



AGRICULTURE RESEARCH GROUP ON SUSTAINABILITY



ARGOS Annual Sector Report High Country



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Report 3



Preface

This report is the third annual management sector report. It includes:

- Description and background of the ARGOS programme;
- Management input – fertiliser, supplements, labour
- Financial analysis
- Biodiversity Conservation and High Country Sheep Production
- Environmental monitoring over the 2009/10 summer
- Recent high country environmental research projects

This report will be updated annually and will be complemented with other information gathered by the ARGOS team. This will include information on the social, economic and ecological indicators being measured throughout the course of the research.

Every effort has been made to ensure that all the information is accurate. However, if there are any inaccuracies, please let me know as soon as possible.

Please be assured that this report and its information will remain confidential to the ARGOS team with only aggregated results published that will not identify the results of individual properties.

Please contact me if you have any questions.

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1 ARGOS

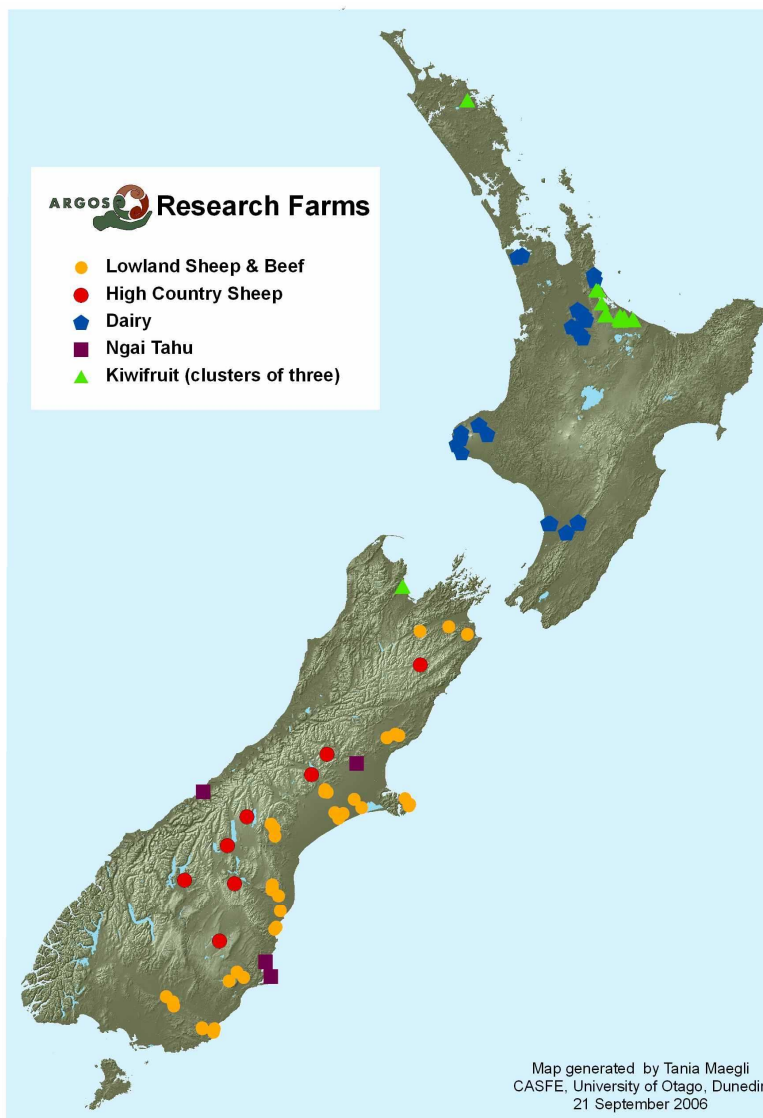
1.1 Description of the ARGOS programme

Background

ARGOS (Agriculture Research Group on Sustainability) was formed to undertake a long term research programme called “Pathways to Sustainability in Primary Production”. The project is an unincorporated joint venture between three parties - the AgriBusiness Group, Lincoln University, and the University of Otago.

The key task of the programme is to examine the economic, environmental and social performance of four New Zealand farming sectors:

- Lowland sheep and beef 36 farms
- Dairy 24 farms
- Kiwifruit 36 orchards
- High Country 8 farms
- Ngai Tahu landowners 8 case studies



The programme is funded by the government through the Foundation for Research, Science and Technology (FRST) and various industry stakeholders – a meat packing company, Merino New Zealand Inc, Fonterra, Ngai Tahu and Zespri International. This funding has been secured for 6 years as a first step in a 20 to 30 year project.

The goals of the ARGOS research is to facilitate innovation and improved performance in primary production systems and to enhance those systems abilities to meet environmental and quality standards, leading to greater returns for New Zealand farmers and growers.

1.2 High Country ARGOS

The High Country section of ARGOS is focused on the merino sector and involves the monitoring and analysis of eight South Island High Country properties. The monitoring and analysis includes financial, management, environmental and social variables.

Motivation and Benefits

The marketing of New Zealand Merino wool has long been supported by a strong reputation and brand image based on the pure and natural landscape that it is produced in and it appears likely that New Zealand Merino growers are producing Merino wool in a very sustainable manner. However, in today's markets there is a need to have objective information to back up these marketing claims. Consequently, there is a need for an integrated, in-depth program of monitoring, recording and analysis across key indicators of sustainability for Merino production.

The information from ARGOS provides information that can be used to respond to regulatory and market demands for information on the environmental performance and impact of High Country farms.

2 Farm Management:

Introduction

Farm Management, in ARGOS, is studied from a management systems approach with 3 main areas of study; economic, social and the ecological environment. Economics includes production (both financial and non-financial) through to the socio-economics of production systems. Social studies the 'people' implications of the systems, motivational drivers, life cycles, whilst the environment objective looks at the impact/implications of the farming system on the environment. Boundaries of the three objectives overlap, leading to overarching research that is an optimal study of farming systems. It was recognised that generic descriptors, of the farms under study, need to be supplied to the three objectives and this led to a fourth objective, the farm management objective. The role of the farm management objective includes collecting physical and managerial style farm data and the preliminary analysis of this data, where appropriate.

Initially descriptive data was collected to provide an overview of each property. Additional data is collected annually to cover the different parts of the farm system. All data collected is imported to a custom built database and this will also be used to add value to projects linked to ARGOS such as the Biodiversity Conservation and High Country Sheep Production project described in this report but remains confidential to ARGOS.

2.1 2008 Annual Management Survey

Introduction

The ARGOS High Country properties cover a total of 139,000 ha, carrying 113,000 stock units, in eight locations from Marlborough to Central Otago. Property sizes range from 4000 - 40000 ha, with an average size of 19720 ha. The properties have similar overarching farming strategies in that their management is based around pastoral based systems.

Information from the 2008 annual survey was collected (for the 2006/2007 financial year) to add to the ARGOS database for analysis as time series data and to be assessed from a case study approach. Data collected included livestock type and numbers, how they were managed and inputs used to sustain the subject's farming system.

