S I D D C

South Island Dairying Development Centre

Focus Day

Lincoln University Dairy Farm

Information Handout

3rd May 2007

For further information visit: **www.siddc.org.nz**
office@siddc.org.nz
Ph: 03 325 3629

Next Focus Day: Thursday, 12th July 2007 [indoor venue to be advised]

S I D D C – Partners networking to advance South Island Dairying

dexcel Partners in profitable dairying

Lincoln University Te Whare Wānaka o Aoraki

CROP & FOOD RESEARCH Mana Kai Rangahau

Ravensdown

LIC

SIDE

The chickens come home to roost!

Seasonal Update - February to May 2007

Situation at the start of February.

	2006	2007
Cow Numbers	640	665
Ha available	161.5	151.5 til mid March
Nitrogen left to use	83 kg N/ha	51 kg N/ha
Supplements on hand	433 kg /cow	157 kg /cow

Decisions Made

1) Use supplements for a short time to lengthen the round to over 30 days by end of February.
2) Use the remainder of the 51 kgs N over the next two rotations of the farm to build up a wedge of grass while growth rates were still high. The last N was applied in mid April.
3) Used late February Pregnancy Scan results to cull 37 cows that that were still not in-calf after 12 weeks of mating and we would not be happy to on sell as late calvers.
4) Continue to lengthen the rotation length during early march to over 35 days and hold between this and 40 days for as long as possible.
5) Try not to have to feed out the limited amount of silage until May.

What happen during February

	2006	2007
Cow Numbers	647 reducing to 646	665 reducing to 660
N used kg /ha	33	28
Supplements used	89 kg /cow	76 kg /cow
Rotation Length	23 increasing to 27	26 increasing to 34
Average farm cover	2097 increasing to 2340	2038 increasing to 2359
Pre-grazing cover	3000 increasing to 3500	3200 increasing to 3550

What happened during March

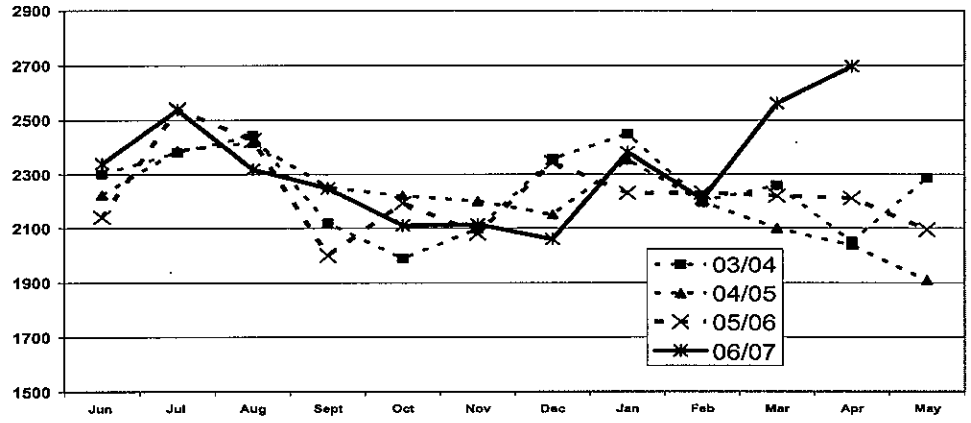
	2006	2007
Cow Numbers	646 reducing to 635	660 reducing to 616
N used	29	17
Supplements used	127 kg /cow	23kg /cow
Rotation Length	Holding at 27 to 28	Increasing from 34 to 40
Average Farm Cover	2340 decreasing to 2233	2359 increasing to 2656
Pre – Grazing Cover	3500 decreasing to 3000	3550 increasing to 4200

What happened during April

	2006	2007
Cow Numbers	635 reducing to 609	616 reducing to 610
N used	3	6
Supplements used	152	0
Rotation Length	35 average	37 average
Average Farm cover	2200 average	2400
Pre-Grazing Cover	3250 average	4000 average

Pasture Information.

LUDF Average Pasture Cover

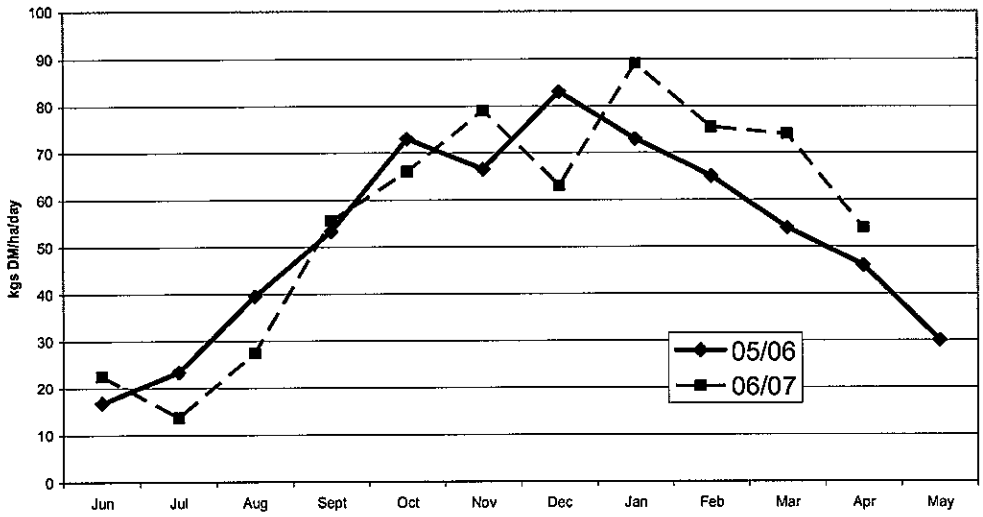


We began the season with higher average covers than previous seasons because we kept stock off the milking platform during the winter. This was done because soil conditions were too wet to allow grazing. Through most of the year we have then run pasture covers very similar to previous years. This has changed in the autumn where we have been running much higher covers. This was our management intent as we had little supplement on hand to feed out in the autumn and so decided to build a much larger feed wedge going into the autumn by lengthening the round earlier.

The objective of building a large pasture wedge going into the autumn was helped by very high pasture growth rates in February, which then continued through March until late April. These higher growth rates have been driven by warm weather and higher soil temperatures.

These higher covers are reducing cow intakes because of the yellowing at the base of the pastures making them less palatable. Growth rates in the first week after grazing are also affected and are about half of the farm average for that week.

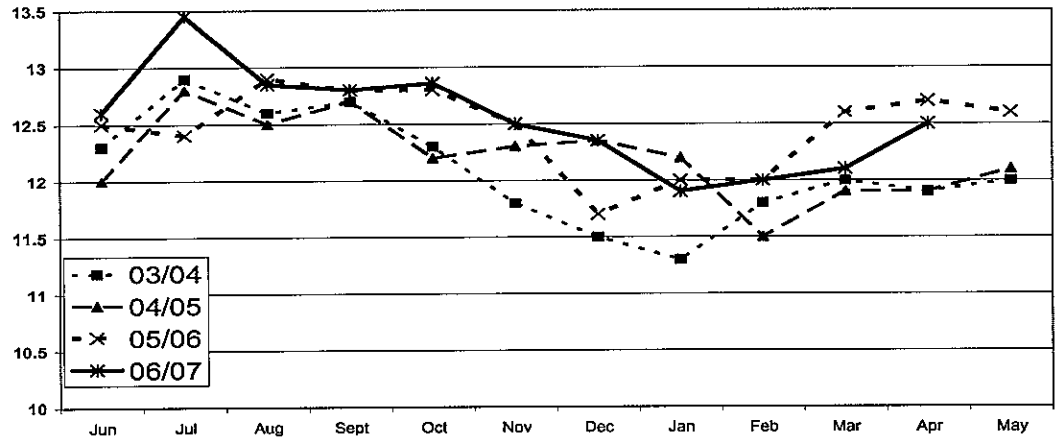
LUDF Pasture Growth



Pasture growth up until 31 December was 1t less then last season, however, by 30 April this situation has been reversed and the high growth rates from January to end of April has resulted in 1.5t more pasture being grown than last year. By this method we potentially have grown 0.5t more grass to the end of April than to the same date last season.

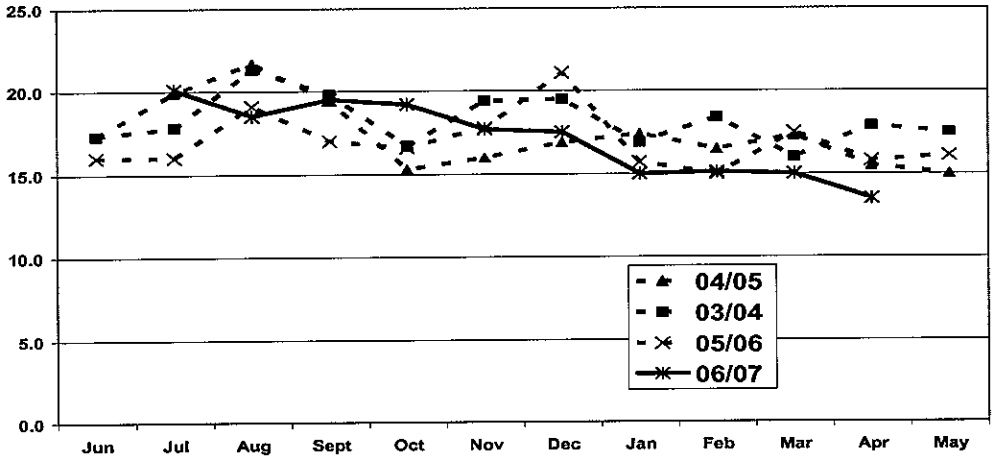
These growth rates do not take into account the fact that a 7 ha sacrifice paddock was out of the grazing rotation for over 3 months, nor the re-grassing of a second 7 ha paddocks which was out for 2 months. The lost pasture growth from these two paddocks (6t x 7ha) + (4t x 7ha) = 70t or 433 kg /ha over the whole farm. After taking this into account we will have grown a very similar amount of grass over the two seasons, however the spread has been very different.

LUDF Pasture ME



ME in April is holding up because residuals of 7 "clicks" are always achieved.

LUDF % Dry Matter

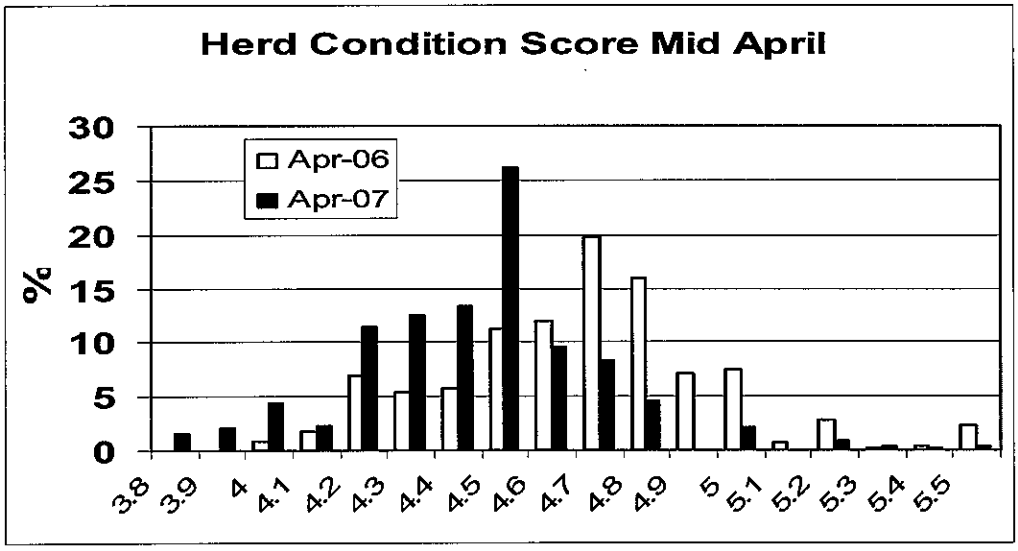


On LUDF pasture dry matter has been close to average until the end of December. In January and February we experienced our highest growth rates for the year and this has also resulted in low % DM. These low % DM have persisted through March and April.

