

The Impact of the Lincoln University Dairy Farm and the South Island Dairying Development Centre on Canterbury and North Otago Farmers

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Abstract**

To assess the success of the extension activities of the Lincoln University Dairy Farm (LUDF) and the South Island Dairy Development Centre (SIDDC), a survey was sent to 622 dairy farmers identified by the Livestock Improvement Corporation (LIC) in the Canterbury and North Otago regions in June 2008. A total of 146 surveys were returned by August 1, 2008. The responses were analyzed using the software, SPSS 15 by staff in the Agriculture and Life Sciences Division of Lincoln University.

Farmers participating in the survey had a mean age of 44, with 76.9% having completed some form of tertiary education. The mean farm size was 238.5 hectares, milking 611 cows. Production per cow was 419 kg ms and 1441 kg ms per hectare, with these production levels being higher than industry averages in the areas surveyed (LIC 2007). The majority of respondents (85.9%) identified themselves as using moderate levels of supplementary feeding (Systems 2,3,4).

Nearly 70% of respondents attended at least one LUDF Focus Day over a three year period. A high percentage attended to learn about grazing and animal management, to benchmark against the LUDF from a production and financial standpoint and to learn about environmental management. The social aspects of attending a Focus Day were not highly rated as a reason for attendance.

LUDF messages, such as low grazing residuals, pasture monitoring and environmental matters were very familiar to farmers. However, newer innovations such as OAD milking during calving, OAD calf feeding and aggressive hormone techniques for deal with non-cycling were less well known. There was a negative correlation in regards to knowledge of LUDF results and distance from the farm.

Twenty three farmers were willing to place an economic value on the adoption of LUDF practices. These ranged from \$50,000 per year to \$1,000,000 per year. Of these technologies, 82.2% had adopted low grazing residuals and 73.8% re-grassing paddocks based on monitoring. Lower numbers had adopted the practice of synchronizing heifers to calve a week before the main herd (28.9%), aggressive hormone intervention for non-cycling (42.2%) and the nil induction policy (36.2%). Over 70% felt that the adoption of some of the LUDF technologies had made their farm management easier.

Focus Days are the most important source of learning about LUDF results (68.4%), however other sources of information such as the media and Dairy NZ, were considered important. The LUDF website was visited at least once per year by 68.4% of respondents. When asked how they learn about new technology and innovation, the farmers indicated a wide variety of sources.

Dairy NZ events were attended by 78.5% of farmers and 68.3% used private consultants. There was a positive correlation between both of the above activities and higher levels of milksolids/hectare.

If a farming surplus was to occur, funds would be used to pay down debt or purchase more land. Respondents showed a strong inclination to invest in their business with any surpluses, rather than on personal consumption.

The most highly ranked reason for being a farmer was to achieve a “high cash surplus” (91.1%), with “being their own boss” at 87.7%. Those who ranked “farming for capital gain” highly, did not rank the aesthetics of farming such as “farming as a lifestyle”, “quality stock”, etc. highly. Conversely, those who favoured farming as a lifestyle did not rank farming for capital gain highly.

Introduction

The South Island (SI) of New Zealand has experienced rapid growth in dairy farming. From the 1988/89 season until 2006/07, SI herd numbers increased from 1,139 to 2,287, with cow numbers increasing from 172,084 or 8.2% of NZ cows to 1,155,317 or 29.5% of NZ cows (LIC 1988/89 and 2006/07). One of the areas to see the largest increase has been North and South Canterbury, where herd numbers have increased from 247 to 689, and cow numbers have increased from 81,014 or 3.8% of NZ cows to 467,061 or 11.9% of NZ cows (LIC 1988/89 and 2006/07).

In 2001, Lincoln University converted a 185 hectare (ha) dry land sheep property to an irrigated dairy farm with a milking platform of 161 hectares. The South Island Dairying Development Centre (SIDDC) was formed consisting of six commercial, education or research partners. Management of the Lincoln University Dairy Farm (LUDF) was delegated to SIDDC with the aim of fostering best practice, using the LUDF as a commercial demonstration farm of high relevance to SI dairy farmers. Since formation, a number of management techniques have been trialled and results reported at Focus Days, in the media and via the www.siddc.org.nz website. Financial data and benchmarks have been provided for the use of the industry. The LUDF has had over 13,000 visitors.

The farm runs over 4 cows/ha, producing between 1700 to 1800 kg of milk solids (ms) from a low input system. In the 2005/06 season, this resulted in the harvesting of over 16t dry matter (dm) of pasture per ha and an operating profit of \$2,240/ha at a \$4/kg ms payout. This compared favourably with the industry’s “Dairy DataBase” benchmarks which showed an average operating profit of \$1,406 for the Marlborough/Canterbury areas (van Bysterveldt and Christie 2006).

In June of 2008, a postal survey was conducted of dairy farmers in the LUDF catchment area of Canterbury and North Otago. The objective of the survey was to determine the demographics of farmers in the area and to gauge whether farmers had adopted the technologies demonstrated by the LUDF. The data was analysed by staff in the Agriculture and Life Sciences Division of Lincoln University using the software SPSS 15.

