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Recalling management changes in the New Zealand sheep/beef and wool sectors as response to external and internal drivers:

Preliminary analysis of ARGOS retrospective interviews

Sanne van den Dungen¹,
Chris Rosin¹, Lesley Hunt²

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**Lincoln
University**
Te Whare Wānaka o Aoraki



1. The University of Otago PO Box 56 Dunedin www.argos.org.nz	2. Lincoln University PO Box 84 Lincoln, Canterbury www.argos.org.nz	3. The AgriBusinessGroup PO Box 4354 Christchurch www.argos.org.nz
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Introduction: Background, Objectives and Outline

1.1 Background

The overall aim of the Agriculture Research Group on Sustainability (ARGOS) is to investigate and compare the environmental, social and economic effects of different farming systems (Organic, Integrated and Conventional) in the sheep/beef, kiwifruit and dairy sectors. Thirty-six farms from the sheep/beef sector (12 in each panel—organic, integrated and conventional), 36 orchards from the kiwifruit sector (12 in each panel—KiwiGreen Hayward, KiwiGreen Hort 16A and Organic Hayward) and 24 farms from the dairy sector (12 in each panel—conventional and organic) have been selected for study. The panels appeared to be generally typical of their sectors in terms of characteristics such as size, level of production, etc. ARGOS was established in October 2003 and is now in the second stage of the project (ARGOS2) that is intended as a longitudinal panel study.

1.2 Research aim and objectives

The first six year research period (ARGOS1) identified a range of factors that can impact on the sustainability of farming systems, largely focusing on the contemporary farm conditions. Research during the period identified distinct responses to different types of pressures and shocks (what, in this report, we refer to as drivers of change): economic, social and environmental. The associated impacts of these drivers varied between sectors, farm systems and farm type. Results and findings from ARGOS1 were presented to relevant stakeholders in each sector, who advocated for a closer investigation of the impact of key shocks and pressures in future research plans. To facilitate planning and more effective response to future shocks, ARGOS2 aims to provide an understanding of the impacts of different types of driver on farming systems. Moreover it seeks to clarify the types of responses and the extent to which these are explained by the farm sector, regions and other segmentations identified in ARGOS research to date. This report aims to provide a first step, using semi-structured retrospective interviews from ARGOS2, toward understanding the different drivers of change and their impact on farm management decisions.

This report presents a descriptive driver-and-response-based perspective at the family farm level. It focuses on the impacts of and the response to external and internal stress factors over the last 40 years, drawing on interviews with farming families participating in ARGOS. A historic narrative framework of a timeline (collaboratively designed by ARGOS researchers) was used to provide an overview of farmers' response and the context in which this should be seen.

The overall goal of this report was to explore key drivers of change in farm management among sheep/beef farmers identified in their response to specified events (economic, climatic, etc.). This was done following the main objectives listed below:

- To identify key drivers of change mentioned by farmers over a time period between 1970 and 2010
- To identify farm management adjustments in response to identified key drivers over the same time period
- To present an overview of drivers and response useful for further, more comprehensive analysis of the interviews

1.3 Key concepts used

The driver-and-response perspective used in this report is further highlighted briefly in this subsection.

Drivers of change in the context of agriculture can be defined as ‘any natural- or human-induced factor that directly or indirectly brings about change in an agricultural production system’ (Hazell and Wood 2008). Examples of drivers to be considered include environmental change, policy changes, economic and social changes. Four scales of drivers can be identified to understand the forces driving change in farming systems and farmers’ response: global, national, regional and local (Table 1). Where global drivers can influence a large group of farmers, local drivers will only affect a smaller group of farmers living in a same geographical area.

Table 1. Overview of different scales of drivers (after Hazell and Wood, 2008)

Scale of driver	Description
Global	Affecting all agriculture around the world (to varying degrees) including trade expansion, climate change and agricultural support in the organization for Economic Co-Operation Development (OECD) and the World Trade Organisation (WTO).
Country	Affecting all agriculture within a country through governmental policies and regulations (such as the removal of SMPs).
Regional	Affecting agriculture within a specific region through local governments such as the Resource Management Act (1991).
Local	Specific to each local geographical area (e.g. climate and soil fertility), agricultural production system and community characteristics.

The nature of reaction or response to a driver can be categorised on the basis of both the extent to which it involves an alteration of existing practice and the robustness and stability of the resulting set of practices. For example, *adjustment* can be defined as a means to reallocate resources in adaptation to change; it is a *response* to any type of change induced by a driver. The term adaptation has its origin in the natural sciences and particularly in the discipline of evolutionary biology where it was used to indicate the successful response of a species to its environmental context (Smit and Wandel 2006). Adaptation therefore generally involves a more passive response, rather than an attempt to change the impact or intensity of the driver. *Perseverance*, on the other hand, is distinct from adjustment, referring to a steady and continued action or belief in the face of a driver of change, usually over a long period and maintained despite difficulties or setbacks. Based on the timing of the response relative to the stimulus or the driver of change, adaptations can be grouped as either *reactive* (after), *concurrent* (during) or *pro-active* (anticipatory). Response has also been differentiated according to its temporal scope, adaptations being tactical (short-term) or strategic (long-term) (Smit, McNabb, and Smithers 1996). A further characteristic of response involves its relative *resilience* which Holling (2001) describes as a system’s capacity to absorb and utilize change: it is the adaptive capacity that can be used as a measure of its vulnerability to unexpected and unpredictable shocks.

Despite utilising a driver-response framework in the analysis, it is not our intent to establish a direct and unilinear relationship between a given driver of change and the response of farming families. As

stated by Hopkins et al. (2004), the farm household structure is a complex system of inter-relationships between and amongst a variety of endogenous and exogenous variables. As a result, any given driver may elicit very different response trajectories as a result of unique context of decision-making found in a particular farming family. To gain insight to this nonlinear relationship, it is necessary to point out the key drivers affecting agriculture, how they are perceived by farmers and how those perceptions are translated into agricultural or household decisions.

1.4 Outline of report

Chapter 2 briefly outlines the research design and its considerations. Chapter 3 is divided in two parts: the first part presents a narrative following a timeline of important events (some of which are referred to as shocks) experienced by the sheep/beef sector from 1970 till present. The second part provides an overview of participants' opinions, response and attitudes towards drivers of change not associated with a specific event. Chapter 4 presents an overview of this report's results and summarises general points of discussion. Chapter 5 offers conclusions and discusses suggestions for subsequent analysis and research in light of both the data from the retrospective interviews and the limitations of that data.

Chapter 2: Methods

2.1 Structuring of the timeline

The initial step in preparing for the interviews with ARGOS participants involved the construction of a timeline to help structure discussions. ARGOS research team members collaboratively designed the timeline, identifying important events, shocks and stresses in the sheep, beef and wool sectors from 1970-2010. These were specifically chosen events, such as drought, change in legislation and input price crisis, thought likely to have provoked a response from farmers. After listing the events according to the year in which they occurred, we characterized specific time-intervals (e.g. 1976-1980) in respect to the most important driver occurring in that period such as environmental, economic or political (see Appendix I). The selected periods and their most important driver were used in the coding (see Chapter 2.3) and formed the outline for the historic narrative in Chapter 3.1.

2.2 Interview

Qualitative data was collected using face-to-face interaction in the form of interviews which allowed the participants greater freedom to express themselves and articulate important drivers and responses. A semi-structured interview was set up with the goal of investigating the social dimensions of past and present shocks experienced by ARGOS farmers. To accomplish this, the timeline prepared by the research team was used to guide the interview, with farmers asked to recall the occurrence of the listed events and the effect each had on their farming system (Appendix I). From March to June 2010, two ARGOS researchers carried out 27 interviews of individuals, couples or families participating in the ARGOS program. The interviews had an average duration of between 60 to 90 minutes. Interviews were recorded and transcribed to allow for further analysis and coding.

The value of semi-structured interviews was established in previous ARGOS research, where they provided the opportunity for researchers to pursue particular topics in more depth (Rosin et al. 2007). An example as such is given below:

A: So, thinking about the time line? Where do you remember? You won't go back to carless days?

This approach plays an important part in the researchers' understanding of the complexity and nuances of the decision-making process and the resulting actions pursued by the participants. This method also enabled the research team to identify key issues that had not been anticipated in the construction of the timeline. Farmers were invited to add events to the list if, in their opinion, the timeline seemed to be incomplete.

2.3 Coding

Coding was conducted with NVivo software, specifically designed for qualitative data. It allows for the collection of changing and growing records, built up from observations, interviews and document analysis (Richards 1999). More specifically, NVivo allowed for the coding of selections of text considered important in a careful reading of the interviews. Subsequently, these selections of text were grouped according to themes called nodes. These nodes could then be organized into hierarchical 'trees' and linked to memos carrying further explanation or researchers' comments and reflections. The timeline used in the interviews provided an important structure for coding and was developed as a tree node prior to the rest of the coding.

The remaining nodes were developed during the process of coding as themes, associated with drivers of change and farmers’ response to these drivers, emerged in the interviews. Drivers were grouped in subcategories with the same characteristics forming the five main drivers on which this report focuses: economic, governmental, environmental, household and personal and societal (Table 2).

Table 2. Grouping of different drivers and examples

Driver	Examples
Economic	Price fluctuations, access to capital, debts and mortgages
Government	Policies and regulations
Environment	Droughts, Snow, Excessive rainfall, Access to water, Pests and diseases
Household and personal	Succession, personal vision and orientation, farm style, life cycle
Society	“Dirty dairying” Media, Public opinion, Network (Advice from others)

2.4 Analysis

After completing the coding, NVivo enables the researcher to develop an overview of all the references coded under a specific node. With the use of a matrix tool, a table based on search criteria was made with time period nodes as rows and coded response as columns. In addition, the matrix tool enables the researcher to quantify responses. The word searching query was used to double-check the accuracy of coding for important nodes.

For this report, the analysis was limited to the descriptive presentation of the combined response in the interviews. Existing literature was consulted to produce a historic narrative to form a context for farmer’s responses to drivers of change. Any attempt at explanation of the variation in response awaits further analysis and grouping of response trajectories.

Chapter 3: Results

3.1 Historic narrative

This chapter uses a historic narrative derived from literature to establish the context within which farmers' responses to drivers (as expressed in the retrospective interviews) developed. Each subchapter represents a pre-defined period following the timeline used in the interview (Appendix I). Farmers' responses to specific drivers per given period are listed in a table and cover the driver, the year of occurrence and farmer's response together with the number of farmers with the same response divided by management system: Organic (O), Integrated (I) and Conventional (C). In addition, an attempt has been made to express the impact—as perceived by the farmer—of a specific driver on the farming system, assigning minimal effect (0), medium effect (x) and strong effect (xx) to the driver listed. The superscript numbers in the remainder of the report refer to relevant quotes that can be found in Appendix II.

Because the participating farmers started farming at different times throughout the period on which this report focuses, there are a low number of farmers' responses at earlier periods in time. Many of the farmers started farming or gained ownership of their farm in the early 1980s (Table 3).

