Kellogg Rural Leadership 1997

Mental Stress & Fatigue

In New Zealand Dairy Farmers

By Owen Becroft

Executive Summary

There is almost a complete lack of information on whether the New Zealand dairy farmer suffers from stress and or fatigue as a result of their job as farmers. Assuming individuals farm by choice then it is difficult to believe that the stress levels are extreme otherwise people would have exited the industry and the return on investment would be significantly higher than other comparable investments. The average return of the 94/95 and 95/96 seasons is 5.5% return on capital. (Includes capital gain) This is lower than bank deposit rates over the same time frame.

However the six years ending in the 93/94 season dairy farmers averaged 21.9% return on net assets. Comparable bank deposit rates at the same time were only 7 to 8%. How much stress is one prepared to accept to get such a healthy return?

Provided farmers have a free hand in their own life decisions then the rate of return and stress levels will be a balancing act for each individual concerned. And there is no reason why negative stress levels in dairy farmers should be any higher than the general population.
I have certainly not proven that there is an excessive level of stress on New Zealand dairy farmers, in fact to the contrary it is likely that dairy farmer's farm because they enjoy the lifestyle, rather than it being just a job or investment. Negative stress will not produce enjoyment.

Fatigue on the other hand is more likely to be more of a factor in the dairy farmer performance because of the nature of the job.
That is.

1. Work and home environment in one place.
2. 7 day per week, milking twice per day.
3. The large number of cows milked per person
4. The milk price received in New Zealand
5. The sole operator difficulties of finding relief staff for time off.

Do dairy farmers suffer from fatigue? I have no absolute proof but believe that they often do. Particularly the sole operator where it is considerably harder to take time away from the farm. The evidence that New Zealand Dairy Farmers suffer from fatigue is circumstantial at best. However by being aware of the problem or potential problem and being able to identify it is the major step in eliminating the problem.
It has been impossible for me to try and put a figure on the losses suffered and I'm not to sure what purpose that would serve anyway as

fatigue is a problem of each individual that only needs to be highlighted and then a treatment is relatively easy to establish.
Any treatment (rest and relaxation) is likely to have a positive impact on farm profitability. The cost of non-treatment will exceed the extra labour cost of relief staff.

Objectives of this report

This report is being undertaken as part of the 1997 Kellogg Rural Leadership Course in which any topic relevant to rural New Zealand could have been selected.

I suspected that there is a significant problem in the New Zealand dairy industry with regard to high fatigue/stress levels.

In researching this project I discovered that there has been very little work done in New Zealand with regard to fatigue/stress and none that looked at the dairy industry in particular. This may be due to the fact that it is impossible to measure these factors within humans accurately. Or it could have been over looked as a problem of any significance

My main objective in writing this report is to find hard data to demonstrate what the stress/fatigue levels are and to quantify what the likely cost are to the New Zealand dairy farmer.

Both of these objectives I have failed to answer conclusively but hopefully will have highlighted a problem that needs to be researched further and under stood better by the New Zealand dairy farmer.

I believe that the problem of fatigued farmers which then leads to negative stress on those farmers is a major burden in the dairy industry of New Zealand.

In this report I am looking only at stress/fatigue brought on by the physical and mental pressure of dairy farming life in New Zealand.

Stress Verses Fatigue

Fatigue verses stress it is important to understand the difference between the two before progressing to the rest of the report.

Definitions are;

Fatigue;	Physical or mental weariness resulting from exertion Tire Relentless Ongoing
Stress;	Pressure tension Demand on physical or mental energy

Stress

Stresses in life are normal and life without any stress at all would likely be very unrewarding in fact stress is one of the key driver's in the development of the human race. People who are exposed to high levels of stress often need to find a replacement challenge if stress levels decline too low.

However there are times when stress levels reach such a point that they overwhelm the individual concerned.

As an intangible stress is impossible to measure in the human being even thought some of the symptoms can be measured accurately. If we were able to measure stress in the human body then it would be likely that the ideal stress levels would be at different levels for all individuals and even at different stages of an individuals life. An acceptable level of stress for one individual may be totally intolerable to another.

Life without any stress or pressure at all would likely mean that the human performance is well below what could be achieved.

'Moderate exposure to stresses spurs people to optimum productivity and work satisfaction. When the duration and intensity of exposure to stresses exceed our ability to manage however, we have bad stress or distress.'
Dr Leon Genesove in an article for the Canadian Ministry of Labour Magazine "Accident Prevention"

Fatigue

Unlike stress, fatigue is a creeping complaint that usually needs a longer time to reach a level that can cause serious impact to human health or performance. However all fatigue will have a detrimental impact, it is not necessary to be fatigued to any degree to maximise human performance.

Symptoms include:

Weakness
Tiredness
Indifference
Lack of energy

Fatigue can have many causes eg.