Fertiliser

Fertiliser applied is graphed below as N, P, K, S and Ca nutrient inputs on a stock unit basis. The first graph (Figure 1) continues with the time series data that will augment the ARGOS database and shows fertiliser inputs for 2004/2005 through to the 2008/2009 seasons for your property and the average of all ARGOS high country properties (per stock unit).

Table 1 shows the range of fertiliser inputs across properties. Both graphs include nutrient inputs for maintenance, cropping, feed conservation and any development work.

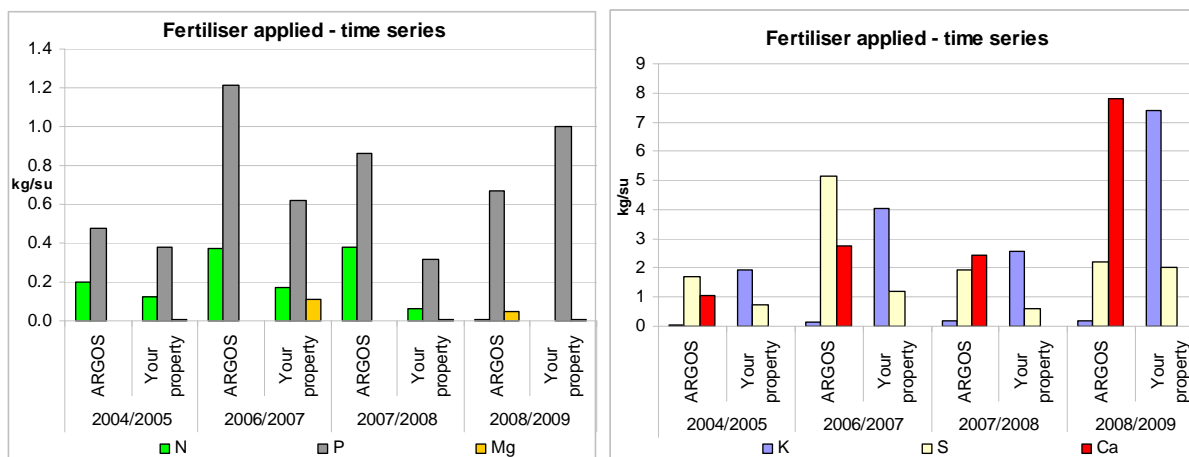


Figure 1 Nutrient inputs applied as fertiliser across high country farms in the 2004/2005 and 2006/2007 financial years

Table 1 Nutrient inputs as fertiliser, kgs/su, applied to ARGOS High Country properties in 2008/2009

Nutrient	HC1	HC2	HC3	HC4	HC5	HC6	HC7	HC8
N	0.06							
P	0.98	1.00	0.60	0.41	0.55	1.45	0.37	0.01
K	1.43	0.01		0.13		0.08		
S	4.35	7.41	2.55	0.27	0.60	1.82	0.66	0.01
Ca	7.26	2.01	41.32	6.39	0.76	4.04	0.81	
Mg	0.40							

Supplement fed

Over all the properties the type of supplement fed out was predominantly silage (or baleage), followed by hay, then sheep nuts (Figure 2). Quantity fed ranged from 140 kilograms of dry matter per stock unit (kg dm/su) to 3 kg dm/su. Figure 3 depicts the quantity of supplement fed per stock unit, annually, for 2007/2008 and 2008/2009.

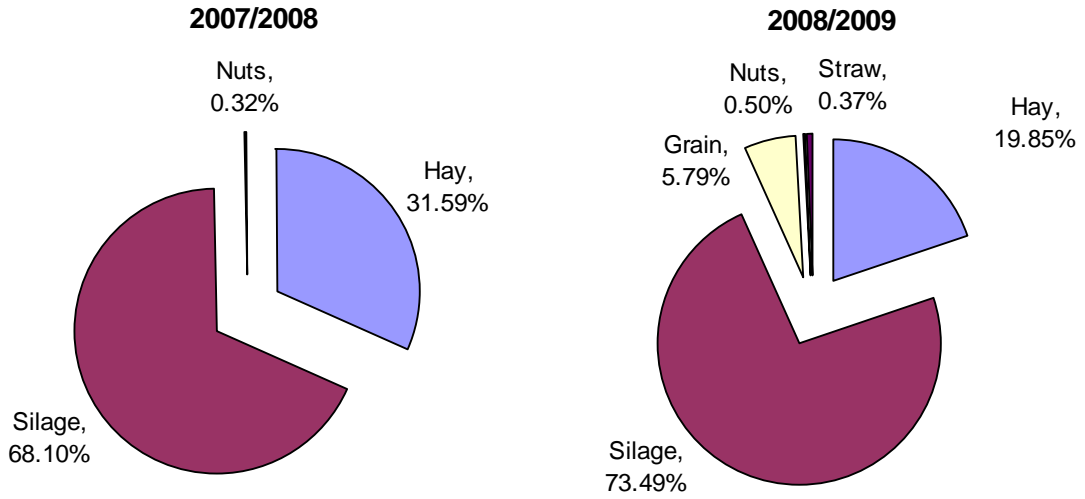


Figure 2 Type of supplement fed out in 2007/2008 and 2008/2009

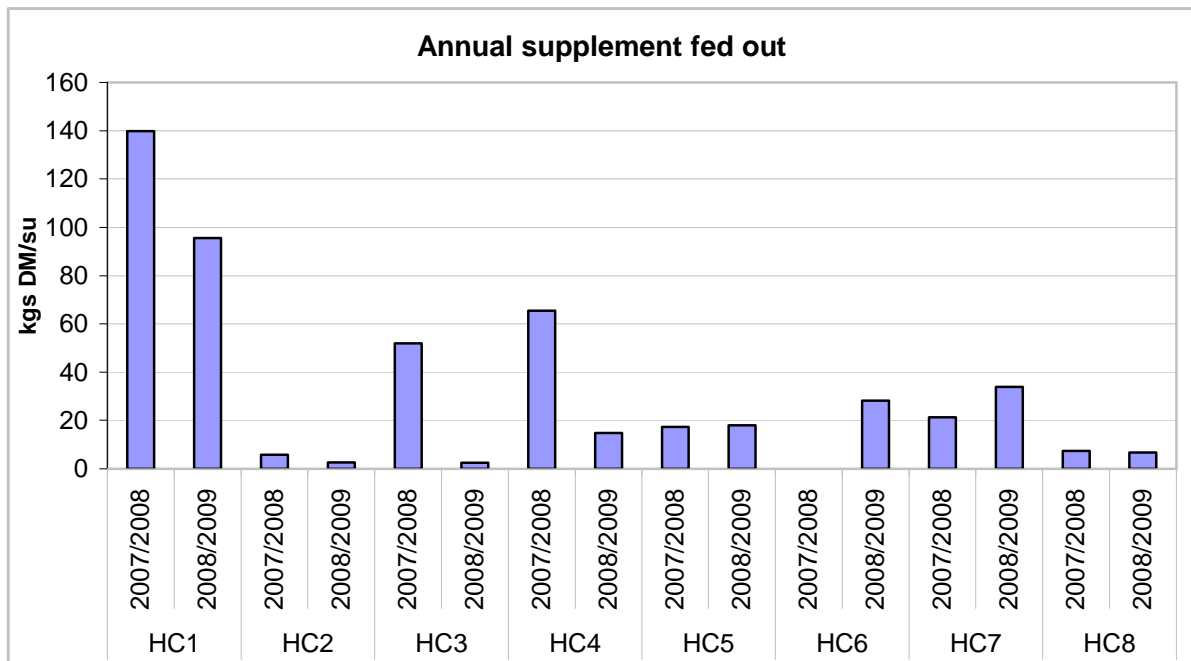


Figure 3 Supplement fed to stock annually (kilograms per stock unit)