Results

Part 1 Demographics

1.1 Position of person answering questions:

1.2

	Percent
Owner/Operator	73.4
50/50 Sharemilker	16.8
L.O. Sharemilker	1.4
Managers	7.0
Other	1.4

1.3 Highest level of formal education

1.4

	Percent
High School	33.1
AgItto/Polytechnic	23.9
University	43.0

1.5 Age of person answering questions:

Mean: 44.6 years

Range: 22 to 72 years

	Percent in each group
20's	7.6
30's	24.0
40's	38.4
50's	23.4
60's	7.0
70's	1.4

1.6 Approximate distance from Lincoln University Dairy Farm

Mean: 104.65

Range: 6 km to 350 km

	Percent
Under 50 km	31
51-100 km	28.2
101-150	22.2
151-200	4.2
176-200	3.5
201-250	7.1
250+	3.5

81.4 % live within 150 km of the LUDF

1.7 Size of milking platform

Mean: 238.47

Range: 50 to 1400

	Percent
Under 100 ha	9.6
100-200 ha	45.2

201-300 ha	26.0
301-400 ha	8.9
400-500 ha	4.1
Over500 ha	6.2

1.8 Number of cows milked at peak

Mean: 611

Range: 130 to 5000

	Percent
Under 220	4.8
221-320	5.5
321-420	6.1
421-520	10.3
521-620	16.5
621-720	11.6
721-820	11.0
821-920	6.8
921-1020	6.2
1021-1120	3.4
1121-1220	5.5
Over 1221	12.3

1.9 Average cow weight

Mean: 479.95

Range: 400 to 750

	Percent
Under 350	7.1
351-400	30.5
401-450	43.3
Over 450	19.1

1.10 Production per cow

Mean: 418.5

Range: 300 to 525

	Percent
Under 350 kg ms	7.1
351-400	30.5
401-450	43.3

450 +

19.1

1.9 Production per hectare

Mean: 1441.4

Range: 698 to 2180

	Percent
Under 1100	3.6
1101-1150	12.3
1151-1200	5.1
1201-1250	5.1
1251-1300	3.6
1301-1350	4.4
1351-1400	10.1
1401-1450	5.8
1451-1500	8.7
1501-1550	5.1
1551-1600	7.9
1601-1650	4.4
1651-1700	8.7
1701-1750	4.0
1751-1800	4.7
Over 1800	6.5

There was a highly significant negative correlation between age and business structure (-.377**)---as age decreased there were less owner/operators. There was also a highly significant negative correlation between age and education (-.260**). Ms/ha were negatively correlated to increasing age (-.225**).

There were significant positive correlations between increased education and hectares controlled (.185*) and cows milked (.189*). Ms/ha increased with cow numbers (.220**) and ms/cow increased with cow weight (.296**).

1.10 Five Farming Systems

	Percent
System 1 (no imported feed)	8.5
System 2 (0-10% imported feed)	22.5
System 3 (10-20% imported feed)	35.2
System 4 (20-30% imported feed)	28.2
System 5 (over 30% imported feed)	5.6

As farm systems moved from system 1 towards system 5, there were positive correlations to cow numbers (.185*), ms produced (.261**) and ms/ha (.484**). There was a significant correlation (.174*) between the higher input systems and attendance at Dairy NZ events.

There was a negative correlation between those who farmed for capital gain and higher input systems (-.225**) and for those who attended LUDF Focus Days to learn about LUDF grazing management techniques (-.189*) and animal management techniques (-.221*).

1.11 How often do you attend Dairy NZ events (excluding LUDF)?

Mean = 2.78 events/year

Number of attendances	Percent
0	21.5
1	13.2
2	24.3
3	13.9
4	7.6
5	4.9
6	5.6
7 or more	9.0

Attendance at Dairy NZ events were negatively correlated to age (-.217**) and those farming for capital gains (-.177*). Those who attend Dairy NZ events are less likely to use the LUDF website (-.226*).

There was a positive correlation between attendance at Dairy NZ events and ms/ha (.204*) as well as those using higher input systems (.174*). There were also positive correlations between those who attended Dairy NZ events and those who attended LUDF Focus Days in all three years surveyed (.189*, .218** and .268**).

1.12 Do you use a private consultant?

No 31.5 %
Yes 68.3 %

There was a positive correlation of dairy farmers using consultants and production of ms/ha (.238**), a positive correlation to those who ranked farming as a lifestyle highly (.170*). There further correlations between consultant use and low grazing residuals (.224*) and heifer synchronization to calve a week before the herd (.350**).

1.13 Assuming that you have a farming surplus in the coming year, please rank the top five areas in which you would like to spend your surplus (1 being the first choice).

#1 use (130 responses)

pay down debt 43.8 in percentages
 purchase more land 16.9
 improve irrigation 15.4

#2 use (129 responses)

Percent

purchase land 17.1
 improve irrigation 14.7
 pay down debt 12.4

#3 use (125 responses)

Percent

purchase land 14.4
 improve irrigation 14.4
 re-grass 10.4
 holidays 10.4

#4 use (119 responses)

Percent

re-grass 16.8
 improve irrigation 10.9
 increase herd size 8.4

#5 use (108 responses)

Percent

upgrade machinery 13.9
 holidays 12.0
 improved housing 10.2

1.14 Please indicate the importance of the following in regards to your personal priorities in farming (1 is very important, 5 is not at all important).