Table 3. Date at which interviewed farmers claimed to have assumed decision-making role for farm grouped by period of time in total (T) and divided per farm system: Organic (O), Intergrated (I) and Conventional (C)

	Time period													
	pre- '70s	'70- '72	'73- '75	'76- '80	'81- '84	'85- '87	'88- '89	'90- '92	'93- '94	'95- '96	'97- '01	'02- '04	'05- '08	'09- '10
O		1		2	1	2		1			1			1
I		1		2	3		1	1			1			
C			1	1	2	2				1			2	
T	0	2	1	4	6	4	1	2	0	1	2	0	2	1

Prior to the 1970s

Most farmers interviewed did not recall events prior to 1970 as they were still too young or overseas. No farmers started farming in this period. Only one event, that of a big wind in 1967, was recalled by a farmer. A few referred to their parents' farming experience, the family farm and the condition of the property, remembering their parents' efforts to clear shrub, to initiate subdivision and burning of pastures to develop the farm^{1,2}

Historical context

From the 1920s an early phase of farm intensification in New Zealand was facilitated by the application of new soil science, synthetic fertilizers and improvements in plant and animal breeding. As stated by Molloy (1980), the area of sown pasture remained fairly stable between 1920 and 1970 but the number of stock units increased by 150%. Over this period of early intensification, oriented to service the United Kingdom (UK) meat market, national meat and dairy production doubled and wool supply tripled (Langer 1990; PCE 2004). New Zealand (NZ) was given preferential access agreements (e.g. the Ottawa Agreement in 1933) followed by bulk purchase agreements where the UK agreed to take all NZ agricultural exports during and immediately after the Second World War (WWII). This led to 90% of exports from NZ going to the UK (PCE 2004). After WWII preferential

access was maintained during the late 1950s and 1960s despite threats of other competitors on the market. However, already during the 1960s, it became clear that NZ trade would be seriously affected by the UK's plans to enter the European Community (EC). Foreseeing a drop in export demand, NZ started to diversify agricultural production (PCE 2004).

Farmers' response

The influence of higher farm revenues from wool in this period are illustrated by the farmer below as he recalls his father farming in a time when it was much more lucrative than at present.

But you know, to comprehend that how much money [farmers were making] in the '50s you: this place ran 800 ewes and the wool cheque off 800 ewes built this house and this is a big house, so yeah that's the sort of money that came in those days. *Organic*

1971-1972

The most important driver identified by the ARGOS team as likely to have provoked a response in farm adjustments from farmers for this period was the drought of 1971. However, this event was only recalled by one farmer³. Because only two farmers had started farming between 1971 and 1972, the occurrence of this drought was not pursued by the interviewers in great detail. Any discussion reflected their recall of parents' responses rather than their own adaptations.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
1971	Drought	x	Feed investments (on farm)	0	1	0	1

Historical context

Low farmgate prices in the mid-1970s led to a dramatic increase in agricultural sector support by the NZ Government. Governmental stock support schemes paid farmers to overcome low prices for sheep products.

Farmers' response

The farmer who recalled the drought of 1971 had been able to draw upon prior feed investments as a response to it. Two farmers pointed out that they had started in 1970 and 1971, a time much different compared to now in economic stability, farm size and workload. One farmer recalled the Government stock incentive schemes that paid farmers for every sheep on the farm; one farmer indicated that this subsidy had provided farmers with a good idea of where they were going financially⁴. Another farmer referred to the difference in workload and farm size compared to now.

It was—at that stage, when I took it over—it was a lot smaller than now. And I'm talking in acres. There was 413 acres on the property at that stage. And so, yeah, the workload was nothing like it is now. The stock levels were, of course, much lower. That's probably the main differences. *Integrated*

1973-1975

Economic drivers were thought to be key in the period between 1973-1975, but farmers did not specifically recall the oil crisis and dip in wool prices of 1973. Only the environmental stress, the "Great wind of Canterbury" was recalled by four farmers, three of whom had farm ownership at the time of the event and one farmer remembered his father's practices. Two farms within the same cluster were affected by the strong wind (Ashburton) while the other two differed spatially (Amberley and Leeston).

	Event/Driver	Effect	Response farmer	O	I	C	Total
1975	Wind	x	Repairing fences	0	1	0	1
		xx	Replaced fences	0	1	1	2
		0	Not so much damage	0	1	0	1

Historical context

The UK entered the European Union in 1973 which caused the proportion of total New Zealand exports to the UK to drop from 90% after WWII to under 40%. This change in the export market coincided with the first oil crisis since the 1870s. To compensate for the loss in markets, the Government of NZ sought a special arrangement with the European Commission to allow preferential access into Britain at negotiated prices for NZ exports of butter, cheese and sheep meat (Protocol 18).

Farmers' response

Farmers only recalled the effect of the storm on their farms. Fences and shelterbelts were damaged and had to be repaired or replaced. One farmer saw the opportunity to make new posts out of the blown over pine plantations. He hired a worker and paid per post⁵. Another farmer emphasized repairs rather than replacements as a response to the storm⁶.

1976-1980

Key drivers for change between 1976 and 1980 were presumed to be economic; this corresponded with the farmers' responses. Although seven farmers achieved farm ownership during this time, only two recalled the effects of the oil crisis on their farm management (*Organic* and *Conventional*). Few farmers recognised this period as one of change on their farms despite the oil crisis of 1979.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
1979	Oil crisis	0	Not so important, no effect	1	0	0	1
		x	Absorb and carry on	0	0	1	1

Historical context

A second oil crisis occurred in 1979 and the policy response included carless days introduced by the Muldoon Government. This policy was an unsuccessful attempt to reduce demand for fuel by prohibiting use of each licensed car for one day per week (Vowles 1995). To balance the effect of increased oil costs, the Government began to borrow money overseas causing inflation to rise.

Farmers' response

The impact of the oil crisis and carless days was not profound: one farmer recalled just having changed the car day⁷ and absorbing the costs. Others explained that the crisis just did not affect them much in general⁸. Four farmers started farming between 1976 and 1980, one of them remembered having problems with borrowing money at that time, because of the high interest levels, but through persistence and a strong drive to develop the farm they managed to obtain a loan⁹.

1981-1984

Environmental events were considered the most important drivers of change for the period between 1981 and 1984. The drought of 1982 was mentioned by two farmers within the same cluster (Ashburton). However, development loans were also identified by farmers as important economic

drivers in this timeframe. Development loans were mentioned by two farmers who had recently started farming.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
1982	Drought	x	Involved in irrigation	0	0	1	1
		xx	Father installed irrigation	0	1	0	1
1981	Development loans	xx	High investments	0	1	0	1
1982	Development loans	xx	New grassing, fencing & fertilizer	1	0	0	1

Historical context

Supplementary Minimum Payments (SMPs) were first introduced as a form of deficiency payment by the Government. The SMPs were followed by other measures to support farm productivity such as incentives for land development, concessionary livestock valuation schemes, preferential credit for farm purchase, tax concessions and fertilizer subsidies. Land Development Encouragement Loans were set up by the Muldoon Government to encourage further development of land for pastoral use (MAF 1999).

Farmers' response

Land prices peaked and hindered farmers from starting to farm; even so, six interviewed farmers started farming between 1981 and 1984. One farmer recalls his unfortunate timing when purchasing extra land.

B: which of course the '80s being the '80s, wasn't a good time to be buying land, high interest and low commodity prices. *Conventional*

Two farmers specifically mentioned the Land Development Encouragement Loans that provided an incentive to make major investments in fencing and clearing of native scrub^{10,11}. Both farmers recalled the period as a concentrated development phase: 'the stock numbers went up, the number of paddocks went up, there was new grassing, new fencing, fertilizer went on'. The droughts of 1982 encouraged two farmers to explore options to drought-proof their farms by gaining knowledge about irrigation via the employer and another by investing in irrigation¹².

1985-1987

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
1984	SMP removal	x	"Dig in toes and do better"	3	7	2	12
		xx	Diversification	3	1	1	5
		x	Off farm work	0	2	2	4
		x	Financial support (government	1	1	1	3
		xx	Investments	1	1	0	2
		x	Selling assets	1	0	1	2
		xx	Financial restructuring	0	1	1	2
		x	De-stock	0	0	1	1

By 1985 when the key economic driver—the removal of SMPs —occurred, 13 of the farmers owned their farms. The most frequently reported response to the economic restructuring was one of perseverance: reducing costs and trying to hold through, while searching for extra sources of income such as off-farm work and financial support. In addition, a more strategic approach of diversification was sought with the objective of extra income and spreading risks. The upheaval caused by the removal of SMPs was considered to have both positive (incentive for production) as well as negative

(stress and disillusion) implications for the viability of the sector. Four farmers started farming in this period. Almost all farmers from the interview recalled the removal of the SMPs either during ownership or from their parents' experiences.

Historical context

The introduction of SMPs had radically increased governmental expenditures on agricultural support. Some criticised these subsidies, claiming that they severed the connection between traditional farming systems and the changing market conditions (PCE 2004). According to the new Labour Government of 1984, market conditions provided signals for more efficient outcomes for the economy which implied a vastly reduced role of the Government. This neo-liberal policy orientation and a looming financial crisis formed the incentive to rapidly dismantle centralized schemes of support which left farmers more exposed to market prices. In a short period of time, NZ removed all financial controls, floated its exchange rate, undertook major privatization of state enterprises, relaxed labour market controls and removed most import tariffs and regulations (Johnsen 2003). Around 30 different production subsidies and export incentives were abolished in the 1984 budget, including those for fertilizer and its transportation and for the eradication of noxious weeds. Other subsidies, for example for irrigation and water, were significantly lowered. In 12 months, more than 25% of farm subsidies, were removed from sheep meat (Smith and Montgomery 2003). From 1985 the Labour Government moved to adopt a "user pays" concept with the intention to make governmental operations more accountable, efficient and contestable. Prices of inputs rose further from 1987 as a result of exchange rate-induced increases (associated with the stock market crash) and taxes on these products (PCE 2004). High interest rates in 1987 aggravated debt problems of many farmers while land prices collapsed by 50% to 70% (Smith and Montgomery 2003).

Farmers' response

The most frequent response to the SMP shock mentioned by the farmers was a reactive 'dig in the toes and do better' and 'box on and make the best of it' approach as 12 farmers indicated a major cut in farm expenses^{13,14}. Such reduction of expenditure has been termed 'self exploitation' by Rheinhardt and Barlett (1989), referring to the ability of farmers to work harder and 'buckle down'^{15,16,17}. All non-essential repairs and maintenance ceased and development of new land stopped (Smith and Montgomery 2003). A few farmers mentioned they fired hired labour to reduce spending and this shortage in labour had to be replaced by family labour. In addition, three farmers started to engage in off-farm work to generate extra income.

For some farmers the removal of subsidies provided an incentive for diversification. As noted by Wilson (1994), there was an increase in deer farming, dairying, farm forestry and horticulture (and a decline in sheep farming) after the economic deregulation. In the interviews, farmers recalled trials with goats¹⁸ and boysenberries among others. Four farmers indicated that diversification¹⁹ prior to the loss of SMPs had reduced the impact that the policy change had on their farming system.

Farmers starting to farm after the abolishment of SMPs in 1984 indicated they never farmed with subsidies and 'didn't know any better', forming a unique group of farmers amongst those having to adjust to the new system. Four farmers started in this period of time²⁰. Farmers that had bought land prior to the economic restructuring could find themselves in the situation of a 50% loss in their assets^{21,22,23}. This devaluation of stock and land, however, benefitted those starting to farm immediately following the adjustment as the capital investment requirement decreased²⁴.

One farmer recalled destocking in 1985 and another was able to sell some land and a house to generate extra cash flow^{25,26}. Another farmer had used the stock market²⁷ to generate extra income that he reinvested in the farm. Some farmers received financial help from the government, with about 20% of their total farm debt written off. At least two farmers recall having benefited from this, although one farmer was refused assistance from the program²⁸. In addition, financial restructuring in collaboration with the bank was mentioned as an important response to the loss of subsidies^{29,30}.

Farmers' attitude and opinion towards the economic restructuring

The policy change had been put into place to improve farm production efficiency and this argument was used to imply that those farmers who had lost their farms lacked the skills or capability to respond effectively (Smith and Montgomery 2003). Several key factors have been identified over the years to explain why some farmers survived the restructuring and others did not. According to Smith and Saunders (1995) the level of indebtedness had a big influence on farm survival. Thomassin and Cloutier (2000) state that young farmers, in particular, were prone to failure because of a lack of access to family funds. Although difficult to assess, several farmers suggested that "bad luck"³¹ played an important role in who had been able to adjust to market liberalization.

