SIDDC
South Island Dairying Development Centre

Partners Networking To Advance South Island Dairying

Lincoln University
Te Whare Wānaka o Aoraki
CHRISTCHURCH • NEW ZEALAND

DairyNZ

Ravensdown

LIC

Plant & Food RESEARCH
RANGAHAU AHUMĀRA KAI

agresearch

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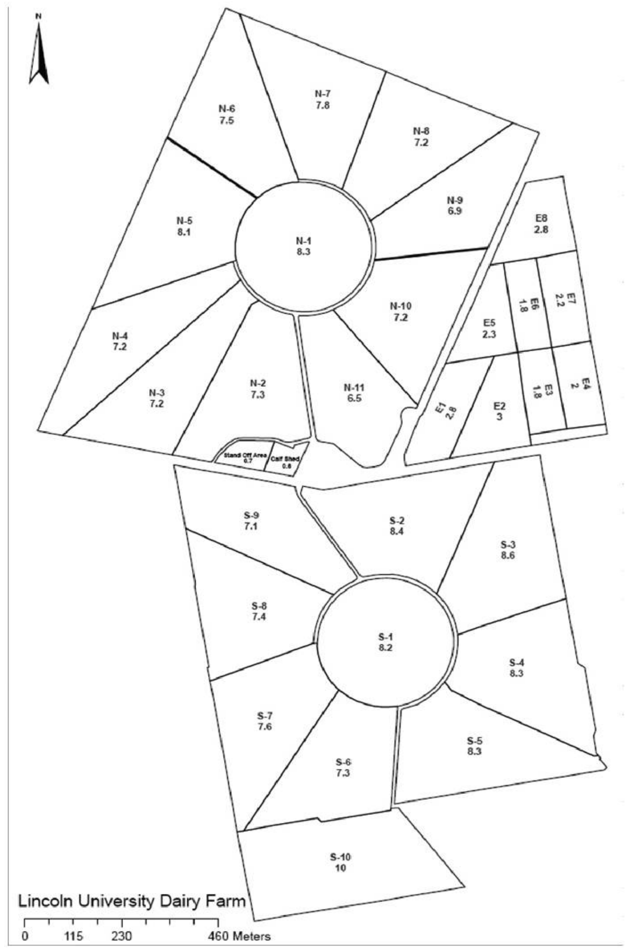
Lincoln University Dairy Farm Focus Day 10 October 2013



Staff

Peter Hancox – Farm Manager
Adam Vollebregt – 2IC
Alistair Linfoot – Farm Assistant
Wesley Steyn – Farm Assistant

LUDF Hazards Notification

1. Children are the responsibility of their parent or guardian
2. Normal hazards associated with a dairy farm
3. Other vehicle traffic on farm roads and races
4. Crossing public roads
5. Underpass may be slippery

Please follow instructions given by event organisers or farm staff

Introduction

The 186 hectare irrigated property, of which 160 hectares is the milking platform, was a former University sheep farm until conversion in 2001. 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.

LUDF Strategic objective 2011-2015:

To maximise sustainable profit embracing the whole farm system through:

- *increasing productivity;*
- *without increasing the farm's total environmental footprint;*
- *while operating within definable and acceptable animal welfare targets; and*
- *remaining relevant to Canterbury (and South Island) dairy farmers by demonstrating practices achievable by leading and progressive farmers.*
- *LUDF is to accept a higher level of risk (than may be acceptable to many farmers) in the initial or transition phase of this project.*

Additional objectives

- To develop and demonstrate world-best practice pasture based dairy farming systems and to transfer them to dairy farms throughout the South Island.
- To consider the farms full environmental footprint, land requirement, resource use and efficiency in system decision making and reporting
- To use the best environmental monitoring and irrigation management systems in the development and implementation of practices, that achieve sustainable growth in profit from productivity and protection of the wider environment.
- To ensure optimal use of all nutrients on farm, including effluent, fertiliser, nutrients imported from supplements and atmospheric nitrogen; through storage where necessary, distribution according to plant needs and retention in the root zone.
- To continue the environmental monitoring programme and demonstrate technologies and farming practices that will ensure the average annual concentration of nitrate-N in drainage water from below the plant root zone remains below the critical value [16 mg N/L] specified in ECan's proposed regional rule in order for LUDF to remain a 'permitted activity' [Rule WQL20].
- To store and apply effluent such that there is no significant microbial contamination of the shallow aquifers.
- To manage pastures and grazing so per hectare energy production is optimised and milkers consume as much metabolisable energy [ME] as practicable.
- To optimize the use of the farm automation systems and demonstrate / document improved efficiencies and subsequent effect on the business.
- To achieve industry targets for mating performance within a 10 week mating period, including a 6 week in-calf rate of 79% and 10 week in calf rate greater than 89% i.e. empty rate of less than 11%.
- To continue to document and measure LUDF's influence on changes to defined management practices on other dairy farms.
- To ensure specific training is adequate and appropriate to enable staff members to contribute effectively in meeting the objectives of the farm.
- To operate an efficient and well organised business unit.
- To generate profit through tight cost control with appropriate re-investment and maintenance of the resources.
- To create and maintain an effective team environment at policy, management and operational levels.
- To actively seek labour productivity gains through adoption of technologies and practices that reduces labour requirements or makes the work environment more satisfying.
- To assist Lincoln University to attract top quality domestic and international students into the New Zealand dairy industry.

Ongoing research

- The effect of fertilisers & other farm inputs on groundwater. 10 groundwater monitoring wells sunk to monitor and manage the effect of fertiliser, grazing, irrigation and effluent inputs over a variety of contrasting soil types.
- Effects of eco-n on nitrate leaching and pasture production.
- Pasture growth rates, pests and weeds monitoring.
- The role of nutrition in lameness in Canterbury.
- Resource Inventory and Greenhouse Gas Footprint

Climate

Men Annual Maximum Temperature	32° C
Mean Annual Minimum Temperature	4° C
Average Days of Screen Frost	36 Days per annum
Mean Average Bright Sunshine	2040 Hours per annum
Average Annual Rainfall	666 mm

Farm area

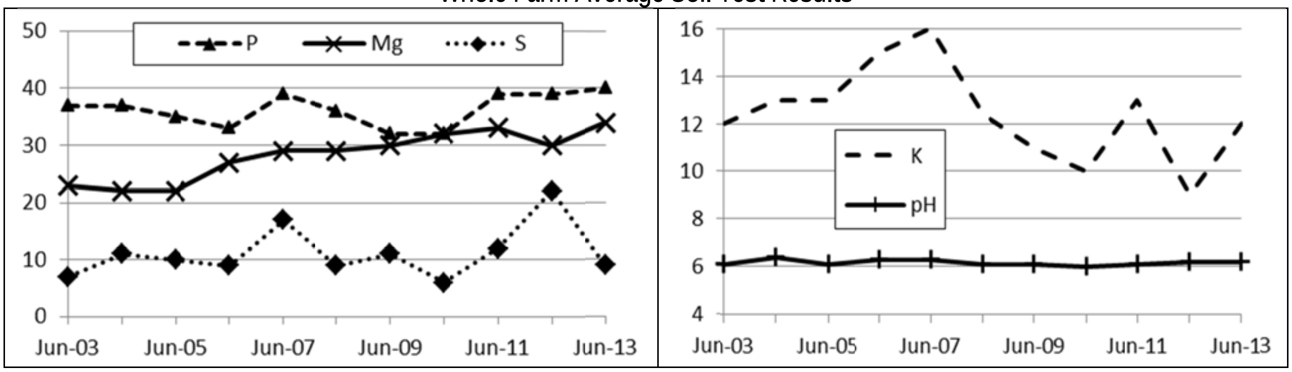
Milking Platform	160 ha
Runoff [East Block]	15 ha
Unproductive land on platform	6.7 ha

Soil types	% Milking Platform		% Milking Platform
Free-draining shallow stony soils (Eyre soils)	5	Imperfectly drained soils (Wakanui soils)	30
Deep sandy soils (Paparua & Templeton soils)	45	Heavy, poorly-drained soils (Temuka soils)	20

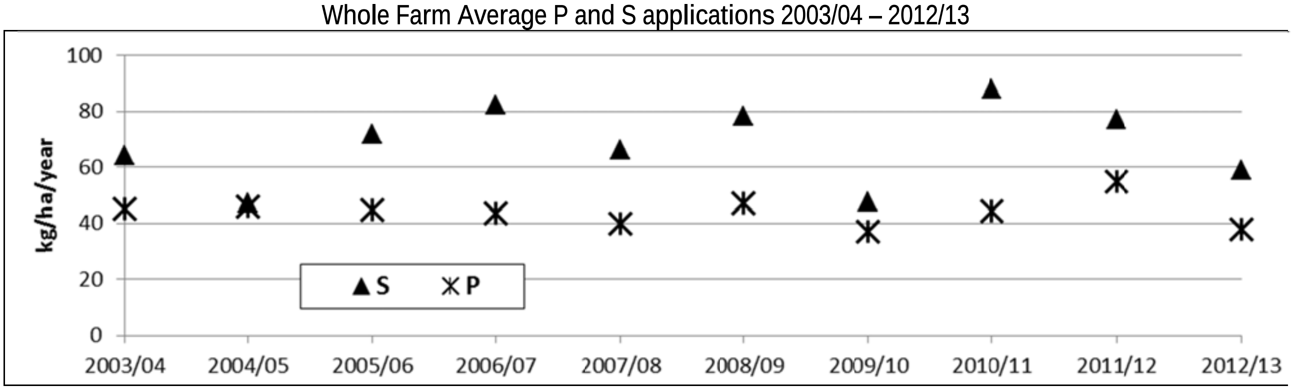
Soil test results and Fertiliser Applications

Target Soil Test Ranges: pH: 5.8 – 6.2, P: 30 – 40, K: 5 – 8, S: 10 – 12, Mg: 20+

Whole Farm Average Soil Test Results



Whole Farm Average P and S applications 2003/04 – 2012/13



Pasture

The milking platform was sown at conversion [March 2001] in a mix of 50/50 Bronsyn/Impact ryegrasses with Aran & Sustain white clovers, and 1kg/ha of Timothy

Paddock	Period Regrassed	Grass Cultivar	Paddock	Period Regrassed	Grass Cultivar
N1	Feb-01	Brons. Imp	S1	Dec-05	Bealey
N2	Feb-11	Trojan	S2	Dec-10	Troj. Bealey
N3	Nov-12	Shogun	S3	Feb-10	Bealey
N4	Feb-01	Brons. Imp	S4	Feb-09	Arrow - Alto
N5	Dec-11	Shogun	S5	Dec-08	Arrow - Alto
N6	Feb-01	Brons. Imp	S6	Dec-06	Arrow - Alto
N7	Feb-01	Brons. Imp	S7	Sep-06	Arrow - Alto
N8	Jan -13	Bealey/Chickory/Plantain	S8	Oct-11	Troj. Bealey
N9	Feb-01	Brons. Imp	S9	Dec-09	Bealey
N10	Jan-12	Tetraploids	S10	Feb-05	Bealey
N11	Nov-07	Bealey	All paddocks also sown with clover		

Irrigation and effluent system

Centre-pivots	127 ha
Long Laterals	24 ha
K-Lines	10 ha
Irrigation System Capacity	5.5 mm/day
Length of basic pivot	402
Well depth	90m

- A full rotation completed in 20.8 hours for 5.5 mm [at 100% of maximum speed].
- Average Annual Rainfall = 666 mm. Average irrigation input applies an additional 450 mm.

Average Evapotranspiration for Lincoln is 870 mm/year.

Effluent

- Sump capable of holding 33,000 litres and a 300,000 litre enviro saucer.
- 100 mm PVC pipe to base of North Block centre pivot, distribution through pot spray applicators.

Mating programme - Spring 2012

KiwiX DNA for 370 cows (F8-F16); Holstein Friesian Daughter Proven for 220 cows (F0-F7); KiwiX daughter proven for approx. 40 low BW cows and R2yr Heifers. AI mate for 3 weeks in heifers and 6 weeks in main herd then follow with Jersey bulls. Heifers start mating 10 days early. 10 weeks mating for milking herd. Expect to rear 160 heifers.

Herd details – July 2013

Breeding Worth (rel%) / Production Worth (rel%)	118 / 49% 152 / 73%
Recorded Ancestry	98%
Average weight / cow (Dec) – Herd monitored walk over weighing	477 kg [Dec 2012]
Calving start date	Heifers – 23 July, Herd 3 August 2013
Est Median calving date	21 August 2013
Mating start date	25 October 2012
Empty rate (nil induction policy) after 10 weeks mating	13% 201213 [6 week in-calf rate 73%]

	2002/03	Average 03/04 - 06/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Total kg/MS supplied	228,420	277,204	278,560	261,423	273,605	264,460	297,740	300,484
Average kg/MS/cow	381	425	409	384	415	395	471	477
Average kg/MS/ha	1414	1720	1744	1634	1710	1653	1861	1878
Farm Working Expenses / kgMS	$2.98	$2.68	$3.37	$3.88	$3.38	$3.86	$3.91	$3.94
Dairy Operating Profit/ha	$1,164	$2,534	$8,284	$2,004	$4,696	$6,721	$4,553	$4484
Payout [excl. levy] $/kg [Milk price + div.]	$4.10	$4.33	$7.87	$5.25	$6.37	$7.80	$6.30	$6.16
Return on Assets	4.4%	6.18%	14.6%	4.8%	7%	7%	6%	6%

Stock numbers	2002/03	Average 03/04 - 06/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
1 July cow numbers	631	675	704	704	685	694	665	650
Max. cows milked	604	654	680	683	660	669	632	630
Days in milk			263	254	266	271	272	273
Stocking rate Cow equiv. / ha	3.75	4.05	4.2	4.3	4.13	4.18	3.95	3.94
Stocking rate Kg liveweight / ha	1,838	1964	2,058	2,107	1,941	1914	1860	1878
Cows wintered off No. Cows / Weeks	500 / 8	515 / 7.8	546 / 9	547 / 7	570 / 9	652 / 8.4	650 / 9.8	650/9.8
No. Yearlings grazed On / Off	0/118	0/157	0/171	0/200	0/160	0/166	0/141	0/138
No. Calves grazed On / Off	0/141	0/163	0/200	0/170	0/160	0/194	0/190	0/156
Est. Pasture Eaten (Dairybase) (tDM/ha)			17.9	17.2	16.2	16.9	17.3	16.8
Purch. Suppl - fed [kgDM/cow]	550	317	415	342	259	463	359	434
Made on dairy/platform [kgDM/cow]	0	194	95	64	144	160	154	93
Applied N / 160 eff. Ha			164	200	185	260	340	350

Staffing & Management

Roster System – 8 days on 2 off , 8 days on 3 off

Milking Times - Morning: cups on 5.00am
- Afternoon: cups on 2.30pm

Contents

On Target - Farming Profitably within a Nitrogen Limit

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Principles of 'Farming Profitably' within a Nitrogen Limit:

1. Maximise pasture production within self-imposed Nitrogen fertiliser limits
2. Convert pasture into (high quality) milk as efficiently as possible
3. Maintain good cost control across all aspects of the business
4. Consider whole farm business (especially in regard to N leaching).

Pasture production and management are covered below, followed by milk production data and related aspects of cow condition, liveweight and by inference efficiency of feed conversion into milk this season (to date). Maintaining good cost control starts with rigorous budget setting (April 2013) and appropriate processes to hold costs, maintain the farm asset and respond to both opportunities and challenges as they occur through-out the season.

The budget was set when the payout projections were much closer to last years projected payout, hence the budget maintains a milk price of $5.80 + 32 cent dividend. Expenses were budgeted at $4.08/kgMS, up a little on the final costs for 2012/13 season of $3.94 (adjusted to include eco-n as if it had been available for use in the autumn of 2013). Included within the budgeted costs was the contingency for purchasing additional grass silage to potentially offset lower pasture production on farm.