Labour

All of the ARGOS high country properties employ varying amounts of labour. This ranges from part time unpaid labour (family members) to fulltime staff. Managing the workload can have a financial impact on the profitability of the business and there is often a balance required between how much time the farm owner can spend working on the farm and social and long term economic consequences if not enough time is spent away from farm work. Therefore, the system that farmers adopt to manage their workload is one that requires careful consideration. Below we quantify the time per stock unit that it takes to run a property and how this varies across properties over 3 years (Figure 4). Variation between years is mainly connected to different stock numbers at 1 June.

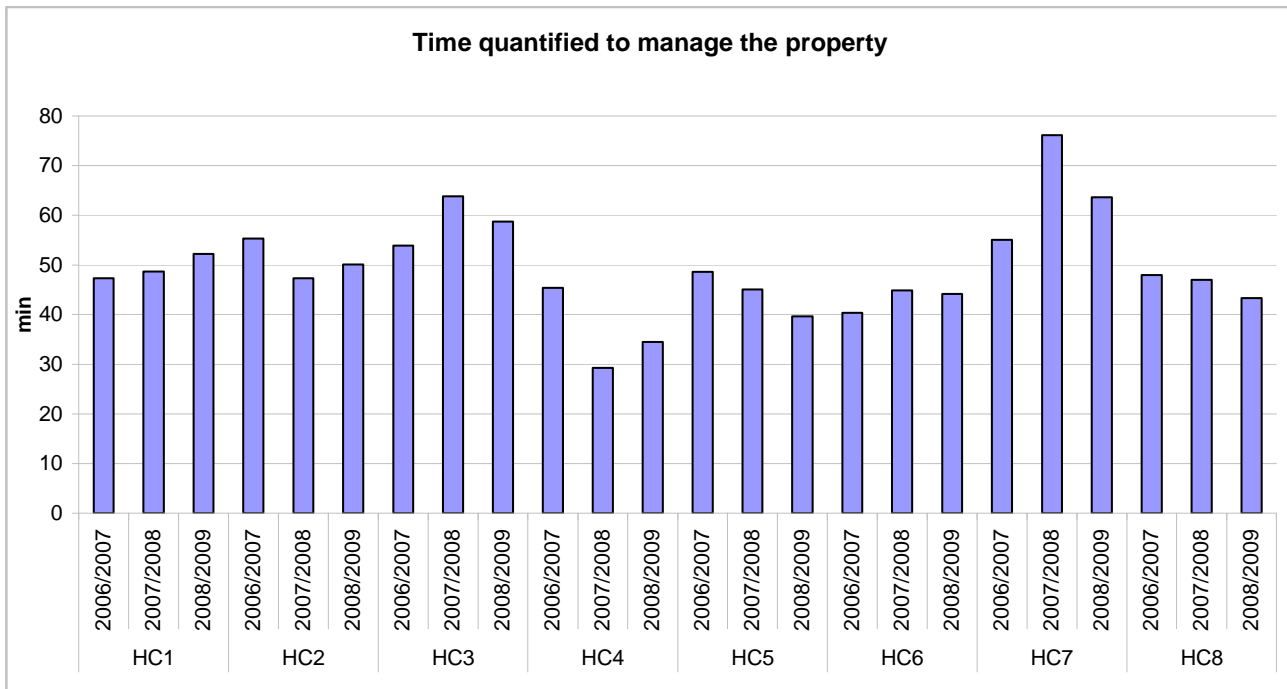


Figure 4 Time quantified as minutes per stock unit to manage high country properties

3 Economic

Introduction

In this section of the report your farm's financial performance for 2007/08 is summarised and compared with previous years and with other ARGOS farms and with MAF and Meat and Wool New Zealand Economic Survey (MWNZES) model farms. These results are summarised graphically and actual data is tabulated at the end of the section.

You may notice that the results provided here for your farm differ in some respects from the ones presented in your annual accounts. This is because the financial analysis for all the ARGOS farms has been carried out as if the farm was an "owner-operated, single-ownership" entity so that we are able to make comparisons across farms that have many differences in the operating and ownership structures (partnerships, trusts, companies) involved. However, the bottom line figures have been reconciled with the data that is set out in the accounts. The changes we have made to your accounts data include some or all of the following:

- The figures from all sets of accounts (partnerships, trusts, companies and individuals have been added together
- All transfers between different accounting entities have been left out
- Where the farmer(s) are paid a salary this is removed and adjustments made to drawings to align these with the majority of properties on which drawings only are taken
- We have removed private portions of farm expenses from working expenses
- Land and building values are updated for ARGOS annually by QVNZ since accounts values are usually based on historical cost and, therefore, give a poor estimate of the value of your farm. The values we use are approximate since QVNZ revalues farms as a desk exercise rather than a formal valuation. When new rating valuations come out, they are the values used in that year and estimates for the next period are based on these.
- Livestock values used vary between accounts (NSC, NAMV, etc.). ARGOS reports are all based on National Average Market Values (NAMV).
- Net Farm Profit after Tax has been recalculated after the removal of farmer salaries, transfers between entities and livestock revaluations.
- In working out the Economic Farm Surplus labour adjustments are made by valuing wages of management using the New Zealand standard methodology (\$31,000 plus 1 percent of opening farm capital to a maximum of \$75,000) and valuing other unpaid farm labour at market rates.

3.1 Financial Summary - 2007/2008

Graphical summary

The graphs that follow show the relative financial position of your farm and three "model" high country farms including the MAF South Island Merino Model (now the High Country Model), the Meat and Wool New Zealand Economic Survey and the median ARGOS high country farm. In those graphs that show the financial results over a number of years the data

has been converted to 2007/08 values to take out the effects of inflation and make the results over time directly comparable.

All the high country farm models clearly show the worsening financial position of high country farms over the period of the ARGOS programme. Gross Farm Revenue (GFR) per stock unit has declined in real terms by a larger percentage than Farm Working Expenses (FWE) and Cash Farm Expenditure (CFE which includes interest and rent) to the extent that in 2007-08 CFE accounted for almost all of GFR. The CFE has risen as a proportion of GFR more rapidly than has FWE as a consequence of the large increase in the real costs of debt servicing. Net Farm Profit has also declined during the period although MWNZ and ARGOS data show a lift in this in 2007/08.