Low Dry Matter % have the biggest impact on cow production when cows are at peak potential intakes. Hence the low % DM were much more of a problem in January than they are in April as potential cow intakes are now lower due to their later stage in lactation. The impact in April will be less on MS production and may be impacting on Body Condition Score gain.

Herd Body Condition Score

The very tight feeding conditions last winter resulted in the herd calving at an average condition score of 4.8 instead of 5.0. This 0.2 condition score difference has continued through the season and we are now faced with the capital cost of recovering this extra 0.2 of a condition score.



We have a wider spread than last year and more cows below condition score 4.5.

LUDF objective is to calve every Rising 2yr and Rising 3yr animal in condition score 5.5, and every mature cow in condition score 5.0.

Dry off schedule.

LUDF Planned Start of Calving 27 July. **Your Herd PSC_____**

R3yr C.S group	Cow C.S group	Dry of days required *	LUDF Early Calvers	LUDF Late Calvers	**Your Early Calvers**	**Your Late Calvers**
Below 4.0	Below 3.5	120	28 Mar	19 Apr		
4.0 – 4.4	3.5 – 3.9	90	28 April	19 May		
4.5 – 4.9	4.0 – 4.4	60	27 May	18 June		
5.0 plus	4.5 plus	50	1 June	21 June		

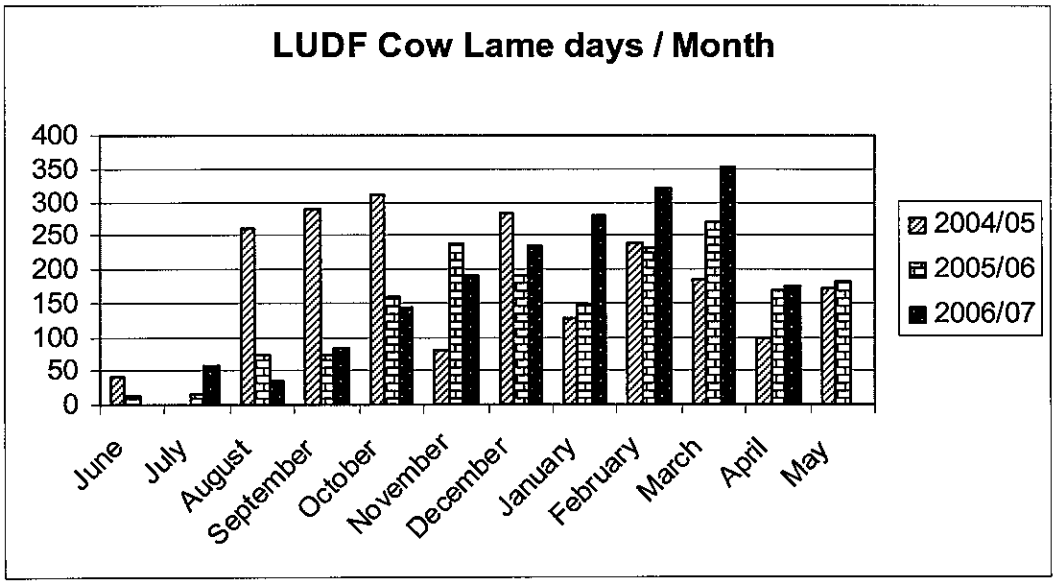
- refer to the Dexcel Condition Scoring Made Easy pg 32.
- Early calvers are due to calve in the first three weeks (about 70% of the herd)
- **There dates are the latest that these groups should be dried off.**
- Cows below Condition Score 4.0 were put onto OAD in FEBRUARY and because they have put on weight and condition score, we have no cows to be dried off before the 28 April.

How this works out for LUDF. Dry off dates and numbers

	Number of cows		
Date	**R 3yr**	**Mature Cows**	**Total**
28 Mar & 19 Apr	0	0	0
28 April	45	8	53
19 May	17	4	21
27 May	60	103	163
1 June	1	120	121
18 June	53	86	139
21 June	0	102	102

These numbers and dates were then used as the starting point in our Autumn/winter feed budget. (See Appendix for Feed Budget)
The early calving thinnest mobs will be get the highest quality winter grazing.

Lameness Update



LUDF lameness in 06/07 occurred mostly in dry conditions. This has been put down to the state of the race surfaces. When dry there are a high number of pressure points / foot plant. During wet conditions they are softer.

This indicates that resurfacing of the laneways may be needed, but hard to justify based on the cost of doing this and the estimated low production losses (refer next page).

A cheaper option than is being considered is to periodically use a very heavy road roller on the lead out parts of the laneways to flatten out these small bumps. The overall width and crown shape is excellent.

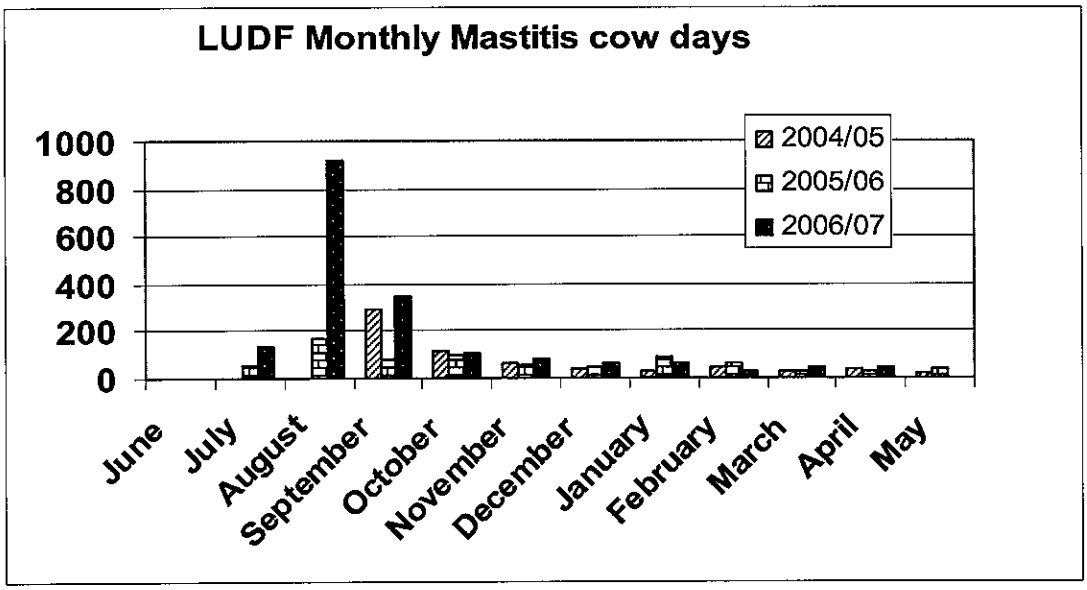
Analysis of Lameness in LUDF Herd 2006/07 (to 30 April)

Category		% of cases
0		7
1	White line abscess	65
2	Sole haemorrhage or bruising	6
3	Sole Ulcer	10
4	Sole penetration	4
6	Between the claws	6
7	Above the foot	1

Repeat cases – 4 cows had two repeats
- 3 cows had three repeats

	04/05	05/06	06/07
Cases of lameness			81 (12.5%)
Cow lame days - OAD	1732	1589	1754
Cow lame days - antibiotic	346	172	112
Production lost			
OAD cows 0.5 kg MS/cow/day	866	794	877
Antibiotic 1.5 kg MS/cow/day	519	258	168
Total MS lost	1385	1052	1045

Mastitis update



Mastitis cases were elevated in spring due to the extremely wet conditions. During August and September the herd had to be taken off pasture every day. They were either put onto concrete or into a sacrifice paddock.

Production Losses due to Mastitis

	04/05	05/06	06/07 *
Cow milking days lost**	639	723	1824
Average MS lost/day	2.0	2.0	1.8
Kg MS lost	1278	1446	3283

* only to mid April

** a cow milking day is every full day that a cow is in the treatment mob and its milk is being withheld from factory supply.

Analysis of Mastitis Lameness by Age (LUDF 2006/07 to 30 April)

Age group	Cases	
	No	% of cases
2	59	50
3	7	6
4	9	8
5	10	8
6	5	4
7	19	16
8+	9	8

The table shows that half of our cases of mastitis occurred in our first calvers and almost all of these cases occurred in the first weeks after calving. There is considerable research on possible treatment to prevent this high level of mastitis.

The main options researched were:

1) Identification of clinical mastitis before calving and treatment with dry cow antibiotics – resulted in cure rates of between 80 and 100%. .
2) Blanket treatment with subcutaneous penicillin (Masticillin) immediately pre-calving resulted in a 31% reduction in mastitis up to 5 weeks after calving.
3) Pre-calving teat spraying 3 times a week (for a minimum of 3 weeks). There was a 50% reduction in the number of infected quarters in the 3 weeks after calving. The trial group was not large enough to indicate if the reduction in mastitis was statistically significant.
4) Treatment with external teat sealant twice weekly only tended to reduce the incidence of mastitis post calving – data not yet published
5) Infusion of internal teat sealant 30 days prior to calving reduced pre-calving infections by 74% and post calving mastitis cases by 65%

Ref (McDougall, Compton, Parker, Weir, Heuer and Williamson – Heifer Mastitis, what causes it and what can we do about it? SAMM Milk Quality Conference June 2006).

After considering all the risks, benefits and management implications the LUDF Management team have yet to decide between options 3) or 5).

Option 3) piggy backs on the fact that the heifers will already be on the milking platform as they are the earliest calving group and this is low cost. Option 5) is more effective but at a higher cost - $8.72 + GST/animal.

RoMP dexcel
planning for pregnancy

Dairy herd repro chequer

You will need:

- Your current Yellow Calving Notebook

1. Your Calving Pattern

Herd Size (as at 1 July) 2005 **672** 2006 **680** yours _____

	LUDF 2005	LUDF 2006	Yours	How to find this figure
Your Planned Start of Calving (PSC)	1 Aug	31 July		*From Expected Calving Order. If you are mating your heifers before your cows, use the PS date of the cows as your PS date.*
Date of mid point of calving	12 Aug	11 Aug		*This is the date by which half the herd has calved, i.e. for a 300 cow herd the date on which the 150th cow calved. Include heifers calving. Source Yellow Calving notebook (calving date order)*

	Target	LUDF 2005/06	LUDF 2006/07	yours	How to find this figure
Days PS calving to midpoint	**14 days**	12	12		*From yellow calving notebook*
4 week calving rate. % calved by 4 weeks after PSC	**70%**	69%	72%		*Cows calved by 4 weeks / Total cows x 1 = % calved*
8 week calving rate. % cows calved by 8 weeks after PSC	**95%**	91%	92%		*Cows calved by 8 weeks / Total cows x 1 = % calved*
Inductions: Number of cows induced	**< 5%**	0%	0%		*Cows induced / Total cows x 1 = % induced*

2) Cows likely to be Reproductive Risks. (Target total <15%)

NB: It is possible that some cows will be counted in two or more boxes.

