstaff, (1985) and Rhoades, (1986). The semi-structured interviews were scheduled around the interviewees daily work plan. Open ended questions, using the six "helpers" who, what, where, when, why, how were used to encourage farmers to explain their answers, and to avoid closed and leading questions. All interviews were taped and later transcribed.

3.4 Formal survey technique

A formal survey has been defined by Doorman (1990) as:

"the application of a pre-formulated questionnaire to a representative sample of farmers, to test, verify and quantify findings, and obtain additional information on topics of special interest."

In formal surveys the questions are designed and phrased prior to the interview to test a predetermined hypothesis and there is little scope to reword the questions during the interview. It is not possible to change the direction of the survey part way through to a potentially more worthwhile end point. Formal survey will not provide qualitative information or insights as to whether the information provided is a true representation of the farmers situation, practices, beliefs and/or attitudes, (Grandstaff and Grandstaff 1985; Rhoades 1986).

Sieber (1973) makes the case for using both case study and formal survey technique to overcome the inherent weaknesses of case studies, (not representative of the population) and formal surveys (lack of in depth qualitative information) to give a stronger body of knowledge about the situation being investigated. Both formal survey and case study research were used for this reason.

3.5 Use of case study and formal survey in determining research needs of farmers.

Case study research was carried out with both the DLG and farmers to: investigate case study as a method of eliciting information about farmer research needs; to compare the issues brought up by the case study farmers to those brought up by the case study DLG members; and to gain a deeper and wider understanding of issues farmers are currently facing and the terminology they use for use in developing a formal survey. Case study research was also used to allow the researcher to gain experience in semi-formal interview technique.

It was proposed that formal survey technique would be used to broaden the coverage of the research to allow generalisations about the wider farming community to be made. It would also allow comparisons between the responses of the DLG and the farmers, to determine how well the DLG represents the farming community. It was also to be used to provide a basis for assessing formal survey as a means of collecting information on farmers research needs, while allowing the researcher to gain experience in developing and administering a formal survey.

3.6 Case Study Interviews With Dairy Liaison Group

The similarities between the objectives of the DLG and this research in terms of determining the research requirements of a dairy farming community led to the development of research with both the DLG and the dairy farmers. The purpose of conducting case study interviews with members of the DLG was to compare the range of issues raised by case study DLG members to those raised by case study farmers. It was also proposed that these case studies would identify a wide range of issues for use when formulating a formal survey.

A letter was sent to each member of the DLG outlining the proposed research and informing them that they would be contacted in the near future, either for an interview as a case study, and/or to complete a survey.

Case study interviews were held with five members of the DLG, selected to represent the range of positions held by its members. Three Massey University personnel, one farmer and one factory production officer were interviewed using a semi-structured technique as outlined above. This method was used to ensure a list of topics would be covered during the interview, while also allowing the conversation to cover other areas that the interviewee felt was important.

During the introduction to the interview it was briefly explained that the research was to investigate how Massey University determines and prioritises the research requirements of the Manawatu dairy farming community, and that any information they gave would be confidential.

The interview was divided into two sections. The first section was designed to discover what the case study DLG members considered to be the technical or managerial problems currently faced by Manawatu dairy farmers. Each group member was asked to list the technical and managerial problems currently faced by Manawatu dairy farmers, as specifically as possible.

The second section was designed to gain some understanding of the set-up and running of the DLG. The DLG were asked what they considered to be their role on the DLG, and the role of other members of the group (Massey University academics, production officers / consultants, and farmers). They were also asked to discuss the function of the DLG, how it carried out this function, and how effective they felt the DLG was. All interviews were recorded and later transcribed.

Transcripts were read through a number of times, then each technical or managerial problem was extracted and placed in a separate list. After close examination the list was sorted into a number of problem areas for presentation in the results section (see

Chapter Four). Information on the development and function of the DLG gathered in the second half of the interview was used to compile the background to the DLG presented in Chapter Two.

3.7 Case Study Interviews with Dairy Farmers

The farmer case studies were restricted to the Manawatu, the area immediately surrounding Massey University, on the soil groups; Manawatu Sands, Manawatu Silts, Manawatu Clays and Manawatu Terraces. Five farmers were randomly chosen from a list of suppliers on each of these soil types, in the same proportion as the number of suppliers on each soil type. Two sharefarmers were chosen as approximately 30% of Manawatu Dairy farmers are sharefarmers. No winter milk contract farmers were selected, as they represent a small section of the dairy farming community. Tui Milk Products provided the names, addresses and telephone numbers of the selected farmers.

The selected farmers were sent a letter introducing the researcher and explaining the research goal of learning about the problems and opportunities that Manawatu dairy farmers, like themselves, are facing. They were also advised that they would be contacted by telephone the following week to discuss the research and arrange a time to meet, at their convenience. All farmers agreed to a meeting, although one farmer deferred the meeting three times.

Interviews were conducted on farm, using a semi structured format. Probing questions and discussion were used to build up a chronological picture of their involvement in dairy farming, the development of their current farming system, and their goals for the future of their farming business. After developing some understanding of where the farmers are now, and where they hope to be some time in the future, it was possible to collect information on what they felt was constraining them from reaching their goals, or reaching their goals sooner. It was thought that by using this development of questioning the farmers would be discussing farming problems that were relevant to

their own farming situation. This was important because in many cases the problems at first may appear to be simple, with adequately researched and accepted solutions. It is not until the problem is put into the context of their farming situation (eg. labour supply, priority for capital input, cultural and social values), that it becomes obvious that the current technology may not be appropriate for particular farming situations.

At the end of the interview the farmers were asked if there were any other constraints or possible opportunities for their farming business that they would like to see investigated on the Massey University dairy farms or elsewhere. All suggestions were then discussed in terms of what it would mean to their current farming business, and reaching their farming goals.

Information that the researcher thought might be sensitive, like the marital status and production records were recorded if the farmer gave them, was not asked for directly, as it was considered important to keep the interview non-confrontational especially considering there would be no follow up interview. No financial information was collected, as this was considered to be beyond the scope of this research.

All interviews were taped and later transcribed. The transcriptions were read through a number of times, then information was extracted under each of the following discussion areas: farming background, current farming situation, farming goals, constraints to achieving these goals and research opportunities for Massey University dairy farms, to be presented in the results section, (see Chapter Four)

3.8 Change in direction of the research

The use of formal survey, as a technique for eliciting information about research needs of farmers, was rejected following completion of the case study interviews. It became evident from these that farmers operate within the constraints of their particular circumstances, and as such the issues or problems they are facing are dependent on these circumstances.

Further it became evident that the collection of information regarding farming problems, in isolation of a knowledge of the farmers' circumstances, would not provide any information on why these issues were problems, or how these problems might be solved. It was considered that the limitations in terms of amount of time and depth of questioning achievable with formal surveys make this tool inappropriate for collecting information about farmers' research needs.

At this point the research direction was altered. Originally had been planned to proceed with a formal survey questionnaire to establish the research needs of a larger sample of the Manawatu dairy farming community. Given the result above it was decided to proceed but to use the formal survey part of the study to establish how well an industry liaison group like the DLG represented the dairy farming community's views. This was done by using a formal telephone survey to test both the DLG's and a sample of farmers' views on some specific issues.

3.9 Questionnaire for Dairy Liaison Group and Manawatu dairy farmers

A formal survey was designed to examine the extent to which the DLG at Massey University represents the local dairy farming community by comparing the responses of the DLG and farmers to a range of issues. Two telephone questionnaires were drawn up; the first was for the DLG, and the second for Manawatu dairy farmers. The questionnaires were designed with similar questions for both the farmers and the DLG investigating the incidence of a range of problems; farmers' perception of the seriousness with which the problems affect their businesses; and farmers' perception of the cause of problems.

The problem areas investigated in the survey were selected from those brought up in the case study interviews with the farmers and the DLG. They included silage, winter milk contract farmers, feeding cows during winter, lameness, sharemilking, bloat, drainage, mastitis, number of empty cows in herds (cows failing to get pregnant within the required time period). Farmers were also asked about their knowledge of the

Massey University dairy farms, their level of contact with Massey University and their use of LIC, discussion groups and consultants.

All DLG surveys were conducted by the researcher. Three people other than the researcher were involved with conducting the farmer surveys. Surveys were carried out in December 1994 and January 1995. Results were tabulated for comparison between the views of the DLG and the farmers. Cross tabulations were performed on variables likely to show logical relations. Copies of the two questionnaires are presented in Appendix Two, and results of the questionnaires are presented in Chapter Five.

CHAPTER FOUR

RESULTS OF DLG AND CASE STUDY FARMER INTERVIEWS

4.1 Introduction

The results of the case study interviews with Manawatu dairy farmers and case study DLG members are presented in this Chapter. The case study DLG interviews were conducted during August, 1994. The LIC Consulting Officer and the three Massey academics were all interviewed at Massey University, the farmer member was interviewed on farm at his kitchen table. Interviews lasted for between one and two hours. All interviews were recorded and later transcribed. The Director of Farm Services was interviewed a number of times to collect details about the establishment and function of the DLG, and how the DLG fits into the administrative structure of the University dairy farms. The information collected during these interviews is outlined in Chapter Two.

The case study farmer interviews were held in November and December 1994. All interviews were conducted at the farm, four at the kitchen table, and one in the dairy shed. All interviews were recorded and later transcribed.

4.2 Results of DLG case interviews

The purpose of carrying out in depth interviews with a selected sample of DLG members was to establish their view of the range of technical and managerial problems currently faced by Manawatu dairy farmers. A total of 70 issues were raised by the case study DLG members, and for the purposes of presenting the data they have been classified into eight problem areas. These problem areas are related to: pasture management (9 issues), supplementary feed (22 issues); animal health (8 issues); soil fertility and drainage (5 issues), sustainability and environmental impact (4 issues);

ownership and management structures of dairy farms (3 issues); labour input (4 issues) and other general management (15 issues). The results are tabulated and discussed below, in these categories.

4.2.1 Pasture management problems.

The pasture management problems faced by Manawatu dairy farmers, as suggested by the case study DLG members are shown in Table 4.1 below. Many of the pasture management problems related to winter feed management.

Table 4.1 Pasture management problems faced by Manawatu dairy farmers, as suggested by case study DLG members.

winter management of pastures
avoiding pasture damage from pugging
growing more grass
identifying the cost of growing extra pasture from nitrogen fertiliser
definition of pasture parameters
adequate pasture cover to aim for at different times of the year
handling spring pasture surpluses
white clover management and potential high quality summer feed
determining if grazing off is worthwhile

4.2.2 Supplementary feeding problems.

Problems relating to supplementary feeding, as suggested by the DLG case studies are shown in Table 4.2 below. Over half the suggested problems were related to silage, and in particular silage quality. The level of problem definition ranged from 'fitting supplements into the farming system' to quite specific problems like 'defining good quality silage'.

Table 4.2 Supplementary feeding problems faced by Manawatu dairy farmers, as suggested by case study farmers and DLG members.

supplement quality (suggested by 2 members)
predicting wastage from silage making
predicting wastage during feeding out silage
means of feeding out supplements
making high quality pasture silage (suggested by 2 members)
how to define good quality silage
cost of making good quality pasture silage
use of nitrogen fertiliser to boost silage production
production response to pasture silage
cost of maize silage
when buying maize silage how do you know it is all there
systems for self feeding silage from the pit
confusion about the benefits of nutrient balancing
production and use of Barkant turnips
summer cropping to feed dairy cows
fitting supplements into the farming system
response to supplements when fed with pasture
long term whole farm effects of forage crops & supplementary feeds
use of supplements to overcome pasture shortages
type of supplement to use
value of supplements
costs versus benefits of gearing up to feed supplements

4.2.3 Animal health problems.

Problems relating to animal health, as suggested by the DLG case studies are shown in Table 4.3 below. Four of the animal health problems mentioned were associated with reduced fertility in dairy cows, and the effects on cow fertility of breeding for high production. Lameness and mastitis were also mentioned.

Table 4.3 Animal health problems faced by Manawatu dairy farmers, as suggested by case study DLG members.

<p>lameness in dairy cows increased incidence of herd wastage poorer reproductive performance of cows decreasing fertility with increasing BI (genetic merit) of cows relationship between higher production of higher BI cows and decreased fertility are larger cows more efficient than smaller cows interaction between environment and cow size cows coming into lactation with mastitis</p>
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4.2.4 Soil fertility and drainage problems

The soil fertility and drainage problems faced by Manawatu dairy farmers, as suggested by the DLG are shown in Table 4.4 below. The level of fertiliser use was the main problem suggested by the DLG case studies.

Table 4.4 Soil fertility and drainage problems faced by Manawatu dairy farmers, as suggested by case study DLG members.

<p>generation of cash flow for drainage and fertiliser drainage role on nitrogen fertiliser in pastoral dairying systems appropriate soil nutrient levels for Manawatu soils appropriate level of fertiliser application</p>
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4.2.5 Sustainability and environmental problems.

Problems relating to the sustainability and environmental impact of dairy farming are shown in Table 4.5 below. There were two types of concern expressed by the DLG case studies: the first was the actual impact of dairying, in particular the effect of high

stocking rate and nitrogen fertiliser. The second concern was the implications of the Resource Management Act¹ for dairy farm businesses.

Table 4.5 Sustainability and environmental problems faced by Manawatu dairy farmers, as suggested by case study DLG members.

environmental impact of dairy farming
implications of the RMA on dairy farming
at what level of nitrogen use is pollution occurring
long term consequences of soil compaction under high stocking rate

4.2.6 Land ownership and succession problems.

Problems relating to land ownership and succession as suggested by the case study DLG members are shown in Table 4.6 below. The problems were all suggested by a farmer member of the DLG.