Responses were 146, results shown in percentages

	1	2	3	4	5
Cash profit	63.7	27.4	6.8	2.1	0
Life style	43.2	34.9	17.1	2.7	2.1
Capital gain	35.6	28.8	30.8	2.1	2.7
Qual. stock	42.1	35.2	18.6	2.8	1.4

Own boss	61.0	26.7	7.5	3.5	1.4
Working outside family	39.3	29.7	22.8	5.5	2.8
	47.4	29.9	15.3	6.6	.7

Being their own boss was positively correlated with all other reasons for farming. However those farming for capital gains were less inclined to be positively correlated to the other reasons for farming.

Part 2 The Lincoln University Dairy Farm (LUDF) and the South Island Dairy Development Centre (SIDDC)

2.1 How often did you attend any of the four LUDF Focus Days in these seasons?

Responses were 142, all results shown in percentages

	0	1	2	3	4
2005/06	32.4	23.2	20.4	18.3	5.6
2006/07	34.5	19.0	23.9	20.4	2.1
2007/08	37.0	31.9	18.8	8.0	4.3

2.2 If you have attended a LUDF Focus Day, why do you attend?

Responses were 118, results are the % who gave an affirmative answer to the reason.

Percent	Reasons
36.2	To meet other farmers and have a day off of the farm
79.7	To learn about latest grazing management techniques
61.0	To learn about the latest animal management techniques
57.6	For the financial information provided
12.7	To visit with Agribusiness people (bankers, suppliers, etc.)
78.8	To learn how the LUDF is performing
65.3	To learn about environmental management at the LUDF (irrigation, effluent, fertilizer, etc.)
76.1	To compare my farm to the LUDF

2.3 When you think of the LUDF farming systems, what comes to mind?

There were 141 responses, results are the % who gave an affirmative answer.

Percent	Responses
89.4	Low grazing residuals
79.4	Pasture monitoring and feed wedge
63.8	Nutrient and environmental management
46.8	Irrigation monitoring
41.1	Re grassing of pastures
34.3	Reproductive tech.—treating anoestrus cows, synchronizing heifers
20.7	OAD milking during calving
9.3	OAD calf feeding

2.4 If you can put an economic value on any of the changes in question 2.3, please list with your estimate of \$ value.

Responses = 23, results are number of respondents in each category

	# responses
Lost money	1
up to \$50,000	5
\$50,001 to \$100,000	8
\$100,001 to \$500,000	7
up to \$1,000,000	2

Some key findings from the LUDF are listed below. Indicate your use of them by putting a “Y” or “N” in the box, and comment why, or why you haven’t, adopted these technologies.

2.5 Low grazing residuals

129 responses

82.2% have adopted (106)

17.8% have not (23)

19 respondents have always followed this practice

43 respondents felt that the practice gives better quality pasture and better utilization

6 respondents felt it was a more profitable way to farm

10 respondents did not adopt the practice, because they felt that their cows would not be fully fed

2.6 Re-grassing based on measurement of poor performing paddocks

130 responses

73.8% have adopted (96)

26.2% have not (34)

32 respondents have always re-grassed

16 respondents felt that the practice results in improved pastures

14 respondents felt that the practice increased production and quality

6 respondents did not re-grass due to being a new conversion

2.7 Synchronizing heifers to calve one week before the main herd

135 responses

28.9% followed practice (39)

71.1% did not (96)

18 respondents followed the practice to get the heifer calving over early

12 respondents followed the practice to give heifers more time to cycle

16 respondents did not follow the practice due to logistics (heifers away from farm, lack of facilities, etc.)

6 respondents felt that it was too expensive

3 respondents synchronize their heifers, but not to calve before the main herd

12 respondents calve heifers early, but do not synchronize

15 respondents do not believe in the practice of synchronizing heifers

2.8 Aggressive use of hormone intervention non-cycling technologies

135 responses

42.2% use aggressive technologies

57.8% do not

29 respondents used the technologies to maximize cycling, conception and compact calving

8 respondents said the practice is too expensive

23 respondents said that they did not believe in intervention

12 respondents felt that they achieved good results through breeding and feeding

10 respondents used other methods like OAD milking, teaser bulls, etc.

5 respondents said that they do not have any reproductive problems

2.9 Nil Induction policy

138 responses

36.2% (50) indicated that they followed the nil induction policy

63.8% (88) indicated that they did not

3 respondents felt that the practice of induction was too expensive

9 respondents were philosophically opposed to inductions

11 respondents felt that inductions violated animal welfare

20 respondents induced for reasons including: tidying up the calving of a new herd and growing the herd numbers

28 felt that it was too costly to waste cows through not inducing late calvers

5 respondents were share milkers who felt that they could not afford not to induce

There was a negative correlation (-.243**) between the adoption of the nil induction policy and ms/ha.