All Induced Cows	**<5 %**	0%	0%		*Cows induced / Total cows x 1 = % induced*
Cows calved less than 30 days before mating starts (incl late inductions)	**<2%**	12.6%	9%		*Late calvingCows / Total cows x 1 = % Late*
Assisted calvings, vaginal discharge, twins, retained membranes	**< 5%**	4.7%	5%		*Cows calving problems / Total cows x 1 = % problems from calving*
Cows who had metabolic problems (milk fever etc)	**<3%**	4.3%	1.5%		*Cow with problems / Total cows x 1 = % metabolic problems*

3) Mating Evaluation 2006

Use this page to analyse and review this year's mating performance.
You will need
Mating records eg Dairy Mating Chart, AB book, Minda Pro, Dairy Win Reports

	2005	2006	your		2005	2006	your
Mating Start Date:	23 Oct	23 Oct		**Herd Size: (as at PSM)**	651	680	

	Target	LUDF 2005	LUDF 2006	Your herd	How to find this figure
% of cows cycling before planned start of mating	**>70%**	77 %	73.4 %		From any pre mating heat records. Cows that have shown oestrus before planned start of mating
Number of Non Cycling cows treated as % of herd	**< 20%**	7.7% e 6.8% l	17.4% e 10.6 % l		All Non cycling cows that were treated to promote oestrus. It is recommended that you note the ages of these cows and determine if there is an age group problem.
3 week submission rate %	**>90 %**	86.5%	88%		Number of cows mated 21 days after start date as a % of total cows. Source From: Mating Chart, Insemination certificates, LIC Mating Reports
6 week submission rate %	**> 98 %**	98%	100%		Number of cows mated 42 days after start date as a % of total cows. Source From: Mating Chart, Insemination certificates, LIC Mating Reports
Days of AB mating period	**42days**	84	63		The shorter the AB period the greater the requirement to increase the number of bulls for natural mating. Also less opportunity for rearing of suitable replacement calves.
Days of natural mating	**42days**	21	42		Lengthening the mating period will result in slightly lower MT rates. Successfully integrating these late calving animals into a profitable farming system will always be a challenge.
Number of bulls used for natural mating	**1:30 MT cows**	1:15	1:15		Allow a minimum of one bull for every thirty non pregnant cows and more if synchrony of oestrus has occurred
% of herd preg after 3 weeks confirmed by PD	**> 53 %**	44.5%	44.6%		Cows preg by 3 weeks / Total cows x 100 / 1 = % pregnant by PD
% of herd preg after 6 weeks confirmed by PD	**> 80 %**	70.3%	69%		Cows preg by 6 weeks / Total cows x 100 / 1 = % pregnant by PD
% Cows confirmed as not in calf after 10 weeks of mating	**<7%**	20%	16%		Cows confirmed as MT by pregnancy diagnosis. Cows calving after this will have less than 3 weeks before PSM
% Cows confirmed as not in calf after 12 weeks of mating	**<5%**	16%	14 %		Cows confirmed as MT by pregnancy diagnosis. Cows calving after this will have less than 1 week before PSM unless mated to Short Gestation Bulls

- 21 cows currently in the lame mob have been dried off to simplify management and to further balance feed demand and supply.

The cows to be dried off on condition score are mostly early calving cows. We have dried off mature cows with a current condition score below 4.0, and below 4.5 for Rising 3yr olds. The calving Condition Score target is 5.0 for mature cows and 5.5 for Rising 3yr old cows. Nine of the lame cows are too lame to travel and will stay on the milking platform.

12. The graph shows that we will be able to feed the reduced herd at an average rotation length of 30 days without silage for the next week.

13. We have another herd test on the 10 May which might highlight some very high somatic cell count cows that we may consider drying off as well. Other than these we do not plan to dry off any more cows until the end of the month.

14. If we were to begin feeding silage in a weeks time we have enough silage for the remaining 526 cows to feed them up to 5 kgs DM/cow/day.

15. Pre-grazing pasture ME continues to hold at above 12 despite the high pre-grazing covers. This is driven by consistently achieving the target post grazing residual of 7 "clicks".

16. The last N fertilizer occurred on the 4 April to bring us to our total annual of 200 kgs.

17. The bulk somatic cell count is holding at about was an average of 245,000.

Next Focus Day - 3 May 10.15am to 1.15 lunch sponsored by Ravensdown. Focus on Herd health, Reproduction and Nutrient Management

The next WEEKLY farm walk is on **TUESDAY 8th April 2007 9.00am.**

Management Group

Peter Hancox (Farm Manager), George Reveley (for SIDDC), and Adrian van Bysterveldt (Dexcel).

Variance Report
for
LUDF

Compare Actual Actuals(2007) With Budget - Main (2007)
DateRange: Jun To Mar

GST Exclusive

	Actuals 2007		Budget 2007		Variance		Actuals 2007 as a % of Budget 2007	
	$	Qty	$	Qty	$	Qty	$	Qty
INCOME								
Cattle Sales (Sales)								
Bobby Calves	21,954	432	10,590	388	11,364	44	207 %	111 %
R2yr Heifers	6,424	13			6,424	13	0 %	0 %
Mixed Age Cows	16,144	50	5,894	8	10,250	42	274 %	625 %
	44,522		16,484		28,038		270 %	
Other Income								
House Rent	7,366		7,370		(4)		100 %	0 %
	7,366		7,370		(4)		100 %	
INCOME	51,888		23,854		28,034		218 %	
MILK								
Milk Sales								
Milk Solids	833,223	236126.8	824,427		8,796	236126.8	101 %	0 %
Milk [Final Payment]	145,108		145,108				100 %	0 %
	978,331		969,535		8,796		101 %	
MILK	978,331		969,535		8,796		101 %	
NET INCOME	1,030,219		993,389		36,830		104 %	
FARM EXPENSES								
Administration								
Accounting Svces	(198)				(198)		0 %	0 %
Tolls(claimable)	(3,864)		(4,000)		136		97 %	0 %
Stationery	(254)		(498)		244		51 %	0 %
Hospitality/Sundry	(94)		(480)		386		20 %	0 %
Other Admin Expense	(28)		(40)		12		70 %	0 %
Farm Consultant	(12,707)		(14,040)		1,333		91 %	0 %
Internet Charges	(475)		(2,000)		1,525		24 %	0 %
	(17,620)		(21,058)		3,438		84 %	
Animal Health								
Vet Fees	(4,949)		(3,908)		(1,041)		127 %	0 %
Drench	(1,452)		(3,060)		1,608		47 %	0 %
Trace Minerals	(9,509)		(5,012)		(4,497)		190 %	0 %
Vaccines	(1,249)		(1,250)		1		100 %	0 %
Other Drugs	(2,056)		(1,726)		(330)		119 %	0 %
Mastitis/Dry Cow	(5,916)		(6,338)		422		93 %	0 %
Bloat	(3,720)	600	(2,040)		(1,680)	600	182 %	0 %
Teatspray	(1,759)		(3,000)		1,241		59 %	0 %
Calving Expenses	(1,289)		(1,440)		151		90 %	0 %
	(31,899)		(27,774)		(4,125)		115 %	
Breeding Expenses								
Category			(3,032)		3,032		0 %	0 %
Admin /Identity Tags	(859)		(1,260)		401		68 %	0 %
Herd Test	(3,033)		(2,148)		(885)		141 %	0 %
Lease Sires	(5,300)	14	(5,300)			14	100 %	0 %
CIDR's	(3,580)	204	(3,100)		(480)	204	115 %	0 %
Artificial Insem.	(17,648)		(13,372)		(4,276)		132 %	0 %
Pregnancy testing	(1,625)	662	(1,530)		(95)	662	106 %	0 %
MINDA	(2,336)		(4,620)		2,284		51 %	0 %
	(34,382)		(34,362)		(20)		100 %	
Electricity								
Irrigation Power	(36,099)		(41,500)		5,401		87 %	0 %
Dairy Shed	(14,969)		(11,111)		(3,858)		135 %	0 %
	(51,069)		(52,611)		1,542		97 %	

Variance Report
for
LUDF

Compare Actual Actuals(2007) With Budget - Main (2007)
DateRange: Jun To Mar

GST Exclusive

	Actuals 2007		Budget 2007		Variance		Actuals 2007 as a % of Budget 2007	
	$	Qty	$	Qty	$	Qty	$	Qty
Feed								
Winter Grazing	(75,773)		(73,508)		(2,265)		103 %	0 %
Hay/Straw Purchases	(1,100)		(2,040)		940		54 %	0 %
Silage Purchased	(40,379)	144.7	(27,744)		(12,635)	144.7	146 %	0 %
Calf feed	(5,179)	8	(3,872)		(1,307)	8	134 %	0 %
Hay/Silage	(80)				(80)		0 %	0 %
Grazing R2	(48,578)		(49,860)		1,282		97 %	0 %
Silage Making	(8,487)		(12,716)		4,229		67 %	0 %
	(179,576)		(169,740)		(9,836)		106 %	
Fertiliser								
Superphosphate	(15,578)	68952	(14,241)		(1,337)	68952	109 %	0 %
Nitrogen (Urea)	(28,008)	57372	(27,915)		(93)	57372	100 %	0 %
Eco-n	(3,703)		(6,476)		2,773		57 %	0 %
Fertiliser Spreader	(10,250)	1052.14	(9,155)		(1,095)	1052.14	112 %	0 %
	(57,539)		(57,787)		248		100 %	
Regrassing								
Cultivation	(7,156)		(2,730)		(4,426)		262 %	0 %
Drilling	(2,016)		(692)		(1,324)		291 %	0 %
Spraying	(1,133)		(1,221)		88		93 %	0 %
Seed Purchase	(4,384)		(2,615)		(1,769)		168 %	0 %
	(14,689)		(7,258)		(7,431)		202 %	
Rates & Insurance								
Insurance	(6,000)		(6,000)				100 %	0 %
Rates	(7,914)		(7,914)				100 %	0 %
	(13,914)		(13,914)				100 %	
Repairs & Maint								
Farm Buildings	(178)		(2,500)		2,322		7 %	0 %
House Maintenance	(1,678)		(3,000)		1,322		56 %	0 %
Water Supply	(98)		(823)		725		12 %	0 %
Irrigation	(12,651)		(12,177)		(474)		104 %	0 %
Fences & Yards	(842)		(823)		(19)		102 %	0 %
Shelter Trees	(720)		(1,500)		780		48 %	0 %
Drainage	(9,624)		(9,050)		(574)		106 %	0 %
Tracks	(2,340)		(4,000)		1,660		58 %	0 %
Tools	(1,521)		(1,666)		145		91 %	0 %
Plant & Equipment	(3,673)		(5,421)		1,748		68 %	0 %
Dairy Shed Plant	(5,118)		(4,500)		(618)		114 %	0 %
Effluent	(2,910)		(2,000)		(910)		146 %	0 %
Minor Cap. purchases	(6,489)		(5,000)		(1,489)		130 %	0 %
	(47,840)		(52,460)		4,620		91 %	
Shed Expenses								
Detergents	(3,776)		(3,500)		(276)		108 %	0 %
Cleaners	(68)		(1,000)		932		7 %	0 %
Rubberware	(1,913)		(2,400)		487		80 %	0 %
Filters	(247)		(480)		233		52 %	0 %
Brooms and Brushes	(665)		(400)		(265)		166 %	0 %
	(6,671)		(7,780)		1,109		86 %	
Vehicle Expenses								
Petrol	(2,654)		(2,500)		(154)		106 %	0 %
Diesel	(4,705)		(5,000)		295		94 %	0 %
Oil & grease	(340)		(300)		(40)		113 %	0 %
Ute	(549)		(1,500)		951		37 %	0 %
Tractor	(1,676)		(4,900)		3,224		34 %	0 %

