

# PART 1: TRENDS AND ISSUES

The New Zealand pastoral sector is grappling with a range of critical issues as it works to ensure a sustainable future and remain ahead of major competitors. Many issues are common across the dairy, deer, and sheep and beef sectors, impacting on large and small industries alike.

Four issues of critical importance are considered in this section. The first chapter compares the levels of profitability between the dairy, deer and sheep and beef sectors and the effect on land use change. Farmers' capacity for adaptation is assessed as they grapple with ongoing physical, financial and regulatory challenges and respond to overseas competition. This is further explored in the following chapter, which looks at adverse events in recent times and the recently developed framework for government support. The final chapter in this section looks at labour issues impacting on the pastoral sector.

The trends and issues specific to the individual pastoral sectors are covered in more detail in the sector issues and developments chapters in Parts 2, 3 and 4.

# COMPARISON OF PROFITABILITY

# 2

## AND ITS EFFECT ON LAND USE

The improved outlook for dairy farming and the subdued outlook for sheep and beef cattle farming have created significant interest in farm conversion, from meat and wool production, and forestry in some cases, to milk production. This interest is at a level not seen since the 1993/94 to 2002/03 seasons, during which there was a net gain of 378 000 hectares to dairying (a 30 percent increase in dairy land over a decade).

### »» FARM PROFITABILITY

There are several measures of farm profitability in common use. Farm monitoring uses a number including farm profit before tax (an accountant's view), economic farm surplus (an economist's view) and return on capital (economic farm surplus/total farm assets (opening)) expressed as a percentage.

However, these measures only reflect one business activity associated with farming in New Zealand – the cash generation from converting pasture into milk, meat and wool. The other important activity is wealth generation from holding land (and other assets) for its capital appreciation. To get a “total return on capital”,<sup>2</sup> the return on capital measure needs to be expanded to include capital appreciation.<sup>3</sup>

The differences in these measures are illustrated by considering dairy farming returns. From 1995 to 2005,<sup>4</sup> dairy farming averaged around 12 percent total return on capital. The farming operation, turning pasture into milk and meat, contributed about 30 percent of the total return on capital for dairying, while capital appreciation provided about 70 percent. This highlights the need to consider the change in capital value of the assets when considering the profitability of farming.

### » DAIRY FARMING

For 2005/06 and 2006/07, the MAF national dairy budget indicates total returns on capital of 14 percent and 12 percent respectively on opening assets. However, the proportion earned from farming has been low (2.8 percent and 2.0 percent respectively) while capital appreciation has been 10 to 11 percent per annum.

The 2007/08 dairy budgets in this report were originally prepared in May 2007 prior to the announcement by Fonterra of the expected payout of \$6.40 for 2007/08. The budgets have been adjusted for the expected change in revenue but no change has been made to the forecast expenditure. Consequently, the profit from farming is likely to be overstated to some extent. The farm profit before tax and the economic farm surplus for 2007/08 is forecast to rise 366 percent and 281 percent respectively, from 2006/07. The return on capital is forecast to rise from 1.8 percent to 6.5 percent.

Looking at the total return, one would need to speculate on what the closing value of the farming assets (land, shares, cows and plant) might be at the end of 2008. Historically, some of the biggest increases in capital appreciation were in 2001 and 2002, following the payouts of \$5.00 and \$5.30 per kilogram of milksolids in

<sup>2</sup> Total return on capital = (Economic farm surplus + capital appreciation)/Total farm assets.

<sup>3</sup> Capital appreciation = Total farm assets (closing) – Total farm assets (opening).

<sup>4</sup> Based on data from Dexel: Economic Survey Of New Zealand Dairy Farmers 2004/05.

2000/01 and 2001/02. Based on historical trends, one would expect to see some increase in the value of dairy farm assets in the 12 to 24 months following a significant rise in milk payments. Obviously it is difficult to forecast the size of any movement, as land prices reflect both the productive value (what returns it can generate) as well as a range of other values, for example consumptive value – reflecting lifestyle value, and speculative value – its value as an appreciating asset. However, a simplistic approach of capitalising the increase in economic farm surplus between 2006/07 and 2007/08 at 10 percent would suggest a significant increase in total asset values.