The increase in forecast milk price, (currently at $8.30/kgMS) has increased gross revenue from $1.95 million to $2.7 million, resulting in a potential Dairy Operating Profit of $8500/ha, assuming costs are held and production is achieved. History of past seasons with large increases in forecast payout suggest even more rigour is required to maintain costs this year as ag-inflation will occur across many on-farm expenses. Avoiding these cost increases will enable LUDF to both retain the increased payout and ensure costs are held in future years with lower probable payouts.

Lincoln University Dairy Farm Budget for 2013 – 2014

							@	Jun-13
Year ending May 31		160.0ha	Budget		2013/14		Actual 12 - 13	Difference
Milk production		Milksolids	$5.80/kgms	1,875/ha	*300,000*	300,484	1,878/ha	-0,484 kgms
Cows	Peak number &prodn		630cows	3.94/ha	*476/cow*			
Staff	3.70	FTE's	170cows/FTE		81,081ms/FTE			
Income					*$/kgMS*	*$/kgMS*		$ change
Milksoilds	$5.80/kgms	88%	1,740,000		*5.80*	*5.84*	1,754,827	- 14,827
Dividend	$0.32/share	5%	96,000		*0.32*	*0.32*	96,000	-
Surplus dairy stock		3%	50,750		*0.17*	*0.20*	60,139	20,750
Other stock sales		4%	88,265		*0.29*	*0.41*	122,198	-33,933
		100%	1,975,015		*6.58*	*6.77*	2,033,164	-58,149
Stock Purchases			23,200			*0.09*	25,740	-2,540
Gross Farm Revenue			1,951,815	12,199/ha		*6.68*	2,007,424	-55,609
Expenses		per ha		$/cow	*2013/14*	*2012/13*	Actual $	$ change in expense
Administration			24,700	39.2	0.08	0.07	21,528	3,172
Animal Health			60,066	95.3	0.20	0.20	60,886	-820
Breeding Expenses			48,128	76.4	0.16	0.17	51,644	-3,516
Electricity-farm			26,600	42.2	0.09	0.09	27,049	-449
Employment			248,037	393.7	0.83	0.73	217,865	30,172
Grass silage purchased		783 kgDM/cow	177,534	281.8	0.59	0.31	93,492	84,042
Silage making & delivery			9,216	14.6	0.03	0.03	9,087	129
Replacement grazing & meal			148,405	235.6	0.49	0.55	163,852	-15,447
Winter grazing - Herd incl freight			154,539	245.3	0.52	0.46	137,904	16,635
EcoN&Giberillin			10,487	16.6	0.03	0.19	58,441	-47,954
Nitrogen			69,949	111.0	0.23	0.38	112,973	-43,024
Fertiliser & Lime			27,901	44.3	0.09	0.11	33,288	-5,387
Freight & Cartage			800	1.3	0.00	0.00	89	711
Irrigation - All Costs		441.25	70,600	112.1	0.24	0.18	55,471	15,129
Rates & Insurance			21,020	33.4	0.07	0.07	21,020	0
Regrassing			29,688	47.1	0.10	0.05	14,790	14,898
Repairs & Maintenance			54,500	86.5	0.18	0.21	61,766	-7,266
Shed Expenses exceld power			9,850	15.6	0.03	0.03	7,560	2,290
Vehicle Expenses			31,336	49.7	0.10	0.12	34,922	-3,586
Weed & Pest			500	0.8	0.00	0.00	1,340	-840
Cash Farm Working Expenses			1,223,857	-	4.08	3.94	1,184,967	38,890
Depreciation est			116,000		*0.39*	0.35	105,000	
Total Operating Expenses			1,339,857		*4.47*	4.29	1,289,967	
Dairy Operating Profit			611,958	*971*	2.04	2.39	717,457	-105,499
DOP			3,825/ha				4,484/ha	- 659
Cash Operating Surplus			727,958		2.43	2.74	822,457	- 94,499
			4,550/ha				5,140/ha	

Are costs holding at LUDF - season to date?

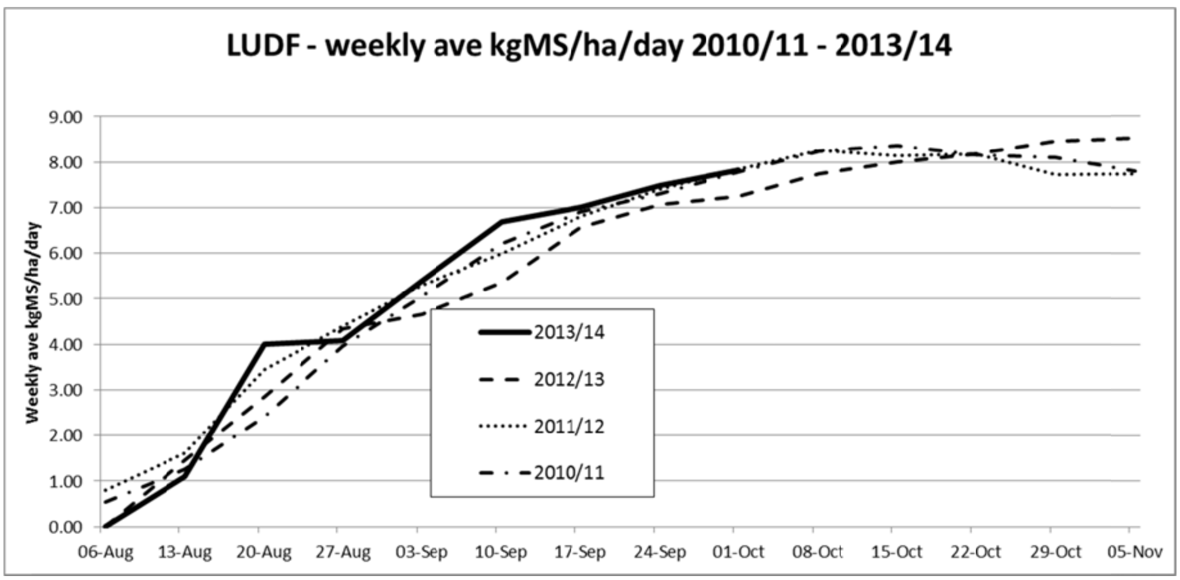
Winter-grazing costs for 2013/14 were budgeted at $154,539, comprising $144,639 for June – August 2013 and $9900 for grazing dry cows in April – May 2014. Actual costs were $163,586, $18,947 over budget, though this is in effect 'offset' by a reduction of $7254 in replacement grazing as the yearling heifers were grazed on LUDF through late June and July (as the result of saturated soils and a high water table at the graziers). The additional winter grazing expenses were the result of:

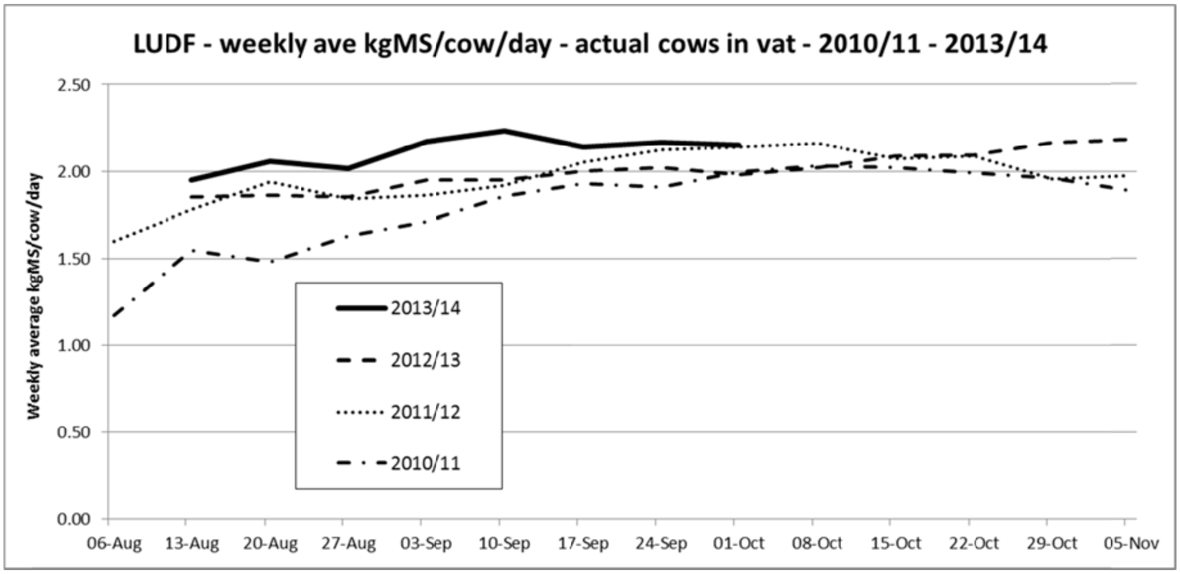
- higher market prices for cow grazing - another $1/cow/week for MA cows and $3/cow/week for the light cows on 16kgDM/cow/day.
    - 300 cows x 9 weeks at $1 more/week = $2700
    - 135 cows x 9 weeks at $3 more/week = $3645
- extra grazing off in August for later calving cows, due to yearlings on farm in June-July.

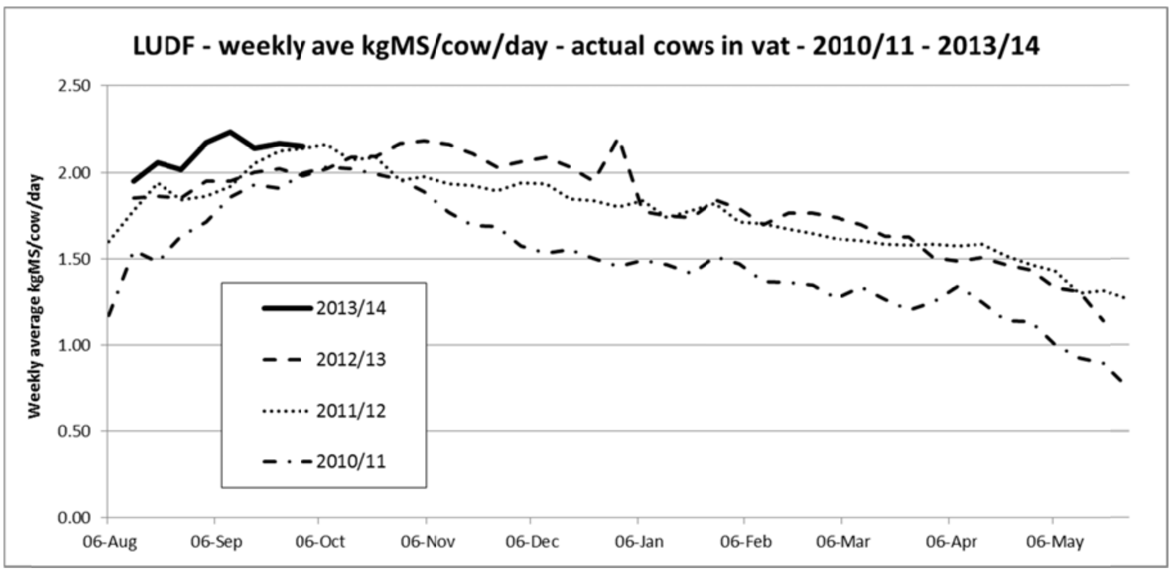
Net result for wintering was $18,947 less $7254 = $11693 over budget.

Most other costs to date are largely tracking according to budget.

Spring Milk Production




LUDF - weekly ave kgMS/cow/day - actual cows in vat - 2010/11 - 2013/14
Weekly average kgMS/cow/day
2.50
2.00
1.50
1.00
0.50
0.00
2013/14
2012/13
2011/12
2010/11
06-Aug
13-Aug
20-Aug
27-Aug
03-Sep
10-Sep
17-Sep
24-Sep
01-Oct
08-Oct
15-Oct
22-Oct
29-Oct
05-Nov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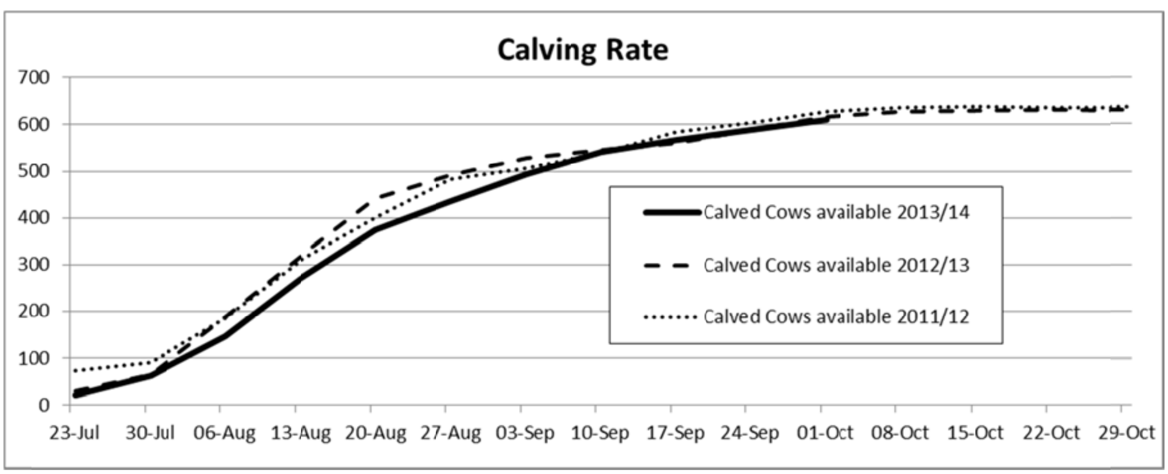
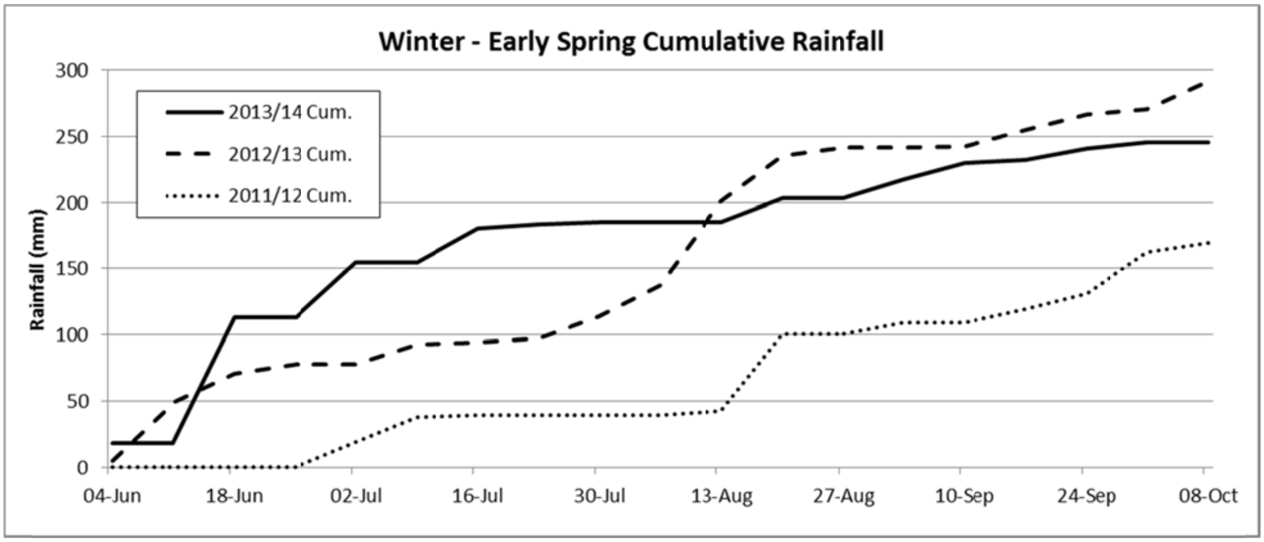
Weekly average kgMS/cow/day
2.50
2.00
1.50
1.00
0.50
0.00
2013/14
2012/13
2011/12
2010/11
06-Aug
06-Sep
06-Oct
06-Nov
06-Dec
06-Jan
06-Feb
06-Mar
06-Apr
06-May

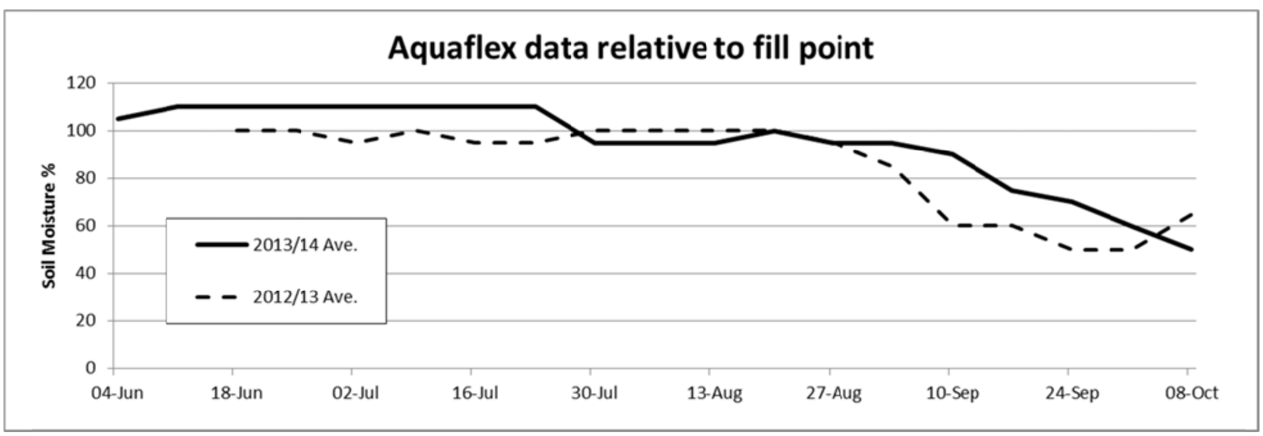

Calving Rate
700
600
500
400
300
200
100
0
Calved Cows available 2013/14
Calved Cows available 2012/13
Calved Cows available 2011/12
23-Jul
30-Jul
06-Aug
13-Aug
20-Aug
27-Aug
03-Sep
10-Sep
17-Sep
24-Sep
01-Oct
08-Oct
15-Oct
22-Oct
29-Oct

Analysis of the LUDF 2013 – 2014 season to date.