Variance Report
for
LUDF

Compare Actual Actuals(2007) With Budget - Main (2007)
DateRange: Jun To Mar

GST Exclusive

	Actuals 2007		Budget 2007		Variance		Actuals 2007 as a % of Budget 2007	
	$	Qty	$	Qty	$	Qty	$	Qty
Vehicle Expenses								
Motorbike	(2,455)		(2,800)		345		88 %	0 %
WOF & rego	(237)		(900)		663		26 %	0 %
	(12,617)		(17,900)		5,283		70 %	
Wages & Employment								
Perm Staff/Bonus	(1,775)		(1,800)		25		99 %	0 %
Casual	(3,555)	372.5	(7,920)		4,365	372.5	45 %	0 %
Accommodation Allce	(14,760)		(14,960)		200		99 %	0 %
ACC	(4,930)		(4,930)				100 %	0 %
Protective clothing	(2,306)		(1,730)		(576)		133 %	0 %
Recruitment	(500)		(1,518)		1,018		33 %	0 %
Staff Development	(845)		(1,400)		555		60 %	0 %
Assistant 2	(119,271)		(121,940)		2,669		98 %	0 %
Stores/Tea Supplies	(253)		(600)		347		42 %	0 %
	(148,196)		(156,798)		8,602		95 %	
Weed & Pest								
Herbicides	(859)		(1,938)		1,079		44 %	0 %
	(859)		(1,938)		1,079		44 %	
FREIGHT								
Freight Livestock	(683)	8			(683)	8	0 %	0 %
Freight General	(454)		(680)		226		67 %	0 %
	(1,136)		(680)		(456)		167 %	
FARM EXPENSES	(618,007)		(622,060)		4,053		99 %	
TRADING SURPLUS	412,212		371,329		40,883		111 %	
RUN-OFF EXPENSES								
Run-off Fertiliser								
Category	(7,289)	18962.9	(3,667)		(3,622)	18962.9	199 %	0 %
	(7,289)		(3,667)		(3,622)		199 %	
Run-off regrassing								
Category	(1,051)		(898)		(153)		117 %	0 %
	(1,051)		(898)		(153)		117 %	
Run-off R & M								
Category	(233)				(233)		0 %	0 %
General	(1,971)				(1,971)		0 %	0 %
	(2,204)				(2,204)		0 %	
Run-off Hay & Silage								
Category	(1,100)				(1,100)		0 %	0 %
	(1,100)				(1,100)		0 %	
Run-off Admin								
Category	(9,750)		(9,750)				100 %	0 %
	(9,750)		(9,750)				100 %	
RUN-OFF EXPENSES	(21,394)		(14,315)		(7,079)		149 %	
RUN-OFF SURPLUS	(21,394)		(14,315)		(7,079)		149 %	
GST								
GST								
GST Payments			(29,423)		29,423		0 %	0 %
GST Component	(943)		48,982		(49,925)		2 %	0 %
	(943)		19,559		(20,502)		5 %	
GST	(943)		19,559		(20,502)		5 %	
INCOME (EXPENSE)	**$ 389,875**		**$ 376,573**		**$ 13,302**		**104 %**	

Planning for Winter
LUDF focus day Thursday 3rd May

While winter is often viewed as the "quiet" time on dairy farms its importance to the success of the operation is no less than calving, mating, spring feeding etc. Poor feeding decisions during winter and lack of planning can have lasting effects on the next season through increased incidence of animal health issues eg mastitis, metabolics etc, low condition score, poor reproductive performance and failure to achieve peak milk production targets. While wintering costs may appear high, short cuts could cost you more in the long-term. Below is summary of some key factors that should be considered when planning for winter.

Pre-Winter Checklist

For each task determine who is responsible for ensuring the planning is done and who will assist. Every farm will approach winter in a different way depending on staff structure and wintering system, however, it is important that everyone involved knows their responsibilities (example table below).

Task	Owner	Herd Mgr	Ass 1	Ass 2	Grazier		Done
Feed Budget	R	A					
Wintering plan with staff/grazier		R	A	A	R		
Transport/cattle movement plan	R	A	A	A			
Animal Health plan		R	A	A	A		
Staff management plan	R	A					
Equipment check and maintenance	R	A					

R= Responsible; A=Assist

Feed Plan

1. Do a feed budget and plan early.
    - 1.1 Crop yields can be highly variable. Constantly re-assess and purchase alternate feed sources if yields are below budget.
        a. Collect all the material from a 1 square metre area
        b. Weigh wet
        c. Determine DM content by drying a sub-sample with low heat (<100°C in the oven or microwave till it is a constant weight)
        d. Calculate kg DM/ha = kg wet x DM%
    - 1.2 Quality test supplements for energy, protein, fibre, minerals etc
    - 1.3 Be realistic about possible body condition score (BCS) gains during winter and make drying off decisions based on this. Cows do not gain condition during their final month of pregnancy.
        a. Remember target calving BCS
            1. Cows – 5.0 average
            2. Heifers – 5.5 average

Drying off time based on condition score

Days from calving	Condition Score	
	Cow	Rising 3yr old
120	3.0	3.5
90	3.5	4.0
60	4.0	5.0
Calving	5.0	5.5

b. Plan the changeover from the milking cow diet to the wintering diet. If feeding crops cows won't consume their full crop allocation on day 1 so ensure you have sufficient pasture/hay/silage to minimise weight loss during this period.

c. Keep hitting target residuals on the milking platform and make drying off decisions based on average pasture cover and targets required for calving.

2. Wintering Plan

2.1 Establish a relationship with your grazier and involve them in winter planning so they know your expectations and you can work together to achieve them.

2.2 Agree who is doing what i.e. grazier or dairy farmer deciding on daily allocation (perception of what is enough can differ).

2.3 Plan for someone from the farm to visit every mob out grazing at least weekly to monitor progress and discuss any issues with the grazier.

2.4 Crop feeding

1. Utilisation
   i. Investigate systems to feed forage before the crop to increase gut fill, reduce hunger and therefore slow rate of intake.
   ii. Offer crop in long thin breaks to maximise utilisation.
   iii. Consider several shifts during the day rather than only one.
   iv. Be realistic with utilisation levels in energy intake calculations. Utilisation will decrease as crop matures (bigger stems) and in wetter conditions.

2. Public perception
   i. If grazing on a main road graze parallel with the road and farthest away so only the last 2 strips are visible.
   ii. Graze the more visible/wetter paddocks at the beginning of winter when conditions are likely to be drier.

3. Animal Health Plan

3.1 Animal Health

1. Monitor tail end cows and separate if necessary – some cows never adjust to crops.

2. Split herd – young, light, early, late etc
3. Invest in a nitrate testing kit and use it. Nitrate levels will be lower in the afternoon than the morning.
4. Supplement to prevent mineral deficiencies (especially on kale).
    i. iodine
    ii. magnesium
    iii. copper

    As cattle are generally only fed these crops for a short period, 6-8 weeks, the best approach to prevent trace element deficiency problems is to ensure that the animals have adequate trace element status before being fed brassicas.
5. Kale is high in calcium therefore it is not a good feed to calve cows on. Remove at least 10 days before calving.
6. Ensure access to fresh clean water
    i. use portable troughs if necessary
    ii. keep animals out of waterways

3.2 Pasture Feeding

1. Techniques to minimise pugging damage
    i. Move cows before daylight if wet to minimise damage
    ii. Block graze to minimise pugging damage
    iii. Graze from the back of the paddock
    iv. Plan to graze wettest paddocks before the wettest part of the winter
    v. On-off grazing
        - If grazing >3000 kg DM/ha pastures cows can consume their requirements in 4 hours
2. Stand off areas – factors to consider
    i. Visibility
    ii. Effluent collection and disposal
    iii. Space to lie down. Cows need to lie down for 8 hours a day.

3.3 Silage feeding

1. Wastage can be high (>30%) if feeding out on wet ground

4. Cattle Movement Plan

4.1 Organise transfer of cows to the wintering block.

1. Trucking
    i. Book early to beat the rush
    ii. Allow enough time from drying off to minimise the risk of mastitis
    iii. Ensure necessary paperwork for the driver is complete
2. Walking
    i. Plan the route. Remember dry cows can/will gallop or run so often it takes less time to move than planned.

ii. Understand your local authority regulations re cattle movement on roads.
iii. Ensure you have sufficient person power to keep animals under control at all times.
iv. Organise safety equipment – flashing lights, stock movement signs, high visibility vests for staff.

5. Staff Management Plan

5.1 Plan your staff management especially if you are wintering on your support block and dairy staff are managing feeding.
a. Holidays for existing staff
b. Induction and familiarisation to the farm of new staff
c. Training

6. Equipment Maintenance Plan

6.1 Service tractors and supplement feeding equipment to minimise breakdowns during the winter.

7. Contingency Plan

7.1 Extreme weather event contingency plan
a Portable fence unit
b Checklist of priorities
c Feed supply
d Water supply
e Generator

Growing and Utilising Winter Forage Crops

LUDF Focus Day, Thursday 3rd May 2007

Derek Wilson and Grant Edwards
Crop & Food Research and Lincoln University

A new project is starting in 2007 to provide information about profitable production and utilisation of supplementary forage crops for winter feeding in dairy farming systems. It will include three main topics:

- **How to consistently grow high-yielding, high-quality forage crops.** Performance of forage crops is often variable, so the project will deliver the key principles of good crop management to help assure reliable high yield and quality. The project will focus especially on brassicas but it will also include other crops, such as maize and cereals, which can be grown in summer and conserved to provide supplementary feeds in winter.

- **Identify optimum sequences of crops.** Although individual forage crops have high production potential, a single crop seldom stacks up economically in a pastoral system. Various sequences of crops are possible, either in the context of specialised dairy support land or during the transition from old to new pasture. Starting in spring 2007, the productivity and economics of several sequences of summer and winter crops will be studied in two-year trials at Lincoln and Ruakura. Three multi-crop sequences will be compared with pasture: one each built around winter brassicas and cereals, maize and cereals, and summer brassicas and cereals. The overall aim is to address the challenging productivity target set recently in the dairy industry feed strategy: Is it feasible to produce 45 t DM/ha p.a. with 11 MJ ME/kg DM?

- **Utilisation of forage crops during winter.** There's not much point in growing good crops and then not utilising them fully. Wastage during grazing commonly occurs in winter feeding systems. There is little solid information about the extent of losses, but they are probably higher than most people realise. Starting in winter 2007, utilisation of forage brassicas will be measured in several on-farm situations. The project will compare utilisation with different grazing management and with different supplementary feeding strategies (i.e. complementary straw, silage, etc.). From the results, management guidelines will be developed to help farmers maximise feed utilisation.

This is a new project. Planning includes a strong emphasis on technology transfer activities to deliver practical messages to dairy farmers. Watch this space this time next year for new information from the first year's work.

Why Nutrient Budget?

A useful farm management tool which allows farmers to ensure on-farm nutrients are used most efficiently and effectively. Nutrient budgets allow you to:

- adjust fertiliser nutrient inputs, accounting for nutrients provided by supplementary feed, effluent etc. In some cases considerable savings in fertiliser can be made and in others more production can be achieved by changing the amounts and types of nutrients used.
- identify potential nutrient losses in your system in particular N and P
- indicates where mitigation options are required to reduce nutrient losses to the environment

The dairy industry is committed to the Clean Streams Accord and therefore Fonterra requires all dairy farmers to have a completed nutrient budget by 30th June 2007.

What is the Current Soil Fertility?