#### › DEER FARMING

Deer farming is a pastoral sector that has been depressed in recent years but is slowly showing some improvement in product prices. However, these prices are yet to indicate a resurgence for the sector from declining deer numbers and deer farms.

In 2005/06, both the North Island and South Island deer models showed losses. While farm profit before tax was a small positive the economic farm surplus was negative, meaning the profit was insufficient to pay for the owner's labour. Declining stock and plant values also contributed to a negative total return of between – 1.8 percent and –3.0 percent.

In 2006/07, the profit improved substantially, but the North Island model continued to show a negative economic farm surplus, while the South Island model showed a 1 percent return on assets. Consequently deer farms in the North Island are converting to lifestyle blocks (near urban centres), dairying or dairy grazing, or to finishing sheep and cattle. In the more remote South Island areas, the decline in sheep income has helped to retain the area in deer farming.

Even with improved prices forecast for 2007/08, the profitability of deer farming remains modest at best. Deer farming can not compete with dairying, dairy support or intensive beef.

#### › SHEEP AND BEEF CATTLE FARMING

The farm profit before tax declined for the national sheep and beef farm model by 14 percent from 2005/06 to 2006/07, and is forecast to remain at similar levels in 2007/08 as in 2006/07.

Drought in eastern North Island districts and parts of the South Island, with the consequential reductions in the value of stock on hand and low prices for lambs are the main contributors to this situation.

Land prices have also plateaued in the last 12 months, except where the land is suitable for conversion to dairy farming or dairy support.

The return on capital from sheep and beef farming fell from 1.1 percent in 2005/06 to 0.4 percent in 2006/07. However, there is considerable variation between farm models.

In 2007/08, the average return from farms is expected to remain at 0.4 percent for sheep and beef, well below the 6.5 percent for dairy farming.

When capital appreciation is included, sheep and beef farms have shown an average total return of about 3 percent per annum over the past two years compared to about 13 percent per year for dairying. This largely explains the interest in conversion to dairying and dairy support.

### »» DAIRY CONVERSIONS

Since the increase in forecast payout for 2007/08, the number of farms undertaking feasibility studies for conversions has risen substantially. However, some of that enthusiasm is offset by concerns about availability of builders, the shortage and high cost of cows, access to water in Canterbury/North Otago, shortages of farm labour, high debt and uncertainty about carbon implications for conversions from forestry.

Fonterra has had 50 to 60 conversions per year for the last few years under modest payouts and so a rise in the number of conversions is expected given the improvement in payout expectations. At this stage the actual impact is unknown as Fonterra's application period for commitments for 2008/09 doesn't open until December 2007.

However, up to 200 conversions are expected over the next two years – mainly in Southland and Canterbury (subject to water availability), with smaller numbers in traditional North Island dairying districts – North and South Auckland, Taranaki, Manawatu, as well as Central Hawkes Bay. This is expected to see the conversion of some 70 000 hectares to dairy farming with the removal of up to 900 000 sheep and beef stock units, and an increase in milking cow numbers by around 180 000.

The combination of conversions and higher payout is also expected to increase the demand for dairy inputs, such as feed production and winter grazing for cows and annual grazing for herd replacements.

### »» RELATIVE PROFITABILITY

The relative profitability of the various alternative pastoral enterprises is shown in Table 2.1, which compares the Southland dairy, Southland/South Otago intensive sheep and beef and South Island deer farm models. The average farm sizes are all about the same: 178 hectares for dairying, 180 hectares for deer and 194 hectares for sheep and beef.

In 2006/07, the economic farm surplus per hectare for dairying in Southland is almost 20 times that for sheep and beef and nearly 10 times that for deer. The difference between dairying and these two other pastoral sectors is expected to widen even further in 2007/08.