Yeah, so, you know, it lost a lot of very capable people. A lot of those young guys, in particular. Like, there's nothing wrong with their farming skills. They were just in the wrong place at the wrong time. Um, you know, just bought in, and suddenly everything's gone. Yeah. *Integrated*

According to another farmer, an individual's level of conservatism³² would hinder necessary farm management adjustments to continue farming. The same farmer indicated that "old farm money", generated in the 50s, helped to create a safeguard for farm continuation.

And a lot of that money—what they call the old farm money—is still in some of the old farms. You know, they've been able to build on that initial big money that came in the '50's and the guys that had done it right. A lot of the old farms have still got it. That's what made them, was that old money and it probably made this place too when you look back. It was massive money from what the costs were. *Integrated*

The impact of deregulation on farming families was very diverse and caused a lot of family stress for several farmers³³. A few farmers acted surprised at the "overnight commercialization" and "changing of the rules" imposed by the Government³⁴. For some there was a change of attitude and a sense of disappointment as the result of feeling let down by the country³⁵. The same farmer decided, from that time onwards, not to borrow money anymore.

So what we, well [my partner] made a conscious decision then that any further development was going to be out of income, he was not going to borrow any more money so that was a huge deciding point in our farming... *Integrated*

A couple of the interviewed farmers acknowledged the necessity of removing the subsidies as a means to increase farm production efficiency. According to one farmer it "made you sit down and farm" and changed the situation for those just living on the minimum price and subsidies³⁶. According to another "it gave you the incentive to push production"³⁷.

1988-1989

Droughts were considered key drivers of farm management adjustment between 1988 and 1989 and were recognised by eight farmers as such. Two subgroups of farmers mentioning the impact of the droughts were farming within a given geographical cluster (Amberley and Methven), while the

remaining differed in locations (Ashburton, Banks Peninsula, Outram and Waimate). One farmer started farming in this period raising to 17 the farmers with farm ownership.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
1988-	Drought	x	Buying feedstuff	0	0	1	1
1989		xx	Relief program	1	0	1	2
		x	Decreased stock rates	1	0	1	2
		x	Grazing alternatives	0	1	0	1
		x	Intensifying	0	0	1	1
		x	Hold on	1	0	0	1
		xx	Feed planning	1	0	0	1
1988	Moved to chilled cuts	x	XXL lambs not so much effect	1	0	0	1
		x	Investment in land	1	0	0	1
1989	Banning of DDT	x	Irrigation	0	1	0	1
		x	Over sow pastures	0	0	1	1

Historical context

After the removal of SMPs in 1985, farm income for sheep and beef farmers dropped by 40 per cent. The shift to chilled cuts from frozen carcasses in 1988 resulted in further lowering of farmgate prices. Lamb prices started to recover again in the 1989s because of a combination of higher world prices, depreciation of the NZ dollar relative to the British pound, removal of the EC's 10% levy on sheep meat imports, increased carcass weights and a 12% reduction in national lamb numbers because of the drought of 1988 (Chatterjee 1996).

Farmers' response

Not all farmers were affected by the fall in lamb prices, as one farmer recalls having a market niche during that time.

A: Okay. And in some ways the fall in prices, and the fall in lamb prices was –

F: Well, we had two good - wool was up at that point. And lamb was as well, especially big lambs. You're in XX lambs at that stage. They were big guys above 24 kilos. So we were making plenty of money, and then, it was just the weather upset things after that. *Organic*

Farmers responded to the droughts in 1988 and 1989 through investment in feed. For some farmers this would mean running a bigger overdraft³⁸. For others interest-free loans from the Government helped them to invest in feedstuff³⁹. Instead of having to buy feedstuff, one farmer recounted having had help from the MAF to strategically drought-proof the farm⁴⁰. Other strategies taken up by farmers in response to the drought were a decrease in stock rates, searching for grazing alternatives and intensifying production⁴¹.

In 1989 the Government banned the commonly used pesticide DDT. Farmers responded by over-sowing and irrigating those pastures with grub damage to alleviate problems. One farmer openly questioned the timing of the ban: he wondered if enough research had been done on searching for alternatives for DDT⁴².

1990-1992

Economic factors were assigned as the key driver for the period of time between 1990 and 1992 with the drop in the wool support scheme of 1991 and the creation of the Resource Management

Act (RMA) in 1991 as the most important events. Although the snow of 1992 was mentioned by six farmers it appeared only to have an impact on two farmers within the same area (Methven). Of the other four, two did not receive sufficient snow to hinder farm productivity (Amberley). The others (Ashburton), were able to mitigate the impact because of rising prices according to one and the farm situation (being 'in between' farms) according to another. Nine farmers were asked specifically about the effect of the RMA on their farms with none acknowledging any impact on management. Two farmers started farming in this period contributing to 18 farmers in total.

	Event/Driver	Effect	Response farmer	O	I	C	Total
1991	Pull support scheme wool	xx	Increased lambing percentage	1	1	0	2
		x	Fired worker	0	0	1	1
1992	Snow	x	Not so much effect	1	1	2	4
		x	Feed investments	1	0	1	2
1991	RMA	0	Not so much effect	3	1	5	9

Historical context

Changing market demands and consumer preferences regarding the fat content of meat encouraged lamb producers to start weighing lambs and to check back fat beginning in 1990, the same year that Southland reached record lambing numbers. Wool prices started dropping as the world's largest wool importers (China and the former Soviet Union) cut back on purchases. This led to a suspension of the price support scheme in February 1991 by the New Zealand Wool Board as the cost of 650,000 bales of surplus wool had resulted in its liabilities exceeding its reserves. The reaction of the New Zealand Wool Board came only days after the Australian Wool Corporation had suspended its price support scheme after accumulating a 4.7 million bale stockpile (Haszler et al., 1996). In 1991, the rising level of environmental awareness (including the decline in both water quality and biodiversity associated with agriculture) was translated into legislative action, resulting in a shift of policy mandate from central to local governments through The Resource Management Act (RMA).

Farmers' response

Farmers recalled facing a sudden and unexpectedly severe decline in wool payouts that caused a "90 degree shift in things" as one farmer had to fire a worker⁴³. A more general response from farmers to the low wool prices was to increase their lambing percentage⁴⁴.

F: So you've got to try and make that little bit extra somewhere along the way. And the only thing you can do, really, is up your laming percentage. Or have a complete change to what I wouldn't know. *Organic*

When asked (nine farmers) about the perceived effect of the introduction of the Resource Management Act on farmers' management adjustments, farmers indicated paperwork to be the only effect. Most farmers expressed annoyance with the RMA and preferred to be left without the hassle

C: And the introduction of the RMA, has that been something that has affected your practice? Kept you from doing anything, or?

F: No. It doesn't affect us here. No one's complaining. So you keep on just plugging away. *Conventional*

Heavy snowfall in 1992 was recalled by a few farmers but did not affect them badly, others responded with feed investments⁴⁵. The loss of stock caused lamb prices to rise again, reducing the

impact of lower lamb survival rates on farm income as the “numbers went down but the dollars went up” as one farmer explained⁴⁶.

1993-1994

The period of time between 1993 and 1994 was characterized by important economic drivers (lamb price crash and Fortex closure). Farmers were not asked specifically in the interview about these two events. However, a subgroup of farmers (11) was asked specifically about the privatization of extension services which explains the higher number of responses. For most of these farmers there was no perceived effect of privatization on their farm management. No farmer started farming in this period.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
1994	Lamb crash	x	Selling lambs as woolly line	0	0	1	1
		xx	Focus on trading instead fattening	0	0	1	1
1994	Fortex closed down	xx	Taken by surprise	0	2	1	3
		xx	Lost job, wife started working	0	1	0	1
1994	Privatization of extension	0	Not so much effect, did not use	3	2	2	7
		x	Loss of focus group	2	1	0	3
		x	Still used	0	0	1	1

Historical context

By 1995 Agriculture New Zealand was sold signalling the end of all government funded extension activity in agriculture (MAF 1999). The role of MAF was redefined in line with the perceived needs of the changing farm economy and in line with the Government’s commitment to state sector reform. The aim of these policies was to make extension services more market led. All scientific and research activities were transferred to the new Crown Research Institutes (Rhodes, Willis, and Smith 2000). Farmers and growers from then onwards would have to pay for advice from farm consultants.

Farmers’ response

As a response to the crash in lamb prices of 1994 one farmer started selling lambs undrafted as a wool line⁴⁷ while another changed his focus from fattening to trading⁴⁸. Deregulation increased the pace of change in the processing industry. Many of the large and old meat processing plants such as Fortex closed due to sheep numbers dropping, surprising farmers in the process⁴⁹. The closing down of Fortex also affected those having off farm work at the Fortex plants⁵⁰.

Some farmers indicated the privatization of extension services had little effect on their decision to hire consultants since they were not using consultants anyway^{51,52}. A few farmers mentioned that prior to the privatization of extension services they benefitted from having a consultant for their discussion groups. As recalled some by farmers, however, these groups slowly disappeared as a result of the state sector reform.

1995-1996

Economic events were assigned to be key drivers for the period between 1995 and 1996, a period that was highlighted by the crash in beef prices and the oil crisis of 1995. The crash was mentioned by only six farmers, all on their own initiative. One farmer started farming during this period bringing the total to 21 farmers.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
1995	Beef crash	xx	Maintained over winter	0	0	1	1
		xx	Diversified	0	0	2	2
		x	Not so much effect (diversified)	0	0	2	2
		x	Cutting costs	0	0	1	1
1995	Oil crisis	xx	Adapt cultivation methods	0	0	2	2
		x	Little effect, started farming	0	0	1	1

Farmers response

Reluctant to sell for a lower price, one farmer kept his stock over winter causing financial problems⁵³. To reduce stress caused by the crash in beef prices on farm income, some farmers started to diversify into such activities as tourism⁵⁴ or rearing calves to keep up with ‘moving goalposts’. Those who had already diversified indicated that such activities acted as buffers against the drop in beef prices^{55,56}. Others started that they cut costs as a response to lowering incomes during the period⁵⁷. As a response to the oil crisis of 1995, a few farmers indicated adaptations in cultivation methods to reduce fuel use, such as no tillage practices⁵⁸. Those who started farming during this time saw the oil crisis as part of “adapting to coming here”, that is the shift to a new location⁵⁹ and starting to farm.

1997-2001

Environmental drivers were considered most important for the period between 1997 and 2001. Five farmers, all located in different clusters, had adopted different management strategies to cope with the drought of 1998-1999. A further two farmers started farming in this period raising the total to 23 farmers.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
1998- 1999	Drought	xx	Irrigation	0	1	1	2
		x	Financial buffer	0	1	0	1
		xx	Off farm work	0	1	0	1
		x	Better look at condition stock	0	0	1	1
		x	Decrease stock rate	0	0	1	1
		x	Feed investment	0	0	1	1
		x	Alternative grazing	1	0	0	1
	Drop in deer prices	xx	Quit deer farming	1	0	0	1

Farmers' response

Yeah now I guess I can I remember all them. I remember that 'cause I'd just started. In '98 I started a lease and the old peak and crisis, it was just ticketyboo, you know, I thought farming was easy. *Conventional*

Harsh environmental stresses of drought and snow demanded farmer response in order to maintain farm viability. The drought of '98-'99 was “character building” according to one farmer⁶⁰. To be able to manage a decline in farm income some farmers sought financial support, while others engaged in off farm work and feed investments. Strategically one farmer “took a general better look at stock condition”⁶¹ to be better prepared against droughts. Irrigation was used as a tool to drought-proof farms⁶² in the longer term by a few farmers. Other reactive responses from farmers were to reduce stock rate⁶³ and to search for alternative (such as road side) grazing⁶⁴.

Three farmers converted to organic over the time period 1997-2001 for varying reasons. One farmer stated specifically that their reasoning for going organic was premium based: “so any premium is a good premium, and I don’t care how I get it”⁶⁵. The same farmer made a radical decision to totally quit deer farming as he saw deer prices dropping.