An illness,
Overexertion,
Poor physical condition
Lack of exercise
Inadequate sleep
Inadequate nutrition
Emotional and psychological problems

For the purpose of this report I am only looking at fatigue that is caused by prolonged periods of overexertion and or inadequate sleep.

The Nature of the New Zealand Dairy Industry

Farmers like many people combine their living and work place.
The positive factors of this are that the need to travel is greatly reduced. Time and cost associated with travel are not lost and idle time at home can also be used more productively.
The down side is that to have a complete break away from work one must also leave one's home.

With a physical barrier between work and home it is easer to leave work hassles at work and vice versa when you change locations.

New Zealand dairy farmers do work and live in the same enviroment and therefor have the potential for conflict between work and social lives. Unless farmers are away from the farm then they are likely to feel the compulsion to get those unfinished jobs completed regardless of the day of the week or the number of hours that they have worked already. "No one can do the job as well as I can" attitude. Or it may be that the financial pressure the farmer is under makes it unattractive or not feasible to get some outside help so that time can be spent away from the farm relaxing.

As a seven-day per week industry the potential to work on relentlessly for long periods is dramatically increased. Added to this is the drive that the majority of the participants in the dairy industry have, hoping to progress along the staff, Manager, Sharemilker, path to farm ownership. It would appear the potential for stress/fatigue to set in is high.

However not all stress is bad some of the high growth recreational activates of the 1990's are high stress. Hanglideing, bungy jumping, skydiving, gambling all carry high stress levels yet many people do voluntarily partake in such activities.

Maybe stress should be classified as positive and negative?

What make stress good or bad?

In "Social stress in agriculture" By J Cary and R Weston 1978 University of Melbourne.
"Stress is a label that applies to human feeling as emotion, motivation, anxiety, frustration, aggression etc.
Stress results from coping with a new set of circumstances which most people face every day, being alive results in a degree of stress. But how individuals cope at different levels is still hard to explain. The stress level rises rapidly once we get outside our own particular comfit zone."

If a new situation is stressful then once the situation becomes the norm after a period of time then it would logical to assume that the level of stress would also decline.
This is likely to happen but not necessary so in all cases, as can be seen with people under extreme financial pressure. Time under this pressure doesn't reduce the stress level in fact it can worsen as time goes on.

Two other important factors come in to the equation at this point, **fatigue** and **control.**

Control

"Control may be defined as the belief that one can have an influence of an event" (Davidson, Baum & Collins)

The individual ability to **control** the level of stress is the most important factor.

Stress that we,

1. Have control of.
2. Decide to partake of voluntarily.
3. Are confident of the outcome.

Is likely to produce positive stress.

If any of those 3 factor's are missing then the same situation would likely to produce negative stress. eg.

A person who bungy jumps will control (decide) on the likely out come and make a voluntary decision to partake of the jump.
While they will have no control while falling they have had full control up to that point and have high expectations to have control at the end of the bungy jump.

This event is likely to be highly stressful but regarded as positive stress by the participant.

If the same person was physically forced to do the same bungy jump against their will. All the factors would be identical except for the control of the participant and the stress levels. These circumstances with the same event would produce the opposite result. Negative stress
The ability to control one's situation is the most critical factor in high stress situations.

From this we can conclude that long-term negative stresses all come from outside influences that we have no or little control of.

Stress wether positive or negative is very much a judgment call by the individual concerned. Of corse there are some physical factors that we have no control of, like the weather. This can cause negative stress but it is usually of a temporary nature.
The weather does have a large impact on where we decide to live ie. Not a lot of people live at the poles of the earth or in the middle of deserts, if they did it is likely the weather would be very stressful. So by deciding where to live we do have some degree of control of the weather that surrounds us.

If the present stress level is unacceptable to any dairy farmer and they have control to take positive action, then that may be a decision that needs to be made.

However if circumstances don't allow full control of this decision then stress levels of the individuals concerned may become unacceptable. This situation may occur if cows and/or farms are unsaleable or if family pressure restricts the options available, or the need to fulfil contractual obligations.
An example of this may be where a sons ideals for his life may be very different to that of his wider family and he feels obliged to farm a particular farm or in a particular manner that he disagrees with. It is also possible to get mismatched partners. Ie. One that thrives on high stress and the other feeling negatively stressed in the same situation. Both of these examples the people lack full control of their lives because of obligations given or assumed.

Taking the above factors into consideration we see that dairy farmers can be negatively stressed by factors over which we have no control but these are usually of a temporary nature. Provided that individuals control their

own decisions and are prepared to take action to lower stress levels then it is likely that dairy farmers are exposed to no more stress than the general population. Farmers being individuals of course some will take on higher stress level than others just as some people chose bungy jumping and others chose just to watch.

If farmers analyse their own situation and are prepared to act stress need not be a prolonged problem, however fatigued people may be hampered in analysing and the taking of action.

Dairy Farmer Fatigue

Unlike Stress, which is readily gauged by the sufferer, fatigue can become quite serious without the sufferer being aware of the fact. This happens because of the slow nature of the on set of fatigue.