For the Southland farms, the return on capital from farm operations in 2006/07 was 4 percent for dairying, 0.5 percent for sheep and beef and 1 percent for deer. Including the appreciation in capital, the total return on

capital was 19 percent for dairy farming, 8 percent for sheep and beef and 12 percent for deer. It is the higher rates of return in the dairy sector that will drive the expansion of dairying over the next two to three years. However, the considerable capital investment involved in converting to dairy may be a deterrent to some. Dairying in Southland has a capital investment of \$37 000 per hectare compared to \$14 300 for sheep and beef, and deer farming systems. Conversion of 180 hectares from sheep and beef to dairying is likely to require between \$3 to \$4 million.

»» TABLE 2.1: COMPARATIVE PASTORAL PROFITABILITY INDICATORS

SECTOR	DAIRY FARMING		SHEEP AND BEEF		DEER
	NATIONAL	SOUTHLAND	NATIONAL	SOUTHLAND/SOUTH OTAGO INTENSIVE	SOUTH ISLAND
<b>MODELS</b>					
<b>FARM PROFIT BEFORE TAX</b>					
2005/06 (\$/ha)	897	879	72	244	69
2006/07 (\$/ha)	569	559	62	242	283
2007/08 forecast (\$/ha)	2 633	2 815	59	203	342
<b>ECONOMIC FARM SURPLUS</b>					
2005/06 (\$/ha)	949	1 339	31	93	- 137
2006/07 (\$/ha)	760	1 272	22	65	133
2007/08 forecast (\$/ha)	2 873	3 627	23	25	181
<b>CHANGE IN CAPITAL</b>					
2005/06 (\$/ha)	3 742	2 265	278	570	- 263
2006/07 (\$/ha)	3 960	4 973	54	1 041	1 389
2007/08 forecast (\$/ha)	n/a	n/a	n/a	n/a	n/a
<b>FARMING RETURN ON ASSETS</b>					
2005/06 (%)	2.8	4.4	0.5	0.7	- 1.0
2006/07 (%)	1.8	4.0	0.4	0.5	1.0
2007/08 forecast (%)	6.5	9.8	0.4	0.2	1.3
<b>CAPITAL APPRECIATION ON ASSETS</b>					
2005/06 (%)	10.9	7.4	4.8	4.5	- 2.0
2006/07 (%)	10.4	15.5	0.9	7.8	10.8
2007/08 forecast (%)	n/a	n/a	n/a	n/a	n/a
<b>TOTAL RETURN ON CAPITAL</b>					
2005/06 (%)	13.7	11.7	5.4	5.2	- 3.0
2006/07 (%)	12.1	19.4	1.3	8.3	11.8
2007/08 forecast (%)	n/a	n/a	n/a	n/a	n/a

Symbol  
n/a Not available.

## CAPACITY FOR ADAPTATION

# 3

Pastoral farmers as a group are continually adapting to climatic conditions, financial signals, market demands, legislative requirements, and new technologies.

The capacity to adapt to these changes or show resilience to stress and shocks is governed by the human, social, natural, physical and financial capital of the farm operators, be they individual families or multiple owner structures; and the signals and support they receive from their sectors and communities.

In 2006/07, the sheep and beef sector adapted to lower profitability by tightening its belt, maximising returns through fine-tuning management of the farming system, and looking for a more sustainable lamb price into the future, through increased marketing co-operation by meat companies.

The dairy sector will adapt to forecast record milksolids payouts by repaying some of the debt accumulated in recent years, catching up on some deferred development and capital expenditure and looking to produce more milksolids. A positive result for dairy farmers, regional economies and New Zealand export earnings, but there are some challenges and issues, particularly in terms of environmental sustainability.

The deer sector welcomed a return to profitability after a four year run of cash deficits and the cull of capital stock. Deer farmers are cautiously returning farm inputs back to full maintenance levels.

### »» DROUGHTS, FLOODS AND OTHER ADVERSE EVENTS

The North Island in particular, had its share of floods and droughts in 2006/07. As part of operating a farm business, farmers must assess the risks they face from the timing and magnitude of such events. Sometimes they get their assessment right and take the event in their stride. Sometimes they need to adapt their farming systems and call on financial and personal reserves to cope. The social capital available in rural communities comes to the fore in adverse events. Drought and flood committees were formed in affected areas to help people cope with the situation, to provide technical information, and to support the recovery measures when the flood waters receded or the grass started to grow again.