2002-2004

Although the period of 2002 until 2004 was characterized by environmental factors as key drivers of change, the snow of 2004 was not accounted for in farmers’ response as only one farmer recalled the event. No farmers started farming in this period.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
2002-2003	Peak prices	xx	Increased farm size	0	1	0	1
		0	No effect, diversified	1	0	0	1
2004	Snow	0	No effect, enough reserves	0	1	0	1

Farmers’ response

The peak lamb prices of 2002-2003 provided the incentive for one farmer to increase farm size. Another farmer claimed to have been “living in a cocoon” upon asked if he could remember the peak prices because of their ability to chase different options and diversify production⁶⁶. Only one farmer mentioned the snow of 2004 and how he managed to get through with the help of available on-farm supplements⁶⁷.

2005-2008

Economic factors were considered key drivers for the period between 2005 and 2008 and were frequently recalled in farmers’ responses, with more emphasis put on the lower lamb prices of 2005-2006 and the oil crisis of 2008. Few farmers mentioned the snow of 2006 and the drought of 2007 and those who did were all from different clusters. Two farmers started farming between 2005 and 2008, bringing the total to 25 farmers.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
2005-2006	Lower lamb prices	xx	Cut costs (stop carry replacements)	0	0	1	1
		x	Cut costs (personal expenses)	0	1	0	1
		x	Sheep/beef ratio adjusted	0	1	0	1
		xx	Change to finishing type regime	0	0	1	1
2006	Snow	x	Feed investment	0	0	1	1
		x	Family labour	1	0	0	1
2005		xx	Converted to dairy	0	1	0	1
2007	Drought	x	Destock	0	1	0	1
2008	Oil crisis	x	Cut fertilizer use	0	2	0	2
		x	Cut fuel costs	0	1	0	1

Farmers’ response

The lower lamb prices of 2005 and 2006 caused one farmer to stop carrying on-farm replacements with the aim of reducing costs. Another farmer rigorously cut personal and family expenses: “just cut things back” to save money, such as their membership to the airplane club, the newspaper and

insurances⁶⁸. As a response to falling lamb prices, the sheep-beef ratio⁶⁹ was adjusted by a few who increased the number of cattle while others changed to a finishing-type regime⁷⁰.

In reaction to the snow of 2006 farmers responded through feed investments and the use of family labour. The drought of 2007 caused one farmer to destock. The oil crisis of 2008 significantly increased fertilizer prices and caused a few farmers to cut back in fertilizer use^{71,72} while others cut back in fuel costs.

2009-2010

Although the period 2009 until 2010 was thought to be mostly characterized by economic drivers, the drought was also mentioned. References to both the peak prices in beef of 2009 and the drought of 2010 were only sporadically given by the same farmer. One farmer started farming between 2009 and 2010, raising the total to 26 farmers.

Year	Event/Driver	Effect	Response farmer	O	I	C	Total
2009	Peak prices beef	x	Increased beef	0	0	1	1
2010	Drought	x	Destock	0	1	1	2

Farmers' response

One farmer explained he had learned from the drought in the previous season and started destocking from December onwards to avoid "getting in a pickle"⁷³. Another farmer saw the peak prices in beef as an incentive to increase the beef/sheep ratio.

3.2 General opinions, response and attitudes towards drivers of change.

Not all farmers would respond to a specific event in the timeline; rather they would make general statements about their response to a specific type of driver. This chapter takes into account general opinions, responses and attitudes towards external and internal drivers of change mentioned by the farmers in the interviews. Because governmental drivers have been mentioned in relation to specific periods of time (covered in Chapter 3.1), they will not be discussed further in this section. Remaining drivers to be discussed in this chapter are: Environmental, Economic, Household and Personal and Societal drivers. To allow for panel comparisons, farmers' responses have been subdivided into farming system: Organic (O), Conventional (C) and Integrated (I).

3.2.1 General responses to environmental drivers

In this research and in the context of sheep and beef farming, several environmental drivers were identified including: climatic conditions (droughts, winds and snow), pests and diseases and soil fertility.

The occurrence and impact of droughts varied between and within panel clusters (three farms of different farming systems in near vicinity of each other) as discussed in the previous section. The farmers' recall of drought events confirms the need to account for the spatial clustering of farms when observing environmental factors.

Driver	Response	O	C	I	Total
Environmental (Climatic)	Feed supplements	5	2	5	12
	- On farm	4	2	5	11
	- Off farm	2	0	0	2
	Destock	2	4	3	9
	Investment in irrigation	2	4	1	7
	Early lambing	0	1	1	2
	Investment in shelter	2	0	0	2
	Increase farm size	0	1	1	2
	Off farm employment	0	1	1	2
	De-intensifying	0	1	0	1
	Increasing lambing percentage	1	0	0	1
	Family labour	1	0	0	1
	Forming partnership	0	1	0	1
	Selling	0	1	0	1
Pest & diseases	De-intensifying	1	1	0	2
	Crop rotation	1	0	0	1
	Grazing rotation	1	0	0	1
	Irrigation	0	1	0	1

Attitude and response towards climatic conditions

The most frequently observed response to climatic events as environmental drivers of change involved the investment in feed supplements, either produced on-farm (4,2,5) or purchased off-farm in the form of sheep nuts or baleage (2,0,0). Farmers destocked to reduce pressure on feed in times of drought or snow (2,4,3). A more strategic response was the investment in irrigation where this was an option to reduce climatic impact (2,4,1). Several farmers shared the perception that climatic extremes were part of farming (3,4,5) and had a mutual approach of "hanging on" in response to droughts, wind and snow.

C: So I guess, in the long term, you don't necessarily completely stock to drought?

F: You can't, 'cause you're never going to make ends meet. It would depend on your, uh, financial situation. If you didn't know anything, you'd be great with our stock we've got right now. In a good year, you have grass coming out your ears. It just doesn't work when you owe money. So you've got to try and build up to a point where you're making money, 'til the next drought comes along, and you start again. *Organic*

Not all farmers considered climate to impact on their farm management as it was a given condition of farming. Some farmers would even derive a sense of pride from being able to farm in places with drought⁷⁴ compared to those “*thinking* they are in a drought” in wetter regions of the country. Those in areas with more consistent rainfall, on the other, did not always sympathise with those in drought prone regions.

The weather's never affected the farm, 'cause you farm for Southland and if you don't, yeah, what annoys me is people saying we're in a drought and we've had 3 droughts in a row, we've had this and that, well nobody's making them live there, you know if they want to do it, come to Southland, if you don't want the mud, go to Canterbury, go wherever, anybody that says you know, this is our sixth drought or our tenth drought, you know... *Organic*

Attitude and response towards pests and diseases

Twelve farmers were asked specifically about the effects of pests and diseases on their farm management. However, only a few farmers mentioned specific responses other than shooting rabbits and the application of chemicals (that would be considered common practice). Other specifically mentioned adjustments were farm management related and involved crop rotation, grazing rotation and de-intensifying grazing pressure and irrigation. Farmers' response to the banning of DDT is reviewed in Chapter 4.1.

3.2.2 General response to economic drivers

Driver	Response	O	C	I	Total
Prices (input)	Low(er) input policy adopted	7	7	5	19
	Low(er) input policy not adopted	0	2	3	5
Prices (output)	Reduce costs adopted	4	5	4	13
	Diversification	2	2	2	6
	Reduce costs not adopted	3	0	2	5
	Change to organic	2	0	0	2
	Change to dairy	0	1	0	1
	Dairy grazing	1	0	0	1
Exchange rate	Passive: no control	0	2	3	5
	Speculate	0	2	0	2

As a response to increasing input prices, a low input policy (7,7,5) was adopted by a greater amount of farmers compared to those not willing to reduce their inputs (0,2,3) out of, for example, a concern of loss in soil fertility.

You can only spend what you've got. I'd love to spend more. If it was there, I would spend more, because I believe our farm could be more productive, and with better quality products, if we could address some of the soil issues. It just comes back down to what we could afford to do. *Organic*

Ways to reduce costs as a response to decreasing farm revenue, such as cutting back on repairs and maintenance, plant and machinery and fertilizer were adopted by a number of farmers in response to economic change (4,5,4). Fewer farmers felt as if they had reached the limit of cutting costs, or felt they could not afford cutting back in the perspective of farm continuity (3,0,2). In addition,

changing (output) prices were seen by a few farmers to diversify their production (2,2,2). Other responses mentioned were to change to dairy, to convert to organic and to adopt dairy grazing.

A few farmers mentioned the exchange rate as a driver to speculate (0,2,0) while others felt as if they could only passively undergo fluctuations⁷⁵ (0,2,3). Not many farmers spoke of audits or how these affected them in a negative way (1,0,1).

3.2.3 General response to personal and household drivers

Driver	Response	O	C	I	Total
Lifestyle	Leisure time	0	1	5	6
	Dairy grazing	1	0	0	1
	Diversification	0	1	0	1
	Intensification	0	1	0	1
Health	Neglect of farm work	1	1	0	2
	Diversification	0	1	0	1
	Investments	0	0	1	1
	Sale of family farm	0	1	0	1
Succession	Investments	0	0	1	1
Death in family	Leasing out farm	0	1	0	1
	Succession issues (leading to debt)	0	0	1	1

Farmers also identified farm adjustments that were the result of personal and household drivers such as health problems, lifestyle decisions and farm succession. The most important lifestyle driven response mentioned was the desire to enjoy more leisure time with the family and/or to be more involved in personal interests besides farming (0,1,5).

A: And as your family grew, so with kids, did that change the way you dealt with the farm at all?

F: No, probably not I don't think, don't know, I wouldn't think so, would you?

FW: Yeah, more inclined to have time off.

F: Family time.

FW: Yeah family time, 'cause we try and work Monday to Friday, I mean you can't at this time of year but generally speaking. *Integrated*

The impact of health problems discussed by farmers included the neglect of farm work⁷⁶, diversification, investments and sale of the family farm. The death of a family member changed one farmer's view on life resulting in the decision to sell his farm and lease it back from the new owner⁷⁷. Succession issues after the death of his father left a farmer with large debts when assuming ownership of the farm, limiting his capacity to respond to changing conditions or to innovate⁷⁸.

3.2.4 General response to societal drivers and advice

Driver	Response	O	C	I	Total
Advice (external)	Intensification	1	2	0	3
	Diversification	0	1	1	2
	Technical innovations	1	0	1	2
	Purpose breeding	0	1	0	1
	Rotational grazing	0	1	0	1
Society	No effect	1	1	1	3
	Fencing off streams	0	1	0	1
	Consciousness	0	1	0	1

A few farmers mentioned external advice (e.g. consultants, other farmers, relatives) as the driver for on farm adjustments such as intensification, diversification and the adoption of technological innovations.

During the interviews some farmers were asked what effect society had upon their farming. Of the farmers who responded, most insisted that external pressure exerted by society had no effect on their farm management⁷⁹ (1,1,1). Fencing of streams and a rising awareness of environmental problems were mentioned only by one farmer.

Yeah well I'm always conscious of that anyway, I'm trying to leave the farm better than I found it and I'm not trying to, I'm conscious of those things. *Conventional*

3.2.5 Personal opinion on risk and innovation

Attitude towards risk management

Farmers differed in their personal perspectives on and general approach to farm risk management. One farmer would not “jump to the flavour of the day” anymore, referring to a time when he was still doing so⁸⁰. Another farmer specifically indicated age was influencing his approach to investments and raising his aversion to risk.

But yeah, maybe that's something to do with my age. I'm getting cautious, more cautious the older I get. But I would punt on something with this money too if I saw what I thought was a good... and that's its sitting on call. And I've got no idea what field it would be in. It could be anything. *Organic*

Farmers frequently described their approach to risk management as occurring within the context of farm decisions made throughout time.

In some interviews, the interviewers specifically asked participants whether they perceived a specific decision to be risky. Fourteen of the interviewed farmers mentioned risk in relation to farm management and differed in attitude between those who were more risk averse and those who perceived themselves as being more progressive and more willing to accept risk. Of these farmers, more seemed inclined toward a risk averse and conservative approach (2,4,3).