The twice a day milking of cows seven days a week makes dairy farmers more prone to fatigue than most occupations particualy when the workload other than milking is still high. Ie. Early season, calving, mating and the making of supplements.
The average herd size of 200 cows and 2.06 labour units per farm (both paid and unpaid) hides fact that of the 14,735 farms in New Zealand nearly 9000 of them have less than 200 cows. (See table)
Not many of this group would be employing labour outside of the family making time off harder to achieve.
Most of the new entrants to farm ownership come into this group who carry high debt loadings as well.
All of these factors combine to make this group of farmers more likely to work for long periods without a break and prone to suffer from fatigue.
Labour units on larger multi staffed farms are more likely to take time off.
Recovery from dairy farm fatigue can and usually is very rapid by taking several days break away from the farm and daily grind of the farm work.

It is likely to be that fatigued farmers are unable to see potential problems as early or fail to act on seeing these problems which may have a detrimental impact on farm profitability and stress.
A fatigued person is almost always likely to be stressed, but stressed people are not necessarily fatigued
However I have found no evidence to back up my assumptions. Other than the remark that farmers invariably make when they do take time off that is "I should have gone away sooner".

"Stress focus's attention on one aspect and by so doing excludes awareness of some other aspects of the enviroment" (Strefort, Strefort & Denson)

Herd Size Distribution in New Zealand

Herd statistics 1995/96 Livestock Improvement

Herd size (cow numbers)			
	10 to 49	341	numbers of herds
	50 to 99	1673	
	100 to 149	3560	
	150 to 199	3399	
	200 to 249	2401	
	250 to 299	1250	
	300 to 349	735	
	350 to 399	507	
	400 to 449	323	
	450 to 499	165	
	500 +	382	
	Total herds	14736	
	Herds less than 200 cows	8973	

The distribution of herd size is shown above. The average herd is 200 cows but 61 % of farms have herds smaller that the average.

Season	Average herd size	Number of herds	Inflation adjusted average milksolids payout
1974/75	112	18540	4.73
75/76	113	18442	4.45
76/77	116	17924	4.12
77/78	118	17363	4.13
78/79	121	16907	3.84
79/80	124	16506	3.88
80/81	126	16089	4.18
81/82	130	15821	4.59
82/83	135	15816	4.58
83/84	139	15932	4.34
84/85	144	15881	4.16
85/86	147	15753	3.69
86/87	149	15315	2.76
87/88	151	14818	2.98
88/89	154	14744	4.00
89/90	159	14595	4.08
90/91	164	14685	2.67
91/92	169	14452	3.66
92/93	180	14458	3.95
93/94	188	14597	3.54
94/95	193	14649	3.47
95/96	199	14736	3.99

The above table highlights two trends over the last 20 years that have increased the pressure on the New Zealand dairy farmer. 1. The increase in the average herd size from 112 cows in 1974/75 season to 199 cows in the 1995/96 season, This is nearly 80 % increase. 2. Over the same timethe return for the milksoilds has decreased by 20%

Number of cows and Kg. of fat produced per person in New Zealand
Source Dr W. C. Holmes, Massey University

	Per person	
Year	Cows	Kg. fat
1930	30	2700
1965	60	7500
1975	75	10000
1985	135	19000
1992	150	24200

From the 1995/96 Dairy Board Economic Survey of Factory Supply Dairy Farms

Labour units per farm	
.71	Paid labour
1.35	Owner & family units
2.06	Total labour units per farm

The above two tables appear to be in conflict, the latter one includes all unpaid labour. Family etc. This was ascertained by questioning 148 farmers with regard to unpaid labour on farm, as part of the annual economic farm survey carried out by the Dairy Board.

Milk Price received at the farm gate for various countries 1995/96
All prices converted to $ NZ.

	$ / Kg. milksolids
New Zealand	3.99
Australia	5.00
U.S.A.	7.03
Irish Republic	8.81
U.K.	8.5
Netherlands	8.44
E.U. 15	9.19
Japan	25.52

Source Livestock Improvement

This table illustrates why New Zealand dairy farmers need to milk large numbers of cows to be economic.

Average herd sizes various countries

Germany	23
France	27
Italy	75
Netherlands	42
Belgium	28
U.K.	69
Irish Republic	27
Denmark	40
Japan	44
Australia	154
New Zealand	199

New Zealands response to low milk prices (relative to other countries) is to run large herds with lower inputs.

Total return on net operating assets of New Zealand Dairy Farmers

Year	Return %
88/89	22.7
89/90	26.0
90/91	7.7
91/92	19.9
92/93	33.4
93/94	21.8
94/95	7.0
95/96	4.0

Source 95/96 economic survey of factory supply

Are farmers likely to be more stressed under a low return on capital because of pressure from banks and other lenders or under a high return because the extra stress is seen to be worthwhile because the return is much higher than other options

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