### »» LAND USE CHANGE

Another way that farmers adapt is by changing land use, either within their system, or by completely changing their farming type. The current disparity in profitability between dairy and other pastoral sectors will see farmers respond by changing land use to dairy farming and dairy support. The regions most likely to see a further increase in dairying are Canterbury, South Otago and Southland. Conversions seem to be focused particularly on irrigated areas in the dry eastern districts of the North and South Islands. A proportion of the forestry land conversions in the Central North Island are also earmarked for dairying, or dairy support. These regional economies will receive a considerable boost.

Meat and Wool New Zealand estimates that for every four farms converted from sheep to dairy, the equivalent of another farm is also required for dairy support, such as producing feed and grazing stock.

The national sheep flock is projected to decline, which in turn will lead to a decrease in the lamb crop. This has flow on effects for sheep and beef farms involved in finishing and trading livestock, the stock and station industry, shearers, meat companies and all associated service industries.

The Government's new initiatives to encourage forestry development for carbon sequestration and to address the problem of hill country erosion will provide opportunities for farmers to review their land management plans and to identify areas suitable for forestry development (or needing erosion control). This also promises to enhance the sustainability of pastoral farming by protecting better pasture land, and reduce the impact of sediment and flooding in downstream parts of a catchment.

### »» LAND PRICE, EQUITY AND FINANCE

Most pastoral models experienced an increase in the value of land. Land values in the national dairy model farm increased by 14 percent. Sheep and beef models experienced a modest average increase of 1 percent in land value. Consequently farmer equity was maintained or increased.

The national sheep and beef model farm has 88 percent equity in its business, or \$3.8 million. However, due to a reduced economic farm surplus, the return on capital on sheep and beef models ranged from -0.7 to 2 percent. Sheep farmers, in general, are 'asset rich and cash poor'. Their equity is almost entirely in farm assets and only a small percentage of income comes from off-farm investment. MAF monitoring shows that sheep and beef farm owners tend not to use their equity to build off-farm investment portfolios but reinvest in their farms.

Diversification within the farm is also difficult for some farms as they are limited in how they can adapt their farming systems. This can be seen in the case of breeding operations, which are located primarily in hill and high country areas. These properties have greater climate risks, less versatile soils and poorer infrastructure. Their distance to markets and population centres also limits how diversified their businesses can be. Changing the sheep, cattle and deer ratio on these properties takes time or involves significant capital input to purchase livestock or invest in on-farm infrastructure such as fences, yards and sheds. However, many of the surveyed farms report a marginal trend away from sheep toward cattle, based on the better relative profitability of cattle and the lower labour inputs required. This is slowed somewhat by current relative prices and the constrained margins for cattle, largely due to the high value of the New Zealand dollar; and the cost of rearing bull beef compared with the returns, which looks likely to reduce the number being reared.

The intensive sheep and beef farms have more opportunities for diversification within the farm such as breeding, finishing, hogget lambing, trading livestock, selling supplements, growing cash crops, grazing outside stock and leasing land to dairy farming neighbours. Changes in stock policies can happen at a faster rate, for example, swapping trading sheep for trading cattle within a season. However, they may lack the scale required to financially justify extra labour or capital inputs on the relatively small size of property.

All sheep and beef farms continue to look at farm management options to maximise returns. Total quantity of meat sold and price per kilogram for that meat are the key indices of profitability. Where feasible, farmers look at adjusting lambing dates to capitalise on early season premiums, marketing their lambs at various stages and through various channels, mitigating or avoiding internal parasite resistance through appropriate drench use, and breed changes for increased lambing percentages and/or growth rates. Tools such as pregnancy scanning and feed budgeting continue to aid maximising feed efficiency.

Higher property prices can lead to a growing affordability gap to purchase a new farm. This particularly affects the next generation of farmers and highlights the need for careful succession planning to enable properties to pass down to subsequent generations. The average age of sheep and beef farmers is projected to continue increasing. There is a widening equity gap between land suitable for dairying and other pastoral land.