Table 1: LUDF Soil Fertility

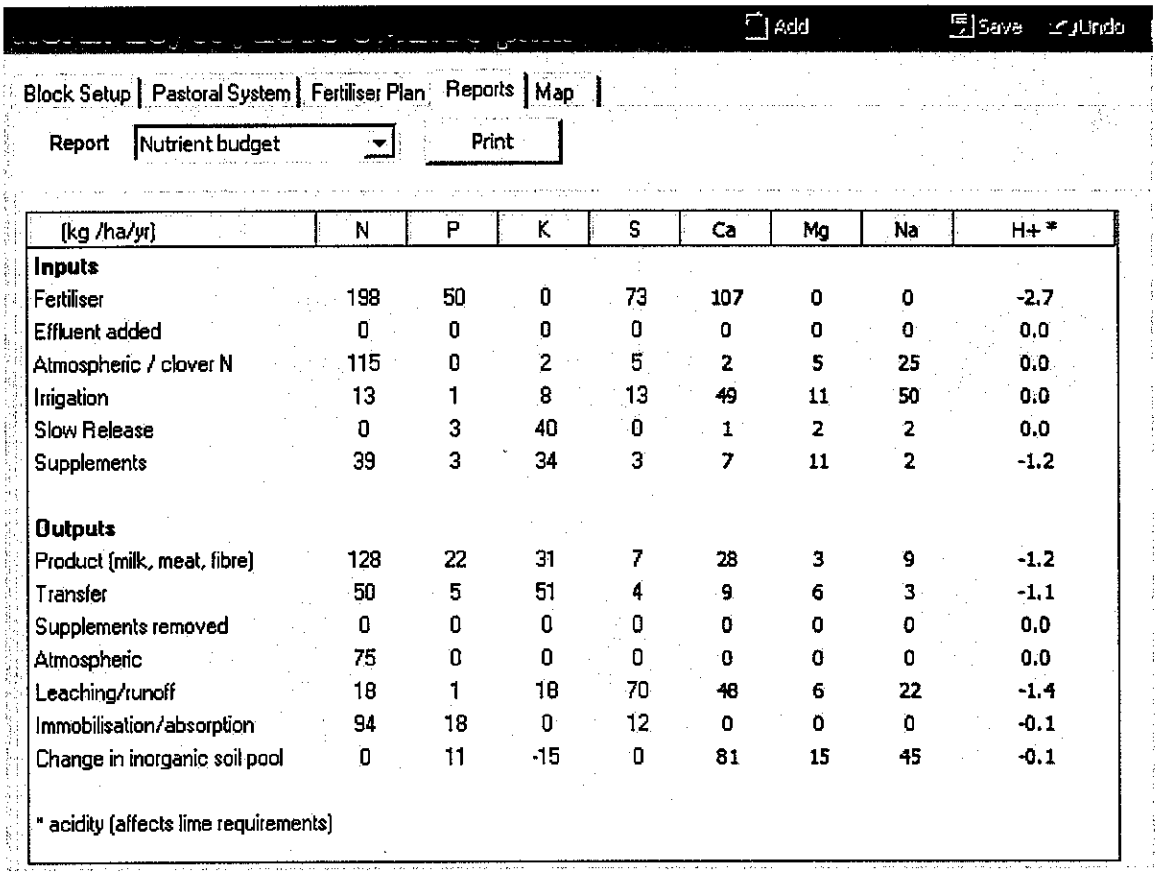
Soil Test	Dairy Non Effluent North	Dairy Non-Effluent South	Dairy Effluent North	Economically Optimal Soil-test Values Sedimentary Soil
Olsen P (ug/mL)	**29**	**37**	**32**	30-40
Sulphate S (ug/mL)	**9**	**11**	**9**	10-12
Calcium (MAF QT)	**9**	**11**	**9**	4-10
Magnesium (MAF QT)	**21**	**33**	**25**	8-10
Potassium (MAF QT)	**11**	**11**	**22**	5-8
Sodium (MAF QT)	**10**	**12**	**11**	-
pH	**6.2**	**6.2**	**6.4**	5.8-6.0

LUDF Nutrient Budget for 2005-2006

The change in soil inorganic pool indicates the predicted accumulation or depletion of nutrients. When the change in inorganic pool is positive it indicates that nutrients are accumulating (inputs are greater than outputs) and soil test levels will increase, while on the other hand when the change in inorganic pool is negative it indicates that nutrients are being depleted (inputs less than outputs) and soil test levels will decrease.

Nutrient Budget - Non Effluent area, North Block

Table 2: Nutrient Budget for the Non – Effluent area, North Block



(kg /ha/yr)	N	P	K	S	Ca	Mg	Na	H+ *
Inputs								
Fertiliser	198	50	0	73	107	0	0	-2.7
Effluent added	0	0	0	0	0	0	0	0.0
Atmospheric / clover N	115	0	2	5	2	5	25	0.0
Irrigation	13	1	8	13	49	11	50	0.0
Slow Release	0	3	40	0	1	2	2	0.0
Supplements	39	3	34	3	7	11	2	-1.2
Outputs								
Product (milk, meat, fibre)	128	22	31	7	28	3	9	-1.2
Transfer	50	5	51	4	9	6	3	-1.1
Supplements removed	0	0	0	0	0	0	0	0.0
Atmospheric	75	0	0	0	0	0	0	0.0
Leaching/runoff	18	1	18	70	48	6	22	-1.4
Immobilisation/absorption	94	18	0	12	0	0	0	-0.1
Change in inorganic soil pool	0	11	-15	0	81	15	45	-0.1

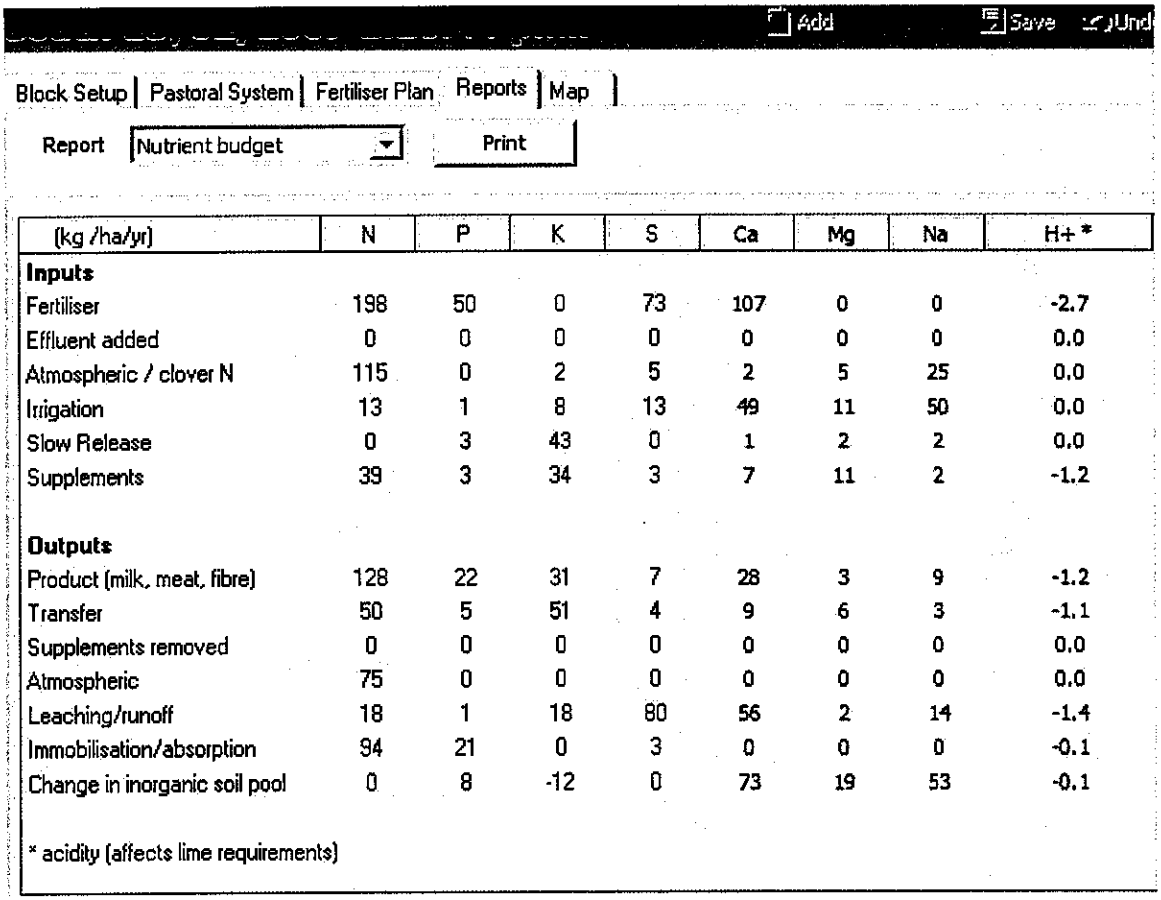
* acidity (affects lime requirements)

What Are the Main Outcomes of the Nutrient Budget?

- 198kgN/ha, 50kgP/ha applied from fertiliser
- 39kgN/ha and 34kgK/ha nutrient input from supplement
- 40kgK/ha nutrient input from TBK reserve of 3.5
- **Change in inorganic pool near to zero (N,P,K,S)**
- **Soil pH being maintained**

Nutrient Budget - Non-Effluent area, South Block

Table 3: Nutrient Budget for the Non-Effluent area, South Block



(kg /ha/yr)	N	P	K	S	Ca	Mg	Na	H+ *
Inputs								
Fertiliser	198	50	0	73	107	0	0	-2.7
Effluent added	0	0	0	0	0	0	0	0.0
Atmospheric / clover N	115	0	2	5	2	5	25	0.0
Irrigation	13	1	8	13	49	11	50	0.0
Slow Release	0	3	43	0	1	2	2	0.0
Supplements	39	3	34	3	7	11	2	-1.2
Outputs								
Product (milk, meat, fibre)	128	22	31	7	28	3	9	-1.2
Transfer	50	5	51	4	9	6	3	-1.1
Supplements removed	0	0	0	0	0	0	0	0.0
Atmospheric	75	0	0	0	0	0	0	0.0
Leaching/runoff	18	1	18	80	56	2	14	-1.4
Immobilisation/absorption	94	21	0	3	0	0	0	-0.1
Change in inorganic soil pool	0	8	-12	0	73	19	53	-0.1

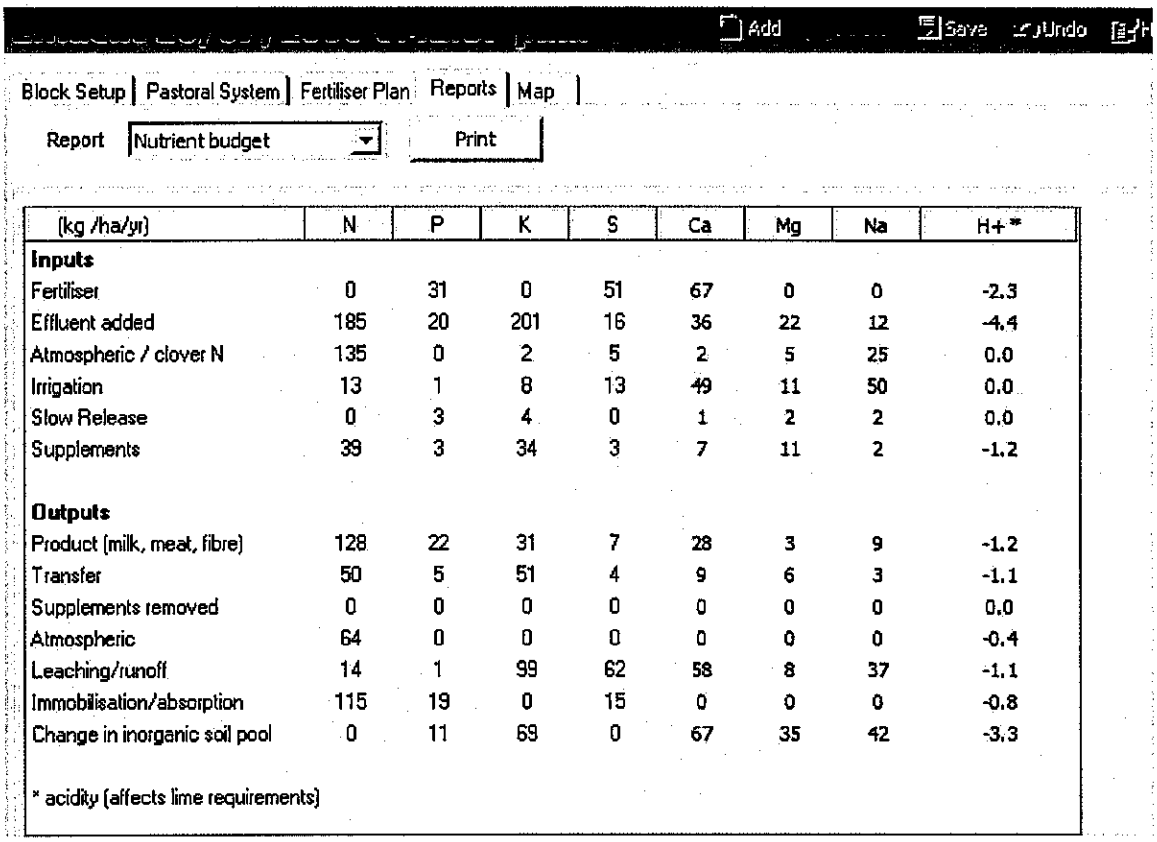
* acidity (affects lime requirements)

What Are the Main Outcomes of the Nutrient Budget?