2.10 If you have made any changes, have they made your farm management easier or more difficult?

57 respondents

70.2% said easier (40)

24.6% said harder (14)---often said it was worth it though

5.3% said no effect (2)

2.11 How important are the following sources to learn about the results obtained at the LUDF (1 is very important, 5 is not at all important)

Respondents 137, results in %'s

	responses	1	2	3	4	5
Focus days	137	45.3	22.6	15.3	6.6	10.2
Consultants	137	20.4	27.0	29.2	9.5	13.9
Disc. Group	128	20.3	34.4	23.4	10.9	10.9
Website	123	29.3	22.8	21.1	12.2	14.6
DairyNewz	127	21.3	27.6	35.4	7.9	7.9
Exporter	138	31.9	29.7	28.3	6.5	3.6
Other publications	127	18.9	22.8	36.2	14.2	7.9
Other farmers	125	23.2	33.6	29.6	7.2	6.4

2.12 If you have used the LUDF website, how often do you visit the site in a year (times)?

Responses = 114

Not used 31.6%
 1-10 times 42.1%
 11-20 times 7.9%
 20-30 times 3.5%
 more than 30 times 14.9%

2.13 When you think of learning about new technology or innovations, please rank the following as sources of information by ticking the relevant box in each row: (1 is very useful, 5 is not useful at all)

Results in percentages

	responses	1	2	3	4	5
Media	135	31.1	31.1	25.9	6.7	5.2
DairyNZ	136	31.6	44.1	16.9	.7	6.6
Demo farms	135	32.6	39.3	20.0	3.7	4.4
conferences	131	22.1	32.8	30.5	9.9	4.6
Other farmers	134	31.3	35.8	26.1	6.0	.7
Sales reps	131	4.6	16.0	23.7	19.8	35.9
consultants	138	27.5	38.4	16.7	8.7	8.7

Summary and Conclusions

The majority of respondents identified themselves as Owner/Operators (73.4%), with 50/50 Sharemilkers constituting 16.8%. The educational level of the respondents of this survey with 43% having attended University and an additional 23.9% involved with Polytechnics or AgIto suggests that dairy farmers in the Canterbury/North Otago catchment of the LUDF are more highly educated than what is commonly assumed for the farming sector. Additionally the mean age of 44.6 years contradicts media reports of an older farm population. However, there could be a predisposition of younger, more highly educated farmers to answer surveys of this type. There were negative correlations between age and educational levels, as well as milksolids production per hectare. More highly educated farmers controlled more hectares and milked more cows. Possibly only those who have visited the LUDF responded as the others thought their input would not be applicable.

The milking platform ranged from 50 hectares to 1400 hectares, with 238.5 hectares being the mean. Cows milked ranged from 130 to 5000, with a mean of 611. The mean cow weight of 480 kg would indicate that the majority of herds were tending towards Friesians. However, 37.6% of farmers felt that their cows weighed under 400 kg which indicates that these herds have a Jersey base.

Production per cow for survey participants was 419 kg ms, compared to North Canterbury production per cow of 383 kg ms and South Canterbury production of 379 kg ms per cow (LIC 2007). North Canterbury farms averaged 1215 kg ms/ha and South Canterbury farms 1232 kg ms/ha (LIC 2007) with the survey group producing 1441 kg ms/ha. There was a positive correlation between ms/ha and cow numbers, which contrasts with a common perception of declining productivity per cow in larger herds.

Most farmers (35.2%) felt they were a System 3 farm (10% to 20% imported feed)). As farm systems intensified from system 1 to system 5, the farms milked more cows, produced more milksolids per cow and more milksolids/ha. The more intensive farms were more likely to attend DairyNZ events. As systems intensified, farmers were less likely to attend LUDF Focus Days to learn about grazing and animal management techniques. There was also a highly significant negative correlation between those farming for capital gain and the more intense systems.

Attendance at DairyNZ events was negatively correlated to age, those farming for capital gain and use of the LUDF website. Dairyfarmers who attend DairyNZ events tend to participate in LUDF Focus Days and produce higher milksolids/ha.

The majority of respondents (68.3%) used the services of a professional consultant. These farmers produced higher levels of milksolids/ha and were more likely to rank farming as a lifestyle higher. Although they tended to follow the LUDF practice of low grazing residuals and heifer synchronization, there was a very significant negative correlation between these techniques and learning about them from consultants.

When farmers were asked to rank their top five priorities for spending a potential farm surplus, 56.2% indicated that they would pay down debt as their first or second option. However, 48.4% ranked purchasing land in their top three options. Other common choices were to make improvements to irrigation systems or re-grass more of the farm. Although farmers were given a choice of several personal consumption options (holidays, schooling), the majority indicated that they would re-invest in their farming operations.

When asked to rank seven possible reasons for farming from 1 (very important) to 5 (not at all important), 91.1% listed cash profit as a 1 or 2. Being their own boss was ranked 1 or 2 by 87.7%. Very few of the reasons for farming were ranked as a 4 or 5. Farming for capital gain was ranked as a 1 or 2 by 64.4%.

Being their own boss was very significantly correlated to all other reasons for farming. All of the options offered were seen positively by the farmers. Being their own boss was positively correlated to all of the other reasons. However, those farming for capital gain only showed a positive correlation to profit and being their own boss. In other words they did not show a correlation with the aesthetic side of farming. In contrast, those farming due to lifestyle, did not show a positive correlation to capital gains, but showed positive correlations to owning quality stock, working outside, family environment, being their own boss and achieving a cash profit.