The following graphs show:

- Gross Farm Revenue
- Farm Working Expenses
- Net Farm Profit Before tax
- Cash Farm Expenses as a percentage of Gross Farm Revenue

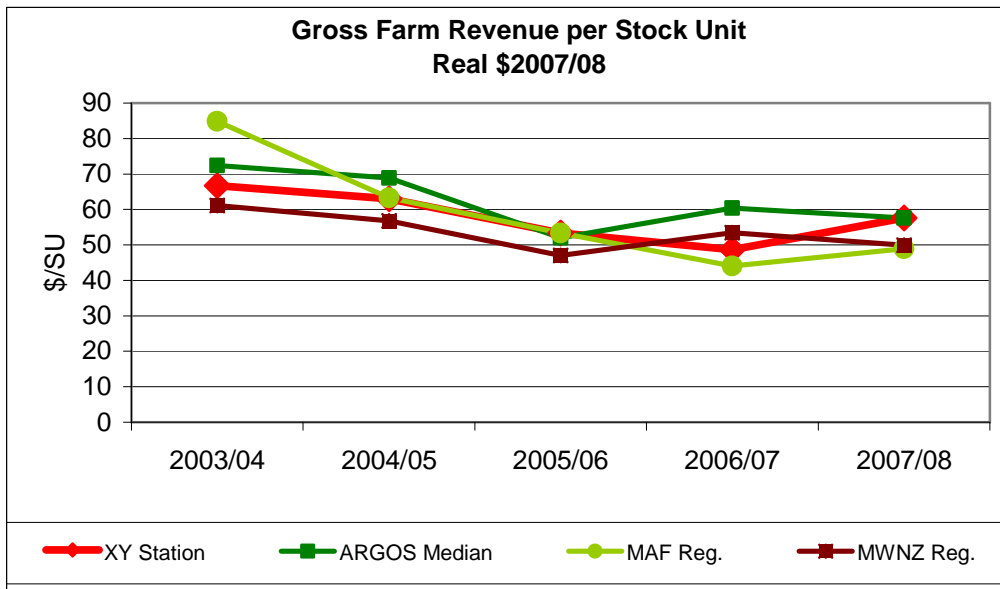


Figure 5 Gross Farm Revenue per stock unit

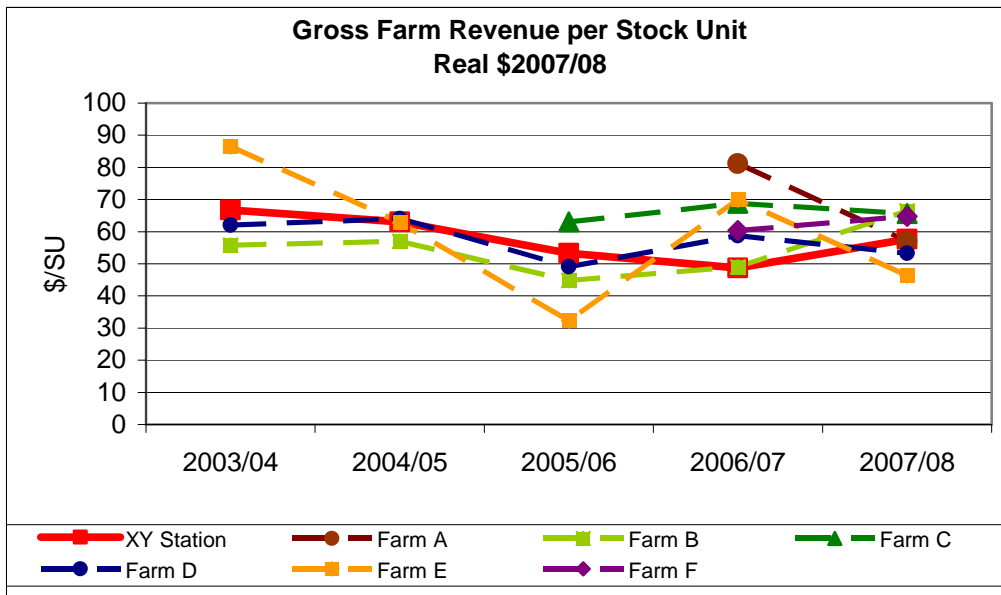


Figure 6 Gross Farm Revenue per stock unit

Gross Farm Revenue is defined as the total farm income deducting stock purchase costs only.