Farm amalgamations are also likely to increase as farmers search for economies of scale to improve profitability and labour efficiency. Neighbouring farmers usually pay more than any productive valuation to gain economies of scale or help farm succession.

Dairy farmers especially will look to buy run-off blocks or neighbouring properties suitable for conversion, ensuring the price of land continues to increase. For those dairy farmers unable to expand they may look at increasing per hectare production through increased stocking rates and/or feeding. New farm ownership structures, including corporate and equity-sharing ownership arrangements and large-scale leasing, have emerged in the dairy sector to enable on-going expansion and viability of farms.

All pastoral sectors have had to adapt to increasing interest rates. Farmers and financiers use various strategies to curb increases in debt servicing costs. These include principal repayment holidays, interest-only loans, having some debt on fixed and some debt on floating interest rates or differing interest review dates to spread risk. Although farmers are keen to reduce debt, repaying principal off loans has become discretionary rather than automatic for farmers. There has been a move towards not repaying principal, particularly in the case of dairy farms continuing to expand. The sustainability of this approach is linked to production, economies of scale, positive trends in the price of milk, ensuring debt servicing costs are covered, and increases in land value so as to maintain equity. The risk arises when there is some seasonal or other impact on production, unexpected deteriorations in milk payments or an income shock of some other sort, particularly if this were to be accompanied by any downward adjustment in land values.

Farm financiers are concerned at the sheep farming deficits currently being experienced, but they remain confident in the future of the sector. In the medium-term the dairy sector is an attractive lending opportunity.

## »» LABOUR

The pastoral sectors experience difficulty in attracting and retaining skilled and unskilled staff. This labour shortage also applies to the industries servicing farmers (such as veterinarians, drivers and trades people).

Dairy farmers with an increased payout will compete with other industries, as well as between dairy farms, for staff. Staff, even those with minimal experience, will be sought after and this demand will increase wages and salaries.

Sheep and beef farmers rationalise labour use where possible. The average age of sheep and beef farmers means that substituting their own labour on physically demanding tasks such as shearing or crutching will not be an option for many. Many farmers have reviewed the frequency of shearing in an effort to reduce this cost. With current low wool prices, shearing now absorbs a significant proportion of the wool cheque. The purchase or contract use of labour saving devices, such as specialised stock handling systems, may also slow down as farmers endeavour to cut expenditure whenever possible – even at the expense of increasing efficiency. They will tend to substitute their own labour on tasks such as drenching and vaccinating.

On dairy farms, the extra income will mean investing in physical infrastructure to increase labour efficiency and improve working conditions, as well as increasing production from cows. Industry sources report new dairy conversions are looking to put in sheds that are built to last; are highly efficient and may contain electronic drafting and identification systems, automatic cup removers and in-shed feeding systems. In this new round of conversions, more rotary sheds than usual are being built.

### »» GENETIC GAIN

The dairy sector has a long history of performance recording, sire testing and artificial insemination for increased performance. Similar genetic information on sheep and deer sires is now more readily available, including indices of stags and rams, and their breeders.

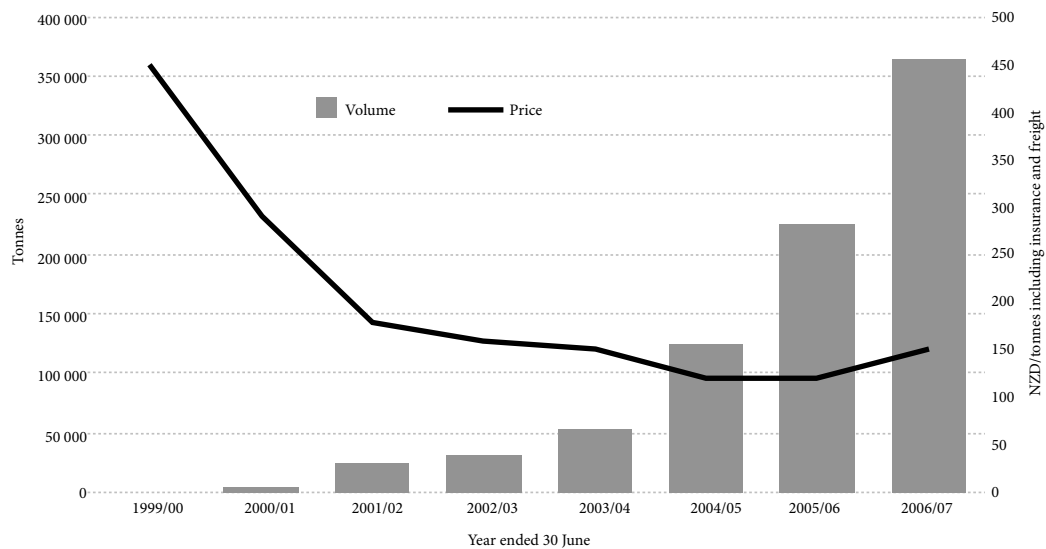
More information on carcass quality of lambs supplied to the meat companies will also help the selection of the best performing lines of animals. But the extent to which this occurs will be driven by the accuracy and incentive of pricing signals.