It has been a challenging spring to feed cows. We started off below target cover, having carried extra heifers on the platform as a consequence of heavy rains in June flooding our graziers property. LUDF was saturated over large areas until mid-September. Drainage was very slow and relatively small amount of rain were enough to keep things very wet.

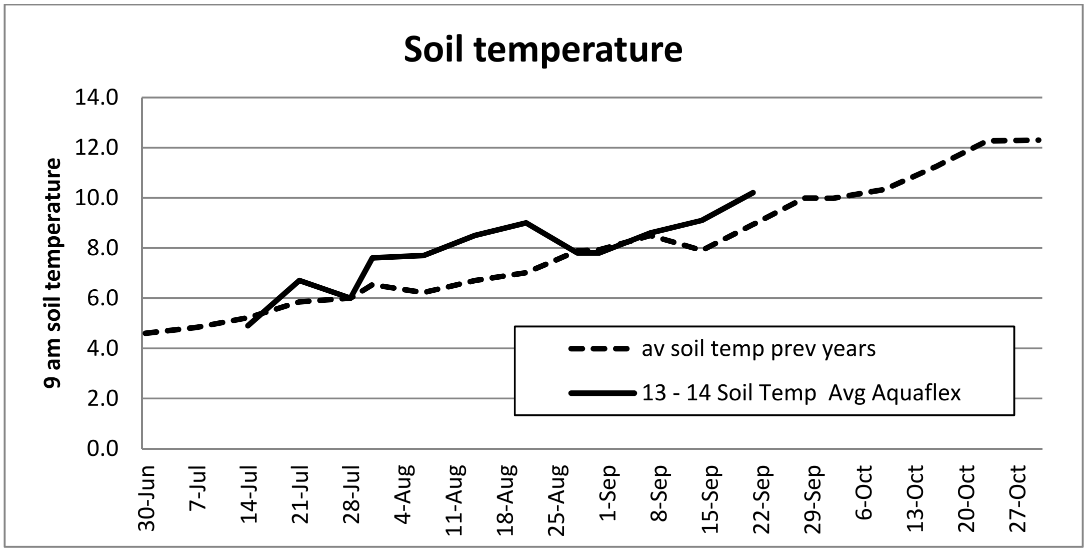
August was warm but conditions were wet so we struggled at times to manage the good growth that occurred. September saw cooler weather and lower than budgeted [average] pasture growth.



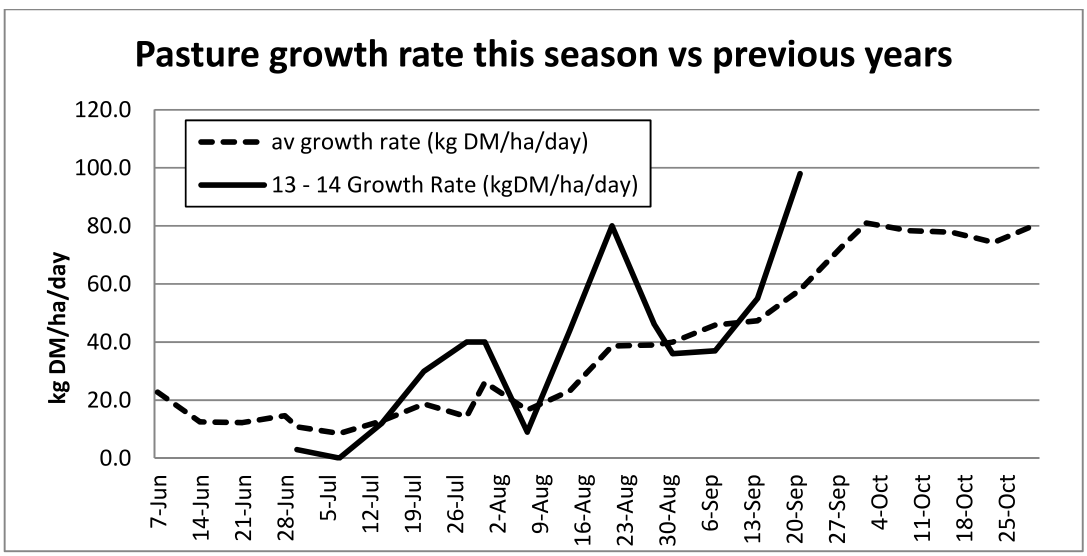


Soil Temperature

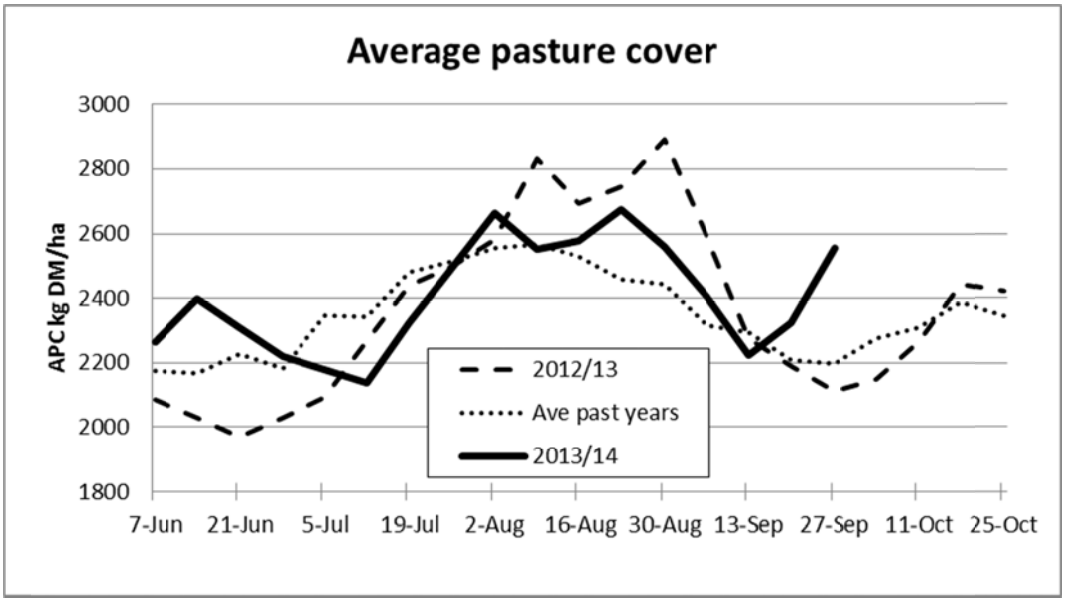
Whilst the drop in weekly average soil temperature was only back to average levels in early September, we saw a sizable decrease in pasture growth in mid- September.

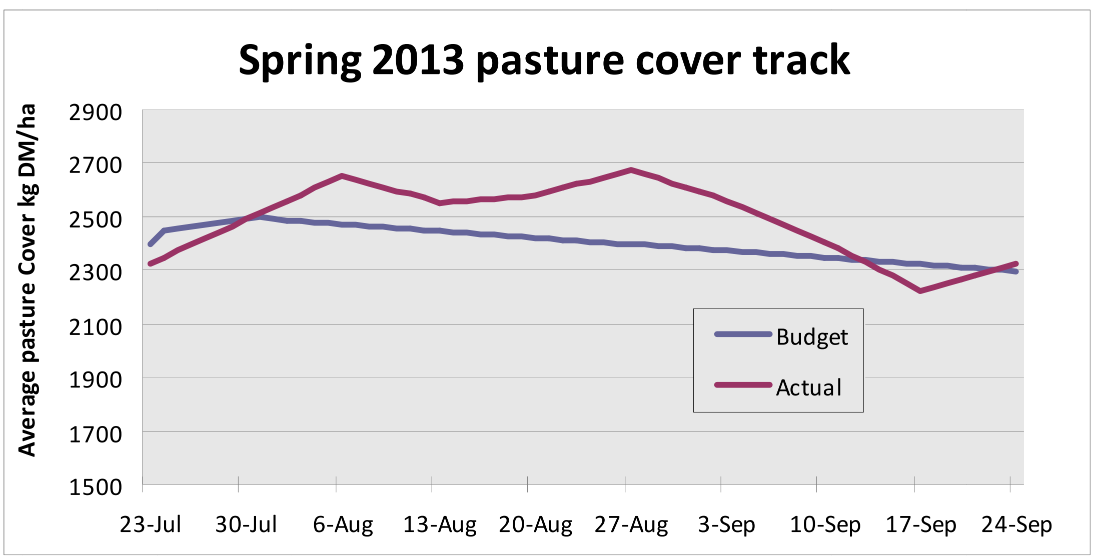


Pasture growth has been erratic throughout the late winter and spring.



Average pasture cover peaked above target but never got as high as we experienced last spring.



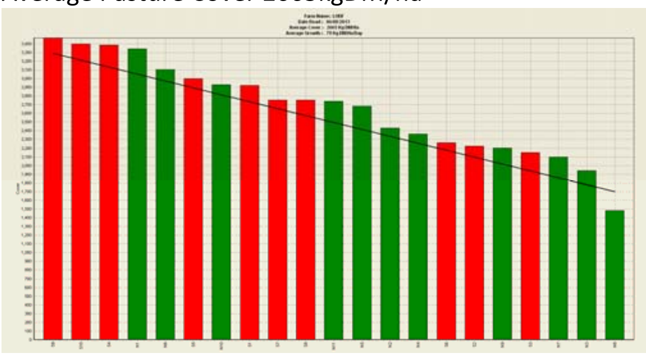


As at the 1st October [see wedge below] the farm is finally growing grass. We are still cautious as the measured 98 kg DM/ha seems a bit high: we continue to feed silage to hold the round length between 23 and 25 days.

In Early September the wedge was good but the farm was wet. By mid- September the farm had a large feed deficit due to slow growth rates. This was made worse by wet soils particularly on the South Block making grazing to low residuals without causing damage impossible. A consequence of this was a quicker than projected round length (see next page).