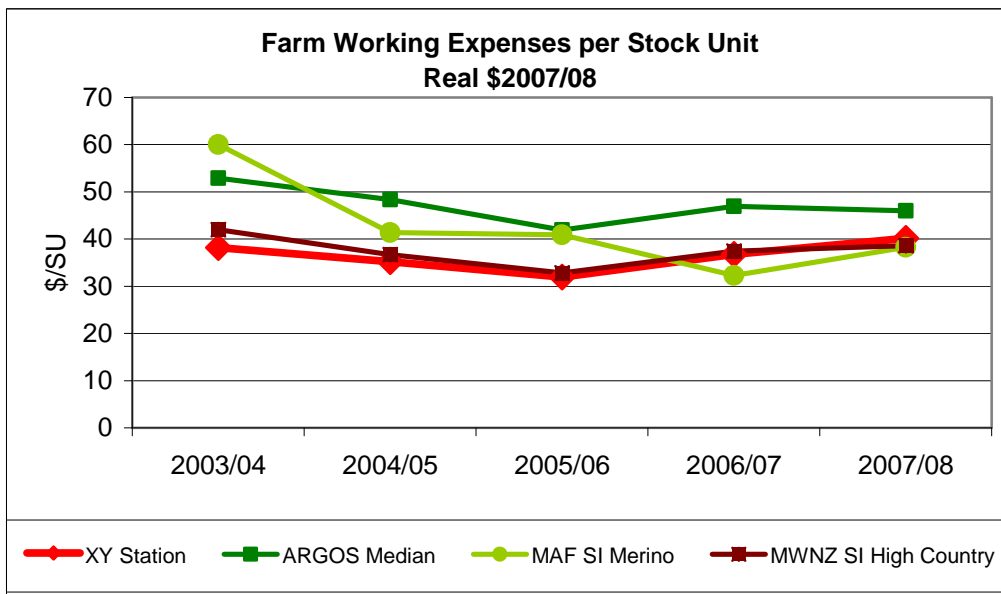


Figure 7 Farm Working Expenses per stock unit

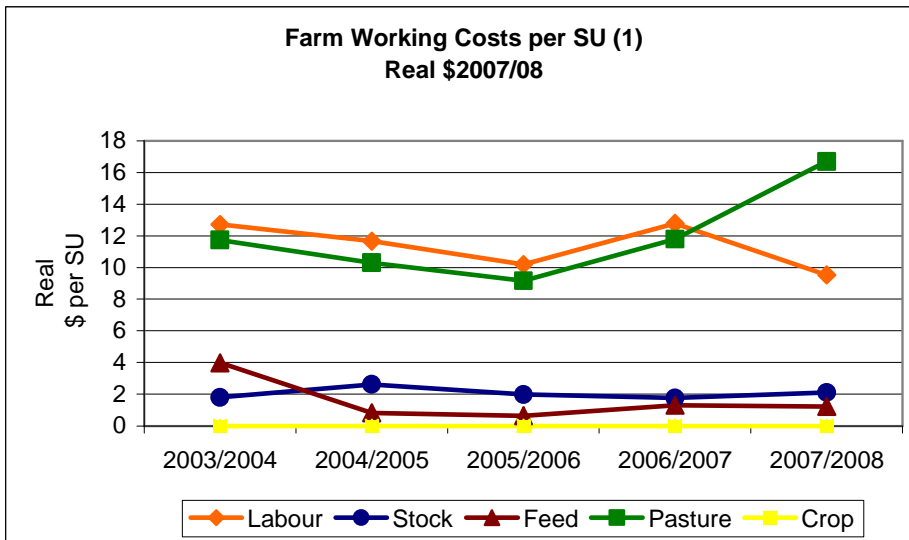


Figure 8 Farm Working Costs per stock unit

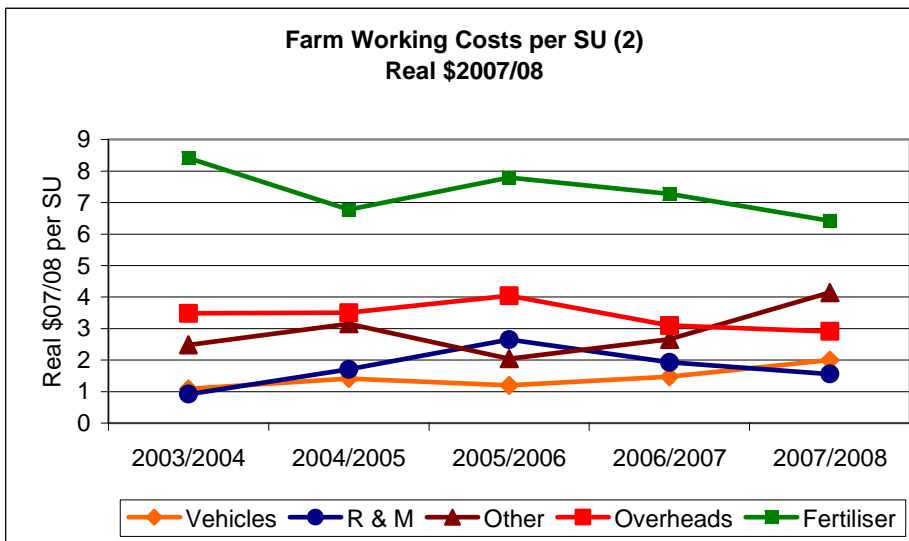


Figure 9 Farm Working Costs per stock unit

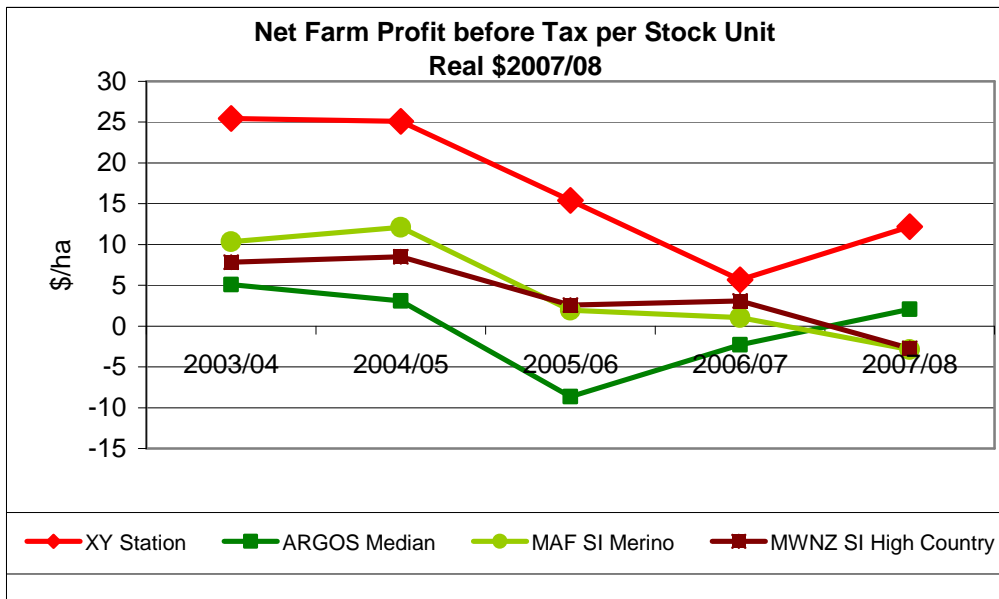


Figure 10 Net Farm Profit before Tax per stock unit

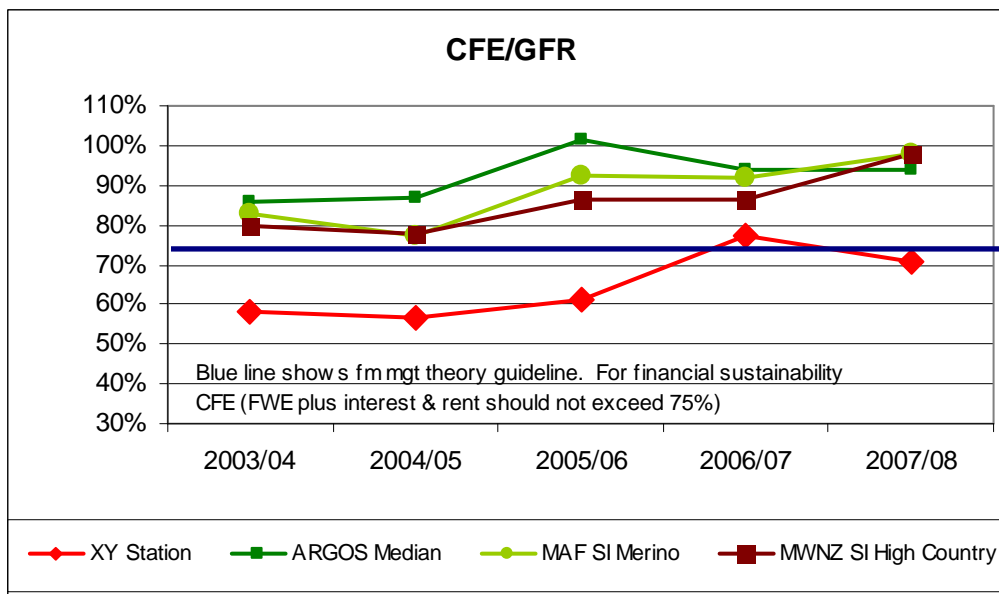


Figure 11 Cash Farm Expenses as a percentage of Gross Farm Revenue

Tabulated summary

Table one shows a summary of key performance indicators, on a per hectare basis comparing your property with MAF and MWNZ. Table two shows the actual financial summary figures comparing ARGOS, MAF and MWNZ.