There were blocks that came up next door to us probably 10-15 years ago but I was still paying this place off, and I thought do you borrow to buy the next bit, oh it would have been tight. And it exposes you to the wheels falling off and then putting your nest egg at risk, and a lot of them have done it, and if I had of done it I probably would have been right, but it would have been a few very stressful years trying to yeah, you've got to farm to the max, and you only needed sort of a dry year and then you're in trouble again. *Integrated*

The more progressive minded (3,1,1) would frequently refer to economic factors as the rationale for the innovations the adopted.

I s'pose we've probably farmed, we've farmed hard all day and probably more we farmed for profit. *Conventional*

Farmers grouped under the risk averse and conservative approach shared the characteristic of “holding back” and of avoiding the exposure of the farm and family to financial risk—even to the extent that options to increase production (such as an increase in farm size) were declined. Farmers grouped as progressive seemed to be more inclined to engage in higher risk farm management decisions and were more production oriented.

Attitude towards innovation

In the interviews, farmers were asked if they had developed any new ideas or techniques that would help them to survive. Their response to this question indicates different types of response and approaches to innovation. A relatively small group of farmers voiced a conservative response, being more reluctant to adopt new farm management strategies (2,2,3).

B: Never get ahead.

A: Never get ahead.

B: That's right, like I said earlier on, that's why we never jumped into something new that came out that year, it still doesn't pay, you know if you sit back, if it's any good, it'll be operating better in two years time, you know and most of them are within two or three years. *Integrated*

A larger group of farmers, however, indicated a predilection to adapt to changing circumstances and/or take on new ideas such as direct drilling⁸¹(6,3,2).

A: Can you say that you've developed any new ideas or techniques that will help you to survive?

B: Oh I've changed lots of things, I've developed things on this farm that maybe other people don't do and maybe some of them they do now. I always think about what I'm doing. How efficient [is it]? Can I do it better? Even things that go really good... I'm thinking of ways to improve all the time.

A: So what, efficiency is one of the big things that you pay quite a bit of attention to?

B: Well just not being wasteful, yeah. *Conventional*

Chapter 4: Discussion

The main objective of this report is to provide a preliminary overview of the content of the retrospective interviews. The interviews were designed to elicit a narrative of changing farm management that was structured by pre-defined important events and to extract the key drivers and responses at specific points in recent history. As a result, the discussion reflects the impact of agricultural restructuring and the adaptive response to external and internal stress factors and shocks over the past 40 years. In this research, it is not assumed that all farm adjustments occurred as a direct response to one particular driver. However, by focusing on key drivers for a given adaptive response it is assumed that general conclusions can still be drawn, which will be discussed in more detail below.

4.1 Drivers for change and responses

As demonstrated in the retrospective interviews, farmers are not passive victims of the changing economic, political, environmental and social climate in which they farm: a large variability was found in both the adaptive responses that farmers applied to drivers and the perceived impact of those drivers on the viability of farming.

Framed by the predefined timeline used in this research, the most important driver for change was the agricultural restructuring starting in the mid-1980s. The response to the resulting changes in the economic conditions of production varied widely between farmers. Some of those interviewed had started their experience as farm owners or managers during or after this period and viewed the neoliberal policies as situation normal. Others who had just made investments in land and stock found themselves with large debts for the first time. To deal with the financial hardships of this period, many farmers adopted a short-term adjustment involving some form of 'self-exploitation': a perseverant response cutting back on farm and household expenditures so as to maintain farm ownership. Another group of farmers responded with farm diversification: a longer term farm adaptation to overcome the decline in farm income. Other responses referred to shorter or longer term involvement in off-farm work and financial restructuring as a response to the loss of farm subsidies. The upheaval caused by the agricultural reforms of the 1980s has been articulated by farmers in different ways. Some would agree it was the "best thing to do" and recognized that these provided incentives for improvements in their farming systems. Others felt completely left "out in the blue" and retained a sense of bitterness toward the New Zealand government from that time.

Climatic extremes such as droughts and heavy snowfall were the most frequently mentioned drivers of change, although some farmers would refer to droughts as a given condition of farming which had "no effect" in changing their management practice. Some farmers responded in a more proactive way than others: in anticipation of future drought events, on-farm feed investments such as baleage were made to cope with reduced pasture growth. Other farmers demonstrated a more reactive response by buying extra feed from off-farm sources at the occurrence of a drought. Farmers differed in the temporal scope of responses: short-term adaptations such as roadside grazing during droughts compared to a more strategic approach in the form of investment in irrigation. In general, the most frequently mentioned responses to drought were investments in feed (sourced both off- and on-farm), destocking and irrigation. The level of impact on farm management attributed to the climatic drivers included in the timeline often differed due to the geographical locations of the farmers: for example, some were farming in more drought-prone areas than others. Furthermore, there was evidence of variability in the perceived impact of drought between farmers in the same

cluster with different farm size, farm management practice and farm structure listed as possible explanations.

Overall among the interviewed farmers, a reduction of costs (plant and machinery, repair and maintenance and fertilizer) was the most frequently adopted reactive response to increasing input prices and lower farm income. A large group of farmers cut back on fertilizer, while a much smaller group decided not to reduce fertilizer inputs out of a concern for their soil fertility. Some farmers turned strategically to innovative cultivation methods, such as direct drilling, to reduce fuel costs and enhance soil properties.

Farm management decisions seemed not to be influenced to a great extent by societal pressures. For example, the introduction of the Resource Management Act of 1991 (RMA)—set up as a response to an increasing environmental awareness—did not alter farm management according to the farmers. It is, however, difficult to assess the extent to which the personal orientation of the farmers has changed under the influence of societal drivers within the narratives that they presented. In other words, there appeared to be a strong desire to represent sheep and beef farmers as being independent and, thus, less likely to be swayed by what they considered to be uninformed and emotional responses of the non-farming population.

Health and lifestyle were mentioned by some farmers as examples of household and personal drivers to which farmers responded. Although not explicitly articulated as such by all farmers, personal values, experiences, motivations and beliefs are important social attributes of the decision making process. According to Darnhofer *et al.*, (2009) social issues and trade-offs within the farming family underlie all adaptation. In order to understand and not only describe farmers' responses, the family farm and its household members (or *actors* following Johnson, 2003) should be placed within the centre of the family farm unit, where it has the ability to develop strategies and act within a certain set of opportunities and constraints.

In previous research values and attitudes towards debt were found to be influential in how the rural downturn of the mid 1980's affected farmers' perceived impact and response (Sligo, 2003; Wilson, 1994; Johnson, 2003). Farmers avoided major farm adjustments because they were unwilling to take on extra debt (Johnson, 2003). In this research, it is difficult to assess relative debt levels of the participants based on their response to the qualitative inquiry. (Additional data on the recent financial conditions of each farm in the ARGOS project may allow for some interrogation of this issue—although financial conditions at particular periods in the past are not necessarily known). To explore farmers' flexibility in decision making and options for change, farmers were asked about their attitude to risk and innovation. The reluctance to take on additional risk prevented some farmers from pursuing strategies such as farm expansion, while others saw taking risks as an option to increase production. When asked about innovation, some farmers tried to "stick to what they knew" and would adopt a more conservative approach towards innovative farm adjustments. A larger group, however, tried new ideas and techniques, such as direct drilling, to improve and maintain their farm, or indicated the desire to continue adapting to their changing farming environment in order to ensure the continued viability of the farm.

4.2 Research design

The retrospective interviews were designed to elicit a narrative of change from the individual farmers' perspectives. As a result, the analysis in this report is based on their attempts to develop logical explanations of the current situation on each of the farms. Although the retrospective interviews provided valuable insights into farmers' response to specific events and drivers, the research also had its limitations which have been listed below:

1. Only those 'surviving' the impact of events and shocks and remaining in farming were interviewed in this research and, as a result, it is likely that unsuccessful response or untenable situations at the time of change have not been identified.
2. The narratives relied on the farmers' ability to remember certain events and their response to them. Some farmers were better at recalling periods of time than others. The level of perceived impact within the existing management system and memory of past conditions has frequently intertwined, colouring the individual farmer's response. As a result, the logic and coherence of the resulting narratives may hide what were largely disjointed and 'off the cuff' responses at the time.
3. Farmers had to perceive the event as something to which they would respond in the form of farm adjustments. The potential for the interviewers to pursue responses was important to establish if 'no effect' was indeed a response to a driver, as opposed to one which better conformed to the mindset of the farmer. As illustrated in Chapter 3.2.1, farmers were as likely to consider climatic extremes (for example droughts) to be a given and known condition of farming as they would acknowledge them as a driver for management adjustment.
4. At this stage of research, and with the diversity of responses given, it is difficult to establish difference between the sheep and beef farm systems (organic, integrated and conventional).

Such limitations to the research design do not imply that the findings are invalid. Rather they impact on the interpretation of the results. For example, without greater understanding of conditions that led to failure of farms facing similar changes, it is impossible to establish if the persistence of the farmers interviewed is the result of general response trajectories or of specific features or conditions of that response. In other words, non-surviving farmers may have attempted similar response strategies to those of the surviving farmers interviewed and it is impossible to distinguish between such responses with data derived solely from the ARGOS farms. The second and third limitations both suggest that the generalisation of findings to a wider population of farmers should be qualified in regard to the current social, economic and environmental condition of farms and the individual farmer's level of experience with particular types of drivers in the past. The final limitation indicates a similar need to qualify the generalization of findings relative to panel comparison.

4.2.2 Justification of the use of the timeline

Shocks and events had been listed by the ARGOS research team and divided into periods of time with a common key driver prior to the interviews. These pre-assigned key drivers frequently matched with the farmers' main focus of driver and response in that timeframe with the exception of one timeframe: 1981-1983. The latter was pre-assigned as a period in which environmental drivers would be key; farmers indicated, however, that the administering of development loans from the Government was perceived as a more important driver of change at that time.

Chapter 5: Conclusion and Follow up Research

5.1 Conclusion

The preliminary analysis presented in this report has focused on providing an overview of the qualitative data relevant to key drivers of change and farmers' experiences for sheep and beef farmers at the family farm level. As a result, it has shown the rich diversity in the range of response utilised by farmers who are confronted with an ever-changing environment of external and internal drivers. The key drivers of change identified were the economic restructuring of the mid-1980s, droughts, rising input prices and market price fluctuations. Although the farmers all demonstrated some degree of resilience *in situ* by managing to remain farmers while negotiating a range of shocks, their response to the economic restructuring varied significantly. This response ranged from "hanging on" that included self-exploitation and perseverant strategies to more flexible ones such as diversification and off-farm income. Similarly, in response to drought, some farmers chose a more tactical short-term approach such as feed investments in the face of changing conditions while others utilise more strategic, long-term farm adjustment (e.g. irrigation). As a response to increasing input prices, a low input policy was adopted by the majority of farmers. Half of the farmers adjusted to fluctuations in market prices by reducing their expenditures on repairs and maintenance and their investments in plant and machinery.

5.2 Follow up research

This report provides the first step in a broader research context of the ARGOS programme and was intended mainly as a descriptive reporting of the external and internal drivers of change and responses mentioned by farmers.

Subsequent analytical steps will focus on further interpretation of the findings and the provision of theoretically informed explanations of farmers' response trajectories as a third step. The latter step will interrogate whether the complexity of responses and strategies adopted by farmers can be explained by, for example, farm typology, life cycle, level of debt, or geographical location using ready available information from the ARGOS database. In addition, the research hypothesis of ARGOS will be tested to determine if there are any differences in farmer response trajectories between the management systems (Organic, Integrated and Conventional). The ARGOS National survey will potentially provide means to establish the alignment of the broader New Zealand farmer population with the ARGOS participant responses to findings and the extrapolation of ARGOS results.