### »» FEEDING

Feeding and breeding are the keys to on-farm performance in all pastoral sectors. New cultivars of ryegrass that give increased animal production due to palatability or carbohydrate and protein ratios are being developed.

A trend sheep and beef farmers are adopting from the dairy sector is the feeding of palm kernel extract. During the North Island drought many farmers used the high protein supplement to feed stock. The imports of palm kernel extract have increased from virtually nothing in 2000, to 362 000 tonnes in 2007 (see Figure 3.1). In the year to June 2007, import volume increased by 62 percent compared with the year before. In 2007, 58 percent of imports were from Indonesia, and 42 percent from Malaysia.

»» FIGURE 3.1: VOLUME AND PRICE OF PALM KERNEL IMPORTS



The use of palm kernel extract is unlikely to continue to grow at the rates shown in Figure 3.1 due to recent price rises and a reduction in its feed value as a result of the demand for biofuels – meaning that more oil is now being extracted from the product.

### »» FERTILISER AND ENVIRONMENT

Dairy farmers are adapting to the call for more environmental responsibility and are meeting most of the targets of the Clean Streams Accord. A significant on-farm trend is the use of nutrient budgeting. Fonterra, along with the major fertiliser companies, have recommended that all dairy farmers complete a nutrient budget for their property. In many cases, this has resulted in more targeted nutrient application, especially on effluent areas, and potential cost savings on the amount of fertiliser used.

Nitrogen inhibitor use has increased steadily from a small base. Many farmers are trialling a small area of their farm or are waiting for more results from research relevant to their situation to prove the environmental, production and economic benefits of the product.

On dairy farms, especially in cooler wetter areas, stand off pads, long term feed pads and herd homes are becoming more popular. Their aim is to increase production of milksolids and to prevent environmental damage to soils and waterways.

**»» CHANGE IS CONSTANT**

The pastoral sector underpins the New Zealand economy. Its capacity to adapt to change holds the key to the livelihood of all New Zealanders and the sustainability of New Zealand's natural resources. Farmers have demonstrated a capacity and willingness to adapt their businesses to meet the challenges that are constantly confronting them. This bodes well for the future.

# ADVERSE EVENTS

## REMINDE FARMERS TO BE PREPARED

# 4

Many farmers got a taste of nature's extremes this year with adverse events hitting most parts of New Zealand. The El Nino phenomenon provided its usual weather pattern, wet in the west and dry in the east; causing floods and land slips in sodden parts of South Taranaki and Wanganui and droughts in the eastern regions of the North Island and Marlborough.

Northland got more than its fair share of rain, resulting in widespread flooding and slips not once but twice during 2007. After enduring the March 2007 floods, the second rain event in July 2007 also brought strong gales to Northland, Auckland and the Coromandel, felling trees, damaging orchards and causing power outages. Taranaki farmers managed through a swarm of tornadoes, while flooding in parts of the Hawkes Bay, in July 2007, and severe rain and snow events in Otago in June 2007, reminded farmers that winter had arrived.