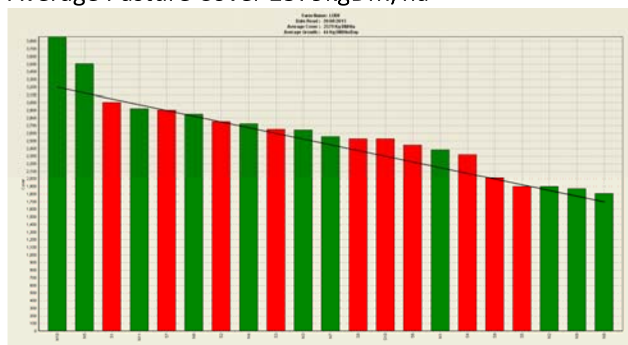
6th August

Average Pasture Cover 2665kgDM/ha



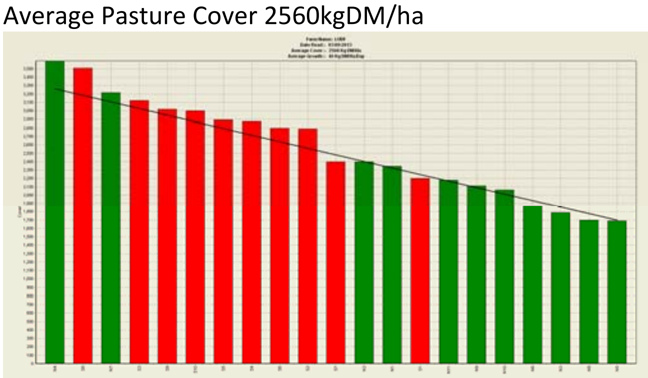
20th August

Average Pasture Cover 2579kgDM/ha



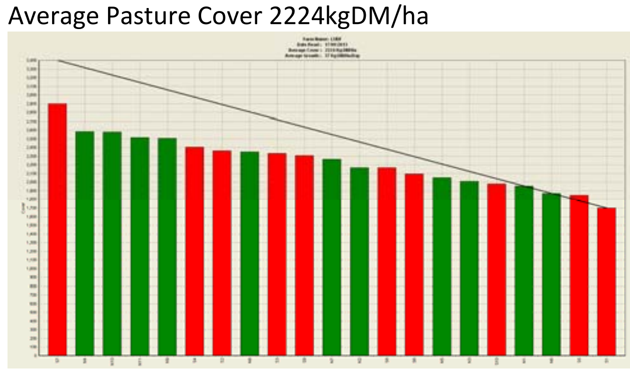
3rd September

Average Pasture Cover 2560kgDM/ha



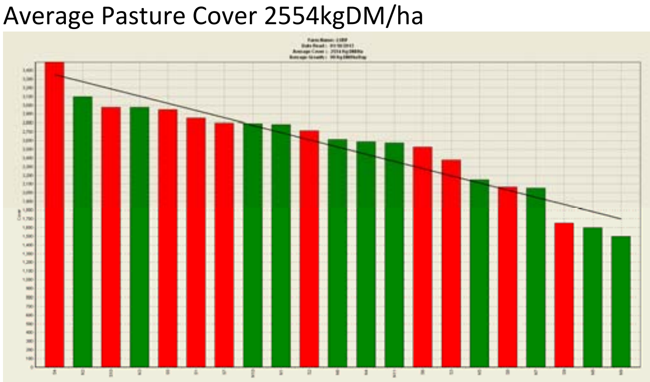
17th September

Average Pasture Cover 2224kgDM/ha



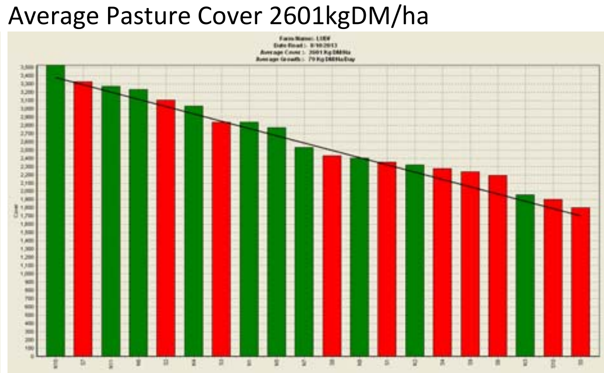
1st October

Average Pasture Cover 2554kgDM/ha



8th October

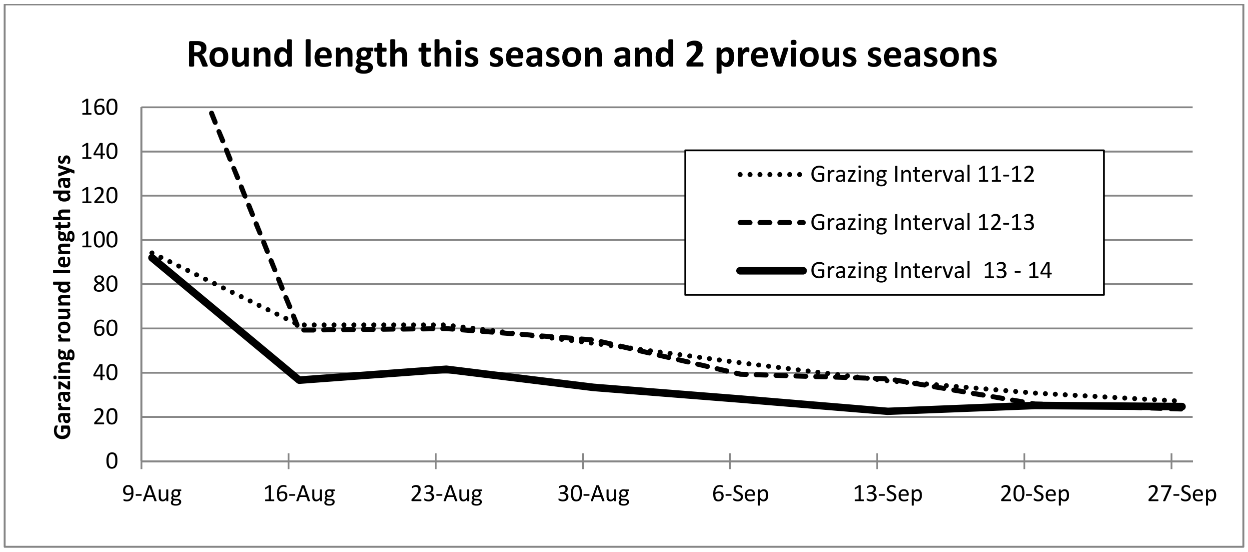
Average Pasture Cover 2601kgDM/ha



Summary table from wedges

Week ending	Average Pasture cover Kg DM/ha	Growth rate Kg DM/ha/day	Average growth rate from past years
6th August	2665	40	17
20th August	2579	44	39
3rd September	2560	46	46
17th September	2224	37	58
1st October	2554	98	81

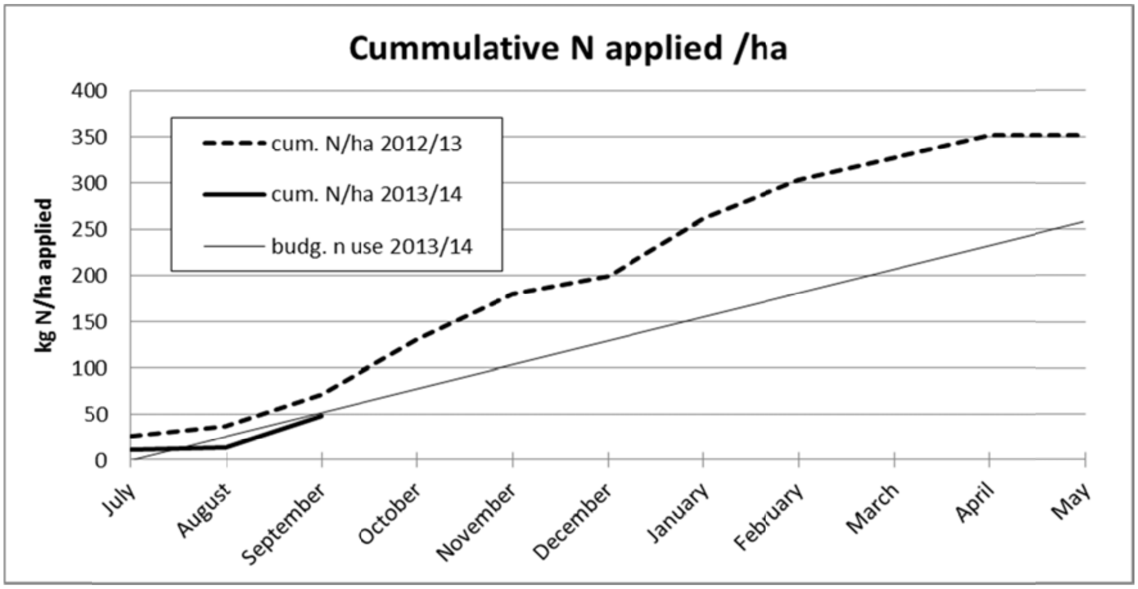
Round length had to speed up considerably in mid-August as we worked to control some high covers and also to prevent soil damage on the South Block.



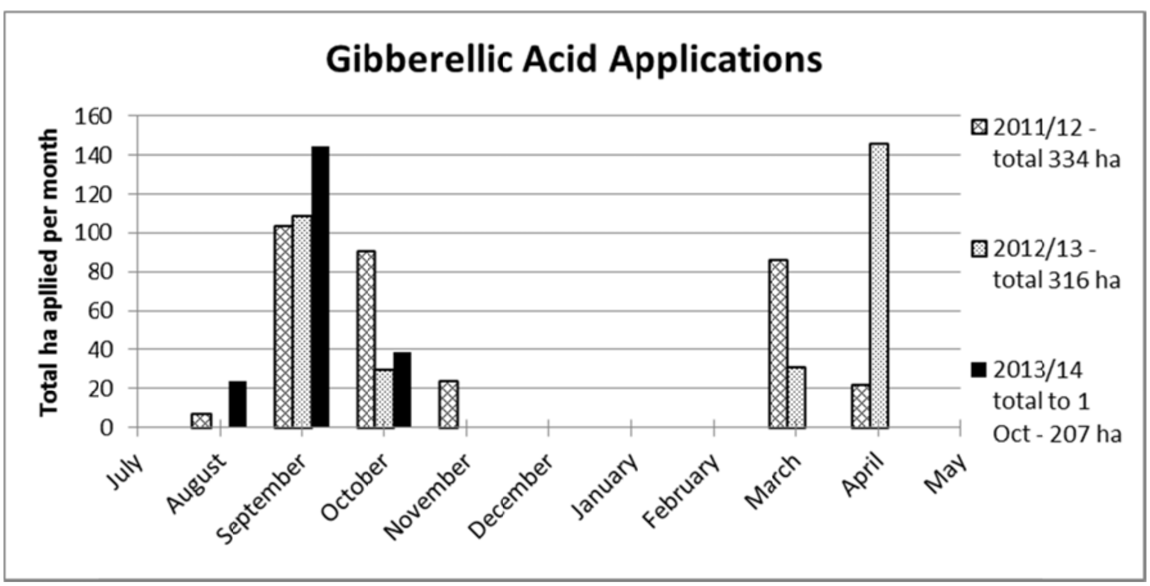
Nitrogen and Gibberellic Acid use to date

There have been times when it may have been useful to have had more Nitrogen fertiliser in the system this season. But we are sticking to a programme of steady application and an annual average total of 260 kg N (fertiliser) per hectare. Overseer estimates this will assist keeping N loss to water at or below 30 kg N leached per hectare.

Total N use to date is 2/3 of the amount used to the same time last season. The trend line in the chart below shows roughly what will happen for the rest of the season. We intend to continue applying N at each grazing, right through the season, (making about the same number of applications), but the rate of each application is capped at 25 kg N/ha, rather than a rate which varied from 25 - 40 kg N in past seasons.

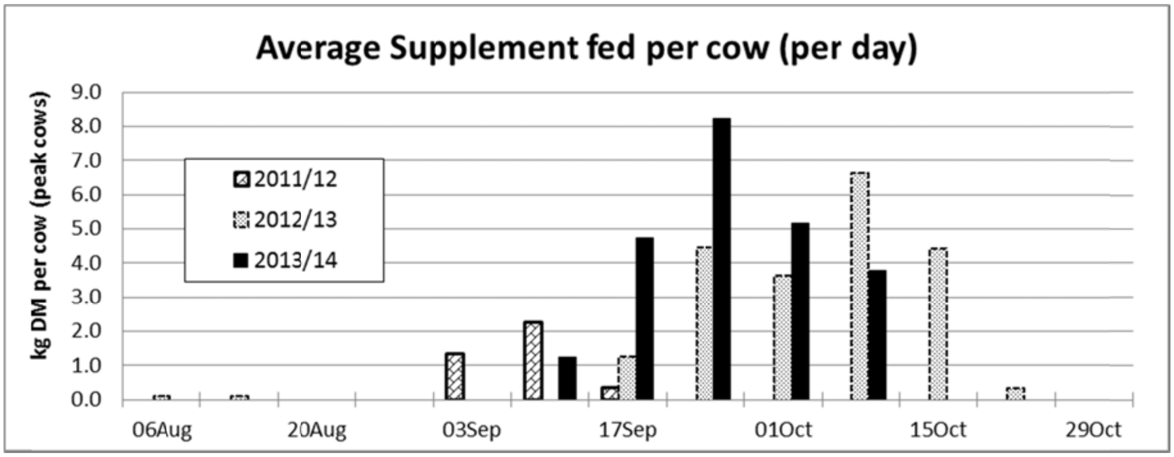


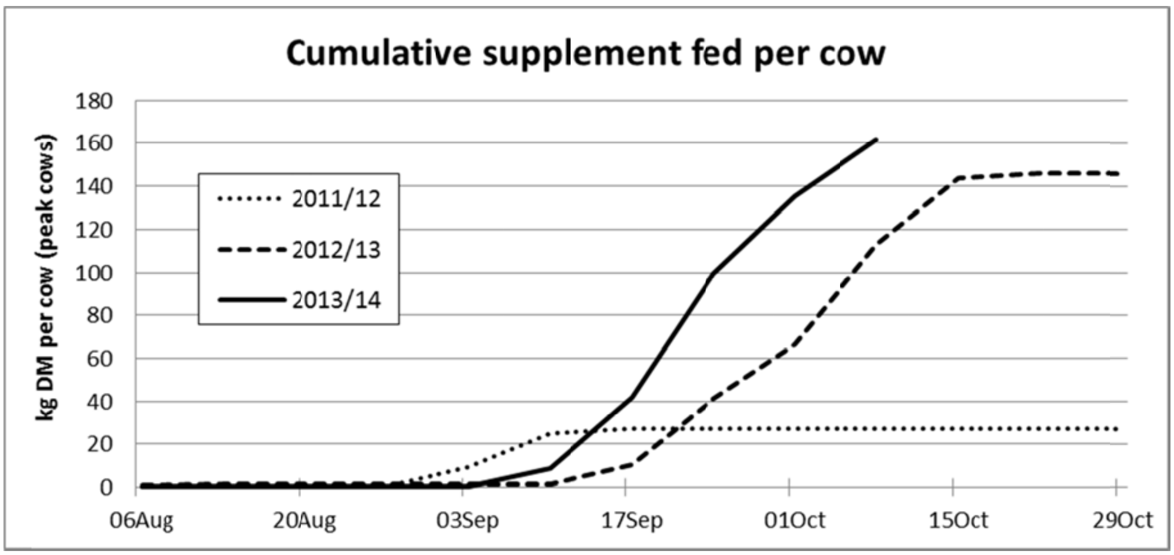
GA use this season is slightly ahead of previous years. It is used in conjunction with applied N.



Supplement use to date

Once again a cool September (perhaps also influenced by lower N use) has influenced supplement use, resulting in more total supplement use to date. All supplement has been grass or Lucerne balage with good utilisation of this feed.

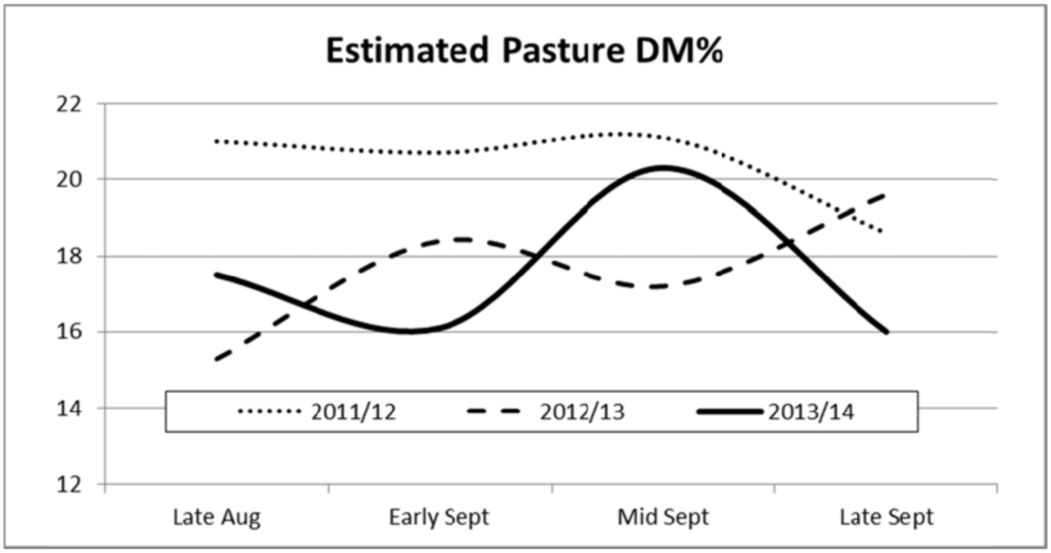




Mowing

We mowed 10 ha in the week ending 27th of August. At the time we had a large feed surplus and APC was well above target. We considered it a safer option to feed this directly to cows rather than taking it as silage. This also enabled us to get a really tidy surface for undersowing of paddock N5.