Table 4.6 Land ownership and succession problems faced by Manawatu dairy farmers, as suggested by case study DLG members.

young farmers not able to afford to buy a farm at current land prices
sustainability of sharemilking agreements
inter-family ownership on family farms

4.2.7 Labour problems.

Problems relating to land ownership and succession as suggested by the case study DLG members, are shown in Table 4.7 below. Three of the problems related to the labour requirement for milking. One related to the labour requirement of feeding out silage.

¹ The Resource Management Act is a Government act passed in 1991. The primary objective of the Resource Management Act is to "promote the sustainable management of natural and physical resources" (Resource Management Act, 1991, p21).

Table 4.7 Labour problems faced by Manawatu dairy farmers, as suggested by case study DLG members.

decreasing labour requirements for milking breeding for tolerance to once per day milking automated (robot) milking self feeding silage direct from stack to reduce labour requirement

4.2.8 General management problems.

General management problems facing Manawatu dairy farmers, as suggested by the case study DLG members, are shown in Table 4.8 below. Problems associated with stocking rate, lactational persistency and calving date and pattern were the most often mentioned.

Table 4.8 General management problems faced by Manawatu dairy farmers, as suggested by case study DLG members.

determining the appropriate stocking rate (suggested by 2 members) generation of cash flow through winter lactational persistency into late lactation (suggested by 2 members) increasing lactation length to increase per cow production determining appropriate calving date and calving pattern (suggested by 2 members) production in early spring and late summer lower pay out but higher availability of contract grown feed Waikato looming border wars between Kiwi and Tui dairies off-peak milk production reducing or maintaining low cost of production to remain competitive making supplements without creating a pasture deficit trade off between stocking rate and per cow production matching feed supply to cow requirements on a day to day basis feeding cows for higher yields design of stand off pads for wintering cows off pasture

4.2.9 Conclusions from DLG interviews.

The technological and management problems suggested by the DLG case studies covered a wide range of topics. Most of the problems were of technical nature. Few of the problems were discussed in the context of the on farm circumstances that lead to the problems, or why a particular management issue may be a problem. This is not

surprising given the case study DLG asked for technical and managerial information and did not ask for it to be put in context of a far or farmer. Some case study DLG members offered anecdotal farm experience to support or illustrate problems.

4.3 Results of farmer case study farmer interviews

The results for the case study dairy farmer interviews are presented under the areas asked about in the interview; farmer background and current farming situation, farming goals and constraints to achieving these goals. Farmers were finally asked to suggest any research opportunities they saw for the Massey University dairy farms.

4.3.1 Farmer background and current farming situation.

The case study farmers were asked to outline their farming background and current farming situation. The farming backgrounds and farming situations of the five case study farmers are shown in Table 4.9. All farmers had a farming background, although Farmer Five came from a sheep and beef background rather than dairying. Farmers Two and Three have taken over their family farms; Farmer Two leases the farm with his brother from their father and uncle, and Farmer Three has bought the family farm. Farmer Four bought the farm after moving from the family farm. The other two (Farmers One and Five) were both sharemilking, but not on family farms.

Table 4.9 Details of case study farmers background and current farming situation.

	Farmer 1	Farmer 2	Farmer 3	Farmer 4	Farmer 5
background	dairying	dairying	dairying	dairying	sheep & beef
years milking	17	22	25	26	3
total land area	180 hectares	161 hectares	158 hectares	405 hectares	140 hectares
milking area	98 hectares	121 hectares	72 hectares	162 hectares	137 hectares
other enterprises	none	beef & forestry	beef & forestry	sheep & beef	none
ownership structure	sharemilking	lease	ownership	ownership	sharemilking
labour structure	self & manager	self & brother	self & worker	self & husband	self & worker
number of cows	308	325	190	240	358
production (kg MF)	49 000	54 000	42 000	unknown	75 000

The number of years involved in dairy farming varied between three and 26 years. The milking area varied from 72 hectares to 162 hectares, while the total land area varied from 140 hectares to 405 hectares. Farmers Two, Three and Four were also involved other agricultural enterprises. All three had beef cattle (Farmer Three had bull beef), Farmers Two and Three had forestry and Farmer Four has sheep for fine wool and finishing lambs.

All farms are run primarily as family businesses. Farmer Two's farm is run as a partnership between two brothers. Three farmers employed labour other than family labour. Farmer One has two sharemilking jobs and employs a manager on one farm, and Farmers Three and Five employ a farm worker.

The number of cows milked varied between 190 and 358 cows, and total production varied between 42 000kg MF and 75 000kg MF.

The farming backgrounds and current farming situations were diverse in terms of ownership structure, farm and herd sizes, production levels and labour structure and other enterprises carried.

4.3.2 Case study farmers' farming goals

The farming goals were discussed during the case study interviews. Usually this was in terms of where the farmer and or farming family would like to be within five to ten years, and then longer term. Within the short period of the case study interviews, (1-2 hours) farming 'activities' rather than goals were established.

To move on from activities and establish goals often requires time to build trust with and give the farmer time to respond to constant asking of "why" (Brazendale and McRae, pers. com). The purpose of establishing farming goals in this study was to set the farming problems or constraints in the context of what they are trying to achieve on their farm. Thus, a knowledge of farming activities and what they are trying to achieve serves the purpose of this study. The future farming activities of the five case study farmers is shown below (Table 4.10).

Table 4.10 Case study farmers' farming activities.

Farmer 1	Farmer 2	Farmer 3	Farmer 4	Farmer 5
<ul style="list-style-type: none"> * get another sharemilking contract and put on another manager * lease land to rear more replacements and beef cattle * buy run off to winter cows on 	<ul style="list-style-type: none"> * employ a farm worker * keep the farm 'ticking over' * purchase or lease more land 	<ul style="list-style-type: none"> * employ a low order sharemilker * ongoing development, improve drainage and soil fertility 	<ul style="list-style-type: none"> * employ sharemilker * develop Red Poll cattle stud * improve shelter on milking block * manage farm with minimal chemical use 	<ul style="list-style-type: none"> * be paid well for being good at a job rather than working hard * still be milking cows and enjoying it when fifty * to try something new each year

Changing the labour structure of the farming business was seen as a priority for all farmers. Farmers Three and Four wanted to employ a sharemilker in the near future,

and Farmer Two would like to employ a farm worker to get more time off the farm. Farmer One would like to employ a farm manager, either in a third sharemilking position or on lease land rearing replacements and beef cattle. Farmer Five was keen to move into a supervisory role where he would be paid well for doing a good job rather than for working hard.

Purchasing land was discussed by three of the farmers. Farmer Two has a 40 bale rotary milking shed, which has the capacity to milk up to 600 cows, and he sees increasing the land area to carry more cows as an option for future development. Farmer One was keen to buy a run off to rear replacements. The land he currently leases as a run off is subject to flooding, and consequently an unreliable feed source. Farmer Five said it would be nice to have their own home and farm, but it was not a short term goal.

The other activities discussed by the case study farmers were quite diverse. Farmer One would like to get another sharemilking contract and employ a manager to run the farm. Farmer Two considered that he and his brother were quite content with the current farm set up, and there was little improvement to be done. They were planning to just 'keep the place ticking over'. Farmer Three would like to continue with development of the property, including improving soil fertility and drainage. Farmer Four has 10 pedigree Red Poll cows and would like to develop a stud and improve the shelter. She was also concerned with managing their farm with minimal chemical use.

One of Farmer Five's goals was to be paid well for being good at his job. To act on this goal he and his family are taking up a very large contract milking position at the end of this season. In this position he will be employed as a supervisor in a less labour intensive job.

4.3.3 Constraints to achieving farming goals.

The case study farmers were asked to outline constraints that were preventing them from achieving their goals or activities, at all or sooner. The constraints to achieving goals or activities as outlined by the case farmers are shown in Table 4.11 below.

Table 4.11 Constraints to case study farmers achieving their farming goals.

Farmer 1	Farmer 2	Farmer 3	Farmer 4	Farmer 5
<ul style="list-style-type: none"> * current high land price * difficult to get good lease land nearby * not enough control over management * high risk associated with maize and pasture silage 	<ul style="list-style-type: none"> * restrictively high land prices 	<ul style="list-style-type: none"> * farm too small to be worthwhile for a sharemilker * insufficient finance for faster development, improve drainage and soil fertility 	<ul style="list-style-type: none"> * bad experience with labour and reluctant to lose control of management * Johne's disease contamination * lack of labour * no adequate pasture pest and weed control without use of chemicals 	<ul style="list-style-type: none"> * small and slow milking shed * farm owner reluctant or unable to invest on farm * little research on low stocking rate low input dairy farming * not worthwhile purchasing land at current land prices

Farmers One, Two and Five considered that land price was to be too high relative to the return they could make on it, and therefore they would not invest in land. Both the sharemilking farmers considered that the lack of control over the management, particularly the timing and level of investment in the farm was a constraint to their farming businesses.

All the other constraints discussed were specific to each farmer's circumstances, and not shared by other farmers. Further, they did not involve technical matters except for the question of non-chemical control of ragwort and porina. Farmer One had difficulty finding suitable lease land near to where he is currently farming. He said that the more established families take up local lease land before he even hears about it. He is concerned that if he were to lease land further away, involving larger amounts of travelling time, the current sharemilking jobs would suffer. He also discussed his

reluctance to buy in pasture and maize silage because he feels there is a high risk, or no guarantee that it will increase production and pay for itself.

Farmer Three felt that his farm may be too small to be worthwhile getting a sharemilker on, especially considering that he did not want to sell his herd. He was also concerned that with over half his income going to wages and debt servicing he may not be able to afford to put on a sharemilker. He also said that the rate of development on his property was restricted by the amount of money available for drainage and fertiliser.

Farmer Four said that lack of labour was a constraint to the business. She has to organise her day around meeting the primary and secondary school buses. Last year she employed a farm worker who did not 'fit into their system', and because of this experience she is reluctant to employ labour. She was considering employing a sharemilker, but is reluctant to loose control of the management. Her son is currently sharemilking on another farm, and it is possible that he may sharemilk for them in the future.

Farmer four and her son are hoping to develop a Red Poll cattle stud. Last year they purchased some cows which have since been diagnosed with Johnes's disease. They realise that their property may be contaminated, and will have to be cleared before they can go ahead with developing the cattle stud. Porina and ragwort greatly reduced pasture production on their farm. They are reluctant to use chemicals on their property so the current chemical control methods are inappropriate for their situation. To control ragwort they graze lambs behind the cows from weaning to slaughter. Apart from providing some control on the ragwort it also allows them to finish the lambs, which is an important part of their farm income.

Farmer Five said that the major constraint to his farm business is the milking shed, which is a slow 16 cup shed. Milking time in spring is up to 5 hours cups on to cups off. This restricts the number of cows that can be carried on the property, and consequently it is run at a low stocking rate relative to other farms in the area. He also

commented that most applied agricultural research is carried out as a high stocking rate high input farming system, and because they cannot run a high stocking rate it is not relevant for their farming business.

4.3.4 Research opportunities for Massey University Dairy Farms.

Case study farmers were asked to suggest anything that they would like to see researched on the Massey University Dairy Farms, or at any other research station. Table 4.12 below shows the suggested areas for research.

Table 4.12 Research opportunities for Massey University, as suggested by case study farmers.

Farmer 1	Farmer 2	Farmer 3	Farmer 4	Farmer 5
<ul style="list-style-type: none"> * sustainable Nitrogen use * animal ethics issues; tail docking, use of induction and covering cows in winter 	<ul style="list-style-type: none"> * level of Nitrogen application before clovers are harmed * use of split application of fertilisers 	<ul style="list-style-type: none"> * sustainable Nitrogen use * affect of grass grown with high nitrogen fertiliser rates on cows and milk quality * grain feeding, wastage, production response and if it is economical 	<ul style="list-style-type: none"> * control of Ragwort and Porina without using chemicals. * information on when Porina invasion is likely so they can plan around it * management of Johne's disease, decontamination of property 	<ul style="list-style-type: none"> * management to make the most money out of a low stocking rate low input farming system * do CIDRs decrease empty rates? * management of dairy cows in top condition

Three farmers mentioned the sustainable use of nitrogen fertiliser as a research opportunity. Two farmers were concerned with the environmental impact, and the third was concerned with the effect on clover growth. One farmer had observed effects on his cows, and was concerned with the effect that nitrogen fertiliser may have on milk quality. Farmer One was concerned that under GATT regulations animal ethics issues would become important, particularly docking cows tails, not covering them in winter, and use of induction.

Farmer One commented that many experiments on research stations were about things he would have never thought of doing. He also said that often there is a fine line between success and disaster when adopting research, for example leaving higher residues behind cows to get more summer grazing. In adopting ideas he is always trying to do the same job as the research stations, but to do it cheaper.

Farmer Two commented that fertiliser companies suggest that split applications of fertiliser should be used. He was interested to know how much more grass you would grow, and if this justifies the increased spreading costs, and the extra worry of trying to get the fertilise trucks onto the farm twice per year.

Farmer Three said he and his farm worker would be interested in information on grain feeding with regard to: wastage, best way of feeding grain, responses to grain feeding, economics of grain feeding.

Farmer Four said that ragwort control without using chemicals was of particular interest. She was aware of a biological control agent, but wanted more information on it. More information on when they are more likely to get a porina invasion would help planning. She was also interested to obtain information on Johne's disease, how long will it be before their farm is cleared, and cross contamination to the rest of the herd.