- 198kgN/ha, 50kgP/ha applied from fertiliser
- 39kgN/ha and 34kgK/ha nutrient input from supplement
- 43kgK/ha nutrient input from TBK reserve of 3.5
- **Change in inorganic pool near to zero (N,P,K,S)**
- **Soil pH being maintained**

Nutrient Budget – Effluent area, North Block

Table 4: Nutrient Budget for the Effluent area, North Block



(kg /ha/yr)	N	P	K	S	Ca	Mg	Na	H+*
Inputs								
Fertiliser	0	31	0	51	67	0	0	-2.3
Effluent added	185	20	201	16	36	22	12	-4.4
Atmospheric / clover N	135	0	2	5	2	5	25	0.0
Irrigation	13	1	8	13	49	11	50	0.0
Slow Release	0	3	4	0	1	2	2	0.0
Supplements	39	3	34	3	7	11	2	-1.2
Outputs								
Product (milk, meat, fibre)	128	22	31	7	28	3	9	-1.2
Transfer	50	5	51	4	9	6	3	-1.1
Supplements removed	0	0	0	0	0	0	0	0.0
Atmospheric	64	0	0	0	0	0	0	-0.4
Leaching/runoff	14	1	99	62	58	8	37	-1.1
Immobilisation/absorption	115	19	0	15	0	0	0	-0.8
Change in inorganic soil pool	0	11	69	0	67	35	42	-3.3

* acidity (affects lime requirements)

What Are the Main Outcomes of the Nutrient Budget?

- 0kgN/ha, 31kgP/ha applied from fertiliser
- 185kgN/ha, 20kgP/ha, 201kgK/ha nutrient input from effluent
- 39kgN/ha and 34kgK/ha nutrient input from supplement
- **Change in inorganic pool near to zero for P**
- **Change in inorganic pool for K is +69kgK/ha (0.5-1 QTK unit/yr increase). This is in the effluent area where the QTK level is already 22. Herbage tests taken in October 2006 on effluent area had K levels of 3.1% and 3.5% compared with the non-effluent area of 2.8% and 1.9%.**
- **Soil pH increasing**

Nitrogen Report

Table 5: N Report

Block N status

Current

	N in drainage* (ppm)	N leached (kg N/ha/yr)	N surplus (kg N/ha/yr)	Added N** (kg N/ha/yr)
Overall farm	4.5	18	206	
Block name				
North	4.7	18	237	198
Effluent	3.5	14	244	185
South	4.7	18	237	198

*N concentration in drainage water. Maximum recommended level for drinking water is 11.3

** Fertiliser and external effluent inputs.

Phosphorus Report

Table 6: P Report

Block P runoff / leaching status

Current

	P loss indices				P lost (kg P/ha/yr)
	Soil	Fertiliser	Effluent	Overall	
Overall farm (pasture)	Medium	Medium	Low	Medium*	1.2*
Block name					
North	Medium	Medium**	n/a	Medium	1.1
Effluent	Medium	Medium	High	Medium	1.3
South	Medium	Medium	n/a	Medium	1.2

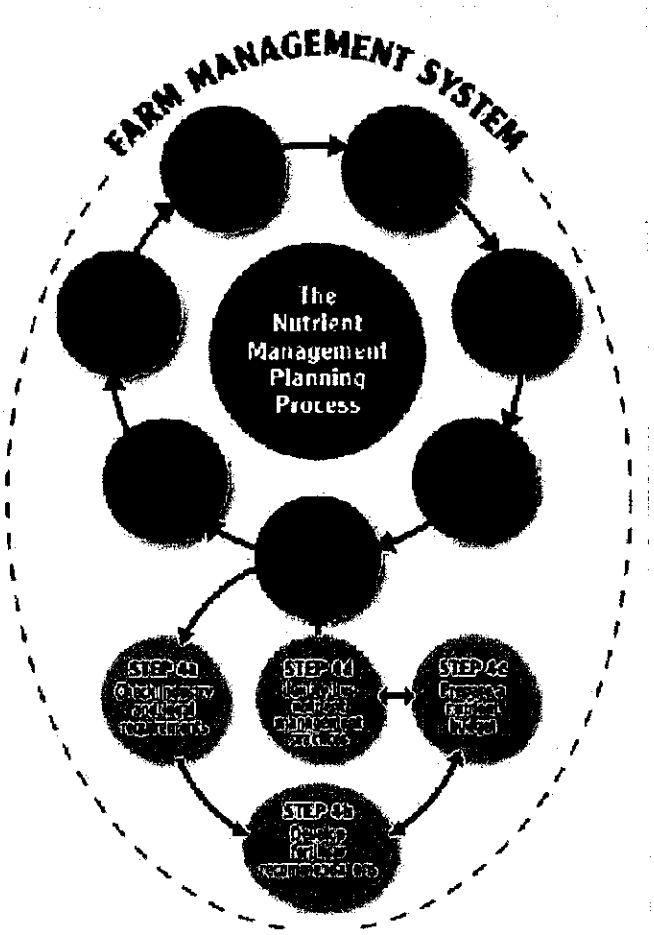
Nutrient Efficiencies as a result of Nutrient Budgeting for LUDF

- Differentiating fertiliser applications between effluent and non-effluent areas saves the LUDF approximately $8000 per year ($0.03/kgMS saving)
- Accumulation of K on effluent block has been identified and mitigation measures are currently being investigated
    - Increasing size of effluent area
    - Making supplement on effluent area and feeding out on other parts of the farm.
- Use nutrient budget as a tool to investigate the impact of various scenarios
    - Increasing/decreasing N use
    - Increasing/decreasing P use
    - Timing of N and avoiding N applications during May, June and July
    - Increasing/decreasing supplement use
    - Maintaining the Olsen P level to within the optimum economic range. Lower Olsen P levels require less phosphate to maintain and are likely to have a lower P loss factor.
- Maintaining the Olsen P level to within the optimum economic range. Lower Olsen P levels require less phosphate to maintain and are likely to have a lower P loss factor.
- Use of nitrification inhibitor eco-n (model does not incorporate this at this stage)
    - 60% reduction in nitrate leaching
    - Over 50% reduction in cation leaching (calcium, potassium and magnesium)
    - 75% reduction in nitrous oxide emissions (a potent greenhouse gas)
    - 10 –15% increase in annual pasture production.

This is only the first step in improving nutrient management on your dairy farm. The next step is to use the information provided by nutrient budgets as part of a nutrient management plan to reduce N and P losses in surface and ground water.

Nutrient Management Plan – Fert Research Template

www.fertresearch.co.nz



Contact details:

Fert Research (NZFMRA)

P: 09 415 1357
F: 09 415 1359

E: info@fertresearch.org.nz
W: www.fertresearch.org.nz

PO Box 9577
Newmarket
Auckland

Nutrient Management Plan User Guide

Part A: Property details

This section identifies the property and the people responsible for the nutrient management plan.

- Complete the contact details.
- State the farm areas - total, effective (i.e. in production or fallow in preparation for production; exclude non-effective areas such as lanes, buildings, farm shelter belts) and irrigated (if any).
- State the irrigation type(s).
- Tick all of the enterprise types that apply.
- The template provides a sample statement of purpose. You can add to this if you wish.

Part B: Plan objectives, land management units and environmental risk

- Code specific objectives are supplied in the template and must be adopted if they apply. If you choose to reject any of these, attach justification (e.g. a farm map showing that there are no areas of significant vegetation or wildlife habitat).
- There is space for additional 'property management objectives'. Write in any extra objectives the owner or manager chooses to set - e.g. objectives about achieving particular nutrient level targets or objectives about farm practices such as soil testing.
- There is space to identify 'land management units' (LMUs) for the farm - i.e. areas of the farm that are under similar management and that will respond to management in similar ways. Consider such things as soil types, slope, management activities (e.g. dryland or irrigated, significantly different crop types, areas receiving dairy effluent) and differences in historical management.
- If all of the farm is managed similarly and responds to that management in similar ways, only one LMU is needed.
- Make a brief note distinguishing each LMU in the table and note the area it covers.
- Mark these on a farm map and attach it to the NMP.
- On a separate piece of paper, make a list of farm nutrient management activities and their possible environmental consequences - e.g. nitrogen fertiliser use might lead to contamination of surface or ground water. For each of these, estimate the likelihood of adverse environmental effects and the consequences of such events. (See Chapter 4, step 3 of the Code for more information about assessing likelihood and consequences.)
- Consider only the inherent risk caused by the activity and do not discount the risks because good management will overcome it. Good management will be highlighted in Part C of the template.
- Note any activities that have medium or higher likelihood of adverse environmental effects and/or medium or higher consequences in the table of environmental risks. Tick the LMUs on which these will occur.
- Add any comments you want to make about the risks identified. For example, you might note industry rules or regional concerns about farm activities.
- Tick the box at the bottom of the page to indicate nutrient management activities that you will address in your planning. Three common activities are already listed - add your own labels for the other boxes if necessary.

You can add any objectives you like, but be aware that management practices should then reflect these and set out steps to achieve them.

Part C: Management guides

- Pages for management planning are provided for nitrogen fertiliser use, phosphate fertiliser use and dairy effluent application. Complete these if they apply for the property.
- Note the types of applicable fertiliser, application rates and locations where they will be spread (LMUs).
- List any specific requirements your industry has about this nutrient use or activity.
- List any specific requirements your Regional Council has about this nutrient use or activity. These will include conditions that must be met for the activity to be a 'permitted activity' or conditions imposed as part of any resource consent held by the farm for this nutrient management activity.
- List the best management practices (BMPs) that the farm will use to reduce environmental risks from this activity.
- There are tables of BMPs in Chapter 5 of the Code. Choose suitable practices from these tables and note them in the NMP.
- It is not necessary to adopt all the possible BMPs for a particular risk or activity but the practices chosen need to be suitable for managing the inherent risks identified for the property.
- For each BMP included, note how the manager will check that these are implemented - e.g. diary entry or noted on a farm map.
- Use the management guide pages as a model for further activities if necessary. In each case, check that the activity itself is reasonably explained (e.g. fertiliser types and application rates, LMUs treated), industry or Regional Council rules are stated and best management practices have been listed.