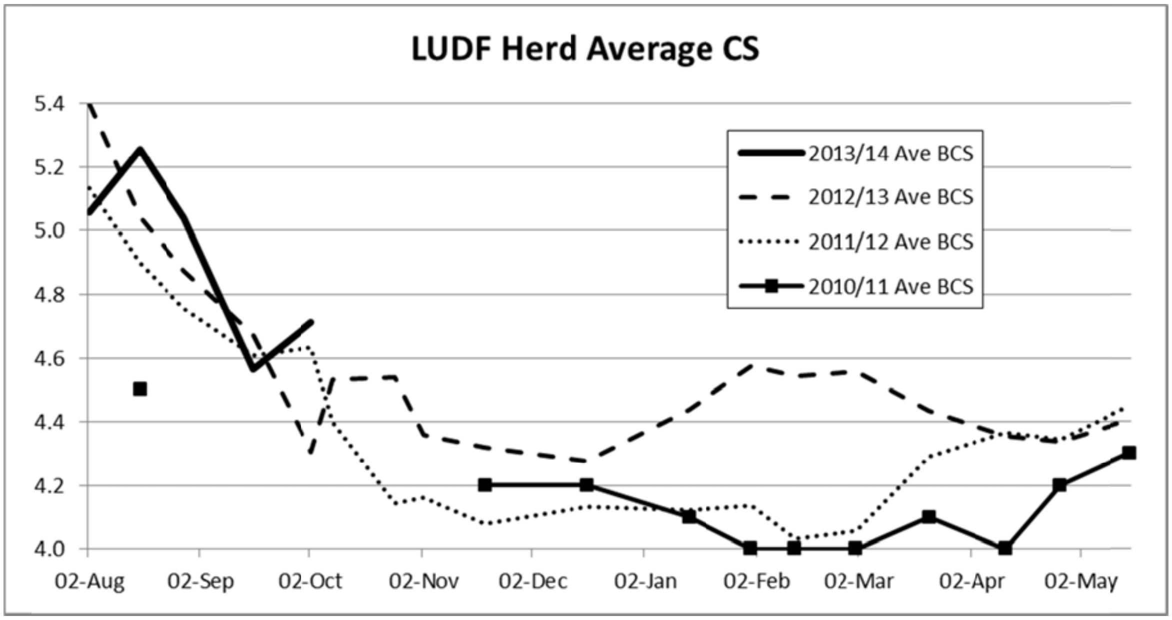
Pasture Quality

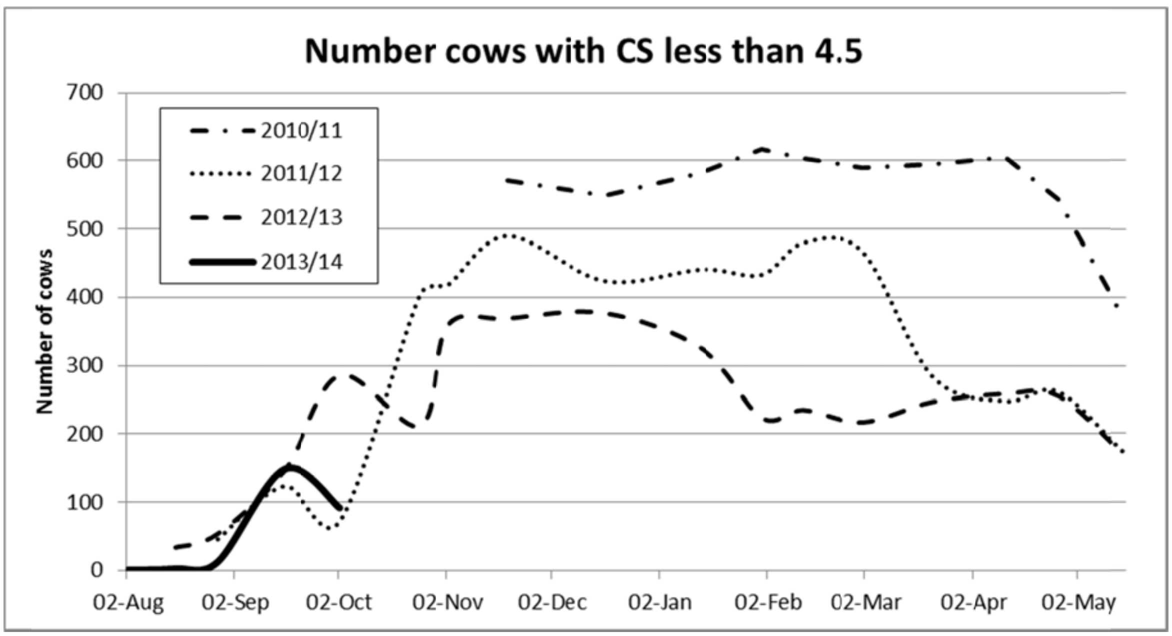


Note: Pasture samples this spring have not been able to be analysed consistently at the same lab, or immediately following sampling raising some questions as to the validity of this data.

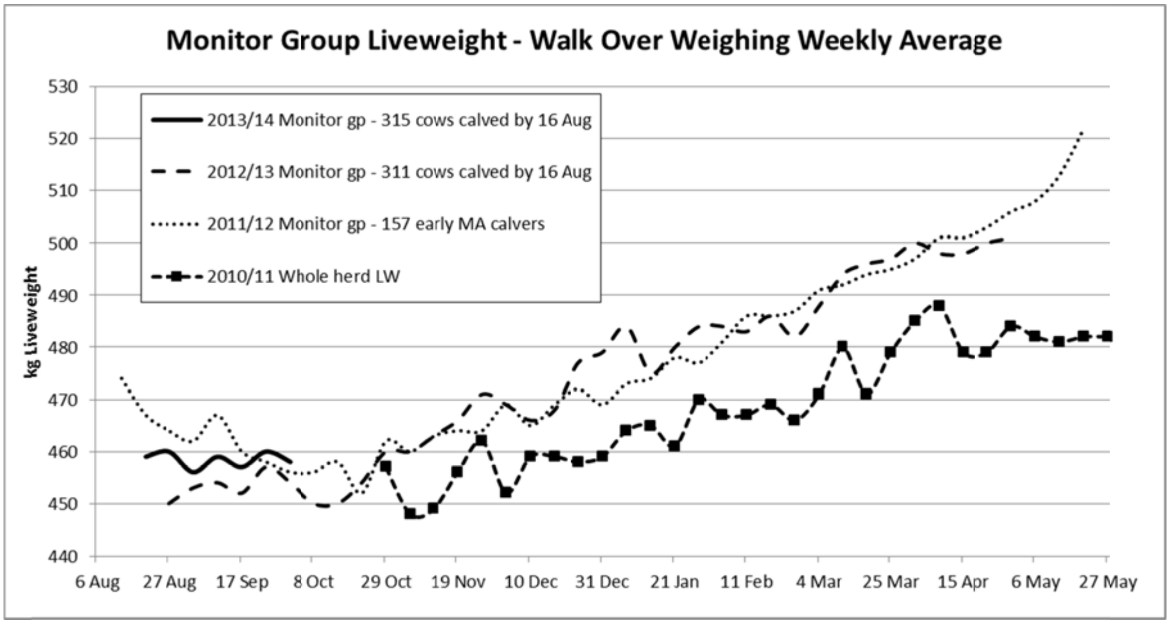
Regrassing

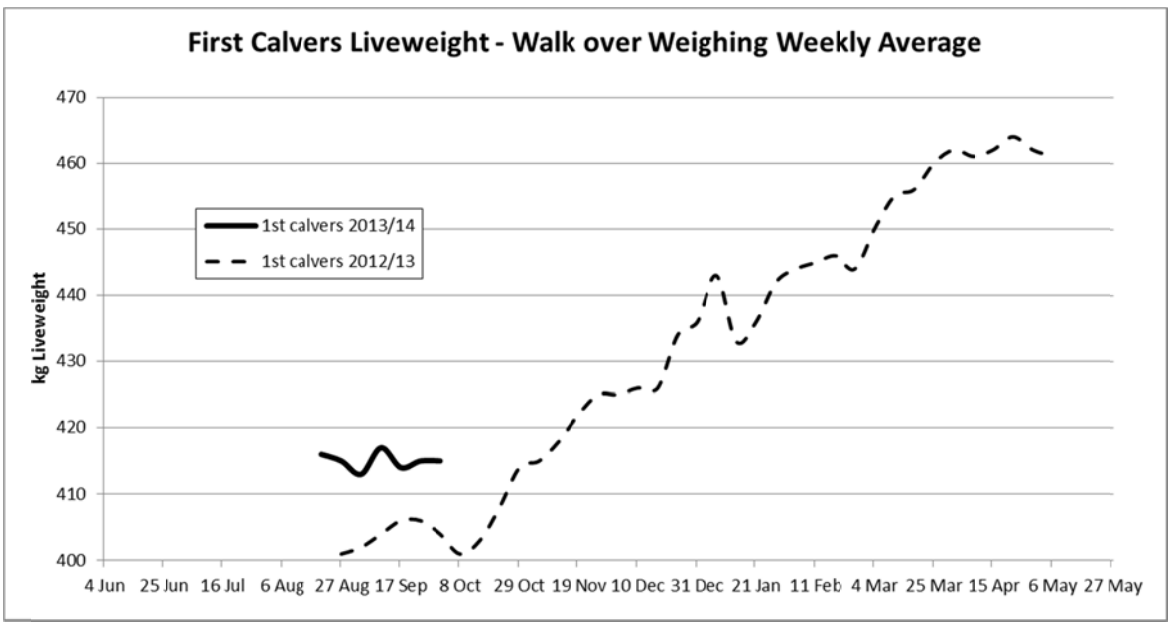
LUDF is continuing to regrass 3 paddocks (15% of the milking platform) this season. Annual grazing days plus the weekly farm walk data, and the desire to continue adding chicory and plantain to the sward for the estimated environmental benefits provides sufficient evidence the gains from this level of regrassing will provide a timely payback. The first paddock (N9, - one of the original Bronsyn / Impact paddocks) has been sprayed and cultivation started. Weather permitting this paddock will be planted on 11 October.

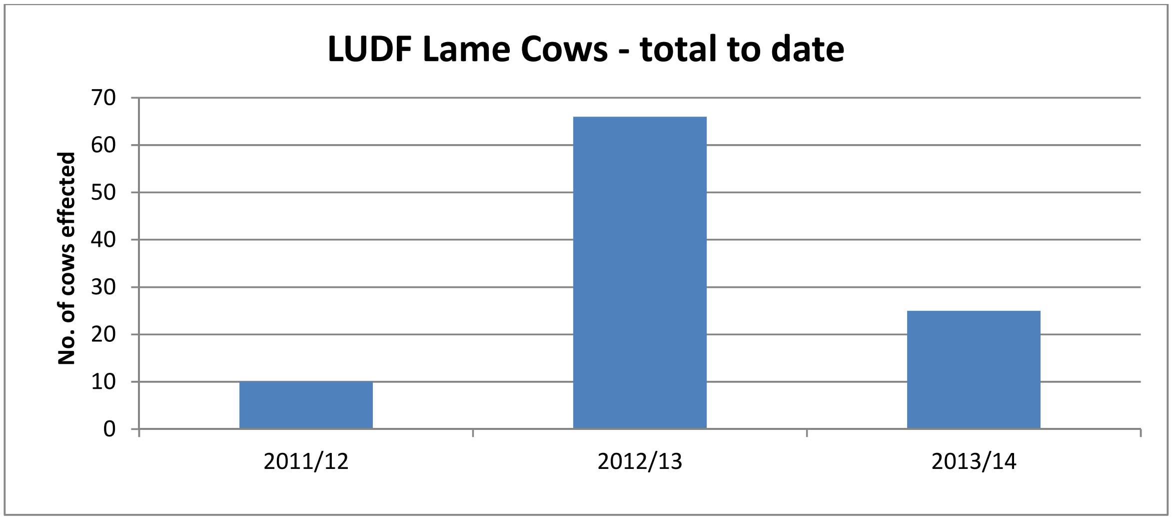


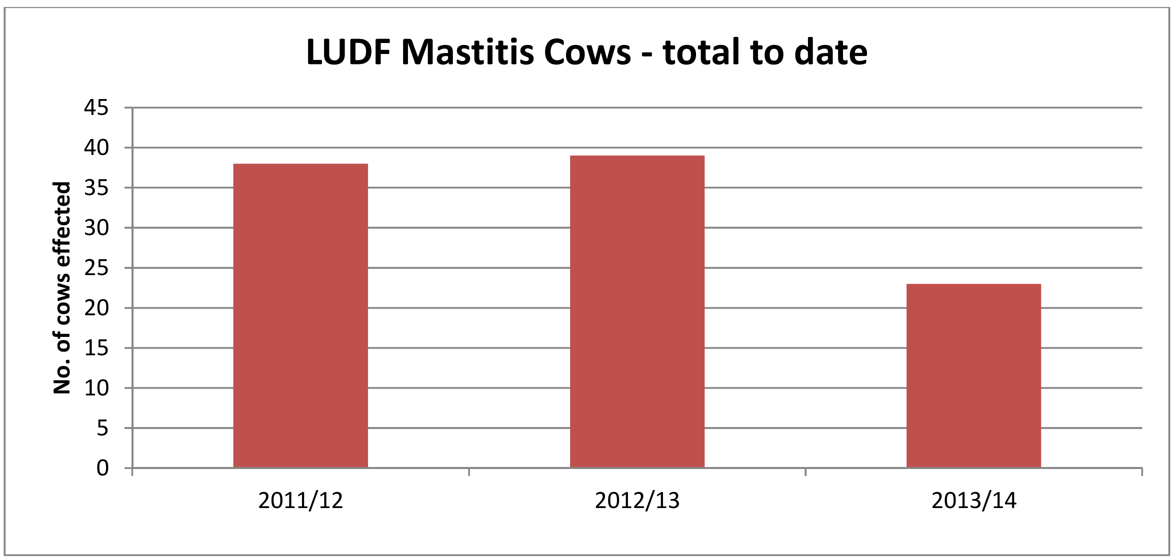


Note: Condition Scoring dates in past years don't necessarily line up exactly with the current year, therefore year to year comparisons are approximate. CS is in ½ score increments. Total herd in 2010/11 was 669 cows vs. 632 in 2011/12 and 630 in 2012/13.


Monitor Group Liveweight - Walk Over Weighing Weekly Average
kg Liveweight
2013/14 Monitor gp - 315 cows calved by 16 Aug
2012/13 Monitor gp - 311 cows calved by 16 Aug
2011/12 Monitor gp - 157 early MA calvers
2010/11 Whole herd LW
530
520
510
500
490
480
470
460
450
440
6 Aug
27 Aug
17 Sep
8 Oct
29 Oct
19 Nov
10 Dec
31 Dec
21 Jan
11 Feb
4 Mar
25 Mar
15 Apr
6 May
27 May


First Calvers Liveweight - Walk over Weighing Weekly Average
kg Liveweight
1st calvers 2013/14
1st calvers 2012/13
470
460
450
440
430
420
410
400
4 Jun
25 Jun
16 Jul
6 Aug
27 Aug
17 Sep
8 Oct
29 Oct
19 Nov
10 Dec
31 Dec
21 Jan
11 Feb
4 Mar
25 Mar
15 Apr
6 May
27 May


LUDF Lame Cows - total to date
No. of cows effected
70
60
50
40
30
20
10
0
2011/12
2012/13
2013/14

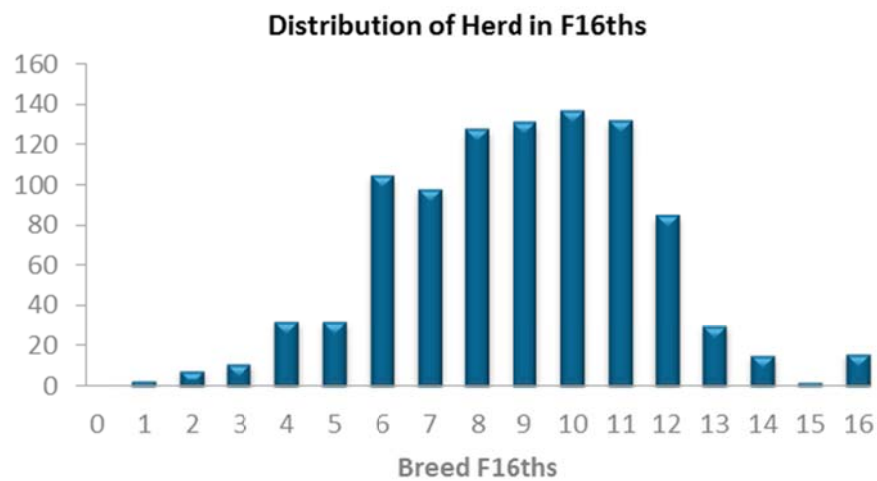

LUDF Mastitis Cows - total to date
No. of cows effected
45
40
35
30
25
20
15
10
5
0
2011/12
2012/13
2013/14

Mating Plan – Spring 2013

The following table was extracted from last season's herd test records for cows born 2005 through to 2009 and shows the effect of cross breeding on average BW/PW/LW and milk production measured during last season's herd testing.