Farmer Five said that much of the research is done with high stocking rate, high input systems, but many farmers, particularly share milkers and contract milkers are constrained by the number of cows they can milk and the amount of inputs they can afford. He said he is not interested in knowing how to run a very high input high utilisation high stocking rate farm. He is interested in how, at 2.5-2.6 cows per hectares he can make the most money, and he has found next to no information on this. He would like to see some research on achieving maximum per cow production on grass at 2.5 cows per hectare.

Farmer Five also said that because of experimental design "scientists decide 'we are going to do exactly this for exactly this period of time' and they can't get half way

through and say 'we'll modify this and we'll make more money', because it stuffs up their experimental design." This means that many experiments results are generated for things that farmers would never have done. For example, the deferred grazing trials at Taranaki Agricultural Research Station, and long and short rotation trials at Ruakura. In both these trials the cows on the deferred grazing and short rotation produced more milk fat than the traditional silage system, up to the end of December. If the scientists had managed the experiments there should have been no difference in production between the traditional silage farmlets and the deferrer grazing and short rotation farmlets up until the end of December. This means that too much pasture was shut up for silage resulting in under feeding cows in the silage 'control' farmlets, and thus comparing deferred grazing and short rotation to a 'control' that farmers do not use.

Ruakura has been using CIDRs in their herd for about 10 years. Farmer Five would be interested to compare their empty rate over a ten years period prior to and post CIDR use. He suggested that the Ruakura scientists would have taken the bull out earlier and induced a few more cows prior to CIDR use but that there would be no difference in empty rate. He thought that CIDR use may be an example of farmers 'just running around spending money to spend more money'.

Farmer Five said that although cows in top condition produce more milk in early lactation, they die much more easily. He said "their system is under a lot more pressure, if they go down with milk fever or something and you don't get the job right they will go down and die quickly". He would like more information on the management of cows in top condition.

4.3.5 Conclusions from farmer interviews

The farming backgrounds and current farming situations were diverse in terms of ownership structure, farm and herd sizes, production levels and labour structure and other enterprises carried.

Farmer goals and the activities to achieve these goals were also diverse. The goals shared by more than one farmer were to purchase more land, and to change the labour structure of the farms. Some of the goals discussed were quite specifically referring to a particular farming situation such as to establish more shelter, while other goals were less specific, such as to be paid well for being good at the job rather than for working hard. In this latter case however it will take a change in circumstances of the farm business for this goal to be achieved.

The constraints to achieving goals were highly specific to the farmer circumstances. For example two farmers were considering employing a sharemilker; one farmer felt that the size of his farm may make it difficult to get a sharemilker, while the other farmer had a bad experience with labour last year, and is reluctant to lose control of management.

Few of the constraints were related to technical problems; they were more commonly related to financial constraints, risk and control of management decisions, or labour. Where the constraints were concerned with technical problems, the current solutions were not appropriate for that farming situation. For example, the chemical control of Ragwort and Porina was not appropriate for the farm where they were a problem, because the farmer was reluctant to use chemicals. One exception may be the management of Johne's disease, for which there may be an appropriate technology of which the farmer was not aware.

4.4 Conclusions from case study DLG and farmer interviews

The purpose of the DLG case study interviews was to establish their view of the range of technical and managerial problems currently faced by Manawatu dairy farmers. The purpose of the case study dairy farmer interviews was to find out what technical or managerial constraints they are currently facing, within the context of their farming situation and their farming goals and activities.

The case study DLG interviews resulted in a large list of dairy farming issues, most of which were technical issues. The case study farmer interviews came up with few technical problems, and most of the problems discussed were related to the labour structure or land ownership. Of the technical problems discussed by the farmers only one, the management of Johne's disease, may currently have a technical solution.

What this case study research has shown is that farmers discuss or think about problems in the overall context, structure and direction of their business, while the DLG mainly discussed technical problems in isolation of any context of why it may be a problem on particular farms. This indicates that in consulting farmers about their research needs, it may not be useful to ask about technical or managerial problems without first establishing the context of their current situation and what they are trying to achieve on their farm.

There is some evidence from these case farmers that when asked to consider what research they would like to see coming out of Massey University dairy farms, they will respond with what they think *can* be done there, rather than with what they want or need to be assisted with. Against this background, and given the importance and diversity of particular farming circumstances, there seems little point in further seeking farmer research needs without also seeking information that provides the context for their needs.

It was considered that the time and depth of questioning required to gain an understanding of the farmers' situation and goals within which constraints and research requirements could be placed, was beyond what could be achieved using a formal survey as discussed in Section 3.8.

CHAPTER FIVE

RESULTS FROM FARMER AND DLG QUESTIONNAIRES

5.1 Introduction

A formal survey of the DLG and Manawatu dairy farmers was conducted to investigate how well the DLG opinion represents the dairy farming population. This chapter contains the results of the questionnaire of Manawatu dairy farmers and the DLG. Farmers were asked to indicate if a range of problems had affected them, and how seriously their business had been effected, and what they considered to be the cause. The DLG members were asked to indicate the proportion of farmers affected by each problem, how seriously farmers would indicate the problem affects their business and what farmers would consider had caused the problem.

5.2 Farmer and DLG sample

The list of Manawatu dairy farmers as provided by Tui Milk Products was divided into five groups; four soil groups, containing predominantly seasonal supply farmers, and a fifth group containing Tui winter milk contract farmers. Four people were involved with conducting the farmer surveys, each endeavouring to contact 25 farmers.

One person was only able to call five farmers, so the other interviewers continued to call farmers on their lists to make up numbers. This has lead to farmers on the Manawatu Terraces soil group being under represented and farmers with winter milk contracts being over represented, (Table 5.01 below). This also meant that only 90 farmers were called rather than 100 originally planned on, which is 14% of farmers across all soil types surveyed. However the laws of chance determine that a random sample will rarely represent a total population sample perfectly, (Hoinville and Jowell,

(1982). People who indicated they were no longer dairy farming were removed from the sample, as described by Hoinville and Jowell, (1982).

Table 5.01: Proportion of farmers on each soil type and winter milk contract farmers contacted during the survey.

Tui Group	number of farmers total	number of farmers called	% farmers called
Manawatu Sands ¹	150	24	16%
Manawatu Silts ¹	142	21	15%
Manawatu Clays ¹	195	17	9%
Manawatu Terraces ¹	59	8	14%
winter milk contract ²	78	20	26%
totals	624	90	14%

¹ Contains of predominantly seasonal supply farmers from each soil group.

² Contains winter milk farmers on all above soil groups.

Of the 19 DLG members, only 17 were contacted. The two members who were unable to be contacted were both farmers, who now appear to be less involved in the DLG; neither having attended the last meeting held on 19 January, 1995.

Results are presented in sections on each question area asked in the questionnaire. These question areas covered: silage; feeding cows adequately during winter; winter milk contracts; lameness; sharemilking; bloat; drainage; mastitis and fertility. Farmers were also questioned about their knowledge of Massey University dairy farms, and the importance of the services of Discussion Groups, LIC services and other consultants in the management of their business.

5.2 Silage

Over the last year Massey academics, Dairy Research Corporation and Livestock Improvement Corporation Consultancy Officers have been involved in holding a number of silage seminars for dairy farmers, to promote silage and silage quality.

The survey questions on silage were designed to determine how many farmers actually make silage, and of those making silage, how many make it to feed to lactating dairy cattle, indicating the proportion of farmers for whom silage quality may be an issue. Farmers who make silage to feed lactating dairy cows were asked if they had any poor quality silage in the last five years, and if they did have poor quality silage, how seriously it affected their farming business. Farmers who had poor quality silage in the last five years were also asked to indicate the cause of poor quality silage.

The DLG were asked a similar set of questions designed to get the DLG to indicate what they believed the proportion of dairy farmers making silage, the proportion making silage to feed to lactating dairy cows, and the proportion of those farmers with poor quality silage. They were also asked to indicate how seriously farmers consider the effect of poor quality silage on their farming business.

5.2.1 Proportion of farmers making silage

Of the farmers surveyed, 69% (62 farmers) make silage. The results for the DLG are shown in Table 5.02 below. Of the DLG surveyed 18% (3 members) did not know what proportion of dairy farmers in the Manawatu make silage, and 53% (9 members) indicated within the range of 60 to 90% of farmers. In general the proportion of farmers making silage was known to about half the group.

Table 5.02 Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu making silage.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
3 18%			1 6%			3 18%	1 6%	4 24%	3 18%	1 6%	1 6%

5.2.2 Proportion of farmers making silage to feed to lactating dairy cows

Of the farmers surveyed who make silage, 97% (60 farmers) make silage to feed to lactating dairy cows. The results for the DLG are shown in Table 5.03 below. One DLG member (6%) did not know what proportion of the farmers making silage, make it to feed to lactating cows. The DLG results appear to be bi-modal. 35% indicating between 30-50% of farmers, and 41% of the DLG indicating between 90-100%.

Table 5.03 Number and percentage of DLG members indicating what they believed to be the percentage of farmers in the Manawatu who make silage to feed to lactating dairy cows.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1 6%				3 18%	1 6%	2 12%	1 6%	1 6%	1 6%	4 24%	3 18%

5.2.3 Proportion of farmers with poor quality silage

Of the farmers surveyed who make silage to feed to lactating dairy cattle, 34% (21 farmers) said they had poor quality silage in the last five years. The results for the DLG (Table 5.04 below) show only one member of the DLG indicated 30-40%, two members (12%) did not know, while 82% (13 members) over estimated the number of farmers who would consider they had poor quality silage.

Table 5.04: Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers who would consider they had poor quality silage in the last five years.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2 12%				1 6%		3 18%		1 6%	2 12%	4 24%	4 24%

5.2.4 Effect of poor quality silage on farming businesses

The effect of poor quality silage on farming businesses, as indicated by the DLG and farmers making silage to feed to lactating cows with poor quality silage in the last five years, is shown in Table 5.05 below. In general the DLG thought farmers would rate the seriousness of poor quality higher than the surveyed farmers rated it, with 33% (7 farmers) indicating poor quality silage did not affect their business at all, and only 10% (2 farmers) indicating the effect was 'quite a lot' or 'very great'.

Table 5.05 Seriousness of effect of poor quality silage on farming businesses.

	not at all	slightly	somewhat	quite a lot	very great
DLG members (n=17)	0 0%	1 6%	6 35%	7 41%	3 18%
farmers (n=21)	7 33%	9 43%	3 14%	1 5%	1 5%

5.2.5 Cause of poor quality silage

The causes of poor quality silage, as suggested by farmers with poor quality silage and DLG members is shown in Table 5.06 below. Pasture quality and / or maturity at harvest was listed as the major cause of poor quality silage by both the DLG (76%) and farmers (43%).

Table 5.06: Causes of poor quality silage, as suggested by DLG member and farmers with poor quality silage.

	DLG (n=17)		farmers (n=21)	
	number	% ²	number	% ¹
pasture too mature and/or poor quality at harvest	13	76%	9	43%
poor weather or rain at time of harvest	2	12%	4	19%
poor fermentation, entrance of air and water	2	12%	4	19%
unknown cause (farmers don't know)	2	12%	3	14%
silage stack not adequately compacted or covered	2	12%	3	14%
pasture not adequately wilted	0	0%	2	10%
pasture moisture level too low at harvest	0	0%	1	5%
pasture too immature at harvest	0	0%	1	5%
high clover content	0	0%	1	5%
low protein or energy content of pasture	0	0%	1	5%
contractors did not come on time	0	0%	1	5%
farmers do not know it is poor quality silage	2	12%	0	0%
not aware of how to make high quality silage	1	6%	0	0%
don't realise the benefits of high quality silage	1	6%	0	0%
anything except themselves	1	6%	0	0%

¹ Number as a percentage of farmers who indicated that they have had poor quality silage in the last five years (percentages do not sum to 100% as some farmers suggested more than one cause).

² Percentages do not sum to 100% as some DLG members suggested more than one cause.

5.2.6 Conclusions from silage questions

Of the farmers surveyed, 69% make silage; 97% of these farmers make silage to feed to lactating dairy cows; and 34% of these farmers thought they had poor quality silage in the last five years. The majority of these farmers (76%) indicated that poor quality silage affects their businesses 'not at all' or 'slightly'. In general the DLG over estimated the number of farmers who would consider they had poor quality silage, and farmers' perception of the seriousness that poor quality silage has on farm businesses.

The DLG and farmers with poor quality silage agreed that the main cause of poor quality silage was that the pasture was too mature or of poor quality at the time of harvesting.

5.3 Adequately feeding cows through winter

Many of the farms in the Manawatu are on heavy clay soils which are inherently poorly drained, and are likely to cause winter feed management problems. The survey questions on winter feeding were designed to determine how many farmers had problems adequately feeding their cows during winter over the last five years, and how seriously inadequate feeding during winter affected their farming business. Farmers were also asked to indicate the cause of inadequate feeding in winter.

The DLG were asked a similar set of questions designed to indicate what they believe to be the proportion of dairy farmers who would consider that they had problems adequately feeding their cows during winter, how seriously they would consider it affected their farming business, and what these farmers would consider was the cause.

5.3.1 Proportion of farmers with trouble adequately feeding cows in winter.

Of the farmers surveyed 33%, (30 farmers) indicated that they had problems adequately feeding their cows during winter. The results for the DLG are shown in Table 5.07 below. Of the DLG members surveyed, 12% (2 members) did not know what proportion, and 76% of the DLG thought that 50% or more of farmers would consider they had problems adequately feeding their cows during winter.