An analysis of LUDF Focus Day attendance over the past three seasons showed that over 70% of respondents had attended a Focus Days in one of the seasons. A very small percentage attended all four Focus Days in any of the years (2.1% to 5.6%).

When asked to provide a positive or negative answer to a series of statements in regards to attendance at LUDF Focus Days, 79.7% indicated that they attended to learn about grazing management, 78.8% to learn how the LUDF is performing, 76.1% to compare their farm to the LUDF, 65.3% to learn about environmental management, 61% to learn about animal management and 57.6% to obtain LUDF financial information. Farmers did not rank the social aspects, such as a day off of the farm and meeting with other farmers and agribusiness personnel highly. This would indicate that the farmers are focused on receiving relevant information and that the LUDF is seen as a benchmark.

There was a negative correlation between those who attended to learn about the latest grazing management techniques and milksolids/ha as well as those using more intensive farming systems. There was a positive correlation between attending to learn about the latest grazing techniques and attendance to learn about the latest animal techniques, environmental management, reproductive technologies and re-grassing.

When thinking of the LUDF, 89.4% were aware of the farms focus on low grazing residuals, 79.4% of pasture monitoring and the use of a feed wedge, 63.8% of nutrient and environmental management, 46.8% of irrigation monitoring, 41.1% of re-grassing of

pastures, 34.3% of the use of reproductive technologies, 20.7% of OAD milking during calving and in 9.3% of OAD feeding of calves.

There was a positive correlation between the awareness of LUDF reproductive technologies and cow weight, indicating that those with heavier cows may have more problems with non-cyclers.

Of the total 146 respondents, 23 put a monetary value on the adoption of LUDF findings to the profitability of their operation. One farmer felt he had lost money, however, two farmers estimated an increase in profit of \$1m. The majority indicated an increase between \$50,000 and \$500,000. There was a positive correlation between this question and hectares and cow numbers.

Low grazing residuals as practiced by the LUDF have been adopted by 82.2% of respondents. Although 14.7% said that they had always followed this technique. A further 43 (33.3%) reported that the practice gave them better pasture quality and utilisation. Ten respondents did not follow the practice as they felt that their cows would not be fully fed

Re-grassing based on the measurement of poor performing paddocks had been adopted by 73.8% of respondents, however 24.6% reported that they had always re-grassed. It appeared from the answers provided that the question may have been mis-read as “Do you re-grass”, rather than “Do you re-grass based on the measurement of poor performing paddocks”.

The policy of synchronizing heifers to calve one week before the herd had been adopted by 28.9%. Those who had adopted the process did so to get heifer calving over with early and to give heifers more time to cycle. Of those who did not adopt the technique, 16 could not synchronize heifers due to logistics, 6 felt it was too expensive, 3 synchronize---but not to calve early, 12 calve the heifers early---but not through synchronization and 15 do not believe in the practice.

There were positive correlations between synchronizing heifers to calve early and those who use the website, those who use consultants, milksolid/ha production and ownership structure.

In regards to the practice of aggressive use of hormone technology to treat non-cycling cows, 42.2% follow the LUDF aggressive intervention system while 57.8% do not. Of those following the system, 29 reported that they did so to maximize cycling, conception rates and/or condense calving. Of those not following the practice, 8 said it was too expensive, 23 did not believe in the practice, 12 felt that they achieved good reproductive results through “breeding and feeding”, 10 used other methods such as OAD milking, teaser bulls, etc. and 5 said that they do not have a reproductive problem in their herd. There was a negative correlation with those who get information from the media, which could indicate that numerous articles on hormone use could be negatively effecting farmer’s perception of the technology.

The LUDF nil induction policy had been adopted by 36.2%, with 63.8% continuing to use inductions as a tool. Of those opposed to induction, 3 felt that it was too expensive, 9 were philosophically opposed and a further 11 felt it violated animal welfare. Those inducing said that they used the practice to tidy up the calving interval, grow herd

numbers and reduce cow wastage. A number of sharemilkers pointed out that they could not afford to not induce as cows were their wealth.

When asked whether the adoption of LUDF technologies had made farming easier or harder, 70.2% felt that it had made management easier with most of the comments supporting the adoption of low grazing residuals and pasture monitoring. A number of those who said it made management harder, commented that it was worth the effort.

The most important way to learn about the results from the LUDF was through the Focus Days, with 67.9% ranking the Focus Days as a 1 or 2. The Exporter was ranked as a 1 or 2 by 61.6%. All other sources were between 40% to 52%. The publication DairyNewz, had recently changed its name from Dexcelink, which may have lowered its ranking.

The website was not used by 31.6% of the 114 respondents. Of those who did visit the site, 42.1% visited 1-10 times per year, with a further 14.9% visiting over 30 times per year.

Dairy farmers were asked to rank seven sources of information for learning about new technology and innovations, from 1 (very important) to 5 (not at all important). Sales representatives were ranked as 1 or 2 by only 20.6% of respondents. However the other sources were ranked between 1 or 2 by between 50% and 76% of dairy farmers, indicating that farmers get their information from a wide variety of sources.

