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Analysis of 10 years' production data within a discussion group. What factors are limiting production?

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Abstract

An analysis of 10 years' production records of a group of farms indicated that for all the improved management techniques employed, production had not increased. Kilograms of **milkfat** per hectare did notgiveameasureofresourceuseorthemanagement ability of the farmer.

Keywords index, management performance, goal, objective.

Introduction

How do farmers measure on-farm production performance? The extent to which production is related to management ability is difficult to assess, given the variability of season and the **lackof** objective indices for different land types.

As a discussion group we were frustrated in not beiig able to ascertainwhether as a group, or as individual farmers. we were making the best use of available resources.

In 1988, a group of farmers in the Pongakawa discussion group collated 10 years' production records to ascertain whether on-farm production had been increasing. The group was concerned that for all the improvedmanagement **techniques employed, production** had not increased. The aim was to measure accurately on-farm performance. The traditionally used index, kilograms of **milkfat** per ha, formed the basis of comparison.

The farms involved lie in an area described by Bay Milk Products as the Eastern Hills. Soils are free draining and fall into the Kaharoa ash group of soils. Contour ranges in the group from flat to rolling at near sea level to rolling to steep at 180 metres.

Method

Farmers were surveyed. The following data were collected for the years **1978/79** to **1987/88:**

area farmed
kilograms **milkfat** at BMP
herd test days in milk
young stock grazed on farm
off farm grazing
calves reared on wholemilk
fertiliser applied
rainfall measured at 2 sites

The data were collated to give total adjusted **milkfat** per ha. The adjustments made were for off-farm grazing (deduct 1 kg **milkfat** for each yearling heifer grazed **off-**farm each week and deduct 2 kg **milkfat** for each dry cow grazed off-farm each week) and calf milk (add 15 kg **milkfat** per calf reared).

Total milkfat per ha per farm was indexed, as was the group average and the regional average, to the 1985-86 year in an attempt to identify trends within the group and as a group with other districts.

Farm A was located on the Pukehma lowlands on a reclaimed peat soil and was included to give some indication as to the influence of soil type. Farm F was the highest in altitude.

Results

The results indicated that production (Table 2) had not increased significantly.

We could not use the data collected to identify the factors limiting production.

Rainfall(Table 1) was afactorbutraindaysobviously were just as important as total rainfall.

Table 1 Mean rainfall recorded at 2 sites within **a** 10 km radius and the groups mean days in milk.

Year	87/88	86/87	85/86	84/85	83/84	82/83	81/82	80/81	79/80	78/79
Rainfall (mm)	1144	1232	1640	1470	1510	954	1536	1437	1633	1407
Days in Milk	289	278	279	282	277	195	242	203		

Table 2 Total milkfat,kg/ha,by farm

Year	87/88	86/87	85/86	84/85	83/84	82/83	81/82	80/81	79/80	78/79
A	477	450	440	528	546	426	458	441	477	523
B	429	355	435	460	401	364	420	360	335	283
C	418	396	452	429	369	324	386	400	377	374
D	403	340	453	460	418	342	408	429	419	378
E	296	293	336	370	331	282	312	334	326	248
F	259	203	357	376	264	298	361	339	271	259
G	255	234	270	367	323	274	317	332	303	
H	245	226	272	290	236					
I	221	192	247	243	195	152	210	197	178	150
Mean	334	299	362	391	345	308	359	354	336	316

We could not correlate fertiliser use (Table 3) to production (Table 2). Fertiliser use probably more accurately reflected farmers' confidence in the next season or payout in the last.

Days in milk (Table 1) indicated only whether we hadexperienced aparticularly severe drought, as occured in 1982183.

A change in area farmed obviously influenced the results. As area increased production per ha decreased until stocking rate could be increased accordingly.

We could compare our performance with that of our neighbours, and the comparison with the regions of New Zealand (Table 5) indicated that our production trend was not dissimilar to theirs. Were we performing? We still did not know.

Discussion

The results for thegroupraisedmore questions than they answered.They showed that we were atthemercy of the elements but left the key question unanswered: how efficiently are we utilising resources?

How do farmers measure performance and secondly howdowemeasurethesuccessofmanagementtechniques we use?

For all the advances being made inresearch, farmers are still unable to measureobjectively the factors limiting to a farm's production. Subjective observations can be made based on education and experience, but when the prescribed strategy is implemented and production decreases, do we blame the season and suggest it will be successful in the following?

Historically, efficiency of production has been indexed on the basis of kilograms of milkfat per ha. In this analysis, this index did not tell us much. We did consider analysis on the basis of a group of the highest producing farms, but we considered that the variation in contour, soil type and even rainfall could be enough to explain the production difference. Farm A – on the Pukehinalowlands-hadsignificantlyhigherproduction in every year. The more favourable soil type was the contributing factor, but to what extent?

Dairy farming is all about setting goals and then measuring performance. The goals must be realistic and theymustrelatetoafarmer'smanagementperformance, not to rainfall, soil type or temperature. Management performance must be measurable.

Some may argue that this type of analysis is unnecessary but the importance emerges when farmers consider future strategies. If we havenowayof assessing pastdecisions, wemay givedifferentpriorities toexisting "tools" on the basis that we didn't see the "label claim" achieved, so it is time to try a different approach. With the prevalence of differing scientific views and commercial bias, farmers have many new "tools" to consider and give weight to their application.

The ability to sell new "tools" short term may be not so difficult but the ability to have those "tools" accepted long term must be based on the farmer perceiving long term gain.

Table 3 Fertiliser applied kg/ha potassic superphosphate ▪ by farm Fertiliser applied was either 15.30 or 50% potassic superphosphate.

	87/88	86/87	85/86	84/85	83/84	82/83	81/82	80/81	79/80	78/79
	230	455	315	645	730	420	600	600	410	
	0	685	465	555	555	555	555			
	640	640	625	625	625	625				
	320	0	530	520	580	635	635	635	510	
	390	135	145	180	275	320	340	340	340	
	360	215	360	255	255					
	285	410	500	490	610	410	490	540	410	
Mean	371	423	420	467	519	494	524	529		

Table 4 Group data by farm indexed as milkfat per hectare

Year	87/88	86/87	85/86	84/85	83/84	82/83	81/82	80/81	79/80	78/79
A	108	102	100	120	124	97	104	100	108	119
B	99	82	100	106	92	84	97	83	77	65
C	92	88	100	95	86	72	85	88	83	83
D	89	75	100	102	92	76	90	95	92	84
E	88	67	100	110	99	84	93	99	97	74
F	73	57	100	105	74	83	101	95	76	73.
G	94	87	100	136	120	101	117	123	112	
H	90	a3	100	107	07					
I	90	78	100	99	79	62	85	80	72	61
Mean	91	62	100	109	95	82	97	95	90	80

Table 5 Regional data: Dairy Exporter April 1989
Annual regional milkfat production compared with the base season of 1985/86

	87/88	86/87	85/86	84/85	83/84
Bay of Plenty	91	83	100	98	92
Northland	98	05	100	102	96
South Auckland	98	86	100	97	95
Taranaki	91	83	100	98	92
North Island	96	05	100	96	94
South Island	96	95	100	67	77
New Zealand	95	86	100	95	93