Table 5.07 Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu who have had problems adequately feeding cows in winter in the last five years.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2 12%	0%	0%	0%	1 6%	2 12%	2 12%	0%	2 12%	3 18%	2 12%	3 18%

5.3.2 Effect of inadequate feeding during winter on farm business.

The seriousness of the effect of inadequate feeding during winter on farm businesses, as indicated by DLG members and farmers who had problems adequately feeding their cows during winter, is shown in Table 5.08 below. In general the DLG thought farmers would consider that inadequate feeding during winter seriously affected their business. There was a fairly even proportion of farmers in each category from 'slightly' to 'very great' indicated that inadequate feeding during winter may affect farmers differently depending upon their circumstances.

Table 5.08 Seriousness of effect of inadequate feeding during winter on farming businesses.

	not at all	slightly	somewhat	quite a lot	very great
DLG (n=17)	0 0%	2 12%	5 29%	9 53%	1 6%
farmers (n=30)	2 7%	10 33%	6 20%	7 23%	5 17%

5.3.3 Cause of inadequate feeding during winter

The causes of inadequate feeding during winter, as suggested by DLG members and farmers who indicated they had problems adequately feeding their cows during winter, is shown in Table 5.09 below. Half of the farmers surveyed who had problems adequately feeding cows during winter indicated that wetness, pugging and poor pasture utilisation during winter were the major causes. Inadequate supplements was the second most frequently mentioned cause, suggested by 23% (7 farmers). The most frequent suggestion by the DLG was lower than expected pasture growth rate, suggested by 65% (11 members), however no farmers suggested this as a cause. The DLG also mentioned grazing off. A range of causes suggested by the DLG were not mentioned by the farmers, and six causes were suggested by farmers that the DLG did not mention.

Table 5.09: Causes of inadequate feeding during winter, as suggested by farmers with poor quality silage and DLG members.

	DLG (n=17)		farmers (n=30)	
	number	% ²	number	% ¹
wetness, pugging and poor pasture utilisation	5	29%	15	50%
inadequate supplements	8	47%	7	23%
drought in previous autumn	2	12%	5	16%
winter stocking rate too high	0	0%	4	13%
wintering all stock 'at home'	0	0%	2	6%
low pasture cover going into winter	4	24%	2	6%
old pastures with low producing pasture species	0	0%	1	3%
frosts	0	0%	1	3%
adjusting to change from winter to seasonal milk	0	0%	1	3%
increased quota, required higher production level	0	0%	1	3%
porina damage	0	0%	1	3%
advised maintenance levels too low	0	0%	1	3%
lower than expected pasture growth rate	11	65%	0	0%
grazing off not available or inadequate	4	24%	0	0%
controlled intake, building pasture cover for calving	3	18%	0	0%
dried off too late	1	6%	0	0%
don't understand importance of CS at calving	1	6%	0	0%
lifestyle	1	6%	0	0%
poor planning	1	6%	0	0%

¹ Number as a percentage of farmers who indicated that they had problems adequately feeding cows during winter, in the last five years (percentages do not sum to 100% as some farmers suggested more than one cause).

² Percentages do not sum to 100% as some DLG members suggested more than one cause.

5.3.4 Conclusions from winter feeding questions

Of the farmers surveyed, 33% indicated they had problems adequately feeding their cows during winter. Most of the DLG thought that 50% or more of Manawatu farmers would consider they had problems adequately feeding cows during winter. The farmers who had problems adequately feeding their cows during winter gave a wide range of degree of seriousness it had on their farm business. The causes of inadequate feeding during winter most frequently mentioned by farmers were wetness, pugging and poor pasture utilisation, and the cause most frequently mentioned by the DLG was lower than expected pasture growth rate. No farmers mentioned lower than expected pasture growth rate as a cause of inadequate feeding during winter.

5.4 Winter milk contract farmers

One of Massey University's two dairy farms (No. 1) is a winter milk farm. The No 1 dairy farm currently has an all autumn herd, however there is a proposal to change the farm to a three farmlet demonstration, (all autumn calving, all spring calving, and 50% autumn and 50% spring calving). In view of this it was felt that some indication of the proportion of winter milk contract farmers who calve 50% or more of their herd in autumn would be useful information.

5.4.1 Proportion of farmers in the Manawatu with a winter milk contract.

Of the farmers surveyed, 28%, (25 farmers) have a winter milk contract. The results from the DLG are shown below in Table 5.10. Of the DLG members surveyed, 35% (6 members) did not know what proportion of farmers have a winter milk contract. The rest of the DLG were within the range suggested by industry statistics.

Table 5.01 above suggests that the proportion of Manawatu dairy farmers with a winter milker contract is 12.5% (78 / 624). Due to sampling errors, a disproportionately large proportion of winter milk farmers was surveyed. However only 20 farmers listed by Tui as winter milk farmers were telephoned, the remaining five farmers considered they had a winter milk contract were listed by TUI as seasonal supply farmers. Farmers were not asked to define their contract so it is not possible to establish why there were more than 20 farmers indicating they have a winter milk contract.

Table 5.10: Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu who have a winter milk contract.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
6 35%	0%	6 35%	4 24%	1 6%	0%	0%	0%	0%	0%	0%	0%

5.4.2 Proportion of farmers calving 50% or more of herd in autumn.

Of the dairy farmers surveyed who indicated they had a winter milk contract 28%, (7 farmers) calve 50% or more of their herd in autumn. The results for the DLG, (Table 5.11 below) were spread between 10% and 70% of farmers calving 50% or more of their herd in autumn, with five members of the DLG indicating that they did not know.

Table 5.11: Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu with a winter milk contract, who calve 50% or more of their herd in autumn.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
5		2	3		4	1		2			
29%	0%	12%	18%	0%	24%	6%	0%	12%	0%	0%	0%

5.4.3 Conclusions from winter milk contract questions

A disproportionately large number of winter milk farmers was contacted, and farmers not recorded as winter milk contract farmers indicated that they have a winter milk contract. More than half the DLG were aware of the proportion of Manawatu dairy farmers with a winter milk contract. Of the winter milk farmers surveyed, only 28% calved 50% or more of their herd in the autumn. The DLG were spread in response to this question.

5.5 Lameness

Lameness is particularly a problem on wet soil types. Since much of the Manawatu has poorly drained clay soils, the incidence and seriousness of the effect lameness on farm businesses may be expected to be high. Lameness was also one of the animal health problems suggested during the case study DLG interviews. Consequently a set of questions about lameness was included in the survey. Farmers were asked to indicate if they had cases of lameness in dairy cows in the last five years. The farmers

with cases of lameness were also asked to indicate how seriously lameness had affected their farm business, and what they thought was the major cause of lameness.

The DLG were asked to indicate what proportion of Manawatu dairy farmers would have had cases of lameness in dairy cows in the last five years, and to indicate on average how seriously these farmers would consider the effect of lameness on their farm business.

5.5.1 Proportion of farmers with cases of lameness in dairy cows.

Of the farmers surveyed 84% (76 farmers) have had cases of lameness in dairy cows in the last five years. The results for the DLG are shown in Table 5.12 below. The majority of the DLG (14 members) indicated between 80-100% of farmers have had cases of lameness in dairy cows in the last five years.

Table 5.12: Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu with cases of lameness in dairy cows.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1						1	1		4	1	9
6%	0%	0%	0%	0%	0%	6%	6%	0%	24%	6%	53%

5.5.2 Effect of lameness on farm businesses.

The seriousness of the effect of lameness on farming businesses, as indicated by farmers with cases of lameness and DLG members is shown in table 5.13 below. The results for both farmers and DLG members were spread across the range of levels of seriousness, with the highest frequency of farmers and DLG members indicating that lameness affected farm businesses 'slightly'.

Table 5.13 Seriousness of effect of lameness on farming businesses.

	not at all	slightly	somewhat	quite a lot	very great
DLG members (n=17)	1 6%	7 41%	4 24%	3 18%	2 12%
farmers (n=76)	28 37%	29 38%	8 11%	7 9%	4 5%

5.5.3 Cause of lameness.

The cause of lameness as suggested by farmers is shown in Table 5.14 below. No results were collected for DLG's perceptions of what farmers would suggest was the cause of lameness (due to an oversight in the survey design). Wetness causing soft feet was the most frequent cause, suggested by 34% of farmers with lameness. Stone bruising and cracks, and poor race condition were also frequently mentioned. Eight percent of farmers did not know what had caused lameness on their property.

Table 5.14 Cause of lameness as suggested by farmers with cases of lame cows.

	number (n=17)	percentage (n=76) ¹
wetness causing soft feet	25	34%
stone bruising and sand cracks	24	32%
poor race condition	16	22%
unknown	6	8%
stones on concrete yard or race surface	6	8%
long distances walked to and from shed	5	7%
purchased lame cows	2	3%
genetic	1	1%
scold caused by dampness	1	1%
calving trouble	1	1%
feed stress	1	1%
driving cows along race	1	1%
new conversion, races not settled	1	1%
cows fault, poor footing on tracks	1	1%

¹ refers to percentage of farmers with cases of lameness in cows (does not sum to 100% as some farmers mentioned more than one cause).

5.5.4 Conclusions from lameness questions.

Of the farmers surveyed, 84% had cases of lameness, the majority of DLG indicated between 80-100% of farmers have had cases of lameness. Both farmers and DLG members suggested that lameness affected farming businesses 'slightly'. Farmers considered that the main cause of lameness was wetness resulting in soft feet.

5.6 Sharemilking.

It was considered by the researcher that running an agricultural business under a sharemilking contract may place constraints on the farmer which are not well known or understood. Two of the case study farmers also discussed constraints that being a sharemilker had on their farming business. For this reason farmers were asked if they were sharemilkers, and if sharemilking placed constraints on their farming business. If it did, they were asked to indicate how seriously their farming business was affected, and what constraints were placed on their business.

The DLG members were asked a similar set of questions: what they believed to be the proportion of farmers sharemilking; the proportion of sharemilkers who would consider that sharemilking places constraints on their farming business; how seriously these farmers would rate the effect of these constraints; and what constraints these farmers would indicate sharemilking places on their business.

5.6.1 Proportion of sharemilkers in the Manawatu.

Of the farmers surveyed 19% (17 farmers) were sharemilkers. The results for the DLG are shown in Table 5.15 below. Forty one percent (7 members) of the DLG did not know what proportion, while the rest of the DLG indicated between 20-40% of Manawatu dairy farmers are sharemilkers. Industry statistics indicate that approximately 33% of dairy farmers in the Manawatu are sharemilkers. The sampling

procedure used was biased against sharemilkers as discussed in Chapter Three, and this resulted in a less than representative sample of sharemilkers being contacted.

Table 5.15: Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu who are sharemilkers.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
7 41%	0%	0%	2 12%	5 29%	3 18%	0%	0%	0%	0%	0%	0%

5.6.2 Proportion of sharemilking businesses constrained by not owning farm.

Of the sharemilkers surveyed, 41% (7 farmers) indicated that not owning the farm places constraints on their farm business. The results for the DLG are shown in Table 5.16 below. The responses from the DLG were spread across a wide range from 20% to 100%. Only one member of the DLG indicated that they did not know what proportion of farmers were constrained by sharemilking.

Table 5.16: Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu constrained by not owning the farm.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1 6%	0%	0%	3 18%	1 6%	0%	2 12%	1 6%	0%	5 29%	2 12%	2 12%

5.6.3 Seriousness of constraints from not owning the farm on farm businesses.

The effect of constraints through not owning the farm business, as indicated by the sharemilkers is shown in Table 5.17 below. The DLG were not asked to indicate the seriousness of the effect of constraints from not owning the farm business. Sharemilkers were spread in response to this question. Only one farmer indicated that not owning the farm had a 'very great' effect on the farming business, three farmers indicated that it affected their business 'quite a lot' and three indicated it affected their business 'slightly'.

Table 5.17: Number (n=17) and percentage of farmers in the Manawatu indicating what they believed to be the how seriously not owning the farm constrains farming business.

	not at all	slightly	somewhat	quite a lot	very great
farmers (n=7)	0 0%	3 43%	0 0%	3 43%	1 14%

5.6.4 Constraints that not owning the farm places on sharemilking businesses.

The constraints that not owning the farm places on sharemilkers, as suggested by sharemilkers with constraints, and DLG members, is shown in Table 5.18 below. The most frequently mentioned constraint mentioned by both DLG members and sharefarmers was that critical management decisions are made too late. Two constraints were mentioned by farmers that were not mentioned by the DLG; difficult to get satisfaction as the owner is always critical, and lack of interest from farm owner. The DLG mentioned five constraints that were not mentioned by the DLG. These include: inadequate maintenance (shed, races, water, fences): decisions on purchase of supplementary feed, relationship with farm owner, lack of capital improvement, and inflexible herd management.

Table 5.18: Constraints to sharemilking businesses from not owning the farm, as suggested by sharemilkers and DLG members.

	DLG (n=17)		farmers (n=7)	
	number	% ²	number	% ¹
critical management decisions made too late	6	35%	4	57%
not able to try new ideas	2	12%	2	29%
owners financially constrained or won't invest	3	18%	2	29%
inadequate fertiliser use	1	6%	2	29%
on contract; won't gain full benefit of development	1	6%	2	29%
difficult to get satisfaction as owner always critical	0	0%	1	14%
lack of interest from farm owner	0	0%	1	14%
inadequate maintenance (shed, races, water, fences)	5	29%	0	0%
decisions on purchase of supplementary feed	4	24%	0	0%
relationship with farm owner	2	12%	0	0%
lack of capital improvement	2	12%	0	0%
inflexible herd management	3	18%	0	0%

¹ Number as a percentage of sharemilkers who indicated that their farming business has been constrained by not owning the farm (percentages do not add sum to 100% as some farmers suggested more than one cause).