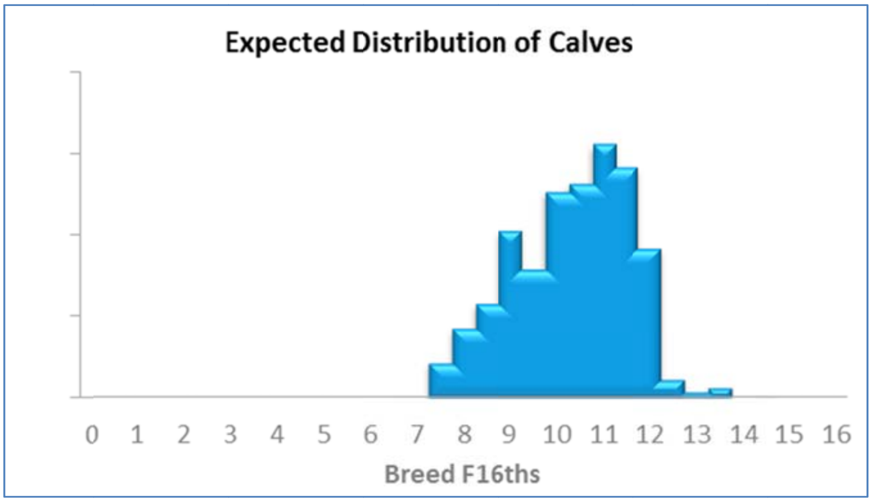
Friesian Content	Number	BW	PW	LW	Ave kg MS/Day	BV Liveweight
F0 - F4	43	114	124	127	1.93	-28.7
F5 - F8	172	107	151	154	2.03	-10.7
F9 - F12	131	121	159	163	2.04	+5.4
F13 - F16	17	116	159	141	2.10	+15
F7 - F9	111	110	162	166	2.05	-7

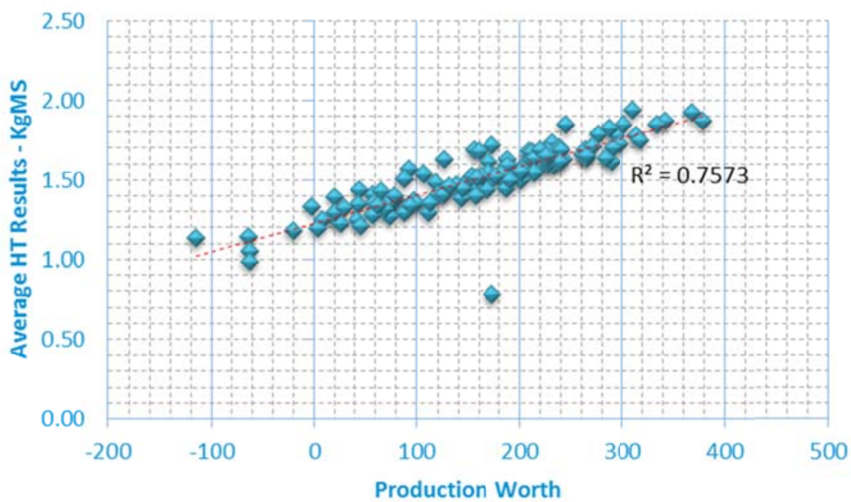
The intention is to primarily breed a herd in the F8 to F12 range, recognising that a crossbreeding programme has been working well for LUDF, as evidenced by the current herd efficiency.



The breeding programme for the LUDF herd this spring is likely to include a mix of KX and HF Premier Sires Forward Pack bulls. Yearlings are to be mated with the KX Premier Sires Daughter Proven Team.

Based on analysis of the breed composition of the herd, and expected BW gain, all cows with breed composition of J16 to F8/ J8 will be mated to HF Premier Sires Forward Pack, while all cows from F9/J7 to F16 will be mated to KX premier sires forward pack. A small amount (50 straws) of a nominated bull may also be used. For the MA cows, this will require approx. 43% as HF Forward Pack and 57% KX forward pack.
Based on these plans, the BW distribution of the calves is expected to be as follow:

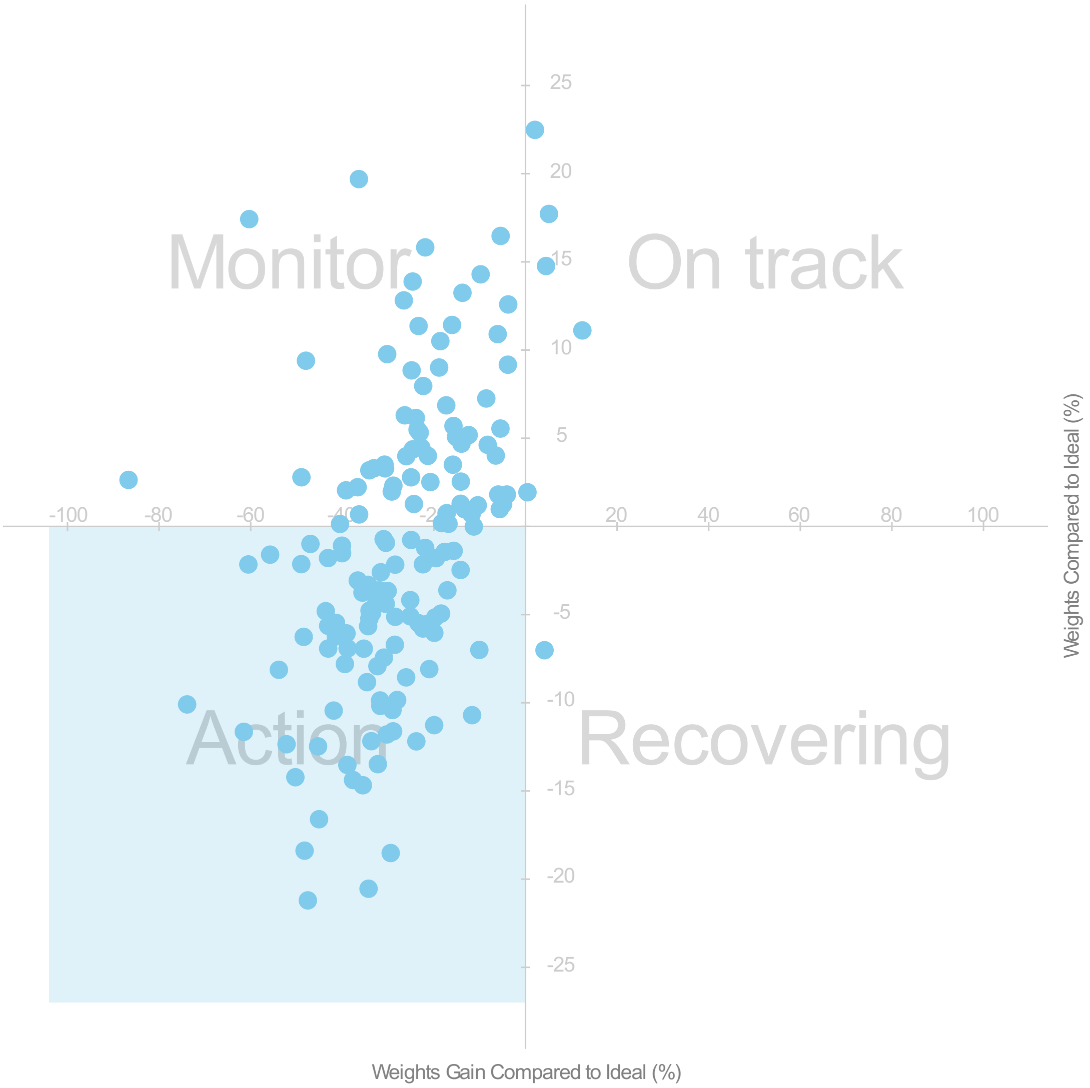

Expected Distribution of Calves
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Breed F16ths


Average HT Results - KgMS
2.50
2.00
1.50
1.00
0.50
0.00
R² = 0.7573
-200 -100 0 100 200 300 400 500
Production Worth

2012 Spring as at 9/09/2013

Animal performance

All 155 animals in this weighing are displayed



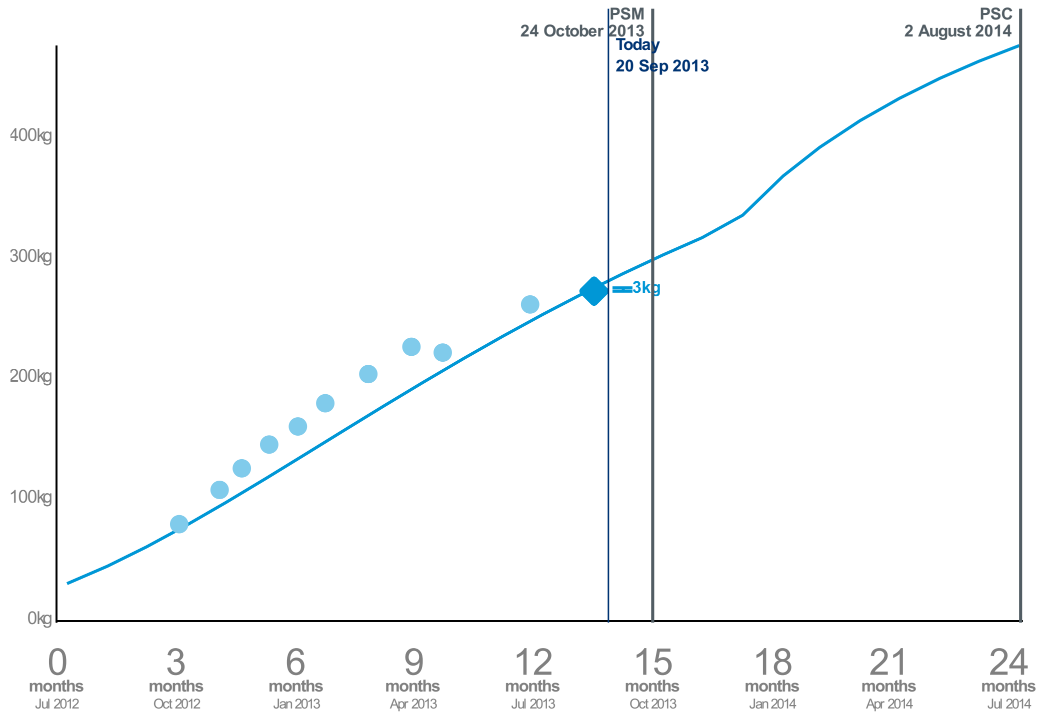
Take action with these animals

Official Id	AE Breed	Current Weight (Kg)	Weight Gain (Kg/day)	Gain Required by PSM (Kg/day)	Variation from Ideal (%)	Previous Category
BQCY-12-10	HF x J	275	0.04	0.59	-1.09	On Track
BQCY-12-102	HF x J	259	0.16	0.81	-4.90	Monitor
BQCY-12-105	HF x J	252	-0.04	0.88	-6.26	Monitor
BQCY-12-110	HF x J	262	0.39	0.73	-3.62	Action
BQCY-12-115	HF x J	258	0.10	1.21	-10.44	Action
BQCY-12-118	HF x J	266	0.10	0.92	-6.07	On Track
BQCY-12-120	HF x J	251	0.24	0.91	-6.71	Recovering
BQCY-12-126	HF x J	262	0.16	0.87	-5.66	Monitor

Overview of 2012 Spring as at 9/09/2013

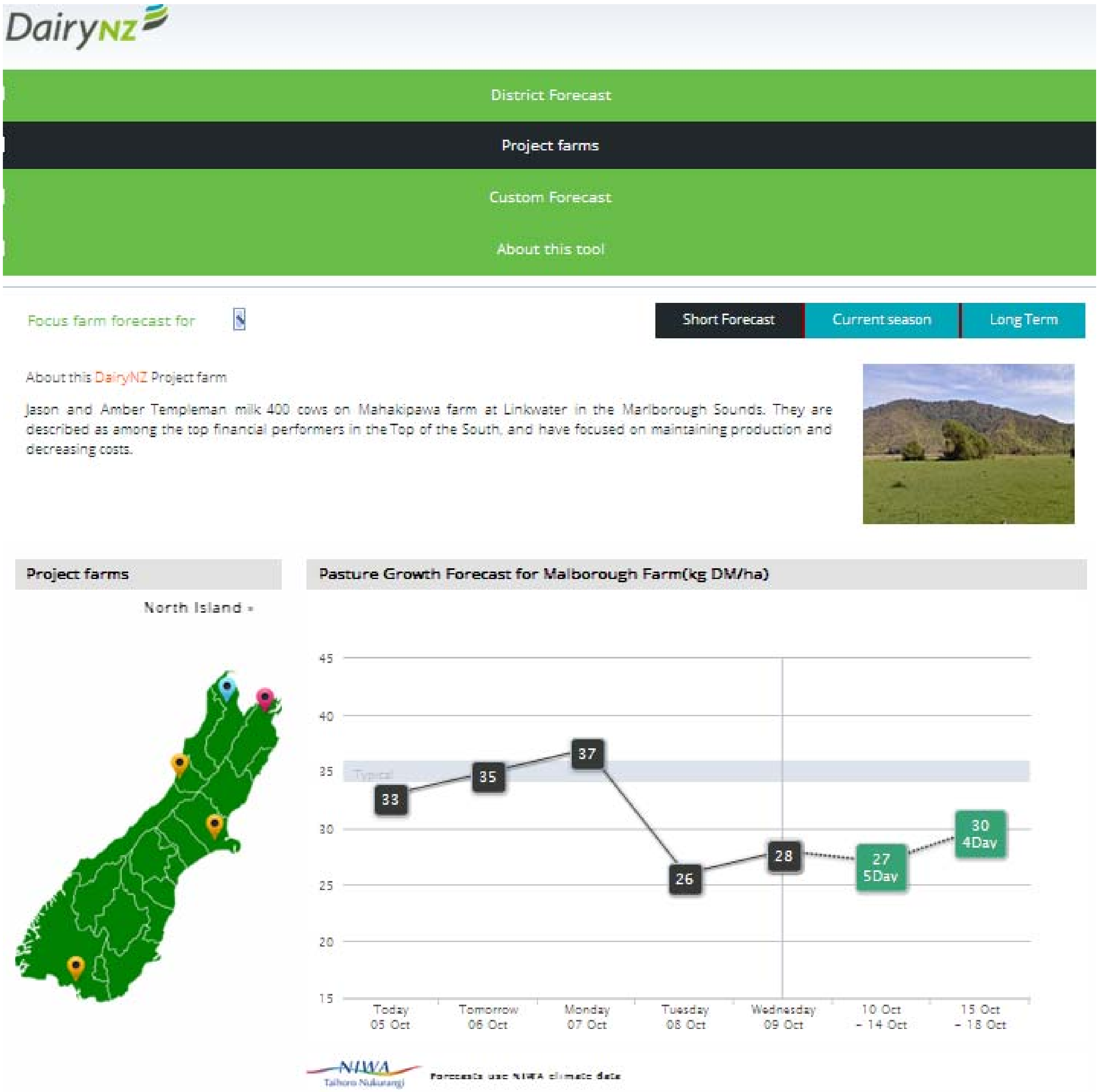
Young stock trend

All 155 animals in this weighing are displayed



Pasture Growth Forecaster

This is a new service which will go online soon. Validation is nearly complete, so watch out for this.



Milk Urea (MU)

Milk supply information now includes milk urea (MU) results, reported as the 3 day average (on Fencepost). What do the numbers mean?

It's important to remember that these reported MU values are on a milk urea (not milk urea nitrogen or MUN) basis. We must be careful when comparing reference values regarding either MUN or MU as many references here and overseas often don't adequately define if results are MU or MUN. To convert MU values to MUN, multiply MU x 0.47. To convert MUN values to MU, multiply MUN x 2.14.

Fonterra, Westland and Open Country Dairies all report their milk urea data as milk urea (MU) NOT milk urea nitrogen (MUN).

A recent paper (Garcia-Muniz et al, 2013) recommends that for NZ pasture-fed cattle, we should use a reference range of 21 - 34 mg MU / dL of milk (equivalent to MUN of 10 – 16 mg MUN / dL of milk).

Low MU: MU values less than 21 mg/dL suggest that protein intake by cows *may* be too low to meet the needs of milking cows, however some overseas studies suggest that MU is normally low in early lactation cows. Interpretation of low MU must be used as an ***indicator*** for possible dietary protein limitations and not used to diagnose protein deficiency. If MU is lower than 21mg/dL, review the total dietary intake per cow per day as pasture and supplements, consult with an experienced nutritionist if needed.

High MU: This is more commonly seen than low MU and is highly suggestive of a high intake of dietary protein – particularly if the dietary protein is highly rumen degradable, causing high levels of rumen and blood ammonia.

High MU concentrations have received much attention internationally because of possible negative associations with both reproductive performance and milk yield. Further, with our increasing focus on urinary N losses and the strong positive association between concentrations of MU and urinary N, MU may well become of greater interest in the future.

