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Farm monitoring - Review of the Northland focal farm scheme

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ABSTRACT

Interest in gathering physical data on individual farms has escalated in recent years with the establishment of a number of focal farm schemes throughout the country. These schemes are aimed at identifying constraints to farm production at a local level, and then demonstrating techniques to overcome these constraints and hence increase production. It is assumed that surrounding farmers will adopt the techniques demonstrated on the focal farm and increase their production accordingly. This paper reviews the Northland Focal Farm Scheme and shows that this process of technology uptake by farmers outside such a monitoring scheme is slow to occur. Farmer confidence and other personal factors appear to be major limitations to management change and increased production on many farms.

Keywords: monitoring, data, focal farm, limitations, farmer confidence, personal factors.

INTRODUCTION

Collecting and recording physical data on dairy farms has been an integral part of the New Zealand dairy industry for a number of years. Research stations and many individual farmers monitor key parameters in their farming systems to develop management skills and improve productivity.

Weather records, pasture and milk production data and financial information have highlighted significant differences in production and profitability between the major dairying regions of New Zealand. In an attempt to identify the important constraints to production and profit, 'monitoring farms' were set up in 1986 in South Canterbury, Westland and Northland regions, which are distant from existing research stations.

An early lesson in this programme was that the choice of farmers was critical to its success (Deane 1992). Selected farmers had to be receptive, motivated and willing to change, because personal circumstances could be a major constraint to management changes and increased production on the monitored farm. The two Northland monitoring farms were chosen with this in mind. One property was a well-known high performing farm in the Dargaville area. The second farm was typical of properties in the Whangarei district with lower performance but considerable potential to improve milk production. Once constraints to production on these farms were identified and overcome, it was assumed that other farmers would be motivated by the local information and improvements and apply similar improvements to their own systems (Gamble 1989).

The programme ran for a period of three years on each farm. During this time, constraints to milk production were identified and action was taken to overcome them (Clayton 1990). Milk production increases on the Dargaville farm were limited over the three years as the quantity of pasture grown was found to be a major constraint and could not be changed quickly. The Whangarei farm however, found the constraints to be herd quality and health, calving date, young stock size

and low stocking rate. Management was aimed at reducing these constraints and milk production rapidly increased by a remarkable 43% from year one to three. This resulted in a significant rise in the economic farm surplus, providing evidence that farm monitoring could achieve desirable results on the farms involved.

Mass extension activities on each of the monitored farms included field days, occasional publications and a booklet summarising the whole project. Farmer awareness of the project was high, but the effect of the exercise on production and profit of surrounding farms was not known. Despite this, the local dairy company decided to expand the farm monitoring programme in Northland, based on the success on the Whangarei farm.

DAIRYPLAN - NORTHLAND'S FOCAL FARM SCHEME

The "Dairyplan" project was developed in May 1989. The primary objective was to assist suppliers to identify and overcome production-limiting factors on their farms in order to improve productivity and profitability (Ferrier 1991). Other objectives for the scheme were to provide objective information for discussion groups; to involve all groups servicing the dairy industry in a cooperative approach; to help identify issues requiring further research; to develop a cost-efficient farm management information service for dairy farmers and to provide the opportunity to test radical changes to farm management on commercial Northland farms rather than on research stations.

Thirty dairy farms (including the original two monitored farms), covering a wide range of soil types, contours and climatic patterns were selected to serve as focal properties throughout the Northland region. The focal farmers were required to monitor key parameters of farm performance and make this information available to other farmers to highlight opportunities for improvement on their farms. Information was to be distributed regularly. It was assumed that production

gains achieved on the focal farms would motivate other suppliers to adopt similar management practices and hence increase their production. Each focal farmer was assigned a consultant from the Ministry of Agriculture and Fisheries (MAF), the Livestock Improvement Corporation (LIC), or a private practice. The data collected on each farm included farm area, stock numbers, milkfat and protein production, lactation days, pasture cover and growth rates, cow intakes, and daily soil temperature and rainfall. This information was collated each month and summarised into an annual report for each farm. Other information such as calving and mating performance, cow condition, fertiliser programme and young stock liveweights was collected on some farms but not included in the annual report. Financial accounts for each year were collected at the end of the project and the information was used to analyse the profitability of various farm management practices.