² Percentages do not sum to 100% as some DLG members suggested more than one cause.

5.6.5 Conclusions to sharemilking questions.

Of the farmers surveyed, only 19% were sharemilkers, which is less than the 33% as indicated by industry statistics. The DLG were close to the industry statistics, indicating between 20-40%. Of the sharefarmers surveyed, 41% indicated that not owning the farm places constraints on the farm business, while the DLG were spread across the range in their responses.

There was a wide range in response about the seriousness of the effect of not owning the farm indicated by both the sharemilkers and the DLG. There was a wide range in responses from both the DLG and sharemilkers to the seriousness that constraints from not owning the farm places on sharemilking businesses. The most common constraint, mentioned by both the DLG and the sharefarmers was that critical management decisions are made too late to be effective.

5.7. Bloat

The following questions on bloat were asked to determine what farmers think about a technical animal health problem, which has to a large extent been solved through the development of drench, pasture spray and trough treatment, and slow release capsules. It was considered that farmers may be concerned about the amount of time and money they spend on bloat prevention. Farmers were asked to indicate if they take preventative action against bloat, and if they did to indicate how much time money they spend on bloat prevention and how concerned they were about it. It proved not possible to collect consistent results for the amount of time and the amount of money spent on bloat prevention thus they are not presented here.

The DLG were asked a similar set of questions about what they believed to be the proportion of farmers taking preventative action against bloat, the amount of time and money spent on it and how much of a concern they believed farmers would consider it to be. The results about the amount of time and money were also not presented here.

5.7.1 Proportion of Manawatu dairy farmers taking preventative action against bloat.

Of the farmers surveyed, 81% (73 farmers) take preventative action against bloat. The results for the DLG are shown in Table 5.19 below. The majority of the DLG (54%) thought that 80-100% of farmers take preventative action against bloat.

Table 5.19: Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu taking preventative action against bloat.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1 6%	0%	0%	0%	0%	2 12%	0%	1 6%	4 24%	4 24%	3 18%	2 12%

5.7.2 Farmer concern about the amount of time spent on bloat prevention.

The results for farmers who take preventative action against bloat, and for DLG members, on farmers' concern about the amount of time they spend preventing bloat, is shown in Table 5.20 below. The majority of farmers (77%) were 'not at all' concerned about the amount of time they spend on bloat prevention, whereas the majority of the DLG (71%) thought farmers would be 'slightly' concerned. The remainder of the farmers were spread across the range of responses with 10% of farmers quite a lot concerned, and 3% considering it a 'very great' concern.

Table 5.20 Farmers' concern about the amount of time spent on bloat prevention, as indicated by DLG members and farmers who take preventative action against bloat.

	don't know	not at all	slightly	somewhat	quite a lot	very great
DLG members (n=17)	1 6%	1 6%	12 71%	3 18%	0 0%	0 0%
farmers (n=73)	0 0%	56 77%	5 7%	2 3%	7 10%	2 3%

Six of the farmers who take preventative action against bloat do not use chemicals, but instead use a closely monitored grazing management strategy. These farmers were not asked to indicate their concern about the amount of time or money spent on bloat prevention.

5.7.3 Farmer concern about the amount of money spent on bloat prevention.

The results for farmers who take preventative action against bloat, and the DLG members, on farmers' concern about the amount of money they spend preventing bloat, are shown in Table 5.21 below. The majority of farmers (60%) were 'not at all' concerned about the amount of money they spend on bloat prevention, while the majority of the DLG (59%) thought that farmers would be 'slightly' concerned about the amount of money they spend on bloat prevention. Four percent of the farmers who take preventative action against bloat considered that the amount of money spent on bloat prevention was a 'very great' concern.

Table 5.21 Farmers' concern about the amount of money spent on bloat prevention, as indicated by DLG members and farmers who take preventative action against bloat.

	don't know	not at all	slightly	somewhat	quite a lot	very great
DLG members (n=17)	1 6%	0 0%	10 59%	3 18%	3 18%	0 0%
farmers (n=67)	0 0%	44 60%	11 15%	4 5%	5 7%	3 4%

5.7.4 Conclusions from bloat questions

Of the farmers surveyed 81% take preventative action against bloat. Of these farmers 77% said they were 'not at all' concerned about the amount of money they spend on bloat prevention, and 60% said they were 'not at all' concerned about the amount of money they spend on bloat prevention. The majority of the DLG indicated that farmers would be 'slightly' concerned about both the amount of time and money that they spend on bloat prevention. No DLG members thought that either the time or amount of money spent on bloat prevention was of 'very great' concern to farmers, however 4% of farmers indicated that the amount of money, and 3% indicated that the amount of time spent on bloat prevention was of 'very great' concern.

5.8 Drainage

Many of the dairy farmers in the Manawatu are on heavy clay soils which are inherently poorly drained. Poor drainage is therefore likely to affect a number of farming businesses. Farmers were asked if they had been effected by poor drainage in the last five years, and if they had been affected, how seriously did it affect their farming business. Affected farmers were also asked to indicated if they had done anything to improve drainage in the last five years, and if not what had prevented them from doing so.

The DLG were asked a similar set of questions relating to what they believed to be the proportion of farmers in the Manawatu would consider that their farm had been affected by poor drainage in the last five years. They were asked to indicate how these farmers would rate the effect that poor drainage had on their farming business; how many affected farmers would have taken measures to improved drainage; and what farmers would consider had prevented them from improving drainage.

5.8.1 Proportion of Manawatu dairy farms affected by poor drainage.

Of the farmers surveyed 51% (46 farmers) indicated that they had been affected by poor drainage. The results for the DLG are shown in Table 5.22 below. Seventy seven percent of the DLG overestimated the number of dairy farmers that had been affected by poor drainage in the last five years, with a further 18 % underestimating, and 6% indicating they did not know what proportion would have been effected.

Table 5.22: Number (n=17) and percentage of DLG members indicating what they believed to be the percentage of farmers in the Manawatu who been affected by poor drainage in the last five years.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1 6%	0%	0%	2 12%	0%	1 6%	0%	5 29%	4 24%	2 12%	0%	2 12%

5.8.2 Seriousness of effect of poor drainage on farm business.

The seriousness of the effect of poor drainage on farm businesses, as indicated by farmers affected by poor drainage and DLG members is shown in Table 5.23 below. All the DLG indicated that poor drainage either effected farm businesses 'quite a lot' (65%) or 'very much' (35%). However there was a fairly even proportion of farmers in each category of seriousness, except for the 'not at all' category in which there were only 2 farmers.

Table 5.23 Seriousness of effect of poor drainage on farming businesses.

	not at all	slightly	somewhat	quite a lot	very great
DLG members	0 0%	0 0%	0 0%	11 65%	6 35%
farmers	2 4%	15 33%	10 22%	11 24%	8 17%

5.8.3 Proportion of drainage effected farmers who have improved drainage.

Of the farmers affected by poor drainage 83% (38 farmers) had taken measures to improve drainage in the last five years. The results for the DLG are shown in Table 5.24 below. The DLG were spread across the range of responses to this question, although none indicated 100% or 0-10%.

Table 5.24: Number (n=17) and percentage of DLG members indicating what they believed to be the percentage of affected farmers in the Manawatu who have taken measures to improve drainage in the last five years.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
4 24%	0 0%	0 0%	2 12%	1 6%	1 6%	3 18%	1 6%	1 6%	2 12%	2 12%	0 0%

5.8.4 Main reason why farmers have not improved drainage.

The main reasons preventing affected farmers from improving drainage, as suggested by farmers and DLG members are shown in Table 5.25 below. All farmers affected by poor drainage, who had not taken measures to improve drainage in the last five years, indicated that financial constraints had prevented them from improving drainage. The second most frequently mentioned reason was that drainage was that drainage was unlikely to work on their soil type (57% of affected farmers). Financial constraints was also the reason most frequently mentioned by the DLG (82% of the DLG). The next most frequently mentioned reasons were that drainage is unlikely to work on their soil type (24% of DLG) and farmers don't appreciate the benefits of drainage (24% of DLG). Other reasons suggested by the DLG for not improving drainage, that were not suggested by the farmers include: tradition, lack of motivation, sufficient area drained

already, and do not want to invest in the farm. The latter reason is similar to that given by two farmers who said that because they were leasing or sharemilking on limited tenure they did not want to spend money on drainage. One of the DLG indicated that they did not know why farmers effected by poor drainage had not improved drainage.

Table 5.25: Reasons for not improving drainage over the last five years, as suggested by farmers with poor drainage and DLG members.

	DLG (n=17)		farmers (n=7)	
	number	% ²	number	% ¹
financial constraints	14	82%	7	100%
not likely that drainage will work on their soil type	4	24%	4	57%
not farm owner; limited tenure or contract	0	0%	2	29%
fertiliser or other spending priorities	1	6%	1	14%
don't know (DLG member does not know)	1	6%	0	0%
don't appreciate benefits	4	24%	0	0%
tradition	1	6%	0	0%
lack of motivation	2	12%	0	0%
sufficient area drained already	2	12%	0	0%
don't want to invest in farm	1	6%	0	0%

¹ Number as a percentage of farmers affected by poor drainage who indicated that their farming business has been affected by poor drainage (percentages do not sum to 100% as some farmers suggested more than one cause).

² Percentages do not sum to 100% as some DLG members suggested more than one cause.

5.8.5 Conclusions from drainage questions.

Approximately half of the farmers surveyed (51%) indicated that their farms have been affected by poor drainage in the last five years. Most of the DLG (77%) over estimated the proportion of farmers that would consider their farms had been affected by poor drainage in the last five years. All the DLG indicated that poor drainage would affect farming businesses either 'quite a lot' or 'very much', while the response from the affected farmers was spread across the range. Most of the farmers affected by poor drainage (83%) had taken measures to improve drainage over the last five years. Financial constraint was the reason most frequently mentioned by both the DLG and farmers who had not improved drainage, for not improving drainage. The DLG mentioned a number of reasons not mentioned by farmers.

5.9 Mastitis

Mastitis has been targeted by the Tui Dairy Company over the last few seasons, with the introduction of penalties for high somatic cell count (SSC). Mastitis has also been the subject of presentations at both the Massey Dairyfarmers' Conference and the Ruakura Farmers' Conference in 1994. Farmers were asked if they had cases of mastitis in the last five years, and if they did, how seriously it affected their farming business, and what they thought was the main cause on their farm.

The DLG were asked to indicate what proportion of dairy farmers in the Manawatu would have had cases of mastitis in dairy cows in the last five years, and how seriously these farmers would consider it affected their farming businesses, and what these farmers would consider was the main cause of mastitis on their farm.

5.9.1 Proportion of Manawatu dairy farmers with cases of mastitis.

Of the farmers surveyed, 93% (84 farmers) had cases of mastitis in dairy cows in the last five years. The results for the DLG are shown in Table 5.26 below. Eighty two percent of the DLG thought that 100% of farmers would have had cases of mastitis, two DLG members said they did not know, and one DLG member indicated that 80% of farmers would have had cases of mastitis.

Table 5.26 Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu who have had cases of mastitis in dairy cows in the last five years.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2 12%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	1 6%	0 0%	14 82%

5.9.2 Seriousness of the effect of mastitis on farming businesses.

The seriousness of the effect of mastitis on farm businesses, as indicated by farmers with cases of mastitis and DLG members, is shown in Table 5.27 below. Twenty four percent of farmers indicated that mastitis affected their business 'not at all' while none of the DLG did. Responses from the DLG and farmers were spread across the range of answers from 'slightly' to 'very much'.

Table 5.27 Seriousness of effect of mastitis on farming businesses, as indicated by the DLG and farmers with cases of mastitis in cows.

	don't know	not at all	slightly	somewhat	quite a lot	very great
DLG members (n=17)	1 6%	0 0%	3 18%	7 41%	5 29%	1 6%
farmers (n=85)	0 0%	20 24%	40 48%	13 15%	7 8%	5 6%

5.9.3 Cause of mastitis.

The major cause of mastitis, as indicated by farmers with cases of mastitis and DLG members is shown in Table 5.28 below. Forty percent of farmers indicated that they did not know the cause of mastitis. There was a large range of causes suggested by farmers of which wet muddy conditions, old cows in the herd or culling too few cows, and 'bugs' or bacteria were the most frequently mentioned. Ten percent of farmers mentioned udder and teat damage, but no DLG members mentioned this cause.

Table 5.28 Major cause of mastitis, as suggested by farmers with cases of mastitis and DLG members.

	DLG (n=17)		farmers (n=85)	
	number	% ²	number	% ¹
unknown	2	12%	34	40%
wet muddy conditions	4	24%	12	14%
old cows in herd; culling too few	0	0%	11	13%
bugs or bacteria	1	6%	9	11%
udder and teat damage	0	0%	8	10%
poor operation by milker	4	24%	7	8%
milking machine related	8	47%	6	7%
cross contamination from other cows	1	6%	5	6%
come in with mastitis at calving	2	12%	5	6%
feed stress	1	6%	4	5%
chill from cold weather	0	0%	3	4%
not using dry cow therapy	1	6%	2	2%
cows with high somatic cell count in herd	0	0%	2	2%
slow to detect mastitis	0	0%	2	2%
genetic	0	0%	2	2%
cows dried off too close to subsequent calving	0	0%	1	1%
bought cows with mastitis	0	0%	1	1%
picked up untreatable strain at a show	0	0%	1	1%
high protein feeding prior to calving	0	0%	1	1%
don't know (DLG member)	4	24%	0	0%
failure to monitor somatic cell count	1	6%	0	0%

¹ Number as a percentage of farmers who indicated that they have had cases of mastitis in the last five years (percentages do not sum to 100% as some farmers suggested more than one cause).