Reproduction and MU concentration: Overseas, this relationship has been reported by some but not all researchers. Here in NZ, it's unlikely that a high MU concentration means that your herd is at risk of reproductive failure. It appears that NZ cows are reasonably tolerant of high intakes of dietary protein and the resulting high MU concentration. Tolerance may reflect adaptation by cows to high concentrations of protein at the level of the rumen and/ or as a result of liver adaptation. If you are feeding your cows well and they are gaining weight as mating approaches, you should not be too concerned by the MU content of your milk.

Milk production and MU concentration: Recent NZ work suggests that herds that yield higher concentrations of MU may also produce milk that contains lower % of milk fat, milk protein, milk lactose and total milksolids – however these outcomes are not consistently supported by findings from around the world. See below for LUDF graphs of production vs MU.

For LUDF, as a predominantly pasture and pasture silage-based farm, how should we be interpreting these MU figures?

- Season to date, the milk urea content of LUDF milk has ranged from a lesser value of around 16-17 mg MU /dL during the first two weeks of September to a more recent high of 40 mg MU /dL during late September. The ideal range is between 21-34 mg MU / dL.
- Unfortunately due to laboratory access issues we have yet to generate pasture analysis results for the season to date – therefore it's challenging to objectively look for any direct correlations between pasture protein intakes and MU content. This is something we may do in the future.

LUDF will continue to monitor and interpret the MU values for the farm. However, given the current pasture and pasture (or lucerne) silage nature of the LUDF system, and the absence of compelling, strong correlations between high MU and cow reproduction or MS yield under NZ conditions, we will not be making short term changes to management practices as a result of MU figures. With our on-going focus on and commitment to environmental N monitoring we will continue to include MU as part of our monitoring process.

Milk urea and management options for LUDF and other predominantly pasture-based farms

Where possible we will consider any options to modify our MU profile but acknowledge for the current LUDF system that options are relatively limited at this point in time.

Nitrogen fertiliser

We acknowledge that MU is associated with pasture crude protein content and in turn that fertiliser N use lifts pasture crude protein. Fertiliser N use is a highly profitably tool to lift pasture production in a highly cost effective manner. We believe that feeding cows on N-boosted, high crude protein pasture is for now a more important priority to both drive MS production as well as keeping down cost of production. Note however that the use of N fertiliser this year is restricted to 25kgN/ha/application.

Pasture species and cultivars

There is some evidence that when the ratio of water soluble carbohydrate (WSC) to protein increases in pasture, that urinary N and MU levels can potentially be reduced. Ryegrasses that contain more WSC may be of interest in the future however decisions with regard to ryegrass selection should be made first on the basis of appropriateness for the farm and farm system, endophyte type, heading date and yield and persistence potential well before any claims for higher contents of WSC.

Herbs – Chicory and Plantain

At LUDF we are continuing to explore the fit for chicory and plantain within mixed pastures. With quite different ruminal protein characteristics and levels of WSC and pectins, these herbs may well offer pasture-based ways to reduce both urinary N losses and MU concentration for pasture-fed herds in the future.

Silage choices

Currently we are focusing on use of pasture and lucerne baleage as supplements of choice. Both supplements contain higher levels of protein than for example, maize silage which contains only 7-9% crude protein. Maize feeding will typically lower MU concentration, however at our current stocking rate and lack of feeding facilities maize silage does not fit as easily as grass or lucerne baleage which are both easy to stop and start feeding at short notice.

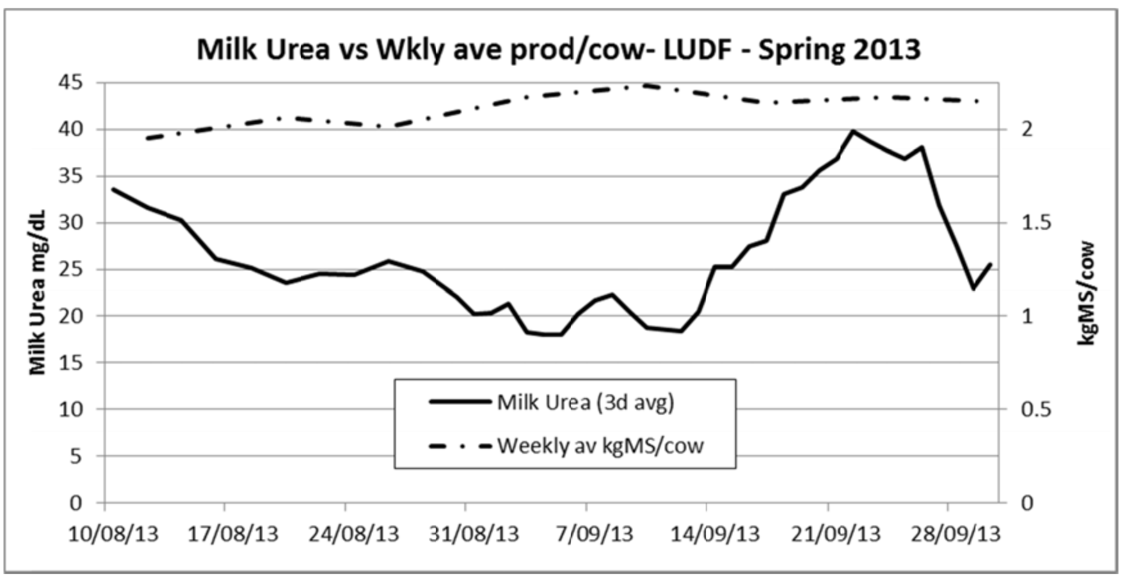
Cereal grains and molasses

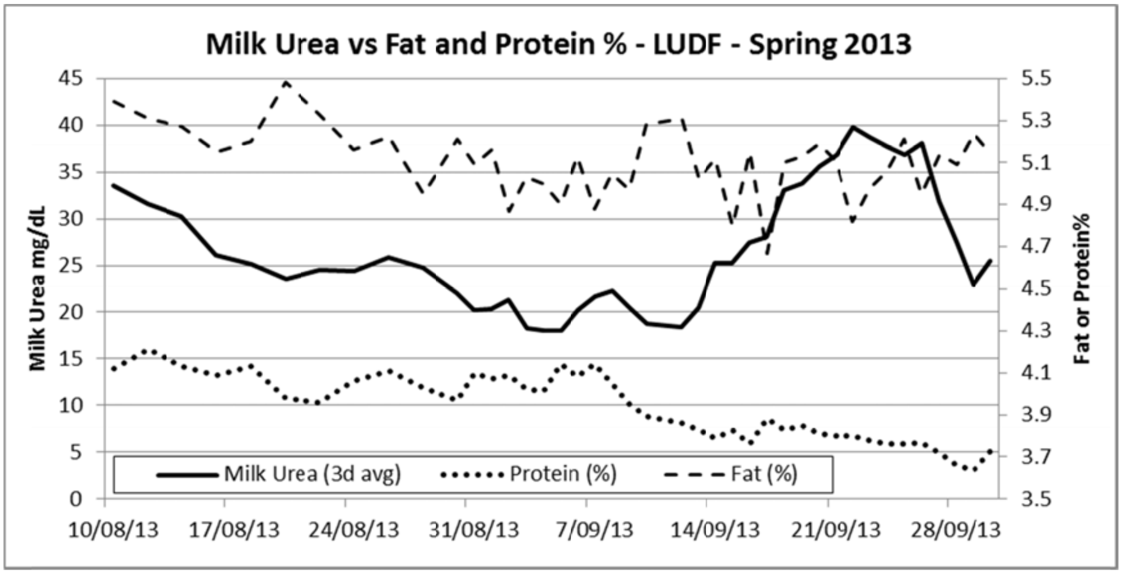
Again, these low protein feeds can dilute down total protein intake and therefore potentially reduce MU and urinary N concentrations however grain and molasses feeding are not featuring as an option at this point in time.

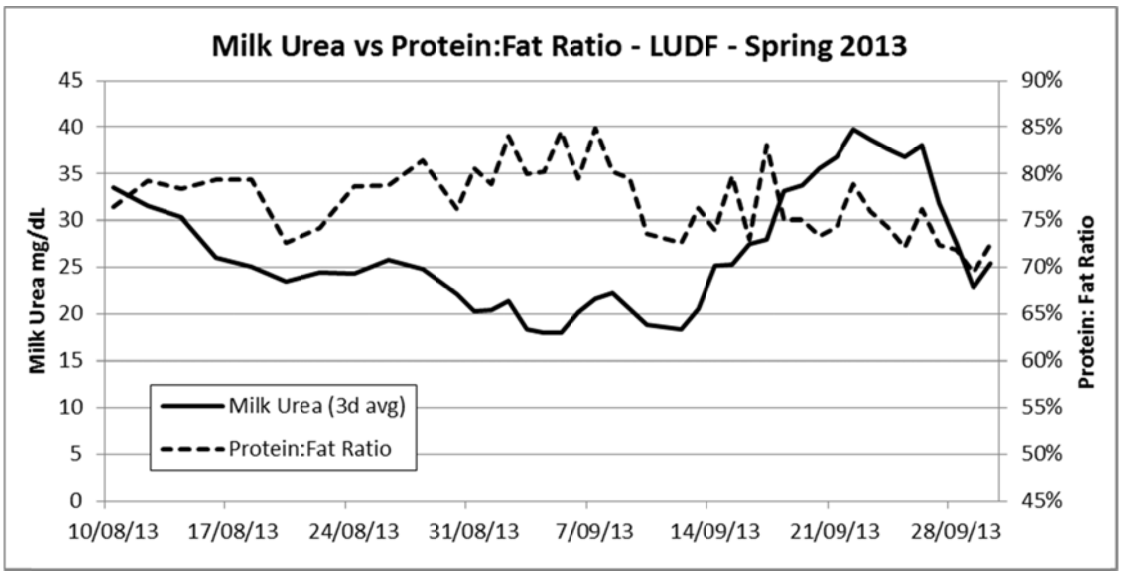
Relevance of the LUDF milk urea figures to *your* farm

- Tempting as it may be to compare MU values between different farms, there is a very wide range of values both within the same farm and between farms. It's best to focus your interpretation of MU values on your own farm and look for change within a season, or between years. Many factors including pasture management, supplementary feeds, stage of lactation and parity (age) makeup of the herd can influence MU values – between farm comparisons will reflect all of these factors, not just the nutritional management of different herds on different farms.

LUDF Milk Urea Results




Milk Urea vs Fat and Protein % - LUDF - Spring 2013
Milk Urea mg/dL
Fat or Protein%
0
5
10
15
20
25
30
35
40
45
3.5
3.7
3.9
4.1
4.3
4.5
4.7
4.9
5.1
5.3
5.5
10/08/13
17/08/13
24/08/13
31/08/13
7/09/13
14/09/13
21/09/13
28/09/13
Milk Urea (3d avg)
Protein (%)
Fat (%)


Milk Urea vs Protein:Fat Ratio - LUDF - Spring 2013
Milk Urea mg/dL
Protein: Fat Ratio
0
5
10
15
20
25
30
35
40
45
45%
50%
55%
60%
65%
70%
75%
80%
85%
90%
10/08/13
17/08/13
24/08/13
31/08/13
7/09/13
14/09/13
21/09/13
28/09/13
Milk Urea (3d avg)
Protein:Fat Ratio

Development of an alternative cattle synchronisation protocol using equine chorionic gonadotropin (eCG).

A number of treatment protocols for oestrus synchronisation have been developed and used worldwide. The Ovsynch (also called GPG) protocol is the most commonly used in New Zealand, especially for the treatment of anoestrous dairy cows. It consists of an injection of GnRH (a hormone given to synchronise ovarian follicle growth), followed by prostaglandin F2α (PG; to induce oestrus) 7 days later, and a second dose of GnRH (to induce ovulation for blanket breeding/time artificial insemination) that is given 2-3 days after prostaglandin. In general, an intravaginal hormone-releasing device (e.g. CIDR) is inserted between the first GnRH dose and prostaglandin which results in higher fertility. More recently, it has been found that the addition of an injection of equine chorionic gonadotropin (eCG) at the time of prostaglandin injection increased pregnancy rates in anoestrous dairy cows. As its name suggests, eCG comes from the mare's placenta and has a stimulatory effect on ovarian follicles in cattle.

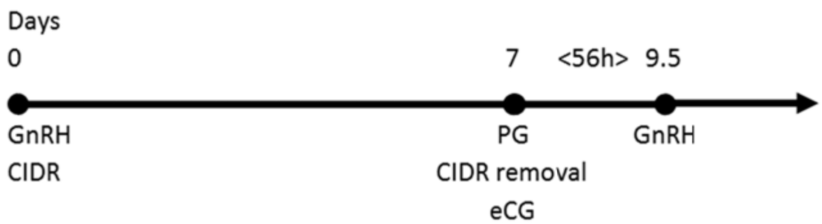


Figure 1. Currently used cattle synchronisation protocol.

We have recently developed a modified synchronisation protocol which can be used to induce synchronous ovulations, depending on the dose of eCG given. In this treatment protocol, eCG is administered earlier than in other protocols to stimulate ovarian follicles from the early stages of development.

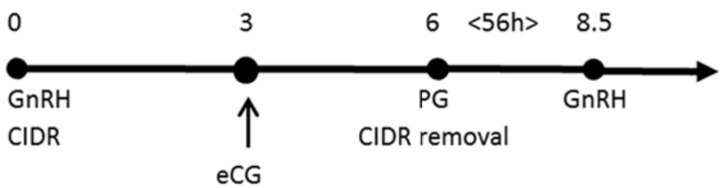


Figure 2. Shortened cattle synchronisation protocol.

This alternative protocol, that can be adapted for fixed-timed artificial insemination (blanket breeding) or bull breeding, has resulted in improved pregnancy (in-calf) rates in preliminary trials in beef cattle. We predict that it would have a similar effect in anoestrous dairy cows; therefore, our next plans are to assess its efficacy in dairy cattle.

Pasture Yield Mapping

Samuel Dennis, AgResearch. samuel.dennis@agresesearch.co.nz

Project funded by MPI (SFF), DairyNZ and Ravensdown.

Many things that will affect pasture growth can vary across a farm, and even within the one paddock, for instance:

- Soil type. Soil depth can vary greatly even within a few metres.
- Irrigation. Different parts of the same irrigator can apply water at different depths and intensities, and more than one irrigator can be present within a paddock.
- Nutrient input – effluent application, nutrient transfer by animals through dung & urine, fertiliser spreading issues, supplementary feeding.
- Soil compaction, pugging, pasture damage, pasture species – and many other factors.

However we generally treat paddocks as a single unit. Fertiliser is applied evenly to the entire paddock. Pasture production is measured by walking a single line with a plate meter.

Arable farmers have been mapping crop yields for a few years now, and using this information to tailor inputs to different parts of a paddock to maximise profitability. Areas that are not producing well can be either corrected, or have inputs reduced so they no longer cost the farmer money.