Distance travelled was negatively correlated with low grazing residuals, OAD milking during calving, irrigation monitoring and re-grassing of pastures. A number of respondents did comment that distance did make attendance difficult and that they would like to see Focus Days held in their areas.

APPENDICES

Responses to Question 2.14: Do you have any suggestions for areas to investigate, or future projects, for the LUDF?

These results are transcribed as written:

Communication comments:

- more field days away from LUDF
- better communication with farmers who are “not on your back door”
- more focus days in the wider region
- set up a subscription service for focus day handouts for those who can't attend

Feeding comments:

- dry cow feeding systems (grass/straw, kale/straw, kale/grass silage, kale/cereal silage, green feed crops/straw)
- higher production through imported feed
- trials on grain feeding, OAD, robots
- work on transition feed pre and post calving
- meal feeding
- investigate the feasibility of putting in a meal feeding system into the shed to maximize ms/ha and maybe reduce supplementary feeding costs
- I think it would be good to investigate the effects of increasing grain or meal feeding to cows in a well managed pasture based system. Can pasture production be maintained? What are max. cow capacities? What are the financial parameters?
- milking on brassicas. Can the cows be fed 100% before tainting occurs. Will grain feeding reduce the risk---what else would help?
- feeding molasses

Suggestions for Systems research:

- put “young herd” on OAD for a whole season
- how would this farm perform if all animals came home on August 1st
- look at growing supplementary crops on the farm
- feeding silage in early spring being part of a defined plan
- look at rotation length to staying at 20 days until February, then use supplements to extend rotation. Rely on irrigation for summer grass
- on farm winter crops or maize silage to mitigate effluent
- development of profitable, self-contained dairy using summer/winter crops on milking platform
- how can new technology be used to increase productivity
- the extrapolation of information gathered on centre pivot irrigated farms to non-irrigated farms
- pre-wilting of summer grass when dm content is low

Reproduction:

- better reproductive performance---this farmer added that he follows the LUDF grazing system, but has to induce because he feels that the LUDF hasn't got on top of reproductive problems
- getting cows in calf
- trial sexed semen
- work on high fertility cows that recover quickly and produce 400 kg ms on grass
- Be honest about fertility in LIC bulls and what bulls you select. How can you be honest when the companies sponsor you
- improving cow fertility
- look at reproduction vs. production
- increase reproductive work
- cow fertility
- link Jim Gibbs lameness work with in-calf rates
- trial a limited induction policy vs. the current nil induction policy
- Keep up the very good work. I still tend to think your aggressive/obsessive approach to pasture management compromises your ability to get cows in calf—it is good for everything else, i.e. profit, production, etc.—but it is no good blaming the cows that were purchased or anything else to do with the cows except maybe the national 1% yearly decline in fertility
- need to look closer at LUDF system to explain foetal losses and feet problems

Fertilizer:

- look at farming without fertilizer
- use of liquid fertilizers through a fertigation system
- due trials with 250 and 300 kg N to check leaching under best practice application technology
- investigate a low or nil N system
- look at lower inputs of N due to cost
- application of eco-n thru pivot
- investigate fine lime or fertilizer
- why use chemical fertilizers? Trials away from this would be very useful. -biotech and use of effluent, fertilizer and how cows can give out less greenhouse gases
- stop the silly nonsense about using low rates of urea and instead reconcile N use with actual water nitrate levels in conjunction with eco-n and/or other nitrification inhibitors
- soil sodium levels in relation to bloat

Labour and automation:

- automation of the milking process and labour
- labour efficiency
- areas in saving labour or making better use of expensive labour
- OAD milking
- dairy shed automation, particularly robotics
- automated heat detection
- robotic milking
- robotic milkers
- human resources-----hours, housing, training
- use of technology and the refining of efficient work place practices

Environment:

- continue environmental research to counter negativity to dairy industry (2 similar responses)
- keep profile of good dairy farming in the media
- carbon sequestration in soils
- help improve dairy farmers understanding and use of irrigation
- managing with less irrigation water

Compliments:

- please do not get into research, maintain the accent on farm systems
- keep up the good work, it's great for benchmarking
- work to date has been hugely valuable
- keep up the good work---it's nice to see the road frontage tidied
- several nice comments about Adrian
- keep farm simple, look at profitability not production/ha

Others:

- ways to maximize net profit
- animal management
- animal health
- integrated pest management
- trial grasses from other farms
- mastitis
- heifer mastitis
- You need to look seriously at your dry matter calculations of growth and cover because they do not stack up with the information provided, e.g. growth rates about 60+ (maybe was t) and overall farm cover and production achieved with the farm covers available. Have regular information on growth and production and myself and Farm Right consultant agree it cannot be fact
- look at wealth creation
- soil compaction in relation to dm production
- investigate 1700/2700 grazing technique worked back to kg me/ha and compare with LUDF grazing technique and measure the actual ME intake possible for a dairy cow without compromising intake. How much does that last .5 ME cost as in lost intake/mating performance, etc. You might find that eating not so hard and bringing in that extra ME is cheaper, plus you will grow more ME/ha (reply #27, a system 5 farmer)
- perform research on Pro-Gibb
- direct drilling vs. cultivation for re-grassing

References

Dairy Statistics 1988-89. (1989) Livestock Improvement Corporation, Hamilton, N.Z.