Doing self-assessment

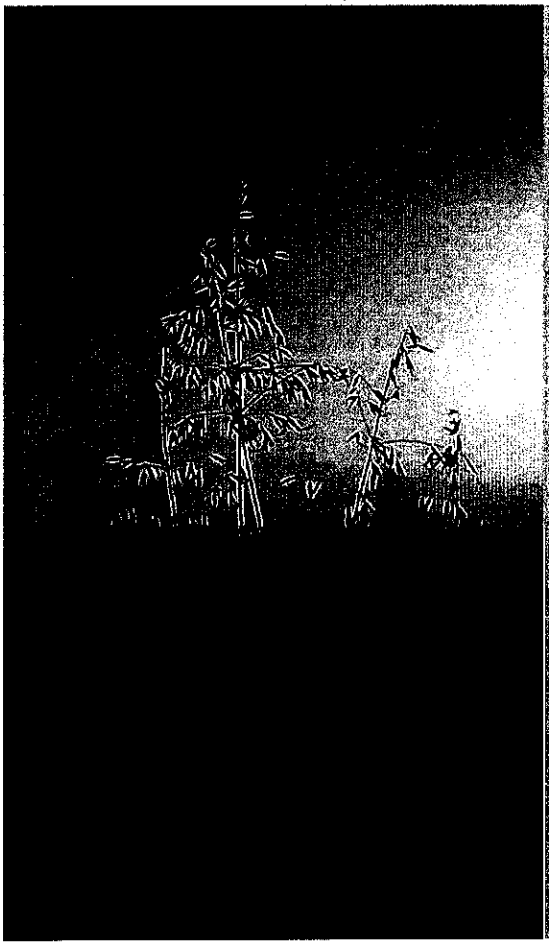
- The property manager needs to complete a self-assessment at the end of the season, checking that the management practices did achieve the objectives set at the beginning.
- For each nutrient management activity included in the management guides, check through the industry and Regional Council requirements and tick 'yes' or 'no' to show whether these were met.
- For each management practice listed at the planning stage, tick 'yes' or 'no' to show whether these were actually practiced.
- Now consider the effects of this nutrient management activity overall. Were the Code specific and property objectives achieved? Tick 'yes', 'no' or 'partially' (if only some objectives were met and/or objectives were barely achieved or the manager was not satisfied with performance).
- If you have ticked 'no' or 'partially' then changes in management practice are required. Note the new management practices that will be used, the person responsible for ensuring these are implemented and a deadline for completion or introduction.
- Write in the actual completion date when each new management practice is adopted.
- The person responsible for the NMP (owner or manager) needs to sign off and date the self-assessment.

Farm map

- Check that there is at least one farm map attached, showing the land management units or other distinctions between management areas.
- Extra farm maps can be added - e.g. to show areas receiving particular fertiliser types, to show riparian strips or protected vegetation that are not treated, etc.

Nutrient budgets and soil test results

- Check that there is at least one nutrient budget attached for each land management unit, this is particularly relevant where you identified significant environmental risks from nutrient management activities.
- This nutrient budget should use the planned nutrient inputs and the expected production outputs from the area. If several fertiliser options were considered then the nutrient budget should support the final choice.
- Soil test results are important for establishing initial soil nutrient levels for nutrient budgeting.
- Further soil tests are useful checks on trends in soil fertility over time to compare actual changes with those expected and planned.



The following document is an interactive PDF version of the Nutrient Management Plan Template and User Guide.

This document maybe filled out using your computer and printed, or alternatively printed and filled out by hand.

Nutrient Management Plan

Prepared by

_____

_____

_____

for

_____

_____

_____

Date

_____

For help completing this section click here

Part A: Property details

Property name:			
Owner:			
Postal address:			
Phone No:		Mobile No:	
E-mail address:			

Manager:			
Postal address:			
Phone No:		Mobile No:	
E-mail address:			

Property area (ha):				
Effective area (ha):				
Area under irrigation (ha):	water		effluent	
Irrigation Type	water		effluent	

Enterprise type: (please click to tick box)

Dairy ☐	Dairy grazing ☐	Sheep & Beef ☐	Deer ☐	Cropping ☐
Horticulture ☐	Viticulture ☐	Arable ☐	Forestry ☐	Other

Purpose of plan

Part B: Plan objectives, land management units & environmental risk

Objectives:

Comply with all legal requirements related to nutrient management activities.

Take all practicable steps to maintain or enhance the quality of the property's water resources.

Take all practicable steps to ensure that there is an adequate supply of soil nutrients to meet plant needs.

To take all practicable steps to contain nutrients within the property boundaries.

Take all practicable steps to minimise the risk of nutrient contamination of any areas of significant vegetation and/or wildlife habitat.

Undertake a nutrient budget.

Property management objectives

Production	
Financial	
Environmental	
Personal	

Land management units

We have identified the following land management units on this property. (See map described in Code Appendix 4 and Fact Sheet 1: Land Management Units and Land Capability Mapping.)

Unit	Description	Approximate area (ha)
A		
B		
C		
D		

Environmental risks

We have identified the following environmental risks for these land management units.

		Inherent risk assessment (see Fig. 3)			
Activity	Potential risk/s*	LMU A	LMU B	LMU C	LMU D

* Potential risks	Yes	No
• Contamination of ground water		
• Contamination of surface water		
• Undesired changes in soil nutrient status		
• Nutrient application to non-target land		
• Accumulation of non-nutrient impurities in the soil profile.		
• Excess stocking rate		
• Pugging and compaction		
• Poor cultivation methods		
• Other		

Comments about specific risks identified.

From the table above, we have chosen the following nutrient activities as significant.
These are addressed in management plans.

N fertiliser use	P fertiliser use	Effluent disposal	Supplement use	Other
☐	☐	☐	☐	

For help completing this section click here

Part C: Management guides

Nitrogen fertiliser use

Fertiliser applications

Fertiliser type	Rate of application (kg/ha)	LMU where it is applied

Industry and legal requirements

Specific industry requirements (Contact industry representative for details)	Met requirements Yes	No

Specific Regional Council requirements (Contact local Regional Council for their requirements)	Met requirements Yes	No

Management practices

We have identified the following management practices to meet the objectives as set out in Part B of this plan.

Management practices implemented to achieve our objectives (See chapter 5 of the Code for examples)	Verification method	Checklist Yes	No

For help completing this section click here

Self assessment for nitrogen fertiliser use

Did the management practices achieve the Code objectives and any farm objectives?

Yes	☐	Objectives achieved
No	☐	Fill out table below
Partially	☐	Fill out table below

Changes in management practices required	Person responsible	Timeframe for completion	Completion date

Verification
I verify that the information supplied above is correct.

Property owner / manager

Signature .....

Date .....

Phosphate fertiliser use

Fertiliser applications

Fertiliser type	Rate of application (kg/ha)	LMU where it is applied

Industry and legal requirements

Specific industry requirements (Contact industry representative for details)	Met requirements Yes	No

Specific Regional Council requirements (Contact local Regional Council for their requirements)	Met requirements Yes	No

Management practices

We have identified the following management practices to meet the objectives as set out in Part B of this plan.

Management practices implemented to achieve our objectives (See Chapter 5 of the Code for examples)	Verification method	Checklist Yes	No

For help completing this section click here

Self assessment for phosphate fertiliser use

Did the management practices achieve the Code objectives and any farm objectives?

Yes	☐	Objectives achieved
No	☐	Fill out table below
Partially	☐	Fill out table below

Changes in management practices required	Person responsible	Timeframe for completion	Completion date

Verification
I verify that the information supplied above is correct.

Property owner / manager

Signature .....

Date .....

Dairy effluent application

Do you apply dairy effluent?

Yes ☐ No ☐ - if yes, fill in the following, if no, go to next section.

Effluent application

Rate	LMU (site/location)

Industry and legal requirements

Specific industry requirements (Contact industry representative for details)	Met requirements Yes	No

Specific Regional Council requirements (Contact local Regional Council for their requirements)	Met requirements Yes	No

Management practices

We have identified the following management practices to meet the objectives as set out in Part B of this nutrient management plan.

Management practices implemented to achieve our objectives (Contact your local Regional Council for their requirements & refer to the DEC Manual)	Verification method	Checklist Yes	No

For help completing this section click here

Self assessment for dairy effluent irrigation

Did the management practices achieve the Code objectives and any farm objectives?

Yes	☐	Objectives achieved
No	☐	Fill out table below
Partially	☐	Fill out table below

Changes in management practices required	Person responsible	Timeframe for completion	Completion date

Verification
I verify that the information supplied above is correct.

Property owner / manager

Signature .....

Date .....

For help completing this section click here

Farm map

If you are filling this in on your computer, or online slot your farm map in here after printing the completed plan.

If you don't have a farm map discuss this section with your fertiliser advisor or consultant.

A farm map might be an aerial photograph of your land, a topographical farm layout, or another document you have created to show your farm's layout and specific details.

Attach detailed nutrient budgets and soil test results.

Include the most recent nutrient budgets (using the fertiliser applications detailed in the Nutrient Management Plan) and soil tests to support the Nutrient Management Plan. Historic soil test results are also useful to show soil fertility trends over time. Also include effluent area and its location.

Nutrient Management Plan

Prepared by

Adrian van Bysterveldt, Peter Hancox, Kelly Morris, Richard Christie

for

Lincoln University Dairy Farm

Date

1 May 2007

For help completing this section click here

Part A: Property details

Property name:	Lincoln University Dairy Farm		
Owner:	Lincoln University		
Postal address:	South Island Dairying Development Centre		
	PO Box 160		
	Lincoln University		
Phone No:	03 325 3629	Mobile No:	021 900 247
E-mail address:	rchristie@siddc.org.nz		

Manager:	Peter Hancox		
Postal address:	LUDF		
	PO BOX 160		
	Lincoln University		
Phone No:	03 325 7381	Mobile No:	
E-mail address:	hancoxp@lincoln.ac.nz		

Property area (ha):	185			
Effective area (ha):	161.5 Milking Platform			
Area under irrigation (ha):	water	161.5	effluent	28
Irrigation Type:	water	Spray	effluent	daily spray

Enterprise type: (please click to tick box)

Dairy	Dairy grazing	Sheep & Beef	Deer	Cropping
✓				

Horticulture	Viticulture	Arable	Forestry	Other

Purpose of plan

1) To demonstrate that LUDF farms using industry agreed Best Management Practices and to encourage similar use on other dairy farms in the South Island.
2) To provide direction for LUDF operational staff on how to manage its impact on soils and water.

Part B: Plan objectives, land management units & environmental risk

Objectives:

Comply with all legal requirements related to nutrient management activities.

Take all practicable steps to maintain or enhance the quality of the property's water resources.

Take all practicable steps to ensure that there is an adequate supply of soil nutrients to meet plant needs.

To take all practicable steps to contain nutrients within the property boundaries.

Take all practicable steps to minimise the risk of nutrient contamination of any areas of significant vegetation and/or wildlife habitat.

Undertake a nutrient budget.

Property management objectives

Production	To increase production levels in ways that are both profitable and environmentally sustainable. Take all practicable steps to ensure that there is an adequate supply of soil nutrients to meet plant needs
Financial	To increase Economic Farm Surplus above $3000/ha at a nominal payout of $4 /kg Milk Solid.
Environmental	To ensure that the 3 yr rolling average conc. of nitrate-N in drainage water from below the plant root zone remains below the critical value [16 mg N/l] that is specified in ECan's proposed regional rule (WQL 18)
Personal	

Land management units

We have identified the following land management units on this property. (See map described in Code Appendix 4 and Fact Sheet 1: Land Management Units and Land Capability Mapping.)

Unit	Description	Approximate area (ha)
A	North Block - non effluent	53.3
B	North Block - effluent	28
C	South Block	81.2
D		

Environmental risks

We have identified the following environmental risks for these land management units.