PROBLEMS

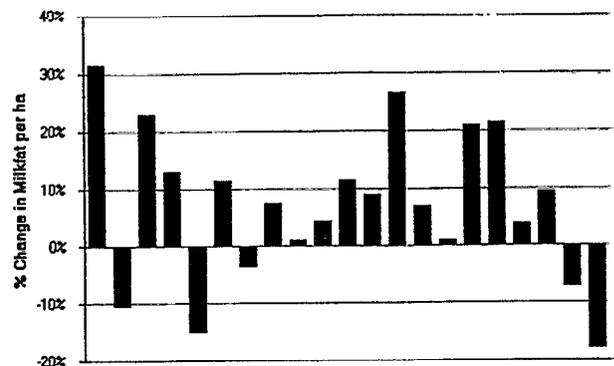
Several difficulties were encountered during the course of the scheme, which may have seriously affected the uptake of information by non-participating farmers. Firstly, the number of farms chosen was too high. The quantity of data generated made analysis and subsequent extension of trends difficult without generalising. Second, the number and geographic spread of the focal farms was too great for one person to collect monthly pasture data. As a result different techniques in cage cutting and pasture cover assessment were used on different farms, creating discrepancies in the estimate of this variable between areas. Third, the second year of the scheme coincided with an industry downturn. Financial pressures impacted on management decisions and seven farms withdrew from the scheme. Several farmers also purchased additional land and developed this into milking area during the project making per hectare comparisons between farms difficult. Fourth, major restructuring in MAF during the three year project period resulted in consultants changing employment. The data analyst subsequently left the area making communication of results confusing and difficult. Fifth, although the scheme was funded primarily by the Northland Dairy Company (and the focal farmers themselves), the project lacked leadership from a central controller. Information was passed around before overall analyses of trends were complete, and there has been limited formal mass extension of the scheme as a whole. For example, focal farm field days were only held at the beginning and end of the scheme and the information provided for each farm was very limited. Little information was published, and annual reports went only to the focal farmers and consultants directly involved. Although some information was used at discussion groups, other suppliers became very dissatisfied with the lack of information from a project that they were funding. Despite this, awareness of the scheme was high and expectations for great improvements in company milkflow arose.

RESULTS AND DISCUSSION

Milkfat production changes between 1989/90 and 1991/92 on 21 focal farms which completed the scheme are

summarised in Figure 1. Responses varied widely between farms with five of the herds recording a decline in per hectare productivity. The average increase in milkfat production was 7% in the three years. During the same period, milkfat production on the average Northland dairy farm only increased by 0.05%, indicating that the gains made on focal farms were not occurring as rapidly on surrounding farms.

FIGURE 1: Changes in Milkfat per ha from 1989/90 to 1991/92 on 21 Northland Focal Farms.



A similar trend in milk production changes was found when comparing the two original farms with neighbouring farms over the entire six year monitoring period (Table 1). Milk production in the Dargaville area remained relatively constant, even though the monitoring farm was producing considerably higher than the district average. The large gains made on the Whangarei farm were not equalled by surrounding farms, although production did increase significantly on some properties. This is not surprising as the area is a developing one where subsurface drainage is providing good results. These increases may have occurred anyway, without a local monitoring programme. Milk production on surrounding farms is disappointing given that six years of data has been collected in both areas.

TABLE 1: Changes in Milkfat production per farm to the factory on the two original farms and the neighbouring farms.

	Average Milkfat per Farm (kg)	% change between	
	86/87 - 88/89	89/90 - 91/92	three year periods
Dargaville farm	28077	27744	- 1.19%
16 surrounding farms	18355	18522	+ 0.91%
Whangarei farm	20584	23519	+ 14.26%
22 surrounding farms	20803	22014	+ 5.82%

In an attempt to determine whether the results for the Northland project were typical of all farm monitoring schemes a comparison of the Northland Focal Farm Project was made with the Baymilk Products "Comparative Farm Scheme" in the Bay of Plenty.

The Baymilk farm monitoring project also began in 1989 but involved only four farms in any one year. The farms were chosen by local consultants as "typical" average performers (Keane B.G., Baymilk Products, pers. comm.). Two of the four initial farms completed three years of monitoring.

TABLE 2: Milkfat production per hectare to the factory for two Comparative farms (C) and surrounding farms (Zone) in the Baymilk Products supply area.