Table 2 Summary of Key Performance Indicators per hectare and per stock unit

Farm details								
Name	Eff. Ha	SU	MAF Region		MWNZ Class			
XY Station	38833	19949	South Island Merino		South Island High Country			
	Per hectare (\$)				Per SU (\$)			
	2006/07	2007/08	MAF 07/08 Regional	MWNZ 07/08 Class 1	2006/07	2007/08	MAF 07/08 Regional	MWNZ 07/08 Class 1
Cash Farm Revenue (CFR)	\$23.35	\$29.90	\$54.12	\$57.09	\$45.02	\$58.21	\$50.89	\$51.67
Farm Working Expenses	\$18.51	\$20.64	\$40.68	\$42.64	\$35.69	\$40.18	\$38.25	\$38.59
Cash Farm Surplus (CFS)	\$4.41	\$8.99	\$3.29	\$3.07	\$8.51	\$17.50	\$3.09	\$2.78
Gross Farm Revenue	\$24.50	\$29.61	\$52.04	\$55.13	\$47.23	\$57.64	\$48.94	\$49.90
Net Farm Profit before Tax	\$2.86	\$6.27	-\$0.25	-\$3.00	\$47.23	\$57.64	-\$0.23	-\$2.71
Economic Farm Surplus	\$1.22	\$4.61	-\$3.05	-	\$2.35	\$8.96	-\$2.87	-
FWE/GFR	75.6%	69.7%	78.2%	77.3%	75.6%	69.7%	78.2%	77.3%

Table 3 Actual financial summary figures comparing ARGOS, MAF and MWNZ.

	Farm	ARGOS	MAF 07/08	MAF 07/08	MWNZ	MWNZ
	XY	HC Median	National Model	Regional Model	07/08 National	07/08 Class 1
Area (Ha)	38833	14607	705	0	722	10660
REVENUE \$/ha						
Sheep (Net of purchases)	1.63	8.28	194.73	15.27	181.35	11.84
Wool	12.92	24.08	57.91	26.83	56.59	27.87
Cattle (Net of purchases)	11.82	4.95	130.68	8.56	110.80	9.55
Cash crops	0.21	0.00	-	-	52.81	0.00
Deer	0.00	0.00	-	-	6.63	1.96
Other major (Contracting)	0.00	4.17	-	-	-	-
Sundry	3.33	1.07	24.91	3.47	151.03	3.93
Cash Farm Revenue	\$29.90	\$43.96	\$408.23	\$54.12	\$471.60	\$57.09
EXPENDITURE \$/ha						
Labour Expenses						
Permanent wages	3.06	4.01	13.66	6.89	33.14	7.67
Casual wages	0.00	0.00	11.40	0.24		
ACC	0.05	0.29	1.01	0.37	4.25	0.39
Agricultural contracting	0.00	0.25	-	-	-	-
Shearing costs	1.78	5.73	26.11	6.04	26.18	6.12
	\$4.89	\$13.20	\$52.17	\$13.53	\$63.58	\$14.18
Stock Expenses						
Animal health	0.80	1.96	21.67	2.29	21.49	2.68
Breeding	0.29	0.08	1.03	0.20		
	\$1.09	\$2.05	\$22.70	\$2.49	\$21.49	\$2.68
Cash Crop Expenses						
Seeds	0.00	0.00			4.53	0.07
Fertiliser and lime	0.00	0.00				
Contract cultivation	0.00	0.00				
Weed and pest control	0.00	0.00				
Other cropping	\$0.00	\$0.00				
	\$0.00	\$0.00	\$0.61	\$0.00	\$4.53	\$0.07
Feed Expenses						
Feed (purchased)	0.14	0.11	0.85	0.00	18.87	2.71
Feed (hay and silage)	0.41	1.90	12.46	1.87		
Feed (grazing)	0.00	0.00	1.00	0.00		
Feed (fodder)	\$0.09	\$0.25	\$1.94	\$0.65		
	\$0.63	\$1.51	\$16.24	\$2.52	\$18.87	\$2.71
Pasture Renovation Expenses						
Seeds	0.09	0.18	0.00	0.00	7.13	0.76
Fertiliser and lime	3.27	3.27	48.44	6.25	58.13	6.73
Contract cultivation	0.00	0.00	8.49	2.00	5.34	1.39
Weed and pest control	5.22	0.71	7.46	1.39	12.54	1.49
	\$8.58	\$4.48	\$64.39	\$9.63	\$83.14	\$10.37
Vehicle & Fuel Expenses						
Vehicles and fuel	1.03	2.17	27.04	3.26	30.69	3.52
	\$1.03	\$2.17	\$27.04	\$3.26	\$30.69	\$3.52
Repairs & Maintenance						
Repairs & Maintenance	0.80	1.05	22.25	3.38	26.22	3.64
	\$0.80	\$0.98	\$22.25	\$3.38	\$26.22	\$3.64
Other Working Expenses						
Electricity	0.17	0.24	5.17	0.65	4.25	0.70
Freight (not elsewhere deducted)	1.01	1.01	7.50	0.89	8.33	0.96
Shelter & plantings	0.00	0.00	0.00	0.00	-	-
Other expenditure	0.95	0.95	4.82	0.41	-	-
Other major expenditure	0.00	0.00	-	-	-	-
	\$2.13	\$3.00	\$17.49	\$1.94	\$12.58	\$1.65
Overheads						
Accountancy	0.19	0.19	4.55	0.53	14.49	1.55
Communication costs	0.17	0.29	3.56	0.40		
Legal and consultancy	0.00	0.00	2.78	0.30		
Other administration	0.49	0.49	2.93	0.32		
Insurance	0.34	0.68	6.10	0.76	6.41	0.82
Rates (incl water)	0.31	0.79	12.50	1.64	13.14	1.46
	1.49	2.43	32.42	3.94	34.04	3.82
Total Working Expenditures	\$20.64	\$29.25	\$255.32	\$40.68	\$295.14	\$42.64

4 Environment

4.1 Biodiversity Conservation and High Country Sheep Production

Environmental work in the high country has been enhanced by the recent award of a 3-year research contract to the NZ Merino Company and the University of Canterbury by MAFs Sustainable Farming Fund. This project will assess the interaction between historical and current farm management and biodiversity values across a range of high country merino and mid-micron properties. Understanding such relationships will enable farmers to better manage livestock and biodiversity values within the environments they farm. Equally importantly, provision of robust scientific data will enable the retail brands they supply to validate claims made around environmentally sustainable merino production. Providing manufacturers a mechanism by which to differentiate their product based on sustainability will, in turn, afford improved returns and economic stability to New Zealand merino growers.

The research is being coordinated by Dr Simon Causer at the NZ Merino Company and Dr David Norton at the University of Canterbury. Ben Todhunter is chairing the Advisory Group, with the other members comprising Will Murray, Hugh Cameron, Steve Satterthwaite and Paul Scoringe.

The project will focus at two spatial scales – firstly, across the eight ARGOS high country farms and secondly, at the scale of individual grazing units within farms.

The *Farm scale* part of the project will address the following questions:

- What are the trends in biodiversity through time across the monitor farms?
- Are there patterns in biodiversity indices that can be related to management inputs?
- How can farmer's best utilise the information from the monitoring to enhance sustainable farm management?