In future research, the farmers' existing repertoires of response and their understood implications provide valuable insights in searching for pathways to promote change. As part of the knowledge building process, a decision support framework can be developed as a tool to help stakeholders identify the most appropriate strategy to address sustainability issues.

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Appendix I: Timeline

Most important driver		Sheep	Beef	Wool
	1965 1970			
Environmental	1971 1972	Drought		
Economic	1973 1974	UK enters EEC/EU, oil crisis, commodity boom		wool dip
	1975	Big wind in Canterbury		
	1976	High inflation		
Economic	1977 1978 1979 1980	Oil crisis (carless day)		
Environmental	1981 1982 1983 1984	Drought (South Canterbury, North Otago) Drought (South Canterbury, North Otago) Drought (South Canterbury, North Otago)		
Policy/economic	1985 1986 1987	SMPs stop, fertilizer subsidies removed, land prices Drought Sheep numbers fall, prices rise to 2002		
Environmental	1988 1989	Drought, move to chilled cuts from frozen carcasses. Drought, DDT banned		Peak prices Wool Bd pull
Economic	1990 1991 1992	Land prices start increasing (MWNZ) Snow		
Economic	1993 1994	Privatisation of extension services, lamb crash		
Economic	1995 1996	Oil crisis	Beef crash	
Environmental	1997 1998 1999 2000 2001	Drought Drought Drought		
Economic	2002 2003 2004	Peak prices Peak prices, drought Snow, drought		
Economic	2005 2006 2007 2008	Lower prices Lower prices Drought, lower prices Drought, lower prices	Price	
Economic	2009 2010		Peak	Wool levy cut

Appendix II: Quotes

¹ It was a very isolated place really to him wasn't it, I don't think he ever saw it as anything but a run block that having [...] sons, one would have the opportunity to develop later; but we've never really asked him why he did... (*Integrated farmer*)

² And then in the 50s my father and his partner, they started clearing the scrub and they built a woolshed and started subdividing it through over sowing and things and burning started to make it into a farm. (*Conventional farmer*)

³ I remember as kids we were, um... Dad put in a paddock of sugar beet and we had to, um, every night go down and, and pull, 'cause you had to pull them out of the ground, put 'em on the back of the truck and we'd feed 'em out, and Dad would feed 'em out the next morning. (*Integrated farmer*)

⁴ Things were probably, economically at that stage, a bit more stable. 1971 was a year where prices were quite low for sheep products in particular. The government had a stock incentive scheme, which actually paid farmers \$3 for every sheep they had on the place, so they would keep them. But from then on, things actually were quite stable for a few years, until the time of Mr. Roger Douglas' reign. And, yeah, we were able to - we had a pretty good idea from year to year where we were going financially. Gradually over time - not too long after '71 I bought part of my brother's property. (*Integrated farmer*)

⁵ So it did have some pretty major effects and...Dad's Home Farm was probably reasonably fortunate, but it was mostly annoyance and cosmetic...as opposed to...you know, there was farms when silos blew away and sheds crushed, and...so from that point of view there wasn't a great deal of structural damage that interrupted major there...but there was from the point of view of shelterbelts...with holes in them...and fences and things...repair rather than replace...you know. (*Conventional farmer*)

⁶ F: We didn't lose a lot in that wind ...

A: Mmm.

F: It, um, 'cause we didn't have, we didn't have big shelter belts ...(*Integrated farmer*)

⁶F: Um, no, not really. Um, yeah we managed to get through most of those things - I suppose the big wind in '75 was...I was still at school then. So, yeah, that knocked things around a bit. That was before my time. But most of the station got struck. Sheds and shelterbelts were gone and what have you. But, um, yeah, as far as far as freaks of weather, we used to get through them all right without too big a hiccup.

A: Do you remember your father's response to that?

F: No, I only thing I can remember is the guy working here, he was getting paid \$1 for, all the pine plantations blew down and Dad paid him a \$1 a post that he cut out and this guy got all his mates up from town and wherever else, had free labour and he chopped posts and that sort of stuff. That's about all I can remember. (*Integrated farmer*)

Um, yeah well I suppose it was just a matter of clean-up and carry on. Yeah, I don't know really what it cost. (*Integrated farmer*)

⁷ A: Ok, so you had the carless days, yep?

FW: So that didn't actually affect us, 'cause we just changed the car day.

A: And the change in input prices associated with that, was it...

FW: Well you just kind of absorb that don't you, I mean like we fill our cars in town. We don't take it out of the farm bowser at all so you know. \$100 hurts but because we live in the country, I don't want to be stuck here and never go anywhere. You pay and you really don't, I won't say don't worry about it 'cause you do, but you pay and you carry on, yeah. Because petrol has got very expensive. (*Conventional farmer*)

⁸ A: And...the oil crisis...does that have any impact on you?

F: In the '70's? No...no. (*Organic farmer*)

⁹ We started in 1980. Probably the Rural Banks then, we had too much debt. We wouldn't make it work. Um, which was interesting, 'cause we did make a start. And I think possibly they were correct with our - the stocking rate and the production that we had when we had when we bought the place, we could not sustain the debt. I know it might sound silly. We made the decision that we were going to borrow more money and develop, and increase the production so that we had a bigger production to spread over not only the new debt, but the existing debt. (*Organic farmer*)

¹⁰ We purchased the place, as I say, in July of 1980, and we were granted from the Rural Bank a land development encouragement loan in '82? I think. And that's when - the following two or three years and that early to mid-'80's, there was a substantial amount of fencing, the road right through the farm - goes right through the farm to the top yards - the top yards were built, and we cleared quite a lot of native scrub. So it was really just more of what had gone on in the past, but it was 'cause it was a special development loan that the government made available to all New Zealand farmers, it was quite a concentrated development phase. And that probably got the farm really to a high gear. The stock numbers went up, the number of paddocks went up. There was new grassing, new fencing, fertilizer went on. (*Organic farmer*)

¹¹ F: No services, no buildings, it was just a bare bit of land. [...] So then things changed and technology in agriculture's had a huge input in this. [...] But yeah, that's where we started from and at that time, well the Government of the day was saying you know, we need young people in farming and here's the Rural Bank and you do this, we'll get the money...

FW: Called development loans.

F: In fact I was just looking at some old notes, we spent a quarter of a million in about less than three years developing the place and that was converted into cheap loans, well some of it was written off providing you paid the bills. (*Integrated farmer*)

¹² A: And did you see the change in farming practices as a result of that?

F: That's when the irrigation started to come in ...And that's when Dad put irrigation in here and, it was, um, Yeah, God, it was incredible really, plus we'd, I think there was about two and a half thousand sheep we had on here then and, yeah, there wasn't a blade of green grass anywhere ... And it was just, um, the sheep just run the whole farm ...(*Integrated farmer*)

¹³ You really just had to dig your toes in and do a bit better. It was as simple as that, to get the same sort of return. We have always strived to get our stock performance going forward. And if you take it from start to now, it certainly has. There's humps and holes in the line, but overall, yeah, like our lamb weights are - at one stage we were happy to kill lambs 13, 14 kilos. Well, now the target was 18 this year, and you weren't far away, were you? (*Integrated farmer*)

¹⁴ Um. Yeah, not really. Yeah, not a lot. Yeah, we just, continued on, I suppose. We just managed, um, things fluctuated a bit and what have you, but we seemed to box on and made the best of it. (*Integrated farmer*)

¹⁵ B: Oh well you just cut your spending, like by that stage I had a secondary income so I wasn't totally dependent on the farm and so we were luckier than most, but you just cut your spending accordingly, you know you just batten down, you don't get the cheque book out when it gets really bad and you know, you might cut down your ewe numbers to make it easier so you don't have to spend so much on feed and that sort of thing. (*Conventional farmer*)

¹⁶ (Laugh) Well we worked, we buckled down and worked our way through it, yeh. Mhm. Ok. We shored our own sheep and bloody yeh. Just cut costs and got through it. Mhm. But, yeh it didn't really affect how I looked at it, really, in the long term. I don't think. (*Organic farmer*)

¹⁷ F: Well, no, I was very young and, like anybody you send off to war, you think you can change the world. You think you can fix it. If you work harder and tear into it, it'll all come right. And so '85-'88 came off SMPs, and I mean there was debt there for the first time since 1951. (*Conventional farmer*)

-
- ¹⁸ B: Yeah a wee bit. We ran a few goats here for a start until they got into a tree break and barked all the trees. So they went pretty soon after that. Forestry, you know we've planted our gorsy gullies and places like that into trees so we've actually quantified it but we've got quite a large area, maybe 20 to 40 hectares. *(Conventional farmer)*
- ¹⁹ A: OK. Now, I guess you were saying that you got sort of more involved in the farm in about 1980 and that of course is not too long before the loss of SMPs and...
- B: Yeah um, it didn't have too much effect on us.
- A: No?
- B: Um, we weren't yeah, it's a kind property. It had had money spent on it, and because we were prepared to make relatively radical decisions that well not exactly radical, but change the game plan far more so me than my father. Um, that even through those hard times, really through the worst of those times the deer were good.
- A: OK.
- B: So that pretty well insulated us from any pain. And then um once things started to come right, the deer were on their way down but it didn't matter, we'd got through the worst of it without too much trouble. *(Organic farmer)*
- ²⁰ A: I guess the other sort of interesting thing about starting out in '86 is of course, that's pretty much directly after the SMPs were taken off, and subsidies were taken off. How did that play into the situation?
- F: No, it didn't make a lot of difference, 'cause we came when it had been done, so. We didn't know anything better. *(Organic farmer)*
- ²¹ Ah, yeah, we'll I've often maintained that if I, um, you know, if I'd endured it any earlier, I wouldn't have, sort of stuck at it as long, type of thing. But it was really interesting, because I went to buy my uncle's share, and lamb prices were dropping. I mean SMP and the whole thing was shutting down. Lamb prices were starting to come off. But the Inland Revenue would not wear it. They said there's not enough evidence to warrant that. So, I had to pay the full price for his land and his stock. But subsequently you're hanging out fresh air, because you're taking a loan out on this inflated value, which suddenly - and if you go back to your stats, you'll find somewhere that, uh, the land prices dropped by a third or a half or something. But the Inland Revenue wouldn't wear it. They said, "No, you're not doing that." So, again, that was hard work. *(Conventional farmer)*
- ²² F: Yet the bank was telling me, why on Earth would you want to go into farming now? ___ ...and the rural bank in the early stage ___ was really taking the view that farming had no future...___ ... end of story. And I don't know what they thought the Country was gonna survive on, or what the land was gonna be utilised for, but they really did take the view that farming had had it. So we took over in this drought, in a time where everybody was saying, "well, farming's had it: SMP's has all gone; and inflation and inputs is up through the roof; and product prices are out the bottom... So we started farming at that time. Decided we were gonna show them all! [laughs] *(Conventional farmer)*
- ²³ F: And I was trying to sort ... and I also started trying to, um, a few years before it, sort of starting to do it organically. But, and it was really at that time 'cause all the interest rates were still high, bought a portion of the farm on ... Dad retired, and so we bought a portion of the farm from there. And then, it was just absolutely at the wrong time and interest rates hit the roof and land prices collapsed and ... So we sort of survived 'til the late '80's by the skin of our teeth then, really. *(Organic farmer)*
- ²⁴ A: So 1985, you bought the farm and, I mean 1985 was the year the subsidies came out...
- F: Yeah that's right.
- FW We never had any.
- F: Yeah we didn't have any, so ...
- A: But you benefited by having the lower...