	Maketu		Edgecumbe	
	C. Farm	Zone	C. Farm	Zone
1989/90	446	415	465	412
1990/91	455	415	495	393
1991/92	484	421	510	410
± % Yr 1 to 3	+8.5%	+ 1.4%	+ 9.7%	- 0.5%

The other two farms were replaced by alternatives for various reasons. Similar information was collected as in the Northland scheme. The MAF was initially contracted to do all consultancy, visiting each farm at least once a month and producing a written report. However, during MAF restructuring, some farms had 3 advisors in one season, and a change was made to allow the farmers to select their own advisor. The mass extension programme is far more comprehensive than the Northland scheme. Monthly newsletters provide basic data as well as a paragraph summarising current farm management. Each farm also has 4-6 field days each year, on timely management topics using comparative farm data. During the first three years, the field days attracted approximately 25% of Dairy Company suppliers on a regular basis. There are now new farmers appearing at these field days, many of whom have no consulting officer or farm advisor contact. This reflects an increasing interest in the comparative farms.

Overall the Baymilk scheme got off to a slow start, but has evolved into a database which is widely used by farmers and extension workers for comparing farm systems. The scheme is controlled by the Dairy Company Farm Production Officer who completes all data analyses. Examples of milkfat production trends on comparative and surrounding farms are shown in Tables 2 and 3.

TABLE 3: Percentage change in average farm production per hectare from 1989/90 to 1991/92 for the Northland and Bay of Plenty regions

	Focal Farms	Surrounding Farms
Northland	+ 7.0%	- 2.1%
Bay of Plenty	+ 9.1%	+ 0.5%

Despite significant differences between the structure of the two farm monitoring schemes, the trends are remarkably similar. In both cases the production gains made on the monitored farms have not been evident on surrounding farms. This is consistent with the lack of production progress made by Hawera farmers neighbouring the Taranaki Agricultural Research Station (Watters 1990).

CONCLUSIONS

The monitoring information together with regular consultant contact appears to have given the focal farmers the confidence to change major components of their farming systems. The farmers also commented that monthly visits to the farm by a trusted peer encouraged them to make critical

decisions such as drying off or nitrogen application earlier. This led to significant production gains on some farms at little or no added expense.

However, the extension techniques employed by a scheme of this nature do not appear to have been effective in raising production rapidly on non-focal farms. This "seeing is believing" approach has been used in discussion groups and field days for many years and farm monitoring occurs both formally and informally on most farms anyway. Despite this, major changes to management systems are generally slow to occur. Farmers will readily "fine-tune" their system by adopting techniques such as deferred grazing or summer cropping. There is considerable reluctance, however, to alter the critical parameters such as stocking rate, calving date and winter feed management, which have far greater influence on milk production and profitability.

Despite some frustration at the lack of increases in Northland milk production, the Focal Farm scheme has been valuable in several ways. First, knowledge about Northland's dairy farming systems has been expanded and a valuable database of local information has been built. This is of immense value to researchers and extension workers, especially those new to the area. Second, the scheme has reinforced the basic principles of profitable dairy farming and shown that problems confronting dairy farmers in Northland are similar to those in other dairying regions. Third, the focal farm project has shown that care should be taken if the "success" of such a scheme is expressed only in terms of milk production. Renewed interest and enthusiasm for dairy farming, attainment of personal goals (not always for increased production) and a rise in net farm income have all occurred in the Northland scheme. Moreover, three years is not long enough to measure production gains which may take five to ten years to be reflected because of variation in seasonal pasture production or the time required for some management changes to impact on farm performance. Farmers may believe the scheme is highly successful even though they have not increased production significantly.

Perhaps the most valuable outcome from the scheme has been the realisation that human inputs, particularly farmer confidence, are probably the most important factors controlling milk production, yet this is an aspect about which relatively little is known.

The availability of monitoring information and some outside advice helped some of the focal farmers to develop the confidence and skills needed to overcome personal and physical constraints to production in a relatively short time. It is recommended that a research and extension programme should be instigated to investigate and address these critical human factors.

An improved understanding of these personal constraints and farmers' goals, combined with continued extension of the basic principles of dairy farming using a whole farm approach should lead to more rapid gains in production and profit on New Zealand dairy farms.

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