This part of the project will involve the re-measurement of the existing sequence of monitoring points established across the ARGOS high country properties from November 2005 – February 2008 and is discussed further below.

The *Grazing unit case studies* will address the following more specific questions about merino sheep behaviour and the environment they inhabit:

- How do wethers and ewes utilise different parts of the landscape (with respect to biodiversity)?
- How do wethers and ewes respond in their habitat use to different weather conditions?
- How is animal comfort correlated with habitat use and weather conditions?

This research will build on some exploratory studies we have already undertaken using GPS collars on wethers and ewes at Otematata and Glenmore Stations and be extended into more comprehensive assessments that also include detailed vegetation and climate information. We are currently having a number of additional GPS collars built which will allow us to obtain a much more representative sample of habitat use and responses to different weather events by merinos.

4.2 Environmental monitoring over the 2009/10 summer

With funding from the SFF project 'Biodiversity Conservation and High Country Sheep Production' the University of Canterbury is employing three students, two (Hamish Sutton and Zuni Steer) to undertake land-cover monitoring and one (James Smith) to undertake aquatic monitoring on the eight ARGOS high country study properties. The original monitoring was established over the period November 2005 – February 2008. Almost all of the monitoring sites were revisited over the 2008/09 summer and photopoints were re-photographed and any damaged stakes replaced, but no measurements of species abundance were made.

The objective of the work over the 2009/10 summer is to undertake a full re-measurement of all the land cover and aquatic monitoring sites. Land-cover monitoring will involve revisiting all monitoring sites and repeating both photographs and plot-based vegetation measurements at these. For the aquatic monitoring, we will repeat the physio-chemical measurements (N, P, pH, turbidity etc) and resample and analyse aquatic invertebrates. The field work will be supervised by David Norton, with additional input from Dr Peter Espie (vegetation) and Dr Jon Harding (aquatic invertebrates). Already (7 December 2009), aquatic monitoring sampling has been completed at three of the properties and land-cover monitoring is completed at one and well advanced at a second.



Peter Espie (red shirt) teaching the summer students plant identification skills with Tony Payne (dressed in Bay of Plenty colours), who worked on the project last summer, watching.

Once the monitoring has been completed and data has been analysed and interpreted, a full report will be prepared for each property that summarises the results from the land monitoring over the 2-4 year period since the monitoring was first established, including comments on any changes/trends observed. This will be confidential to each farm and will provide farmers with an indication of trends in land cover that are occurring across their

property over this time in relationship to their management inputs. In addition, a generic report will also be prepared that looks at patterns across all eight properties, but will not provide specific information on patterns on individual properties.



**Glenmore
Veg plot 32a**

24 Nov 2005

6 Dec 2008

25 Nov 2009

Example of the type of comparative information that monitoring will provide. This example is for a short tussock grassland site that receives no fertiliser or seed inputs and is subject to only light grazing and shows an improvement in tussock condition over the four year monitored period.

4.3 Recent high country environmental research projects

Grazing limiting mouse-ear hawkweed flowering: In previous research it has been suggested that merino grazing during hawkweed flowering may reduce flowering and seedling establishment of hawkweeds. In this study we took advantage of an obvious difference in flowering across a fence-line to further assess this observation. Despite a similar abundance of mouse-ear hawkweed rosettes on either side of the fence, we found a statistically significant difference in hawkweed inflorescence density and sheep grazing density supporting the suggestion that grazing during flowering can reduce flowering in hawkweeds. This research has since been published (Norton DA, Reid N 2009. *Sheep grazing reduced Hieracium pilosella flowering*. New Zealand Journal of Agricultural Research 52: 129-131).



Differences in hawkweed flowering between two blocks with different grazing regimes. The left hand block has had a higher density of recent grazing than the right hand block, although hawkweed density is similar in both.

Relative impacts of hares and sheep in summer grazing country: In January 2009 we established five 20 x 20 m enclosure plots in tall-tussock grassland in summer grazing country on Glenmore Station. The enclosure plots are fully sheep proof, and half of each plot (20 x 10 m) is also rabbit and hare proof. These plots have been established in order to undertake a long-term study of the relative impacts of sheep and hares on biodiversity values in summer grazing country.



Establishing exclosure plot, Glenmore Station

5 Social

5.1 Climate Change Survey:

In March, members of the ARGOS research team received funding to conduct a survey of 4000 New Zealand pastoral farmers and their understanding of and response to climate change. This survey was designed in response to interviews conducted with ARGOS sheep/beef and dairy farmers during the previous year. In doing the interviews we were surprised by the extent to which understandings of climate change had become overly politicized. On the other hand, there remained a diversity of response from farmers. Some strongly expressed their doubt regarding the reality of climate change – particularly the claims that global warming trends were the result of human action. Others showed some level of concern about the potential implications of climate change for their farming practice. The most consistent finding, however, was the relatively low level of knowledge about the processes underlying arguments about the potential contribution of agriculture to the changing climate.

In order to provide us with a broader sense of the extent to which our interviews indicated the perspectives of the broader pastoral farming population, the survey included sets of questions to gauge:

- belief in climate change and its causes;
- the level of responsibility farmers held for mitigation of greenhouse gas emissions;
- level of knowledge about climate change process; and
- desirability of potential mitigation practices.

We are currently in the process of recording and analysing the more than 1000 responses that were returned. Initial findings suggest that, while there is a moderate level of responsibility for and concern about climate change, the great majority of pastoral farmers perceives the current attempts at regulation (including the Kyoto Protocol and the emissions trading scheme) as patently unfair to the agriculture sector. The findings from the survey will allow ARGOS to make stronger statements about the current attitudes toward climate change in the pastoral sector, especially in regard to the need for policy makers to pursue greater engagement with farmers in the development of New Zealand's position climate change negotiations. We expect to have a more comprehensive report on the survey by March 2010. (Please note that not all of the ARGOS farmers returned their surveys. We hope to get a response from each participant so that we can incorporate this data in the larger ARGOS project and will provide a further copy of the survey for those who have yet to respond.)

The findings from the survey will allow ARGOS to make stronger statements about the current attitudes toward climate change in the pastoral sector, especially in regard to the need for policy makers to pursue greater engagement with farmers in the development of New Zealand's position climate change negotiations.

5.2 Examining historical management changes – retrospective survey

During the coming year, members of the ARGOS social research team are planning to interview each of the participant farmers. The interview will consist of a discussion of changes in management that have occurred since the farms were first managed by the current farmer. Essentially, we will be asking farmers to tell us the story of how they have developed their farm. Through the interviews, we hope to gain a better understanding of both the factors that initiate or cause change as well as the pathways that lead to viable management responses. We believe that the historical aspects of changes can provide insight to the future adaptation and resilience of farms in the face of shocks. Our existing interview data has, however, focused almost exclusively on current conditions of management. The additional information is also expected to inform policy recommendations for promoting more sustainable agriculture into the future.