² Percentages do not sum to 100% as some DLG members suggested more than one cause.

5.9.4 Conclusions from mastitis questions.

Of the farmers surveyed 93% have had cases of Mastitis in the last five years, and 88% of the DLG indicated that between 80-100% of farmers would have had cases of mastitis. None of the DLG indicated that farmers with mastitis would consider it would affect their business 'not at all', however 24% of farmers with cases of mastitis indicated that mastitis affected their business 'not at all'. The farmer and DLG responses to the seriousness of the effect of mastitis on farming businesses was spread across the range from 'slightly' and 'very much'. The major cause of mastitis was unknown to 40% of farmers with cases of mastitis. There were a wide range of causes mentioned by both the DLG and farmers with cases of mastitis.

5.10 Increased empty rate in herds.

One of the main animal health problems faced by Manawatu dairy farmers, as suggested by case study DLG members (see section 4.2.3) referred to poorer reproductive performance of high BI² cows. Farmers were asked if they had observed an increasing empty rate in their herd in the last five years, and if they had, how seriously it had effected their farming business, and what they thought was the major cause.

The DLG were asked similar questions about what they believed to be the proportion of dairy farmers in the Manawatu that would have observed an increasing number of empty cows in their herd in the last five years, how seriously these farmers would consider it effected their farming business, and what they thought farmers would consider was the major cause.

5.10.1 Proportion of farmers observing an increasing number of empty cows.

Of the farmers surveyed, 24% (22 farmers) had observed an increasing empty rate. The results for the DLG are shown in Table 5.29 below. Over one third (35%) of the DLG indicated that they did not know while the rest of the DLG were spread across the range indicating between 20-80% of farmers would have observed an increasing number of empty cows in their herd in the last five years.

Table 5.29 Number (n=17) and percentage of DLG members indicating what they believed to be the proportion of farmers in the Manawatu who have observed an increasing number of empty cows in their herd in the last five years.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
6 35%	0%	0%	5 29%	2 12%	0%	2 12%	0%	1 6%	1 6%	0%	0%

² Breeding Index (BI) the measure of genetic merit currently in use in New Zealand. A Breeding Index of 100 is equivalent to the 'average' cow in 1953/53.

5.10.2 Seriousness of effect of increasing empty rate on farming businesses.

The seriousness of the effect of increasing number of empty cows on farm businesses, as indicated by farmers with an increasing empty rate and DLG members, is shown in Table 5.30 below. Six percent of the DLG indicated that they did not know how farmers would rate the effect of an increasing empty rate on their farming business. All the rest of the DLG indicated that it would affect businesses either 'quite a lot' (29%) or 'very much' (65%). The responses from farmers who observed an increased empty rate were spread across the range of levels of seriousness, with 14% indicating that it affected their businesses 'not at all'.

Table 5.30 Seriousness of effect of increasing number of empty cows in herd, on farming businesses as suggested by DLG members and farmers who have observed an increasing empty rate.

	don't know	not at all	slightly	somewhat	quite a lot	very great
DLG members (n=17)	1 6%	0 0%	0 0%	0 0%	5 29%	11 65%
farmers (n=22)	0 0%	3 14%	8 36%	6 27%	3 14%	2 9%

5.10.3 Major cause of the increasing number of empty cows.

The reasons for an increases empty rate, as suggested by farmers observing an increasing number of empty cows in their herd, and DLG members is shown in Table 5.31 below. Fifty percent of farmers did not know what had caused the increased number of empty cows, compared to only 6% of the DLG. Poor feeding at mating was the cause most frequently mentioned by the DLG (94% of DLG), and this cause was also mentioned by 41% of farmers. Four of the causes mentioned by farmers were not mentioned by the DLG, and six of the causes mentioned by the DLG were not mentioned by the farmers who had observed an increasing number of empty cows in their herds.

Table 5.31 Major cause of increasing number of empty cows, as suggested by farmers with who observed an increasing number of empty cows and DLG members.

	DLG (n=17)		farmers (n=22)	
	number	% ²	number	% ¹
unknown	1	6%	11	50%
poor feeding at mating	16	94%	9	41%
associated with high BI or high producing cows	1	6%	4	18%
poor heat detection	0	0%	2	9%
bull went lame	0	0%	1	5%
infertile cows	0	0%	1	5%
took bull out early to tighten calving pattern	0	0%	1	5%
poor weather at mating	1	6%	1	5%
trace element (Selenium and Copper) deficiency	2	12%	1	5%
poor bulls or semen technology	3	18%	0	0%
don't know(DLG member)	1	6%	0	0%
more Friesian in cows	1	6%	0	0%
use of induction	1	6%	0	0%
calving pattern	1	6%	0	0%
small replacement heifers	1	6%	0	0%

¹ Number as a percentage of farmers who indicated that they have had cases of mastitis in the last five years (percentages do not sum to 100% as some farmers suggested more than one cause).

² Percentages do not sum to 100% as some DLG members suggested more than one cause.

5.10.4 Conclusions from increasing empty rate questions.

Of the farmers surveyed 24% had observed an increasing number of empty cows in their herd. The DLG's responses were across the range from 20-80% of farmers observing an increasing number of empty cow in their herd. The effect of an increasing number of empty cows in the herd on farming businesses was considered to be 'quite a lot' or 'very great' by the DLG, while the effected farmers indicated a range of responses from 'not at all' to 'very much'. The cause of an increased empty rate was unknown to 50% of farmers who had observed an increased empty rate, while 94% of DLG members indicated that farmers would consider that poor feeding at mating was the major cause.

5.11 Knowledge of the Massey University Dairy Farms.

Farmers were asked if they were aware that Massey University has dairy farms for experiments (farm trials), and extension (field days). They were then asked to list any research from the Massey University Dairy Farms they had heard of; how they rate the relevance of Massey University dairy farm experiments to their own farming business; and to indicate if they had ever been to a Massey University dairy farm. If they had they were then asked how many times per year they would visit a Massey University dairy farm.

The DLG were also asked what proportion of Manawatu dairy farmers would know that Massey University has dairy farms for research and extension, and what research from these farms farmers would be able to name, and how farmers would rate the relevance of Massey University dairy farm experiments to their own farming business. The DLG were then asked to indicate what proportion of the DLG have ever visited a Massey University dairy farm, and what proportion would come back at least once per year.

5.11.1 Proportion of Manawatu farmers that is aware of Massey dairy farms.

Of the Farmers surveyed 100% (90 farmers) said that they are aware that Massey University has dairy farms for research and extension purposes. The results for the DLG are shown in Table 5.32 below. Only 5% of the DLG thought that 100% of farmers would have heard of the Massey University dairy farms, while 53% of the DLG indicated that they thought 80-90% of Manawatu dairy farmers would know of Massey University dairy farms.

Table 5.32 Number (n=17) and percentage of DLG members indicating what they believe to be the proportion of farmers in the Manawatu who know that Massey University has dairy farms for research and extension.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
					1			2	2	7	5
0%	0%	0%	0%	0%	6%	0%	0%	12%	12%	41%	29%

5.11.2 Massey University Dairy Farm trials that farmers know of.

Massey University dairy farm trials that farmers have heard, of as suggested by the DLG and farmers, are shown in Table 5.33 below. The response most frequently mentioned by both the DLG (35%) and the farmers (46%) was 'nothing'. The next highest response was the No. 1 dairy farm and or winter milk production, mentioned by 29% of DLG members and 14% of farmers. The range of farmer responses was diverse. Only one of the dairy farm trials mentioned by the DLG, Bovine Somatostrophin, was not mentioned by farmers, however the farmers mentioned ten trials that the DLG had not mentioned.

Table 5.33 Massey University Dairy Farm trials that farmers are aware of as suggested by farmers and DLG members.

	DLG (n=17)		farmers (n=90)	
	number	% ²	number	% ¹
nothing	6	35%	41	46%
No. 1 and or winter milk production	5	29%	13	14%
twin heard	1	6%	10	11%
bloat	2	12%	6	7%
silage	0	0%	6	7%
late control pasture management on No 4.	6	35%	6	7%
high and low breeding index	3	18%	5	6%
feeding trials	0	0%	5	6%
pasture species trials	0	0%	5	6%
nitrogen use	1	1%	4	4%
fertiliser	0	0%	3	3%
stocking rate	0	0%	3	3%
pasture assessment	0	0%	3	3%
drainage	1	6%	3	3%
once per day milking	4	24%	2	2%
effluent management	0	0%	2	2%
grazing management	0	0%	2	2%
walking distance trial	0	0%	1	1%
electronic milking	0	0%	1	1%
supplements	0	0%	1	1%
pasture spraying with Magnesium	0	0%	1	1%
lameness	0	0%	1	1%
milking machines	0	0%	1	1%
mating and reproduction	0	0%	1	1%
winter feeding on pasture	0	0%	1	1%
weight in dairy cows	0	0%	1	1%
mastitis	0	0%	1	1%
seed trials	0	0%	1	1%
mating beef heifers	0	0%	1	1%
breeding trials	0	0%	1	1%
split herd wintering	0	0%	1	1%
extending lactation	0	0%	1	1%
low and high sward height	0	0%	1	1%
iodine	0	0%	1	1%
treating hooves with formalin	0	0%	1	1%
Bovine Somatotrophin	1	6%	0	0%

¹ Number as a percentage of farmers who indicated that they have had cases of mastitis in the last five years (percentages do not sum to 100% as some farmers suggested more than one cause).

² Percentages do not sum to 100% as some DLG members suggested more than one cause.

5.11.3 Relevance of Massey University dairy farm trials to farmers'

businesses.

The relevance of experiments at the Massey University dairy farms, as suggested by dairy farmers and DLG members is shown in Table 5.34 below. None of the DLG indicated that farmers would consider that the Massey University dairy farm experiments were either 'not at all' or of 'very great' relevance to their farming businesses. However the responses from the farmers were spread across the range, with 17% indicating 'not at all' and 26% indicating 'very great' relevance.

Table 5.34 Relevance of Massey University dairy farm experiments to farmers' businesses as suggested by farmers and DLG.

	not at all	slightly	somewhat	quite a lot	very great
DLG members (n=17)	0 0%	7 41%	7 41%	3 18%	0 0%
farmers (n=90)	15 17%	10 11%	20 22%	22 24%	23 26%

5.11.4 Proportion of dairy farmers who had ever visited a Massey Dairy

Farm.

Of the farmers surveyed, 82% (74 farmers) had ever visited a Massey University Dairy Farm. The results for the DLG are shown in Table 5.35 below. Four (24%) of the DLG said they did not know what proportion of Manawatu dairy farmers had ever visited a Massey University dairy farm. The rest of the DLG indicated that between 10-60% would have ever visited a Massey University dairy farm. None of the DLG indicated as high as 82%.

Table 5.35 Number (n=17) and percentage of DLG members indicating what they believe to be the proportion of farmers in the Manawatu who have ever visited a Massey University Dairy Farm.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
4 24%	0 0%	3 18%	1 6%	4 24%	1 6%	2 12%	2 12%	0 0%	0 0%	0 0%	0 0%

5.11.5 Proportion of farmers visiting Massey dairy farms at least once per year.

Of the dairy farmers surveyed, 31% (28 farmers) indicated that on average they would visit a Massey University Dairy Farm at least once per year. The results for the DLG are shown in Table 5.36 below. Two (12%) of the DLG indicated that they did not know, while the rest of the DLG indicated between 0 and 20% of farmers would visit a Massey University dairy farm at least once per year. None of the DLG indicated as high as 30% of farmers would visit a Massey University dairy farm at least once per year.

Table 5.36 Number (n=17)r and percentage of DLG members indicating what they believe to be the proportion of farmers in the Manawatu who visit a Massey University Dairy Farm at least once per year.

don't know	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2 12%	2 12%	12 71%	1 6%	0%	0%	0%	0%	0%	0%	0%	0%

5.11.6 Conclusions from questions about the Massey Dairy Farms.

All of the farmers surveyed said that they were aware of that Massey University has dairy farm for research and extension purposes. The majority of the DLG thought less than 60% of farmers would know of the Massey Dairy farms. Forty six percent of farmers said they could not name any research from the Massey University dairy farms.

Farmer response to the relevance of Massey University dairy farms to their own farming business was spread across the range from 'not at all' to 'very great' relevance. All the DLG thought that farmers would indicate that the Massey University dairy farms would be 'slightly' to 'quite a lot' relevant. Of the farmers surveyed, 82% had visited a Massey University dairy farm, which was far higher than the proportion indicated by any of the DLG.

5.12 Contact with and use of LIC, discussion groups, consultants and Massey.

Farmers were asked to indicate if they studied agriculture at Massey or elsewhere, or if they are often in contact with Massey Agriculture staff. This question was not designed to determine the education level of the surveyed farmers, but to get some indication of their previous or current contact with Massey University.

Of farmers surveyed 39% (35 farmers) said they had studied at Massey University or are often in contact with Massey University agriculture staff. The importance of discussion groups, the services of the LIC and other consultants, as indicated by surveyed farmers, is shown in Table 5.37 below.