The financial year had started with parts of the South Island recovering from severe snow storms on 12 June 2006. Snow remained in many areas until the end of June. For weeks farmers struggled to feed their stock, families were without power and telecommunications, businesses suffered and roads were closed. The arrival of the snow storm was sudden, and its impacts widespread. On the Canterbury plains and in the foothills south of the Rakaia River, the snow was as deep as the July 1945 snow storm (75 to 90 centimetres).

A three-day period of high rainfall in July 2006 resulted in swollen rivers and severe surface flooding throughout much of southern Wairarapa, with substantial landslips in parts of Wanganui and Wellington.

After a difficult spring, dry conditions on the east coast of the North Island developed into an extreme, late drought when the autumn rains, usually expected in April and May, failed to arrive. Rain finally arrived in mid-June 2007, too late for pasture covers to recover before winter.

Most farmers battled through the disruptive weather, recognising that changing weather is a normal part of primary production. The frequency of events and media coverage did remind those fortunate not to be severely affected to build their resilience through: maintaining supplementary feed reserves; vegetating erodible land; acting quickly in response to weather warnings by moving stock or destocking when necessary; building greater flexibility into farm management systems, for example by using trading stock; and maintaining good insurance cover and alternative means of power.

With the number of adverse events this year, the On-farm Adverse Events Recovery Framework<sup>5</sup> was timely in its arrival. This framework ensures government support is transparent and fair; and aims to maintain and strengthen individuals' and communities' primary responsibility for risk management and preparedness as those individuals with good risk management plans are better placed to recover from the effects of adverse events.

<sup>5</sup> For more information about the framework visit [www.maf.govt.nz](http://www.maf.govt.nz).

The framework sets out the criteria and assistance that may be provided. This assistance is aimed at the initial clean-up, welfare support and communications, following adverse climatic and natural disaster events. In a significantly large event such as the lower North Island floods in 2004, limited financial assistance to restore uninsurable infrastructure, pasture, crops and forestry may also be provided.

# LABOUR ISSUES

## IN THE PASTORAL SECTOR

# 5

Sourcing and retaining skilled employees remains a challenge for many farmers. Amalgamations, farm conversions, dwindling rural populations, increasingly complex farm management practices and changing ownership structures have added to these challenges. New Zealand's low unemployment rate means that, more than ever, the primary sector must compete with other businesses to attract staff on-farm and across many agricultural servicing industries.

Changing land values and lower returns are impacting on the viability of smaller properties and raising concerns over the long-term future of the traditional family farm. The challenge for these properties will be to develop a viable business and, at the same time, provide for the needs of all family members particularly when dealing with farm succession. Bleak financial outlooks may also see older farmers leaving the industry earlier than planned. However, some may seek to expand their property when the economics of such a decision may not be justified. Private investors are also looking towards the dairy sector or farm support business for improved returns rather than the sheep and beef sectors.

Industry has invested considerable resources in promoting the primary sector to schools and more widely highlighting the sector as an excellent career opportunity. Employers have also improved their staff management, in particular recognising the value of training in building skills, which in turn has increased staff productivity and played a part in improving staff retention. In the South Island, the growth in dairy farm employment has drawn on qualified migrants to fill dairy positions. On-going skills development for employers and employees, both on and off-farm, remains a key issue for the pastoral sector as a whole.

Also of concern is the drop between 1999 and 2005 in the number of university Bachelors graduates (35 percent decrease) and postgraduates (45 percent decrease) across agricultural and environmental studies (see Table 5.1). These limited pools of graduates are unlikely to fill current and future vacancies, for example in science, policy, natural resource management, engineering and farm consultancy. Increasing pressure on farmers to reduce their environmental impacts, for example through improved effluent and fertiliser management, will see the needs for these services increase.

Sector representatives also express concern about the shortage of veterinarians in rural practice, including those with specialist knowledge in areas such as deer husbandry.