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To Canterbury and North Otago Dairy Farmers

Dear Sir/Madam

In 2001 Lincoln University converted a 185 ha dry land sheep property to an irrigated dairy farm. The South Island Dairying Development Centre (SIDDC) was formed consisting of six commercial, education or research partners. Management of the Lincoln University Dairy Farm [LUDF] was delegated to SIDDC with the aim of fostering best practice, using the LUDF as a commercial demonstration farm of high relevance to SI dairy farmers.

Over the past seven years, a number of management techniques have been trialled and results reported at Focus Days, in the media and via the www.siddc.org.nz website. Financial data and benchmarks have been provided for the use of the industry. The LUDF has had over 13,000 visitors. We would like to invite you as a dairy farmer to inform us of your perceptions of the LUDF.

The enclosed survey is being conducted by SIDDC in conjunction with the Agriculture Group of the AGLS Division of Lincoln University. The objective of the survey is to determine whether you have benefitted from the LUDF work, whether these technologies have been adopted on your property, and any suggestions you may have for future activities on the LUDF. The survey is being sent to all dairy farmers in Canterbury and North Otago

We hope the enclosed questionnaire will only take a few minutes of your time. A self-addressed and stamped envelope has been enclosed for your convenience. The results of the survey will be available on the SIDDC website in late spring. All answers will be confidential and the researchers will not be able to identify any respondents. Your contact details were obtained through the cooperation of the Livestock Improvement Corporation.

Thank you for your time in considering this request and in completing the form. Your answers will be vital to measurement of the LUDF's past performance and future direction. If you have any questions, please feel free to contact the writers at the numbers listed below.

Yours sincerely

Richard Christie, Executive Director
South Island Dairying Development Centre
(03) 325 3884

Marv Pangborn, Lecturer
Lincoln University
(03) 325 2811 ext. 8363

This project has been reviewed and approved by the Lincoln University Human Ethics Committee.

CANTERBURY DAIRY QUESTIONNAIRE - JUNE 2008

Part 1 Demographics:

Please circle one for each question.

1.1 Position of person answering questions:

Owner/operator 50/50 sharemilker Lower Order Sharemilker Manager
Other

1.2 Highest level of formal education

High school AgIto/Polytechnic University

Please enter the number in box at right:

1.3 Age of person answering questions (years):

1.4 Approximate distance from Lincoln University Dairy Farm (kms. one way):

1.5 Size of milking platform (hectares):

1.6 Number of cows milked at peak:

1.7 Average cow weight (kg):

1.8 Production per cow (kg milksolids):

1.9 Production per hectare (kg milksolids):

1.10 DairyNZ has identified five types of farming systems, please circle the one that best describes your operation:

System 1: All grass, self contained.

System 2: Feed imported either as supplement or grazing off and fed to dry cows (4-14% of feed imported).

System 3: Feed imported to extend lactation and for dry cows (10-20% of feed imported).

System 4: Feed imported and used at both ends of lactation and for dry cows (20-30% of feed imported).

System 5: Imported feed used all year (30-40% of feed imported).

1.11 How often do you attend Dairy NZ events? (excluding LUDF Focus Days)

- times per year in box

1.12 Do you use a private consultant?

Y or N in box

1.13 Assuming you have a farming surplus in the coming year, please rank the top five areas in which you would like to spend your surplus. (1 being the first choice)

- | | |
|---|--|
| <input type="checkbox"/> paying down debt | <input type="checkbox"/> improving irrigation systems |
| <input type="checkbox"/> increasing the herd | <input type="checkbox"/> remodelling or building new cowshed |
| <input type="checkbox"/> purchasing more land | <input type="checkbox"/> other buildings |
| <input type="checkbox"/> upgrading machinery | <input type="checkbox"/> holidays |
| <input type="checkbox"/> upgrading effluent systems | <input type="checkbox"/> more or improved housing |
| <input type="checkbox"/> more fertiliser to increase farm fertility | <input type="checkbox"/> fencing waterways |
| <input type="checkbox"/> increased re-grassing | <input type="checkbox"/> education for children or self |
| <input type="checkbox"/> Others [please list] _____ | |

1.14 Please indicate the importance of the following in regards to your personal priorities in farming (1 is very important, 5 is not at all important):

	1	2	3	4	5
Cash profit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Life style	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Potential for capital gain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality stock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Like being own boss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Like working outside	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good place to raise family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, please detail _____					

Part 2 The Lincoln University Dairy Farm (LUDF) and the South Island Dairy Development Centre (SIDDC)

2.1 How often did you attend any of the four LUDF Focus Days in these seasons?

2005/06 2006/07 20

2.2 If you have attended a LUDF Focus Day, why do you attend? Please tick any or all.

- to meet other farmers and have a day off of the farm
- to learn about latest grazing management techniques
- to learn about the latest animal management techniques
- for the financial information provided
- to visit with Agri business people (bankers, suppliers, etc.)
- to learn how the LUDF is performing
- to learn about environmental management at the LUDF (irrigation, effluent, fertilizer, etc.)
- to compare your farm to the LUDF