Table 5.37 Importance of discussion groups, services of LIC and other consultants in the management of farm businesses.

	not at all	slightly	somewhat	quite a lot	very great
farmers (n=90)	17 19%	13 14%	12 13%	18 20%	30 33%

One third of the farmers indicated that these services were of 'very great' importance to the management of their farm. Responses from the rest of the farmers were evenly spread across the range from 'not at all' and 'quite a lot'.

The farmer response to the importance of discussion groups, the services of the LIC and other consultants was cross-tabulated with farmer response to the question on the relevance of Massey University dairy farm experiments to farming businesses. The cross table is shown below (Table 5.38).

Table 5.38 Cross tabulation of importance of discussion groups, LIC services and other consultants with the relevance of Massey University dairy farm research, in the management of farm businesses, as suggested by surveyed farmers (n=90).

		Relevance of Massey University dairy farm research				
		not at all	slightly	somewhat	quite a lot	very great
Importance of advisory services ¹	not at all	4	3	4	4	2
	% row	24%	18%	24%	24%	12%
	% column	27%	30%	20%	18%	9%
	slightly	4	3	2	2	2
	% row	31%	23%	15%	15%	15%
	% column	27%	30%	10%	9%	9%
	somewhat	3	2	5	2	0
	% row	25%	17%	42%	17%	0%
	% column	20%	20%	25%	9%	0%
	quite a lot	4	1	4	6	3
	% row	22%	6%	22%	33%	17%
	% column	27%	10%	20%	27%	13%
	very great	0	1	5	8	16
	% row	0%	3%	17%	27%	53%
	% column	0%	10%	25%	36%	70%

¹ Advisory services include discussion groups, LIC services and other consultants.

Of the farmers who indicated that advisory services (discussion groups, LIC services and other consultants) were of 'very great' importance, 70% said that Massey University dairy farm research was also of very great relevance to their farming business, while only 9% said it was 'not at all' relevant. Of the farmers that indicated that advisory services (discussion groups, LIC services and other consultants) were 'not at all' important none said that Massey University dairy farm research was of 'very great' relevance to their farming business, while 27% said it was 'not at all' relevant.

Although the statistical rigour of this cross tabulation was not tested, it appears that there may be one group of farmers who are serviced well by both the advisory services (discussion groups, LIC services and other consultants), and Massey University dairy farm experiments.

5.13 Conclusions from farmer and DLG questionnaires.

A total of 90 farmers were contacted, which is 14% of the Manawatu dairy farming population. Seventeen of the 19 DLG members were also surveyed. Winter milk contract farmers were over represented, while farmers on the Manawatu Clays were under represented.

In general the DLG over estimated the seriousness of the problems discussed, relative to how dairy farmers indicated how seriously these problems had effected their farming businesses. The range of responses from both the DLG and farmers was quite wide, in terms of both the seriousness and causes of problems, indicating diversity in farmer circumstances and knowledge of their circumstances.

Neither farmers nor DLG members appeared to have a great deal of knowledge of some of the issues surveyed. For example 35% of the DLG did not know what proportion of Manawatu dairy farmers would have observed an increasing number of empty cows in their herds in the last five years, and half the farmers did not know what had caused the increased empty rate. Further the cause of mastitis was unknown to 40% of farmers and 24% of the DLG.

Cross tabulation of the relevance of Massey University dairy farm experiments with the use of advisory services (discussion groups, LIC services and other consultants) indicated that there may be a group of farmers who are well serviced by both Massey University dairy farm experiments and advisory services (discussion groups, LIC services and other consultants), while there may be another group of farmers who are not well serviced by either.

CHAPTER SIX

DISCUSSION AND CONCLUSIONS

This Chapter presents and develops four main areas of discussion resulting from the research. The first relates to the place of case study and formal survey research in eliciting information on the research needs of farmers. The second is about how an industry liaison group appears to reflect the views of the farming population it represents. The third considers the diversity of opinion amongst DLG members raises the issue of how decisions are made within a group. The fourth area of discussion highlights the diversity of response amongst farmers, and discusses the consequences of this in setting the future direction of research.

6.1 Place of case study and formal survey in eliciting farmers research needs.

Experiences gained by the researcher when carrying out the case study interviews with farmers and the DLG members lead to a change in direction of the research. Formal survey was discarded as a technique for determining the research needs of a farming population. During the case study interviews it became apparent to the researcher that without an understanding of the farming situation and what farmers are trying to achieve in their farming business the information generated on their research needs will be of limited value.

Formal survey technique is limited in the depth and quality of information obtained. For example if the case study Farmer Four had been asked in a formal survey to list the problems they are currently facing on their farm, they may have listed porina and ragwort¹ amongst the problems. At this level of information it is not possible to understand why it is a problem, and may lead one to interpreting the response as farmer ignorance of methods for controlling ragwort and porina. Through informal interview the researcher was made aware of the farmer's unwillingness to use chemicals on her farm, and that chemical control was therefore inappropriate for this farmers

circumstances. Through formal survey is difficult to determine if issues are a problem because the farmers are not aware of current solutions, or whether farmers considers that current technology is in appropriate for their farming circumstances.

A further illustration of the need to discuss research requirements in the context of farmers' situation is the response of Farmer One to research opportunities for Massey University dairy farms or other research institutes. He responded with what he thought could be researched there rather than what he would like assistance with. For example he suggested animal ethics issues such as use of induction and tail docking.

While case study interviews carried out in this research were short, and lacked follow up and reconfirmation with farmers, they incorporated many of the key components of FSR alluded to in section 2.2. They were farmer orientated, systems orientated, with a problem solving approach. They can be seen as complementing main stream research, and providing some feed back from the farmers to researchers. However it was not on farm research owned and run by farmers, and no interdisciplinary approach was used.

With some farmers a 1-2 hour interview was long enough to gain an understanding of their farming situation and what they were trying to achieve on their farm. With other farmers it was difficult to establish these details. In all cases the researcher feels that revisiting the farmers would have increased the depth of understanding of the researcher and provided a better basis on which to discuss constraints to their farm, and how research may help overcome these constraints.

While the formal survey used in this research achieved the objective of comparing the views of dairy farmers and the DLG members, the truthfulness of the respondents answers during the telephone survey is questionable. The brief nature of the introduction, and the whole survey, and the limited training of the interviewers made it difficult to create enough confidence with the farmers to accurately collect sensitive information on the size of their farms and herds, and their opinion of LIC, discussion groups and other consultants. Thus it is difficult if not impossible to judge if the information given is correct. This has been observed by others, (eg. Doorman, 1990).

The suitability of survey the questions is also dubious. Considerable effort was made to base the questions on the information collected in the qualitative case study interviews with farmers. However some questions were misunderstood, misinterpreted, and appeared to be irrelevant to the farmers' circumstances. Conducting the survey by telephone allowed interviewers to further explain what was meant by the questions. A number of the questions were criticised by farmers; especially questions 6.4 and 6.6 (see Appendix Two), asking farmers to indicate how concerned they were about the amount of time and money they spend on bloat control respectively. Most farmers indicated that they were 'not at all' concerned about either the time or money they spend on bloat control, because it is the only option they see other than having dead cows. However many commented that if they did not have to take preventative action against bloat, it would reduce costs and labour requirement during spring.

6.2 Representation of farmer perceptions by the DLG

Comparisons were made between the farmer perceptions and the DLG members opinion of farmer perceptions. This was to allow some judgement to be made about how well farmers are represented by the DLG. For a number of the issues discussed the DLG and farmers seemed to be in agreement. Farmers and DLG agreed on the proportion of farmers taking preventative action against bloat, the proportion of farmers with a sharemilking contract, and proportion of farmers who are sharefarmers.

For other issues farmers appear not to be so well represented. In some cases it appears that parts of the farming population are not represented by DLG opinion at all. In many cases the DLG overestimated the seriousness of problems like poor quality silage, drainage, number of empty cows in herd.

When the *relevance* of Massey University dairy farm experiments was cross tabulated with the *importance* of advisory services (discussion groups LIC and other consultants), a group of farmers who are well serviced by both the Massey University

dairy farm research and the advisory services was identified. Cross tabulation also identified a group of farmers who's research needs are not well met by either. If the DLG continues to use these advisory services as their main technique to collect information on farmers' research needs farmers who do not use the consultancy services will not be serviced by the Massey University dairy farm research.

This has implications for a industry liaison group like the DLG. They may need to accept that they may not be representing the whole farming population. On issues which have important consequences for the industry, or where there is a large investment involved, they may need to actively seek wider representation of farmers.

6.3 Decision making in a group with diverse opinion

The diversity of opinion amongst members of the DLG was evident from the responses in both the case study interviews and the questionnaire. While the DLG functions as a group, with decisions being made as a group, there is a range of opinion amongst the members in terms of the incidence of problems, their seriousness and cause. This diversity was shown in issues like the proportion of farmers who take action against bloat, the proportion of farmers who have improved drainage, the proportion of farmers affected by not owning the business, the cause of mastitis, and the seriousness of the effect of lameness on farming businesses.

If the DLG is to function as a group, management of the group, and the way in which group decisions are made will have important consequences for the decisions made by the group. This raises important questions about the group dynamics and how group decisions are made. Whose opinions are accepted, and whose views these opinions represent becomes important. If some members of the group are dominant, and their opinions are more frequently accepted as the group decision upon which actions are taken, the group needs to think about which farmers are being represented by this decision. This is an issue which is rarely addressed in group management and may be worthy of soliciting outside assistance.

6.4 Reasons for differing opinion amongst farmers and implications for research.

Farmer response to a number of the issues investigated in the questionnaire was diverse, both in terms of the degree of seriousness of the effect of problems on their farm businesses and the cause of the problem. In particular farmer response to the degree of seriousness and causes of the following issues; inadequate feeding during winter, lameness, poor drainage, mastitis and empty rate, was diverse.

There were also large differences between the farmers and the DLG members on the perceived cause of problems. These differences were shown in the responses to the causes of poor quality silage and mastitis. Farmers suggested a number of causes not mentioned by the DLG, and the DLG suggested a number of reasons that farmers did not consider to be causes. The DLG also suggested that farmers did not know the cause in a number of cases, (poor quality silage, cause of mastitis, empty rate in herds), and some farmers said they did not know the cause in some cases (empty cows, mastitis, lameness, and poor quality silage).

The responses by the DLG to a number of questions on the cause of problems or reasons for farmer inaction, suggests that farmers may lack knowledge. Responses such as farmers do not know how to make and don't realise the benefits of good quality silage, farmers do not understand the importance of condition score at calving, and they don't appreciate the benefits of drainage.

There are two logical explanations for this finding. One is that farmers are managing their farms as complex holistic systems, for which the importance or seriousness of isolated issues taken out of the context of their whole farming system may not seem important. Or in the development of their farming system they have been able to overcome or reduce the effects of certain problems, or they evaluate the costs and benefits from adopting technologies such as drainage differently to those on the DLG. This would suggest that a greater understanding of their management systems may yield more useful innovations for coping with their problems than traditional research efforts which are necessarily distant from the farmers' situation. The wide range of

farming circumstances, activities towards goals and constraints to achieving these goals, observed during the case study interviews would support this argument.

The second explanation is that some farmers may not know how seriously their business is being affected or what is causing certain problems. If this is the case there would appear to be scope for further problem solving research and / or extension of the research results.

It seems most likely that the way ahead is a combination of the two above approaches. The second explanation of farmer ignorance or lack of knowledge has been the explanation most commonly accepted and used to date. Very little effort has been made to develop research within the context of first approach.

Research efforts at the Massey University dairy farms can only continue to address issues in the context of those particular farms and the staff and other resources that support them. This must always limit the relevance and applicability of the results to the wider farming community even where that community is more widely consulted in defining the issues to be researched. It seems logical that these research efforts should be complemented by some formal research into farmer circumstances and the constraints that *they* face on *their* farms.

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APPENDIX ONE DAIRY LIAISON GROUP STRATEGIC PLAN

INTRODUCTION:

Massey University No. 1 and No 4. Dairy Farms are a tremendous resource for agricultural teaching, research and extension activities.

To raise the profile of the Dairy Farms amongst the region's dairy industry and increase the research, teaching and extension usage of the farms, a Dairy Liaison Group is being established. The group includes people from the southern North Island dairy community, appropriate MU departments, agricultural consultants, Tui Milk Products, AgResearch, MU Extension Co-ordinator (Pastoral Agriculture) and Farms Administration, enabling the establishment of a broad network of contacts.

The basic objective of the group is to promote a two way flow of information and ideas between the regional dairy industry and Massey University using the MU Dairy Farms as the vehicle for such a process.

Feed back from the regional Dairy Industry through the Dairy Liaison Group will be used in stimulating relevant programmes on the MU Dairy Farms and in encouraging participation by interested University Departments. Massey University's profile within the dairy industry will be raised by the activities of the group in promoting Field Days and other extension activities on MU dairy farms where University staff can present topics of current interest and latest research findings.

MISSION STATEMENT:

To ensure the MU dairy farms are an effective link between Massey University and the regional dairy industry.

OBJECTIVES TO BE ACHIEVED ANNUALLY:

Objective One:

"To critically evaluate the production systems in place and the physical and financial performance of MU No. 1 and No. 4 Dairy Farms."

The critical evaluation will include:

- stocking rate
- calving and drying off dates
- seasonal pasture cover levels
- milk production per cow and per ha
- reproductive performance
- causes of herd wastage
- fertiliser inputs
- gross farm income
- economic farm surplus
- components of farm expenditure

for comparison with Tui Farmer of the Year and MAF Monitor Farm performance levels.