We intend to conduct these interviews from late February into March on the kiwifruit orchards, with interviews in the sheep/beef and dairy sectors in early winter. The interviews are expected to take 60-90 minutes and will be recorded as in the past. We will contact individuals 10-15 days prior to interviews in order to set times that are convenient.

6 Acknowledgements and References

6.1 Acknowledgements

The ARGOS programme has been designed and implemented with the intention of providing quality information to both farmers and their associated industries to ensure that they are broadly sustainable, internationally competitive and profitable. To facilitate this, we greatly value the input provided by the farmers and industry partners to enable us to undertake the research and ensure that our outputs are relevant.

Thank you for your support and input

6.2 References

PUBLIC REPORTS

The following are publicly available on the ARGOS website (www.argos.org.nz). Please contact ARGOS if you would like a hardcopy.

Research Reports

09/03 New Zealand Farmer Attitude and Opinion Survey 2008: Management systems and farming sustainability, by John Fairweather, Lesley Hunt, Chris Rosin, Henrik Moller and Solis Norton

09/02 New Zealand Farmer and Orchardist Attitude and Opinion Survey 2008: Characteristics of organic, modified conventional (integrated) and organic management, and of the sheep/beef, horticulture and dairy sectors, by John Fairweather, Lesley Hunt, Jayson Bengé, Hugh Campbell, Glen Greer, Dave Lucock, Jon Manhire, Sarah Meadows, Henrik Moller, Chris Rosin, Caroline Saunders and Yuki Fukuda

08/04 Soil Properties on ARGOS Dairy and Sheep & Beef Farms 2007, by Peter Carey, Dave Lucock and Jayson Bengé

08/03 Linking farmer wellbeing and environmentally sustainable land use: a comparison between converting organic and conventional dairy farmers, by Belinda Mortlock and Lesley Hunt

08/02 Causal mapping of ARGOS high country farms and comparisons to sheep/beef and dairy farms, by John Fairweather, Lesley Hunt, Dave Lucock, Chris Rosin

08/01 Causal mapping of ARGOS dairy farms and comparisons to sheep/beef farms, by John Fairweather, Lesley Hunt, Chris Rosin and Hugh Campbell

07/14 Transdisciplinary synthesis, by ARGOS

07/13 Social Objective Synthesis Report: Differentiation among Participant Farmers/Orchardists in the ARGOS Research Programme, by Chris Rosin, Lesley Hunt, John Fairweather and Hugh Campbell

07/12 Environmental indicators from alternative farm management systems: Signposts for different pathways to sustainable primary production in New Zealand?, by Tanja Maegli, Sarah Richards, Sarah Meadows, Peter Carey, Marion Johnson, Monica Peters, Katherine Dixon, Jayson Bengé, Henrik Moller, Grant Blackwell, Florian Weller, David Lucock, David Norton, Chris Perley and Catriona MacLeod.

07/11 Economics Objective Synthesis Report, by Caroline Saunders, Glen Greer, Eva Zellman

07/09 Management and Production Features of ARGOS farms and Differences between Production systems, by Jayson Benge, Dave Lucock, Martin Emanuelsson, Jon Manhire

07/07 New Zealand Farmer and Grower Attitude and Opinion Survey: Analysis by Sector and Management System, by John Fairweather, Lesley Hunt, Andrew Cook, Chris Rosin, Hugh Campbell

07/05 Becoming the Audited: Response of New Zealand Sheep/Beef Farmers to the Introduction of Supermarket Initiated Audit Schemes, by Chris Rosin, Lesley Hunt, Hugh Campbell and John Fairweather

07/03 The Representativeness of ARGOS Panels and Between Panel Comparisons, John Fairweather, Lesley Hunt, Andrew Cook, Chris Rosin, Hugh Campbell

07/02 Understanding sheep/beef farm management using causal mapping: development and application of a two-stage approach, by John Fairweather, Lesley Hunt, Chris Rosin, Hugh Campbell and Dave Lucock

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06/10 New Zealand Farmers and Wetlands, by Carmen McLeod, Lesley Hunt, Chris Rosin, John Fairweather, Andrew Cook, Hugh Campbell, November 2006

06/07 Total Energy Indicators: Benchmarking Organic, Integrated and Conventional Sheep and Beef Farms, by Andrew Barber and Dave Lucock, September 2006

06/05 Prevalence and diversity of non-forage herbaceous plants on sheep/beef pastures in the South Island, by Grant Blackwell, Dave Lucock, Henrik Moller, Richard Hill, Jon Manhire and Martin Emanuelsson

06/03 Cleaner streams and improved stream health on North Island dairy and South Island sheep/beef farms, by Grant Blackwell, Mark Haggerty, Suzanne Burns, Louise Davidson, Gaia Gnanalingam and Henrik Moller, June 2006

06/02 Weed survey to be published, Henrik Moller et al

06/01 Understanding Approaches to Sheep/Beef Production in New Zealand: Report on First Qualitative Interviews of ARGOS Sheep/Beef Participants, by Lesley Hunt, Chris Rosin, Marion Read, John Fairweather, Hugh Campbell, February 2006

05/07 Interspecific interaction and habitat use by Australian magpies (*Gymnorhina tibicen*) on sheep and beef farms, South Island, New Zealand, by Marcia Green, Erin O'Neill, Joanna Wright, Grant Blackwell and Henrik Moller, July 2005

05/06 Bird community composition and relative abundance in production and natural habitats of New Zealand, by Grant Blackwell, Erin O'Neill, Francesca Buzzi, Dean Clarke, Tracey Dearlove, Marcia Green, Henrik Moller, Stephen Rate and Joanna Wright, June 2005

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ARGOS High Country Environmental Report

No. 1, August 2006 - High Country Environmental Monitoring Report 2005-06

Report 1, September 2007 - ARGOS Annual High Country Sector Report

Report 2, November 2008 - ARGOS Annual High Country Sector Report

Report 3, December 2009 - ARGOS Annual High Country Sector Report

Research Notes (short research summaries)

1. Background to the ARGOS Programme
2. Transdisciplinary Research
4. Market Developments for NZ Agricultural Produce
11. Sketch Map Results: Sheep/Beef Sector
12. Positive aspects of wellbeing for ARGOS sheep & beef farmers
13. What makes ARGOS sheep & beef farmers stressed?
14. Ways in which ARGOS sheep & beef farmers managed the stress of farming
17. Bird Sampling Methods
18. Birds on sheep/beef farms
20. Management of Data in ARGOS
27. Monitoring stream health on farms
28. Stream management: it really matters what you do on your own farm!
29. Soil Phosphorus and Sulphur levels in Dairy farms
30. Soil Phosphorus and Sulphur levels in Sheep & Beef farms
32. Fertiliser use on ARGOS kiwifruit orchards
33. How ARGOS uses Geographical Information Systems (GIS)
34. Food Miles
35. Understanding sheep/beef management using causal maps
37. Four types of sheep/beef farmers across the ARGOS panels
38. Audits and Sheep/Beef Farm Management
40. High Country Woody Weeds
42. The Relevance of Performance Indicators Used for Non-AgriBusinesses to Sheep and Beef Farms
43. Common elements of pastoral farming systems as shown by causal mapping