### »» COST OF ON-FARM LABOUR

The cost of employing staff in the pastoral sector has grown significantly over the past eight years. Dairy labour costs have increased by 71 percent between 1999/00 and 2006/07 – increasing from \$0.28 per kilogram milksolids to \$0.46 per kilogram milksolids (see Table 5.2). Labour now accounts for 16 percent of total farm working expenses on dairy farms compared to 11 percent in 1999/2000. These figures do not tell us how many employees are involved, so the rise may be a rise in staff numbers, in hours, or pay rates, or a combination of these. From 2001 to 2007, wage inflation for the agriculture industry as measured by Statistics New Zealand's Labour Cost Index was 16 percent, which was the same as the rate for all industries combined. Farmers are

responding to rising labour costs by investing in labour saving devices such as automatic cup removers and changing farm management practices, for example, once-a-day milking and increasing the use of contractors.

»» TABLE 5.1: DOMESTIC STUDENTS COMPLETING AGRICULTURE, ENVIRONMENTAL AND RELATED STUDIES QUALIFICATIONS

YEAR	LEVEL 1-3	LEVEL 4	LEVEL 5-7	LEVEL 7	LEVEL 8 HONOURS /POSTGRAD	LEVEL 9
	CERTIFICATE	CERTIFICATE	DIPLOMA	BACHELORS	CERTIFICATE OR DIPLOMA	MASTERS
1999	812	40	246	419	159	96
2000	950	73	242	316	155	77
2001	1027	123	275	264	135	85
2002	1654	121	252	252	115	54
2003	1659	175	224	228	93	77
2004	2499	318	237	265	82	99
2005	7813	314	258	276	68	71

**Source**

Education Counts: Tertiary Education Statistics ([http://educationcounts.edcentre.govt.nz/statistics/tertiary\\_education/retention\\_and\\_achievement](http://educationcounts.edcentre.govt.nz/statistics/tertiary_education/retention_and_achievement)).

»» TABLE 5.2: CHANGES IN THE COST OF LABOUR ON DAIRY FARMS

YEAR ENDED 30 JUNE	FARM LABOUR COSTS <sup>1</sup> (\$)	LABOUR COST PER COW (\$)	LABOUR COST PER KG OF MILKSOLIDS (\$)	MILKSOLIDS PER HECTARE (KG)	TOTAL FARM WORKING EXPENSES (FWE) (\$)	LABOUR AS A % OF FWE (%)
1999/2000	21 030	89	0.28	808	206 267	10
2000/01	18 275	79	0.25	825	217 614	8
2001/02	23 337	95	0.30	821	181 302	13
2002/03	35 142	129	0.38	888	262 355	13
2003/04	35 890	104	0.30	898	259 635	14
2004/05	42 172	123	0.38	873	286 062	15
2005/06	51 722	142	0.47	958	326 462	16
2006/07	58 690	163	0.47	1 009	370 539	16

**Source**

MAF National Dairy Model, Dairy farm monitoring reports 1999–2007. Does not include ACC.

**Note**

1 Includes permanent and casual labour, excludes ACC.

In the sheep and beef sector, labour costs between 2000/01 and 2006/07 have increased by 53 percent from \$2.67 per stock unit to an estimated \$4.08 per stock unit (Table 5.3). These costs account for an estimated 11 percent of total farm working expenses in 2006/07 compared to 8 percent of total farm working expenses in 2000/01.

»» TABLE 5.3: CHANGES IN THE COST OF LABOUR ON SHEEP AND BEEF FARMS

YEAR ENDED 30 JUNE	FARM LABOUR COSTS <sup>1</sup> (\$)	LABOUR COST PER STOCK UNIT (\$)	STOCK UNITS	TOTAL FARM WORKING EXPENSES (FWE) (\$)	LABOUR AS A % OF FWE %
2000/01	11 904	2.67	4 642	147 567	8
2001/02	15 374	3.60	4 268	173 099	9
2002/03	18 389	3.78	4 869	177 121	10
2003/04	18 369	3.75	4 893	181 038	10
2004/05	19 741	3.93	5 014	197 816	10
2005/06	22 142	4.36	5 073	200 551	11
2006/07	18 495	4.08	4 528	171 102	11

**Source**

MAF sheep and beef farm monitoring reports 2000–2007.

**Note**

1 Includes permanent and casual labour, excludes ACC.