___ other reasons, please detail _____

2.3 When you think of the LUDF farming systems, what comes to mind? (please tick any or all)

- ___ Low residual grazing
- ___ Nutrient and environmental management
- ___ Reproductive technologies - treating anoestrus cows before start of mating
- ___ Synchronisation of R2yr heifers before start of mating
- ___ Once per day milking during calving
- ___ Once per day calf feeding
- ___ Pasture monitoring and feed wedge
- ___ Irrigation monitoring
- ___ Re-grassing of pastures
- ___ Other _____

2.4 If you can put an economic value on any of the changes in question 2.3, please list with your estimate of \$ value

Some key findings from the LUDF are listed below. Indicate your use of them by putting a “Y” or “N” in the box, and comment why, or why you haven’t, adopted these technologies.

2.5 Low grazing re s.
Reasons:

2.6 Re-grassing based on measurement of poor performing pa ks
Reasons:

2.7 Synchronising of heifers to calve one week before herd.
Reasons:

2.8 Aggressive use of hormone intervention non-cycling technologies

Reasons:

2.9 Nil induction policy

Reasons:

2.10 If you have made any changes, have they made your farm management easier or more difficult?

2.11 How important are the following sources to learn about the results obtained at the LUDF? (1 is very important, 5 is not at all important):

	1	2	3	4	5
Focus Days	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discussion groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Website	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dairy News (Dairynewz)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Dairy Exporter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other farming publications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other farmers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.12 If you have used the LUDF website, how often do you visit the site in a year (times)?

2.13 When you think of learning about new technology or innovations, please rank the following as sources of information by ticking the relevant box in each row:

	(1 is very useful, 5 is not at all useful)				
	1	2	3	4	5
Media (TV, magazines, newspapers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DairyNZ events (inc. discussion groups)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstration farms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conferences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other farmers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sales representatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.14 Do you have any suggestions for areas to investigate, or future projects, for the LUDF?

Lincoln University Dairy Farm

The 186 hectare irrigated property, of which 161 hectare is the milking platform, is a former University sheep farm. It was converted to dairying in 2001 and is managed by the South Island Dairying Development Centre [SIDDC], representing its 6 partner organisations [refer to About SIDDC]. The spray irrigation system includes two centre pivots, small hand shifted lateral sprinklers, and k-lines. The different soil types on the farm represent most of the common soil types in Canterbury.

Key Objectives

1. To develop and demonstrate world-best practice in dairy farm systems and to transfer them to dairy farms throughout the South Island.
2. To operate as a joint research centre with DairyNZ, where the practical application of new technologies and on-farm forage production systems can be tested and developed.
3. To use the best environmental monitoring systems to achieve best management practices under irrigation, which ensure that the industry's 4% productivity gain target is achieved in a sustainable way and that the wider environment is protected.
4. To continue the environmental monitoring programme and demonstrate technologies that will ensure that the 3-year rolling average concentration on nitrate-N in drainage water from below the plant root zone remains below the critical value [16mg N/L] that is specified in Environment Canterbury's [ECan] proposed regional rule as requiring reduction [Rule WQL18].
5. To operate an efficient and well organised business unit.
6. To provide a commercial return on adjusted capital value to Lincoln University, and a defined benefit to each of the stakeholders.

7. To create and maintain an effective team environment at policy, management and operational levels.
8. To assist Lincoln University to attract top quality domestic and international students into the New Zealand dairy industry.

Specific objectives for the season 2007/08

1. To deliver an Operating Profit of \$6,844/ha and Return on Dairy Assets of 15.3% from a \$6.40 payout - with budgeted milk solids production of 294,700 kg with Cash Farm Working Expenses of \$2.85/kgMS.
2. To improve water use efficiency for better integrating the technologies currently existing on the farm by ensuring useable decision making data is accessible to the farm management in a timely manner.
3. To increase the land area that effluent is applied to so that nutrients are better distributed and there is an increased range of contingency plan options. Also, ensure that nitrate losses are not greater on effluent areas than on non-effluent areas, and that there is no significant microbial contamination of the shallow aquifers.
4. To manage pastures and grazing so milkers consume / harvest as much metabolisable energy [ME] as practicable, with a target of 200 GJ/ha ME, using less than 200 kg of N/ha applied. For example, this could be achieved by consuming / harvesting 16t DM/ha with average ME 12.5.
5. To optimize the use of the farm automation system [Protrack] and demonstrate / document improved efficiencies and subsequent effect on the business.
6. To achieve an in-calf rate of no less than 88% [i.e. 12% empty] after 12 weeks mating, i.e. 9 weeks of AM mating plus 3 of natural mating. All AB matings to result in crossbred replacements including replacements from yearlings.
7. To continue to document and measure LUDF's influence on changes to defined management practices on other dairy farms.
8. To ensure specific training is adequate and appropriate to enable staff members to contribute effectively in meeting the objectives of the farm.
9. To actively seek labour productivity gains through adoption of technologies and practices that reduce labour requirements or make the work environment more satisfying.