		Inherent risk assessment (see Fig. 3)			
Activity	Potential risk/s*	LMU A	LMU B	LMU C	LMU D
Over wintering stock	pugging & compaction Leaching of N into aquifer Contamination of surface water	medium high low	Medium high low	High Medium High	
Spray effluent to land	N leaching to aquifer Ponding undesired changes to soil nutrient status	N/A	High High High	N/A	
Application of Fertiliser	Undesired changes to soil nutrient status Contamination of surface water	High Low	High High	High High	
Stock in drains	contamination of surface water	Medium	N/A	High	

* Potential risks

	Yes	No
• Contamination of ground water	✓	
• Contamination of surface water	✓	
• Undesired changes in soil nutrient status	✓	
• Nutrient application to non-target land		✓
• Accumulation of non-nutrient impurities in the soil profile.		✓
• Excess stocking rate		✓
• Pugging and compaction	✓	
• Poor cultivation methods		✓
• Other		

Comments about specific risks identified.

1) Open surface water on LUDF are a stock water race along part of the western boundary of the North block and man made drains on the South Block. All these are fenced and electrified.
2) Extensive use of on/off grazing in wet soils conditions.

From the table above, we have chosen the following nutrient activities as significant. These are addressed in management plans.

N fertiliser use	P fertiliser use	Effluent disposal	Supplement use	Other
✓	✓	✓		

Part C: Management guides

Nitrogen fertiliser use

Fertiliser applications

Fertiliser type	Rate of application (kg/ha)	LMU where it is applied
Urea	200 kg N/ha/yr, max of 40/application	A,C
	No N applied except in extreme situations	B
EcoN	Autumn & Spring	A,B.C

Industry and legal requirements

Specific industry requirements (Contact industry representative for details)	Met requirements Yes	No
N/A		

Specific Regional Council requirements (Contact local Regional Council for their requirements)	Met requirements Yes	No
3 yr rolling average conc nitrate-N in drainage water remains below 16 mg N/l	✓	

Management practices

We have identified the following management practices to meet the objectives as set out in Part B of this plan.

Management practices implemented to achieve our objectives (See Chapter 5 of the Code for examples)	Verification method	Checklist Yes	No
Apply EcoN as recommended in Autumn & Spring	GPS spreader log		✓
Wait til Soil T above 5 deg C and after mid August for first application of N	Pad rec & Soil T log	✓	
Max rate 40 kg/N/ha and not repeated for minimum of 3 weeks	Pad record	✓	
N applications to follow cow grazings (up to 5 days prior & 7 days past)	Pad record	✓	
N not applied within 10m of waterways	GPS spreader log		✓
N applied when sufficient moisture is available to dissolve it	irrigate if no rain	✓	
No N in autumn once soil T below 7 deg or after May 1	Pad rec & Soil T log	✓	
FertMark accredited contractor or calibrated fertigation through pivot	GPS Logs		✓
No artificial N applied in effluent area except in severe N deficiency	Pad rec & GPS log	✓	

For help completing this section click here

Self assessment for nitrogen fertiliser use

Did the management practices achieve the Code objectives and any farm objectives?

Yes	☐	Objectives achieved
No	☐	Fill out table below
Partially	✓	Fill out table below

Changes in management practices required	Person responsible	Timeframe for completion	Completion date
Collection of GPS spreading logs from Contractor	Peter Hancox	31 May	

Verification
I verify that the information supplied above is correct.

Property owner / manager

Signature .....

Date 30/4/07

Phosphate fertiliser use

Fertiliser applications

Fertiliser type	Rate of application (kg/ha)	LMU where it is applied
Sulphur Super phosphate	250 kg/ha Spring & 325 kg/ha Autumn	A,C

Industry and legal requirements

Specific industry requirements (Contact industry representative for details)	Met requirements Yes	No
Fertilizer applications based on a Nutrient Budget	✓	

Specific Regional Council requirements (Contact local Regional Council for their requirements)	Met requirements Yes	No
N/A		

Management practices

We have identified the following management practices to meet the objectives as set out in Part B of this plan.

Management practices implemented to achieve our objectives (See Chapter 5 of the Code for examples)	Verification method	Checklist Yes	No
Soil sampling annually (at same time of year on same GPS transects)	noted in Farm Diary	✓	
Nutrient budgets developed by Ravensdown	copy on file	✓	
Fertilizer applications determined by nutrient budgets	copy on file	✓	
Application by SpreadMark accredited contractor	accred on file		✓
No application within 10 m of surface waterway	GPS Log		✓
Use FertMark registered fertilizers	Product Catologue	✓	
Not grazed for a minimum of 10 days after fertilizer application	Pad log	✓	

For help completing this section click here

Self assessment for phosphate fertiliser use

Did the management practices achieve the Code objectives and any farm objectives?

Yes	☐	Objectives achieved
No	☐	Fill out table below
Partially	✓	Fill out table below

Changes in management practices required	Person responsible	Timeframe for completion	Completion date
Collect GPS log from contractor	Peter Hancox	1 June	
Find a local FertMark accredited spreading contractor	Peter Hancox	1 August	

Verification
I verify that the information supplied above is correct.

Property owner / manager

Signature .....

Date 30/4/07

Dairy effluent application

Do you apply dairy effluent?

Yes ☑ No ☐ - if yes, fill in the following, if no, go to next section.

Effluent application

Rate	LMU (site/location)
5 - 8 mm / application	B
less than 200 kg N/ha/year	B

Industry and legal requirements

Specific industry requirements (Contact industry representative for details)	Met requirements Yes	No
No effluent spread on pasture 7 days prior to grazing	✓	

Specific Regional Council requirements (Contact local Regional Council for their requirements)	Met requirements Yes	No
Resource consent requires uniform application to an area of 28 ha	✓	
Resource consent requires no ponding to occur for longer than 12 hours	✓	
Record of daily volumes applied	✓	

Management practices

We have identified the following management practices to meet the objectives as set out in Part B of this nutrient management plan.

Management practices implemented to achieve our objectives (Contact your local Regional Council for their requirements & refer to the DEC Manual)	Verification method	Checklist Yes	No
Irrigator manually shifted to recently grazed paddocks	effluent log	✓	
Irrigation spans changed to spread	effluent log	✓	
Pivot set on fastest speed to prevent ponding (applies 5 - 8 mm /application)	Pivot log	✓	
Effluent only spread on the dry free draining block of the farm	fixed sprayer	✓	
No effluent applied to camp areas, of within 20 m of boundary of open water	fixed sprayer	✓	
Storage backup system is removal of effluent by suction truck	ph no. in office	✓	
Alarms to staff cell phones if pivot not moving when spraying effluent.	test switch check	✓	
Manual override of effluent pump if pivot is not moving	farm diary		✓

For help completing this section click here

Self assessment for dairy effluent irrigation

Did the management practices achieve the Code objectives and any farm objectives?

Yes	☐	Objectives achieved
No	☐	Fill out table below
Partially	✓	Fill out table below

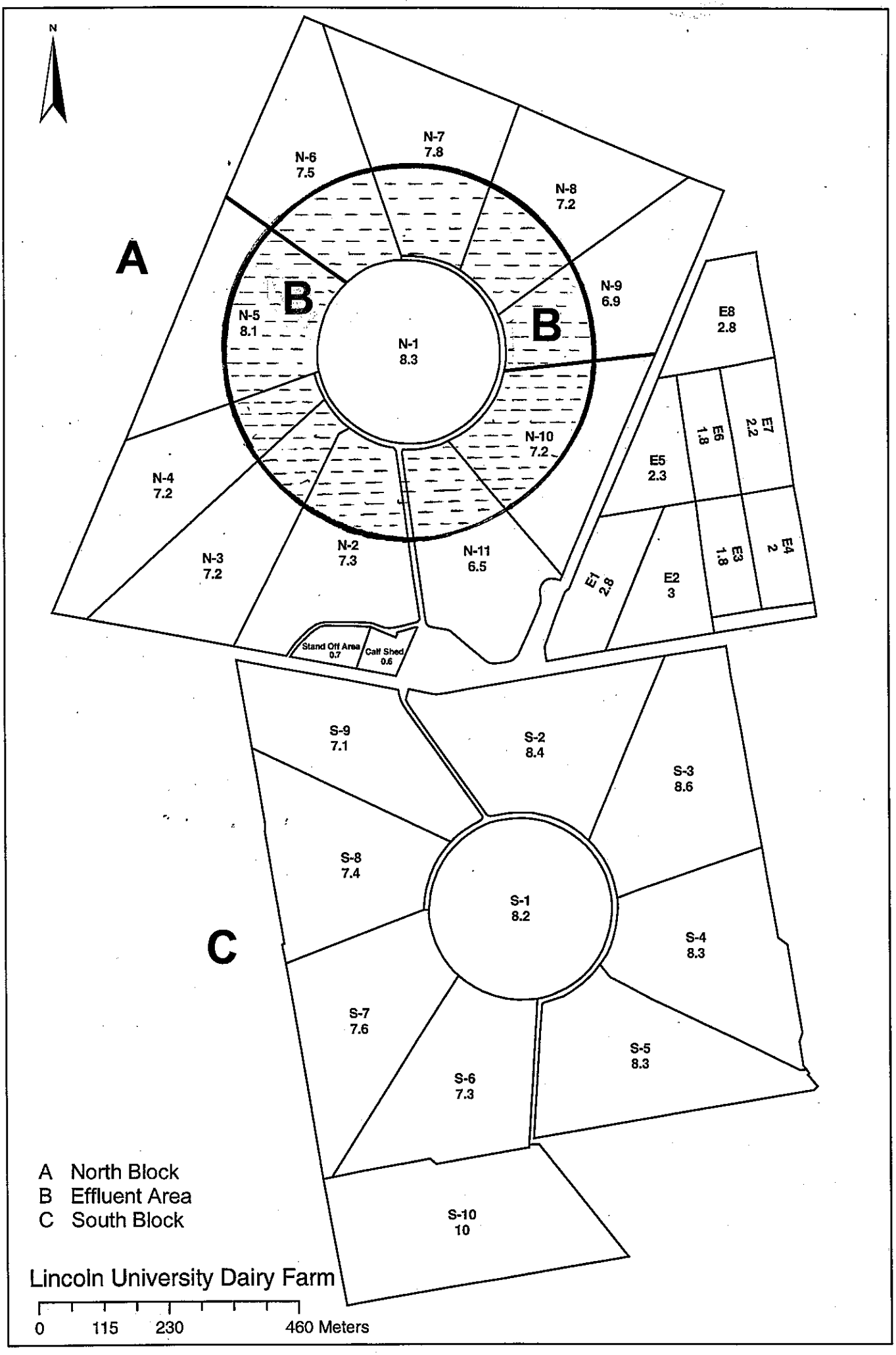
Changes in management practices required	Person responsible	Timeframe for completion	Completion date
Recording of when & why pivot stopped when spreading effluent	David Good/ Peter Hancox	immediately	
Training of farm staff in recording effluent speading problems	Peter Hancox	1 Aug 07	

Verification
I verify that the information supplied above is correct.

Property owner / manager

Signature .....

Date 30/4/07


N
A
B
B
N-1
8.3
N-2
7.3
N-3
7.2
N-4
7.2
N-5
8.1
N-6
7.5
N-7
7.8
N-8
7.2
N-9
6.9
N-10
7.2
N-11
6.5
E1
2.8
E2
3
E3
1.8
E4
2
E5
2.3
E6
1.8
E7
2.2
E8
2.8
Stand Off Area
0.7
Calf Shed
0.6
C
S-1
8.2
S-2
8.4
S-3
8.6
S-4
8.3
S-5
8.3
S-6
7.3
S-7
7.6
S-8
7.4
S-9
7.1
S-10
10
A North Block
B Effluent Area
C South Block
Lincoln University Dairy Farm
0
115
230
460 Meters