F: Land prices

A: Yes and the lower land price because of course farming, the values dropped although the subsidies went up and so... (*Conventional farmer*)

²⁵ I remember '85. I remember de-stocking. (*Conventional farmer*)

²⁶ B: We sold some land and a house ... And then we had a wee bit of luck, because our neighbours then handed it back. And then our neighbours turned 'round and asked if we wanted to lease the whole lot. So that was useful, really useful. (*Organic farmer*)

²⁷ B: No, no, no 'cause the other thing that came into play there for us or, yeah us was that my partner's father had given her \$5,000 worth of shares and the company's taken over about mid '85 so I turned my attention to the share market at the time which was brilliant and spun that into a lot of money, so I was constantly balancing off-farm effectively, and that kept the bankers happy enough and we had 10,000 shares and then suddenly it was 50 and then it was 100, that virtually got _____ to be quite honest, so that came into play and then when it crashed, a fair bit of that I had in cash, but we just rearranged things. So we virtually brought that back to the farm, so again that got us off the hook. (*Integrated farmer*)

²⁸ A: What about the dropping of the minimum prices did that and the removal of fertilizer subsidies...?

C: Things were tough then...

B: That was tough because it was followed by a pretty severe drought and Christchurch was just pitiful.

C: Yeah, I think we actually got, was there a drought benefit or something, our kids were little and we got something, we got money from the Government...

B: Drought relief money was it?

C: No it wasn't a loan; we got money like a benefit type thing. I can't remember how much it was; but we got it for about four or five months, does that sound right?

B: Mmm, I can't remember back then what it was.

C: I'm sure there was something that was paid out then, yeah, no that was really hard. (*Conventional farmer*)

²⁹ FW: Um...the banks always have been very good with us. Yeh there is ...They told us that we're one of the few people that do a budget and [...] We're one of the few farmers they've got that do a budget and then at the end of the year it's almost the same as what the budget is. And they said that most people aren't like that and they've always been um...

F: Yeh they're, they're...

FW: very good with us really.

F: Yeh they've leant to us, they said well that's fine and going out on a bit of a limb here but we know um... Mmhm. We'll lend you the extra and we know we'll get it back, so...

FW: I think our interest rates are lower because the bank knows that we're quite conscientious with our money. We seem to pay a bit less, well I know some other people are. (*Integrated farmer*)

³⁰ A: You do hear there were several people who committed suicide related to it, they were saying, and the like as well.

F: So probably we were one of the - I suppose you could say we were lucky, but we did everything we possibly could to do that the banks required of us. And we were probably just fortunate that they thought we were worthy to keep going. Otherwise we could have been a statistic too. (*Organic farmer*)

³¹ F: Well it's all part of the decision making, and you know, a couple of people that you knew well committed suicide. It gets into your skin and you don't ever forget it and that's what people felt ...you don't forget those things. (*Integrated farmer*)

³² F: ...and anybody that didn't get on the band wagon and get their production up, you know they won't be farming now, the '90s hit them that hard.

FW: And a lot of older guys, they just said oh I wouldn't do it, I'm just that more conservative nature, I wouldn't put my cards out, different profile. (*Integrated farmer*)

³³ Well, yeah, I do remember that, 'cause that's when, that was more stress related than droughts, I think. Because that was a whole new industry ... that no one knew what to expect. Where a drought, you've learnt through the years how to farm. But this was totally different to a farming industry that, um, 'cause it was all related to money and, and bits and pieces ... They weren't gonna get their cheque at the end of the month [laugh] ... Sort of, was sort of thing but, ... (*Integrated farmer*)

³⁴ And that would've worked fine [to borrow money to increase production], had we not—in mid-stream of doing all this work—we didn't know there was going to be a change of government. And Roger Douglas decided, well, "Heck with the farmers, we'll just make them all commercial overnight, and if they can't be commercial, they're gone". And there were a lot of farmers, did exit. It caused a lot of heartburn for a lot of people. (*Organic farmer*)

³⁵ FW: And a total change of attitude from us, 'cause that's when, you know our interest rates went up to, were we paying about 27% at one stage?

F: But that was just the annoying part and this is why we've become so conservative, we were the bright young men coming into farming and we were increasing production and it wasn't just me, the whole of Otago was booming...

FW: For the good of the country if you like.

F: But we honestly believed we were doing it for the good of the country, it wasn't so much creating wealth for us as creating wealth in the long term for the country. The country was going to benefit from it and then we were told in '85 we were a bunch of fools, you'd made your own stupid decisions and now we've changed the rules on you, tough and that's exactly where we were left.

FW: So what we, well [my partner] made a conscious decision then that any further development was going to be out of income. He was not going to borrow any more money so that was a huge deciding point in our farming...

F: Well it just set everything... (*Integrated farmer*)

³⁶ F: That had to be done and that actually knocked a lot of people around because they were just living on the minimum price or the subsidies or, you see I think at one stage there in the wool, I think there was a dollar, we were getting a dollar a kilogram just, there was a name for it too, the major, the subsidies...

FW: The SMP.

F: Made you sit down, SMP it was yeah, made you sit down and farm. (*Integrated farmer*)

³⁷ ... as it gave you that incentive as you see it, to um, push your production. Because, you know, you can't stand still, otherwise you'll go backwards. And it certainly - there would be farmers that up until that probably weren't doing too much, were doing all right. It certainly made a difference to some of those people, that they had to pull a finger out. (*Integrated farmer*)

³⁸ In '88, and then we had this huge drought. And, uh, I remember sitting there and we were buying nuts, and I had this overdraft that, um, well just kept growing. We'd never had an overdraft before. And, uh, bank manager said, "Well, when you going to stop needing these nuts?" I said, "Well, winter is going to rain." He said, "No, think on a budget, on a cash flow, when all of this is going to come right." I said, "Well, when's it going to rain?" It as a substantial drought, like something we hadn't seen before. And I guess it was systematic of what was to come. SB3C

³⁹ B: That was probably when the droughts, yeah sort of '88 I guess, that was when we had the, that was a bad drought then and nothing ___ [1.12.03] so we were probably forced through that to look at alternatives because we weren't gonna make any money then. But then of course, yeah we

actually borrowed a lot of money through those two years but that's of course, when we had the interest free loans from the Government and things like that which were a help at the time, but at the end of the day you still had to pay it back. But it helped us through at times so ___ [1.11.36], we were happy with the decision at the time. SB12C

⁴⁰ A: And so what did you do? What did MAFF tell you to do that you put in place to drought-proof?

C: Um...one of the main things was the timing of selling the...um...the cull ewe ___[23:19]...because that...that first triple drought, we were selling the cull ewes in the autumn...and they...they ate an entire barn of Lucerne hay...and they were so thin they all went down the chute and got nothing. Um...so...that...we now sell cull ewes before lamb kill. So that was one of the major things. And another thing was always...um...at one point...um...pre-'87...we sold half a bail of hay...barn...of hay, because it was...you know, it was a good spring year...and we had lots of hay coming in, so we'll get rid of this old hay. And the year we sold it...it was fine...we didn't need it. But we never sold hay again after that. You know, rather stack it in the paddock with a tarp over it, ___[24:00].

⁴¹ Well, it needs monitoring...keep an eye on production costs. I guess it pushed us more to an interest in intensifying...taking the view that...well...as bad as prices might be...so long as you don't go above the cost of production, at least if you've got product to sell. And if you start shutting down shop...and cutting back production...ah, if returns are poor, and you got nothing to sell as well you're really gonna get doubly hit. And so that...the outcome of those ones are probably...pushed ___[33:05] intensity...on that one...yeah. SB6C

⁴² Perhaps at times things are banned before the research on its replacement has been done. Maybe things happen out of order and...and that probably happened then, if I think back to...a little bit to what happened. SB6C

⁴³ So, um, Australia had this huge stockpile. They had them on concrete slabs with plastic over them. They had all sorts [of wool]. And the cost of buying it and storing it, all the rest of it. Bang. So that stopped. Went to a meeting in town. They said, "No, that won't happen to us. 'Cause Australia is all fine. We're less than 1/3 fine wool. All cross-bred and stuff." And by June, I think it was, they said, "Nah, that's it. We're out too." So we put off the worker we had here. Um, and then again it was just another 90 degree shift in things. SB3C

⁴⁴ Um, it's probably - my uncle had a Dorset stud, and they are renowned for their high lambing. So, um, my father's got some - we actually started off with triplet rams. We got some triplet rams and started crossing. And then we just kept our own rams, and they all had to be triplets, born and reared. And we just built that up over the years. So it didn't take long to come up with 180 percent. And we're able to maintain that. And, um, yeah, and when we crossed the Freasian, it probably increased it more. SB4B

⁴⁵ A: And did that change what you did in later years?

F: Yeah 'cause we got more supplements, we made sure we had more hay and balage made, the '92 storm sort of made us change in that direction 'cause we never really used to have balage or anything, you know it wasn't sort of heard of...

FW: There was definitely not a lot of ___.

F: Yeah so after that, we made sure we had balage and stuff.

A: I've heard people saying they keep two years, is that a...

F: Oh some people do probably; ours never seems to last for two years. SB5C

⁴⁶ F: The take over was a bit of a set-back but in saying that we had good prices ...

A: Mmm hmm.

F: Of what the lambs were, so, yeah, no, it was quite good.

A: Mmm. Yes, that seems to be the, you know, when there is a disaster like that then there's fewer lambs about, so the price goes up [laugh], so, yeah, ___.

F: So, yeah, so at the end of the day your, your, your, ah, numbers were down but your dollars were up ..SB6B

⁴⁷ Uh, '94, um, we were selling, um, all our lambs undrafted as a woolly line, and Addington Market, what's now Canterbury Park, and uh, that was working quite well for us for two or three years, and in 1994 there was a lot of rain over the Christmas break, and everyone - like now, everyone had grass in their paddocks, and the whole store thing just went completely nuts. SB3C

⁴⁸ And the lamb crash...I guess...the opportunity we were looking then is...we were buying lambs and trading and fattening and...so long as we could see a market...I think the decreased lamb value, we had less ___[59:49] on what we were trading and fattening. Trading probably a wee bit more at that stage, wouldn't you say?

FW: Definitely.

F: So, we like to think we put ourselves into a position...that the lamb crash...didn't negatively affect us. And perhaps these other issues helped us...make it much...make sure that it didn't affect us, I guess...at that stage. SB6C

⁴⁹ F: And that's what Fortex said, they said no things are good, things are good right up to when the lambs went way, they were good, they were good and they knew dam well that they were bugged and it makes you very very aware of smart company directors, it does in fact, yeah and it still does, and it will for the rest of the time, you can't trust anybody. SB10Ba

⁵⁰ Yip, ok. Yeh and then you went and worked in um Fortex down in Ashburton later on. All right. Yeh. And I got more teaching as the children got older. Mmhm. And then when Fortex closed down, what's it? Be 16, 17 years ago. Um, you got more into teaching and...Yeh I went out and got a full time job. Mmhm. Yeh. When he sort of lost the job down there. Ok. And we turned around and bought more ground too so...Mmhm...we both had to work a lot harder (laugh). SB3B

⁵¹ A: So...do you think...like you've talked about farm advisers and consultants...so you haven't used them, 'cause of the whole impact of the privatisation of those services, too...from when they're...

F: No, I've got a bit of a beef ___[17:41] really. My brother's got a farm adviser...he's not a bad farm adviser...but some of them have got a lot of farmers in trouble...and...you know, I don't think advisers are good for people. I mean, I've talked to a lot of farmers that are buying irrigators and ___[17:54].

FW: Well, I mean you needed a farm advisor that knows about organics...and they weren't around in those days for a start. And...ah, because...you know, you sort of know your land best...and it's...you know, it's very sort of specialised...localised...um, experience...___[18:12] I think we have the best people to make these decisions. SB5A

⁵² A: Mmm. And what about, um, sort of the change from when MAF gave, um, consultants for free, you know, you had all the extension services and then you had to start paying for it yourself, did that impact on you, ___ ___ ...

F: Oh ...

A: Paid for advice since then?

F: Um, we don't use them, we just, ah, you just sort of farm through those sort of things ...

A: Mmm.

F: You know, you just, you just, well, you just deal them off the day, whatever happens that, you know, like if you want information you just go and try and find it ...

A: Mmm.

F: Um, I was always taught that, I went to, ah, when I was at Fortex had a few seminars we went to and it's about, the thing I learnt is, is, if the problem you've got, you've gotta find out how to get the information to fix it ...