From this evaluation suggestions will be made by which the performance of the units may be maintained in the top 5-10% of dairy farms on similar country; and if necessary the adoption of different robust, innovative and relevant whole farm management systems promoted.

Objective Two:

"To identify specific research and extension needs of dairy farms within the region for consideration by MU Farms Administration and appropriate MU Departments."

The desired outcomes include:

- annual identification of 5-10 extension topics relating to local seasonal supply and winter milk production, for coverage at the annual field day.
- annual identification of 3-6 research topics relating to the local dairy industry, that could be studied on the MU dairy farms or within the appropriate MU Faculties.
- pre-circulation of such topics or issues in written form prior to one nominated Liaison Group meeting per year.
- preparation of a report by Farms Administration summarising the perceived research and extension needs arising from this annual review for circulation to the Group, MU Farm Committee and appropriate Faculties.

Objective Three:

"Facilitate teaching and extension programmes associated with the MU Fairy Farms."

The desired outcomes include:

- achieving at least 20 teaching visits per farm per year.
- hosting one "Massey style" field day on the MU dairy farms per year.
- ensuring media releases (via the MU Ag Journalist) to the local press 2-3 times per year, and National press 1-2 times per year (covering performance of systems in place, specific research and field day proceedings).
- attracting at least 6 discussion group visits per farm per year through the above activities.
- having Fact Sheets plus research summaries available for visiting group.
- the preparation of an annual report by Farms Administration summarising the extent of such activities for circulation to the Group, MU Farm Committee and appropriate Faculties.

Objective Four:

"To identify and facilitate sources of funding for such research and extension projects."

Objective Five:

"To evaluate the effectiveness of the Dairy Liaison Group activities."

The first step in this process will be to investigate how such an evaluation can be achieved. The annual reports summarising levels of activity will be one measure. Another approach would be to carry out surveys at intervals of local dairy farmers to determine their perception of MU profile relative to dairy farming.

TERMS OF REFERENCE:

Group Membership:

Dairy farmers from the local region	4
NZ Dairy Board Consulting Officer Service	1
Tui Milk Products Farm Production Officer	1
NZ Farm Management Society	1
AgResearch	1
Dairy Research Corporation	1

Mu Academic Departments

Animal Science	1
Ag/Hort Systems Management	1
Plant Science	1
Veterinary Science	1
Soil Science	1
Mu Extension Co-ordinator	1
MU Farms Administration	4
with flexibility to co-opt as required.	

Meeting Frequency and Agenda:*March:*

Identify specific research and extension needs of dairy farms within the region and consider appropriate sources of funding for such activities.

June:

Evaluate the production systems in place and the physical and financial performance of MU No. 1 and No. 4 Dairy Farms.

September:

Open.

November

Discuss topics and organisation of MU Dairy Farms field day in February.

Minutes to be kept and circulated prior to the next meeting.

D.A. Grant

J.D. Stantiall

November 1993

APPENDIX TWO DAIRY LIAISON GROUP QUESTIONNAIRE

QUESTION 1 SILAGE

- 1.1 What do you think is the proportion of dairy farmers in the Manawatu that make silage?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 1.2 Of the farmers making silage, what proportion do you think make silage to feed to lactating dairy cattle?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 1.3 Of these farmers, what proportion do you think would consider that they had poor quality silage in the last five years?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 1.4 How seriously on average do you think these farmers would rate the effect poor quality silage had on their farming business?

none at all / slight / somewhat / quite a lot / very great

- 1.5 What do you think these farmers would consider is the main reason for having poor quality silage?

QUESTION 2

FEEDING COWS DURING WINTER

- 2.1 Over the last five years, what proportion of Manawatu dairy farmers would consider that they had problems with feeding their cows adequately during winter?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 2.2 How seriously do you think these farmers would rate the effect that inadequate feeding during winter had on their farming business?

none at all / slight / somewhat / quite a lot / very great

- 2.3 What do you think these farmers would consider was the main reason for not being able to adequately feed their cows during winter?
(Specific, eg not "winter feed shortage").

QUESTION 3

WINTER MILK CONTRACTS

- 3.1 What proportion of dairy farmers in the Manawatu have a winter milk contract?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 3.2 Of the farmers with winter milk contracts, what proportion do you think calve 50% or more of their herd in autumn?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

QUESTION 4**LAMENESS**

- 4.1 In the last five years, what do you think is the proportion of dairy farmers in the Manawatu that have had cases of lameness in dairy cows?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 4.2 How seriously do you think these farmers rated the effect of lameness on their farming business?

none at all / slight / somewhat / quite a lot / very great

QUESTION 5**SHAREMILKING**

- 5.1 What proportion of dairy farmers in the Manawatu are sharemilkers?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 5.2 What do you think is the proportion of the sharemilkers who would consider that not owning the farm places constraints on their farming business?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 5.3 What do you think these sharemilkers would indicate as the most important constraint that not owning the farm places on their farming business?

QUESTION 6**BLOAT**

- 6.1 What do you think is the proportion of dairy farmers in the Manawatu that take preventative action against bloat in their dairy cows?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 6.2 Of the farmers trying to prevent bloat, how much time on average do you think they spend each day on preventing bloat?**hr****minutes**

- 6.3 How concerned on average, do you think farmers would indicate they are about the amount of time they spend on preventing bloat?

none at all / slight / somewhat / quite a lot / very great

- 6.4 How much money, on average do you think these farmers spend per month on bloat prevention? \$.....

- 6.5 How concerned on average, do you think farmers would indicate they are about the amount of money they spend on preventing bloat?

none at all / slight / somewhat / quite a lot / very great

QUESTION 7**DRAINAGE**

- 7.1 Over the last five years, what do you think is the proportion of Manawatu dairy farms, that have been effected by poor drainage?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 7.2 How seriously do you think the effected farmers would rate the problem of poor drainage?

none at all / slight / somewhat / quite a lot / very great

- 7.3 What proportion of the these farmers do you think have improved drainage in the last five years?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 7.4 What would these farmers suggest are the reasons for not improving drainage?

QUESTION 8**MASTITIS**

- 8.1 In the last five years, what do you think is the proportion of Manawatu dairy farmers that have had cases of mastitis in dairy cows?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 8.2 What do you think farmers would consider was the major cause of mastitis?

- 8.3 How seriously do you think these farmers would rate the effect of mastitis on their farm business?

none at all / slight / somewhat / quite a lot / very great

QUESTION 9**DECLINING FERTILITY**

- 9.1 In the last five years, what do you think is proportion of dairy farmers in the Manawatu that have observed an increasing empty rate in their herd?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 9.2 How seriously do you think that the affected farmers would rate the problem of an increasing empty rate?

none at all / slight / somewhat / quite a lot / very great

- 9.3 What do you think the farmers that observed an increasing empty rate would consider is the main cause?

QUESTION 10**KNOWLEDGE OF THE MASSEY FARMS**

- 10.1 What do you think is the proportion of Manawatu dairy farmers that is aware that Massey University has dairy farms for research and extension purposes?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 10.2 Of the research that has been carried out on the Massey Dairy Farms, what research do you think these farmers would be able to name?

- 10.3 How do you think these farmers would rate the relevance of the research conducted on Massey University dairy farms, to their own farming businesses?

none at all / slightly / somewhat / quite a lot / very great

- 10.4 What proportion of Manawatu dairy farmers do you think have ever visited the Massey University Dairy Farms?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

- 10.5 What proportion of Manawatu dairy farmers do you think would visit at least once per year?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know

APPENDIX TWO DAIRY FARMER QUESTIONNAIRE

Hello. My name is I am calling on behalf of Kate Mirams, who is a student at Massey University. As part of her work she is surveying Manawatu Dairy farmers. Would you mind helping her out by answering a few questions about your farming business? There are 12 questions, and the whole survey will take about 10 minutes.

QUESTION 1 SILAGE

- 1.1 Do you make silage?
Yes / No (circle one)

If NO: **Question 2**

- 1.2 Do you make silage to feed to lactating dairy cows?
Yes / No (circle one)

If NO: **Question 2**

- 1.3 In the last five years, did you make any poor quality silage?
Yes / No (circle one)

If NO: **Question 2**

- 1.4 How seriously has poor quality silage affected your farming business?
not at all / slightly / somewhat / quite a lot / very much
(circle one)

- 1.5 What was the MAIN cause of the poor quality silage?
(record the MAIN cause)

QUESTION 2 WINTER MILK CONTRACTS

- 2.1 Do you have a winter milk contract?
Yes / No (circle one)

If NO: **Question 3**

- 2.2 What proportion of your herd is calved in autumn?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
don't know
(circle one)

QUESTION 3

FEEDING COWS DURING WINTER

- 3.1 In the last five years, did you have problems adequately feeding your cows during winter?

Yes / No (circle one)

If NO: **Question 4**

- 3.2 When you look back on the last five years, how seriously has inadequate feeding through winter affected your farming business?

not at all / slightly / somewhat / quite a lot / very much (circle one)

- 3.3 What was the MAIN reason for not adequately feeding your cows during winter? (record the MAIN reason, be specific, e.g not "winter feed shortage")

QUESTION 4

LAMENESS

- 4.1 In the last five years have you had any cases of lameness in dairy cows?

Yes / No (circle one)

If NO: **Question 5**

- 4.2 When you look back on the last five years, how seriously has lameness in cows affected your business?

not at all / slightly / somewhat / quite a lot / very much (circle one)

- 4.3 What was the MAIN cause of lameness? (record the MAIN reason)

QUESTION 5 **SHAREMILKING**

- 5.1 Are you a sharemilker?
 Yes / No (circle one)

If NO: **Question 6**

- 5.2 Does not owning the farm place constraints on your farming business?
 Yes / No (circle one)

If NO: **Question 6**

- 5.3 When you look back on the period you have been sharemilking, how seriously have these constraints affected your business?
not at all / slightly / somewhat / quite a lot / very much
(circle one)

- 5.4 What are the MAIN constraints that not owning the farm has placed on your farming business?
(record the MAIN constraints)

QUESTION 6

BLOAT

6.1 Do you take preventative action against bloat?
Yes / No (circle one)

If NO: **Question 7**

6.2 How do you try to prevent bloat? (**List prevention methods**)

6.3 How much time per day do you spend on bloat prevention?
(**Record the time**)
.....hours.....minutes

6.4 Is it a concern to you that you spend this much time each day on bloat prevention?
not at all / slightly / somewhat / quite a lot / very much
(**circle one**)

6.5 How much money do you spend on bloat prevention each month?
(**Record the amount spent each month**)
\$.....

6.6 Is it a concern to you that you spend this much money on bloat prevention?
not at all / slightly / somewhat / quite a lot / very much
(**circle one**)

QUESTION 7 DRAINAGE

7.1 In the last five years has your farm been affected by poor drainage?

Yes / No (circle one)

If NO: **Question 8**

7.2 When you look back on the last five years, how seriously has poor drainage affected your business?

not at all / slightly / somewhat / quite a lot / very much
(circle one)

7.3 Have you taken measures to improve the drainage on your farm in the last five years?

Yes / No (circle one)

If YES: **Question 8**

7.4 What is the MAIN reason that has prevented you from improving drainage?
(list the MAIN reasons)

QUESTION 8 MASTITIS

8.1 In the last five years have you had any cases of mastitis in dairy cows?

Yes / No (circle one)

If NO: **Question 9**

8.2 When you look back on the last five years, how seriously did mastitis affect your farming business?

not at all / slightly / somewhat / quite a lot / very much
(circle one)

8.3 What was the MAJOR cause of mastitis?

(Record the MAJOR cause)

QUESTION 9 FERTILITY

- 9.1 Have you observed an increasing number of empty cows in your herd over the last five years?
Yes / No (circle one)

If NO: **Question 10**

- 9.2 When you look back on the last five years, how seriously has an increasing number of empty cows affected your business?
not at all / slightly / somewhat / quite a lot / very much
(circle one)
- 9.3 What do you think is the major cause of the increasing number of empty cows?
(List the MAJOR cause)

QUESTION 10**MASSEY UNIVERSITY DAIRY FARMS**

- 10.1 Did you know that Massey University has dairy farms that it uses for experiments, such as farm trials, and extension such as field days?

If NO: **Question 11**

- 10.2 What Massey University dairy farm experiments do you know of?
(List experiments)

- 10.3 Are the experiments at the Massey University dairy farms relevant for your farming business?
not at all / slightly / somewhat / quite a lot / very much
(circle one)

- 10.4 Have you ever visited a Massey University dairy farm?
Yes / No (circle one)

If NO: **Question 11**

- 10.5 On average how many times per year do you visit a Massey University dairy farm?
(Record number of times per year)
.....times per year

Question 11**YOUR FARM**

- 11.1 What is the total area of your farm? _____ ha
- 11.2 What is the effective milking area of your farm? _____ ha
- 11.3 What was the peak number of cows milked last year? _____ cows
- 11.4 What distance is your farm from Massey University? _____ km
- 11.5 How long would it take you to travel to Massey University? _____ hours/minutes

QUESTION 12

ABOUT YOU

- 12.1 Did you study agriculture at Massey (or elsewhere), OR are you often in contact with Massey University Agriculture faculty staff?

Yes / No (circle one)

- 12.2 How important are discussion groups, the services of the LIC and other consultants in the management of your farm business?

**not at all / slightly / somewhat / quite a lot / very much
(circle one)**

Thank you very much for assisting with this research, I greatly appreciate you taking the time to help.