A: Mmm hmm.

F: And then that's how, like I was taught is, is finding the right people to fix your problem [...] SB6B

⁵³ Certainly '95, I think, was a significant beef drop. Because we, um - '94 - 'cause what happened then was Alliance people said, "If you want to supply us, forget any, uh, bonuses or pool payments. If you want to supply, we've taken so much off the head of every lamb, and it's going into our coffers." And that was the start of building up the cash reserves that they have now. '95 there was a beef crash. Because in '94 we sold some cows for \$850-odd dollars, and in '95 our agent said, "Look, you're not going to get that." We said, "Well, even \$500." "No, not going to get that." So we kept them on. And it was a really, really cold winter. And we carried all these stock on that we just shouldn't have. You know, we should have just let things go, but it was half the price of the year before. SB3C

⁵⁴ In the second half of the '90s we started rearing calves to increase our income. We were doing tourism as well. Um, and just looking at all sorts of things. I mean we were doing early lambing. We just looked at all the things on the conventional mix to try and become more profitable. But as I said, the goalposts kept moving. We were just up against it all the time (17:19.6 - 20:51.1). SB3C

⁵⁵ FW: That doesn't really matter either because if it's crashed when they're selling to kill, it's cheap to get the calves at the other end isn't it, so it balances.

F: You're a year behind but it does balance out.

A: So you've sort of learnt to deal with that uncertainty by saying well I'll make up...

FW: Yeah, because of what we run here, young and old, it probably doesn't affect us as much as someone just killing would it? SB11C

⁵⁶ The beef crash...well...yeah, we haven't paid enough attention to that...ah, it's not something that I...you do kind of...just monitor...to a degree the beef sellers packed with information...feed up. There's a wee bit of trying to monitor what's happening in the grain market I guess. SB6C

⁵⁷ No, we've tended - out of necessity, and then by choice - to go low cost. So we're not big on fertilizer or running tractors or any of those sorts of things. So, no, the input - you know most of our things are rates or local body. Just overhead-type things, rather than inputs. As a, um, yeah as a business it's pretty low cost. Our biggest cost at the moment is debt. You know SB3C

⁵⁸ The oil crisis...I guess that concerned us in that our business is...reliant on fuel. I don't know...maybe...it's probably changed in the time...we were looking pretty closely at our cultivation methods. SB6C

⁵⁹ F: Yes. But I don't remember the oil crisis in '95.

FW: It probably didn't affect us greatly because we would have been just on your mother's on the home farm block, and then we came up here didn't we in '95.

F: Yeah we came here in '95.

FW: Yeah.

A: Yeah, it would just be part of adapting to coming here.

F: Yeah. That's probably why we didn't notice it. If the price had gone up we were just... probably doing a few more k's and what have you but it was just not noticed because of the shift. SB7C

⁶⁰ B: Um... '98-'99 was a drought, yeah oh, it's character building when you go through sort of droughts and that. You just sort of go through them, but um, I suppose since I wasn't exposed to like a big bank loan, and I was sort of only sort of just paying my father, I wasn't exposed to the financial pressures, which I would have noticed, they seem to be the biggest ones that expose you to these, is if you're owing a heap of money and you go through a drought you just think... the pedal just goes backwards. SB11B

⁶¹ FW: Yeah, you do [change your practice after a big drought], you try and make sure that your stock are in good condition going into the winter, you know, they've got good fat covers and they're

looking good and also having enough supplements on hand, you know, having winter feed in the ground and hoping that it'll grow. SB5C

⁶² The droughts of '87 through to '99...well...as I said we're trying to farm-proof ourselves with irrigation and...if we can manage it, rather than keep our wells going...then probably the drought...well, we started seeing a little bit of issue with...with an underground well. So, the effect we got there...from the whole of that...__[06:16] started kicking in...'cause a lot of other farmers __[06:19] the underground water starting __[06:22]. So that was probably one of the immediate effects. The droughts...they highlighted a few issues of efficiency of the water, and ah...efficiency of the equipment to put the water in that we've got...and the timings and...um... __SB6C

⁶³ F: Oh generally we don't do a hell of a lot different, but we sell still lambs if we have to instead of fattening them. Just reducing the numbers as quick as we can. SB7C

⁶⁴ F: I was brought up in the dry but the biggest thing that hit us that year was we had something like 400 old ewes, we bought Simon's ewes when we came here and some of them were only 1 year ewes, so there was about 400 to go to the works and we couldn't get them in and we started feeding them on the side of the road and all sorts, we eventually got them away, that was the hardest part 'cause they started going backwards 'cause there just wasn't the feed there, but we tried our best to get them in but we couldn't do much about that, we ate all the grass on the side of the road, wherever we could. SB12D

⁶⁵ Because the Queen Street farmers were buying them as a tax write off, and the Government closed that loop hole. So there were millions of dollars lost in the industry over night just by Government change. So your money's not your money until you've actually got it in the bank. So when we cash out on the deer, as I say we tend to do things fairly thoroughly that we'd gone from 1,000 deer one week to zero the next week, I said well right, if we've got to go back to sheep, because the farm was still set up to handle sheep, what's the most profitable form of sheep? And that was organics were just starting to pay a bit of a premium then, so any premium is a good premium and I don't care how I get it. And so hence we registered and became certified organic and have been ever since. SB11A

⁶⁶ Peak prices 2002...can't remember that. We've been living in our own cocoon really...we've had quite good prices all the way along...with what we've done.

A: And is that through your management...and being up with things, or do you think that's...you know, how has that happened?

F: Ah, we've chased...all the time...different options __[26:01]. And...um...and we...

FW: __[26:07].

F: Yeah.

FW: __[26:13].

F: Yeah...so we'd always be having...you know, lots of challenges with growing. Yeah, we've sort of sailed through all of this and...you know, been going on a...upward time...you know, we don't necessarily show up and earn lots of money or anything like that...but our capability...our land area...our...um...growing options...have just been increasing over time. So...you know, the conventional thing's been going along like this...and...you know, our opportunities have just been quietly poking away. SB9B

⁶⁷ F: So, yeah, we had snow on the ground here for a week, but it was - once again, that was June, so we had plenty of supplementaries, so we managed to get through that without stock losses or anything else. So that was -SB4B

⁶⁸ F: No. A: So in some ways, the poor financial, ah the worsening financial situation relative to the industry at that point... pushed us.

FW: Decided what was really effective use of our money and what wasn't. Yeh.

F: Well we went through, we looked at a lot of things. You know there's um...

FW:...we cut all our insurances back.

F: Um, it might not seem like a great cost but um, I belong to The Hudsons SX Aeroplane club. That wasn't a great expense but we cut that out. We cut the newspaper out, we don't get that anymore. There's, you know, just things like that, we just went through and went and just...

FW: Is this important or not?

F: You know we can live without that and live without that. Um, just cut things back. SB3B

⁶⁹ Cattle have slowly increased. Um, and probably the last couple of years we've dropped sheep numbers slightly because of the downturn in prices, slightly. But, that's - everything sort of fluctuates based on prices and what have you. So it doesn't take much to come and go on that. Crop-wise it depends on what suits the system. So, it's yeah, pretty static at the moment. SB4B

⁷⁰ F: We've moved into a finishing-type regime, which two years ago worked really, really well for us. We turned over a lot of animals, made it work well. [...] There's no point in putting animals on, 'cause there's no profit in it. SB3B

⁷¹ A: So, has there been a time where inputs ever got so expensive that you've decided to change how you deal with - or perhaps, actually gotten cheap enough, that you've decided that it's something that you can use more of?

F: Ah, yeah, in my time the fertilizer. You know, we saw that big spike - three seasons, no two seasons ago - and we cut our program by probably 2/3, like our main program, in that season. And we had a really good hard look at how much you needed for your cropping and all that sort of stuff as well. So that would be one, I guess. SB9B

⁷² A: Have you ever had to change thing because the cost of a particular input got too high?

FW: Oh yeh fertilizer.

A: Yip. Fertilizer?

FW: It definitely comes in to that category.

F: Yip.

FW: You know there was a period there where that was so ridiculously high that we just thought neh, it can sit for a while (laugh).

F: That was

FW:...awful...

F: what's that about 18 months ago, wasn't it? Where urea and all that sort of stuff went up to, was it 1200 dollars a tonne or something?

FW: It was something ridiculous you know.

F: Yeh I was just, no we don't need that. SB3B

⁷³ And last season would be the second worst year we've had but we are smarter farmers now and you know, we just carried on de-stocking right from December gradually without really getting in a pickle and just having to bail out, so we managed our way through that quite well, because no sooner do you bail out then it rains for three weeks and the grass starts growing again, didn't happen this year. But we sold quite a lot of store lambs and things just to ease the burden a bit. SB8C

⁷⁴ *No, well they're in the land or milk and honey down there. They think they're in a drought sometimes, they need to come up here but I mean, we are green now, we've actually freshened up pretty good in the last couple of weeks. SB12C*

⁷⁵ A: And, um, what about the exchange rate fluctuations? How do you manage those sort of constant changes?

F: Um, well you can't really manage them. You just hope like hell that they go to suit, but that's always, yeah, something you keep an eye on. That you're aware of. But, yeah, it's an awkward one to manage, really. Um, you can sell certain things at different times to hopefully coincide with prices, but, yeah, when stock need to go, in general, they need to go. So you can't hang on to them too long, or wait for markets to shift around too much. So - you can sit for a while while the prices increase, but you can't do it for too long. There's not a lot you can do on that side of it. SB4B

⁷⁶ FW: I was just thinking another thing that's made a major change is that you've had an accident on the farm. Too, when you fell over, and he injured his shoulders and his back. You know and that's sort of had quite a profound effect on the farm really.

F: Yeah, well things just haven't been...

FW: no things haven't been maintained...

F: done. SB3B

⁷⁷ F: Yeah, which we've still got both men in the properties up there as well and we got to the stage, I lost some of my brothers and sisters and my parents all died within a week or two so I thought well, we'll have another look outside of life so that's why we thought well we'll lease the farm and we went away to Britain, on a farm tour over to Britain for a number of weeks and so we're still leasing, we're into the 2nd term, oh the 5th year of lease now it is, they were a 3 year lease so we're got 1 year remaining till March next year.

[...]

F: But by the leasing, we retained the property, we still own the property...

FW: Got all your assets.

F: We still live here, well we still live here on the property and we've retained our assets still in the land, so we've probably got the best of both worlds. SB10Ba

⁷⁸ So when dad died - his will - I mean, he knew he had cancer. He never told us, but he knew. Um, um, so yeah, he died quite suddenly, and not long after that the accountant said, "Well, you and Hamish have each got half your father's estate each. That's what the will says. But the intention was that your brother was going to buy them out. So you'd better sign your half share of that will over." And that's what I did. And I should never ever have done that.[...] SB3C

⁷⁹ I mean I'm just doing what I do, I just try and do it, yeah without being too detrimental to the environment but yeah, no I don't think, it doesn't affect me at all, not in a way I think anyway. SB12C

⁸⁰ F: Have I developed any new techniques and have I...I find it a very difficult question...I think so.

A: What types of things would those be?

F: Well I'm probably far more thick skinned now. Um, and, less inclined to um, try new things now probably. Less inclined to change unless it's well proven.

A: Ok. So not jumping after every new innovation type thing?

F: No. No, cause I'm still open minded. But I'm still not, well, mind you I've done a lot in the past, and you've got to stick with something for along time before, you know, it comes to fruition, really. Especially in farming anyway. SB3A

⁸¹ So yeah, so direct drilling's been a huge bit of a um... not um... high risk at the start because your very green at doing it, changing your whole farming practice to spraying, minimal spraying but yeah timing and it's as much skill and direct drilling as we used to be with a full cultivation. But we went to that which means yeah, we're less hours on the tractor and less costs. Possibly the costs right at the end is not a huge difference, but the soil is better. SB11B