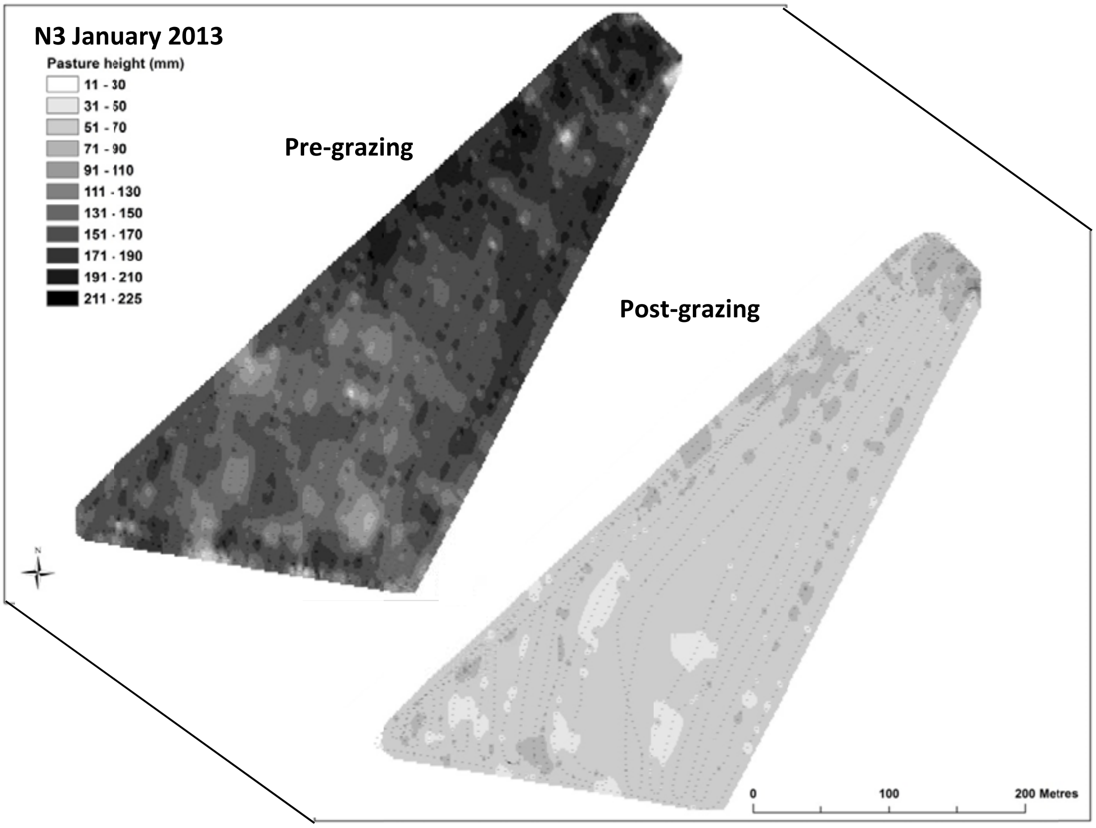
We can now map pasture yields also (C-Dax pasture meter). However, unlike a crop, a pasture is harvested many times in the year, so we cannot practically directly measure the difference in total pasture production unless we map yields before every single grazing – which is impractical. If we do determine total yields, we have no established methods of using this information.

This project is mapping pastures on LUDF and on a number of other farms, to determine:

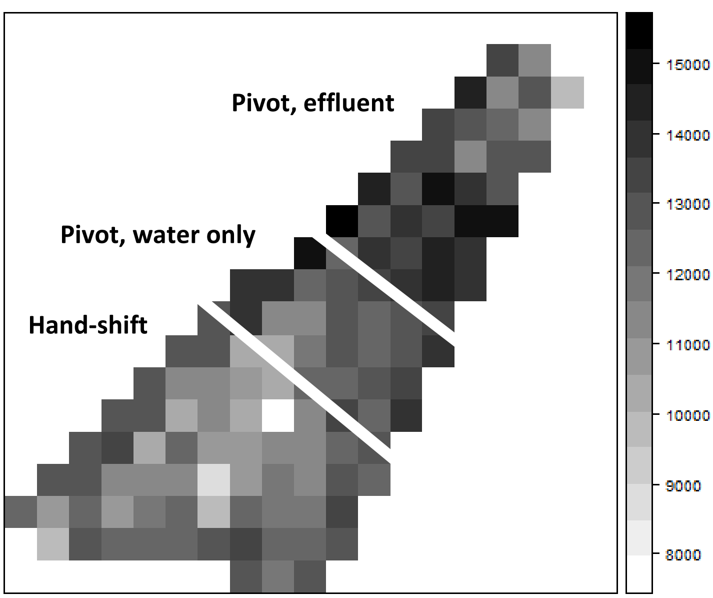
- What differences in within-paddock pasture yield are present on dairy farms.
  - We are seeing substantial differences in yield on every farm, including LUDF.
- The main causes of the yield variation that we measure.
  - The largest variation in yield appears to be driven by water supply to plants, ie differences in soil depth / WHC or irrigation. In addition, specific paddocks show variation that may be due to fertility (particularly from effluent), compaction, and other factors.
- How we can estimate annual pasture yield from a small, practical number of yield maps taken at strategic times of the year, so farmers can actually use this technology.
  - 6 paddocks at LUDF are mapped every grazing, to allow actual annual yield to be calculated, and allow methods involving fewer maps to be developed.
- How we can use this information to inform:
  - Annual fertiliser applications (particularly P).
  - Nitrogen fertiliser applications.
  - Other farm management – irrigation, representative transects, pasture renewal...

This project has already caused LUDF management to consider whether their farm walk transects are representative, an immediate benefit from the project, along with improving irrigation distribution (VRI).

LUDF mapping: Map pre- and post- grazing, every grazing, for example:



Subtract post-grazing map from pre-grazing map to map pasture intake. Sum to obtain total pasture intake over recording period. Below map presents total pasture intake measured on N3 from September 2012 to date (kgDM/ha), note that this is lower than total annual yield as measured by the farm due to a few grazings not being mapped.



Note on this paddock:

Highest yield from effluent area
Lowest yield from hand-shift sprinklers
Moderate yield from pivot applying water only.
Soil WHC differences also (not clear in this map)

Consider:
Plate meter transect?
Differing fertiliser requirements?
Irrigation improvements?

Performance of New Dairy Pastures in Canterbury

Tom Fraser, AgResearch. tom.fraser@agresearch.co.nz
Funded by New Zealand dairy farmers through DairyNZ

It is common practice to renew old and "run-out" pastures that are not performing. Renewing pasture is costly so it is critical that the regrassing pays off.

This trial on ten irrigated dairy farms from North Canterbury to North Otago was initiated to determine the value of regrassing on long term production and persistence of the new pastures. A pasture, deemed as run out by the farmer, was subdivided and one half was renewed to a novel endophyte ryegrass pasture while the remainder of the paddock remained in the old pasture. The new pasture was compared with the original and another, considered by the farmer to be high performing, pasture on the same farm. Pasture composition, production, and quality and pasture pests and endophyte infection have been monitored for two years.

Herbage production is presented for the first 3 years with quality and determination of wild/novel endophyte. When averaged across all ten farms, the 'control', 'new' and 'good' paddocks have all averaged 50 tDM/ha to date. Sown endophyte levels have remained high in the majority of new paddocks. Clover root weevil (CRW) are now present on all ten farms, and are at high levels (>200/m^2) in some paddocks.

Production from the new pastures equalled the total DM production from old pastures within 10 months of sowing. However, three years following pasture renewal, there has been no production advantage achieved from regrassing a stable old pasture.

Two different types of Perennial ryegrass were used:

•Diploid seed: Samson AR37, Sown at 16kg/ha Ryegrass + 3kg/ha Tribute White clover

•Tetraploid seed: Halo AR37, Sown at 20kg/ha Ryegrass + 3kg/ha Tribute White clover

Four farms were sown with diploid seed from the same seed line and six farms were sown with tetraploid seed from the same seed line. On eight farms the new paddocks were sown during February-March 2010 (autumn sown) and the remaining during September-October 2010 (spring sown).

Management of the paddocks post establishment has been the same for fertiliser applications, grazing management and irrigation applications.

Table 1. Establishment and production of control, new and good paddocks.

	Pasture growth (tDM/ha.)			
Paddock ID	Establishment to Jul 2010	Establishment to Jul 2011	Total from Aug 2010 to Jul 2011	Total From establishment to September 2013
Farms included	Autumn sown	Spring sown	Autumn sown	All farms
Control	4.5^{ab}	15.1^{b}	15.7	48.4
New	3.9^{b}	15.0^{b}	16.3	48.6
Good	5.3^{a}	18.3^{a}	16.4	51.1

Means with superscript letters in common are not significantly different; $P<0.05$.

Table 2. Proportional composition of plant components in the 2010/2011 and 2011/2012 seasons.

	Pasture composition (%)					
	Green Grass Leaf		Legume		Weed	
Paddock ID	2010/2011	2011/2012	2010/2011	2011/2012	2010/2011	2011/2012
Control	82.0	85.6^{ab}	8.9^{a}	5.6^{b}	5.2	5.6^{a}
New	84.9	86.0^{a}	6.4^{b}	6.5^{b}	4.0	2.7^{c}
Good	83.1	83.4^{b}	10.5^{a}	8.4^{a}	3.3	4.2^{b}

Note: Within a column, means with superscript letters in common are not significantly different; $P<0.05$.

Source: A.L.Taylor et al. 2012. Performance of new dairy pastures. NZGA 73:157-162

Note that there is little difference in pasture yield between the “Control” paddocks and the “Good” paddocks. The paddocks selected for renewal by the farmers may not actually have required renewal, and this may contribute to the lack of response to renewal.

Pasture Renewal

Getting a new pasture properly established is a 12 month process and pre-sowing preparation is a critical part. Here's what should you be doing to ensure your pasture renewal plans are on track;

Walk your paddocks

To assess their condition and identify work required before sowing new pasture. Why do you believe this paddock requires renewal? Is the problem actually the pasture, or is there some other underlying problem that will still exist and continue to limit production following renewal? If the paddock is patchy, what is causing the poor areas to be poor? Dig some holes to assess the soil profile in the seed and root zone, and to identify soil borne pests. Seek advice from an experienced advisor, and preferably have them walk paddocks with you.

Soil test

If the paddock has been cropped you should have some good soil test data to work with. Otherwise, soil test the specific paddocks being renewed – do not rely on tests from farm soil tests or transects.

Weed control

Is important to ensure previous pasture, crop and weeds are fully sprayed out. Remember you need 5-10cm actively growing leaf for effective glyphosate absorption and kill - and add a broadleaf spray if required.

Where spray-drilling in situations with hard to kill weeds, or where there are high soil weed seed loadings, consider a double spray with a fallow period

Identify any pests

Talk to your advisor about remedies. If spray-drilling, apply slugbait. And use treated seed

Prepare a good seedbed

Appropriate for the chosen sowing method. Some form of cultivation may be required if conditions in the seed zone are not conducive to a rapid germination and even emergence.

If cultivating, ensure a fine, firm and moist seedbed. Manage trash from the previous crop or pasture – this can harbour pests, lead to uneven sowing or poor seed-to-soil contact.

Discuss all spraying, cultivation and sowing requirements with your **contractor** well in advance of work required.

Seed selection

Correct endophyte is more important than cultivar.
Then decide diploid or tetraploid.
Then cultivar.

The Industrialisation of American Dairying and the Implications for New Zealand

Keith Woodford
Professor of Farm Management and Agribusiness
Lincoln University

10 October 2013

Background

- **The American dairy industry is rapidly transforming to an industrial model based on large scale (>2000 cow) mega farms.**
- As of 2013, approximately 40% of American production comes from 800 mega farms.
- Another 30% comes from a further 2500 farms, each with between 500 and 2,000 cows.
- The final 30% comes from more than 50,000 farms with less than 500 cows
- **The mega farms have costs of production that are much lower than the smaller farms.**
- The last 5 years have been difficult for all American dairy farmers due to high feed prices.
- The tide has now turned and with lower feed prices the mega farms are expanding again.
- America is now the second largest global exporter of dairy products with about 18% of their milk exported.
- **My expectation is that within 5 years the USA will overtake New Zealand as the largest global exporter of dairy products.**

Much of the information that follows was obtained during two weeks of visits to American 'mega farms' undertaken by Marvin Pangborn and myself in June 2013.

The Basics of the System

- The farms are either 'open-lot' containment or 'free-stall' housing. Either way, the cows are ad-lib fed a computer generated total mixed ration (TMR).
- With the open-lot system, cows are kept in feedlot type facilities with some shading. There are inevitable nutrient leaching issues with this system.
- In the free-stall system cows are free to choose their own individual step-up raised stall. When the cow stands to urinate or defecate the waste products land in a lower area which is typically cleaned several times a day either mechanically or by a pulse of water. The bedding stays dry and it is possible to collect all nutrients with this system.
- The Holstein (predominant breed) cows typically produce about 35 litres of milk per day. With three-times-a-day milking and use of BST (bovine somatotropin) this can be further increased.
- Milking parlours are either parallel pits (similar to herringbone systems) or rotaries (known as carousels).
- Milking typically occurs for about 22 hours per day plus 2 hours of cleaning.
- Tankers collect the milk every few hours (milk vats typically are non-refrigerated).
- Cows are washed and dried prior to milking.
- The labour is predominantly Hispanic ethnicity and they work 8 to 12 hour shifts.
- Some farms grow their own forage (about half the diet) but others buy it in.
- Most farms buy the concentrates they need.
- Everything is done according to standard operating procedures (SOPs).

Competitive Advantage of the System

- Very efficient use of capital (e.g. a 72 bale rotary, milking 4500 cows, each of which produces about twice the milk of a typical cow in the NZ system).
- High feed efficiency with most of the feed being used to produce milk rather than just maintain the cow.
- Moderately high labour productivity (litres per labour unit) arising from high production per cow but limited by the need for cow preparation.

Potential Achilles Heels

- Depends on Hispanic workers, many of whom do not have legal status.
- Dependent on bought-in feeds.
- Shortage of water in some regions.

Overall Economics

- Depends very much on feed prices.
- Depends very much on management efficiency. (We saw a great range, from superb to woeful.)
- There are economies of size up to at least 5000 cows, and arguably beyond this scale of operation.
- Given the above caveats, the breakeven point is probably about $US18 per 100lb of milk (about $NZ7 per kg MS) based on 2012/13 grain prices.
- **However, with corn and other grain prices now dropping rapidly the breakeven point will be lower than this; hence the current and expected expansion**.
- The bottom line is that the mega farms can be internationally competitive and they are going to expand.
- The main area of expansion will be the Mid-West States (e.g. Kansas, Iowa, Wisconsin, Minnesota).
- Productivity improvements are on-going.

Challenges for the USA

- The current demand is for whole milk powder but they don't have the right processing plants.
- Environmental regulations.
- A shortage of water in some regions.

Some Lessons for New Zealand

- New Zealand on-farm infrastructure is under-engineered relative to American infrastructure.
- Many dairy farms are moving to Jersey cows based on comprehensive performance data (e.g. whole-of-herd comparisons of a shed of Holsteins versus a shed of Jerseys).
- Individual technologies are not easily transferable to NZ.
- Don't be fooled by the 'tales of woe' in the news media about the small scale American farms. These farms will continue to decline but the overall industry is likely to expand.

Should New Zealand be worried?

- Only if we rest on our laurels.
- We <u>must</u> keep seeking productivity improvements just like the Americans are.
- We must also work harder on consumer brands, particularly for Asia.
- We are lucky that the demand for dairy products in Asia, and particularly China, continues to climb.

- Production in China is at best static and probably in decline as they struggle to transform their own industry.
- **There is room for both New Zealand and the USA in the global marketplace.**
- There will be on-going volatility, and those who make bad decisions will fail, but this is a golden period for dairy.

LUDF Farm Walk Notes

Tuesday 8th October 2013

Critical issues for the short term

1. **Manage feed supply on the platform and respond quickly to changing growth rates.**
2. **Use back-fences on all herds.**
3. **Keeping all cows especially heifers and fresh cows well fed whilst limiting pasture and soil damage.**
4. **Make sure all calved cows are getting enough magnesium chloride (Dosatron).**
5. **Closely observe cows for any signs of mastitis and metabolic conditions.**
6. **Irrigation has been set up and will be test run over the next few days, irrigation is likely to begin shortly**.

Herd Management

1. There are now 394 in the main herd and 222 in the small herd (heifers and a few light condition score cows). This gives a total of 616 cows milking into the vat this morning. plus 8 colostrums and 3 treatment cows.
2. The whole herd has gained 2kg liveweight over the week, the monitor herd is up 1 kg while the first calvers liveweight has been constant for the last 2 weeks.
3. All replacement calves have been de-budded and are now outside.
4. We have had 2 new case of mastitis and 1 new lameness case this week.
5. Average bulk milk SCC is 130
6. Average milk production per cow (all cows milked into the vat) is 2.15kgMS/cow, similar to the last few weeks, while production per hectare (now at 8.14 kg MS/ha) continues to increase with increasing cow numbers.

Growing Conditions

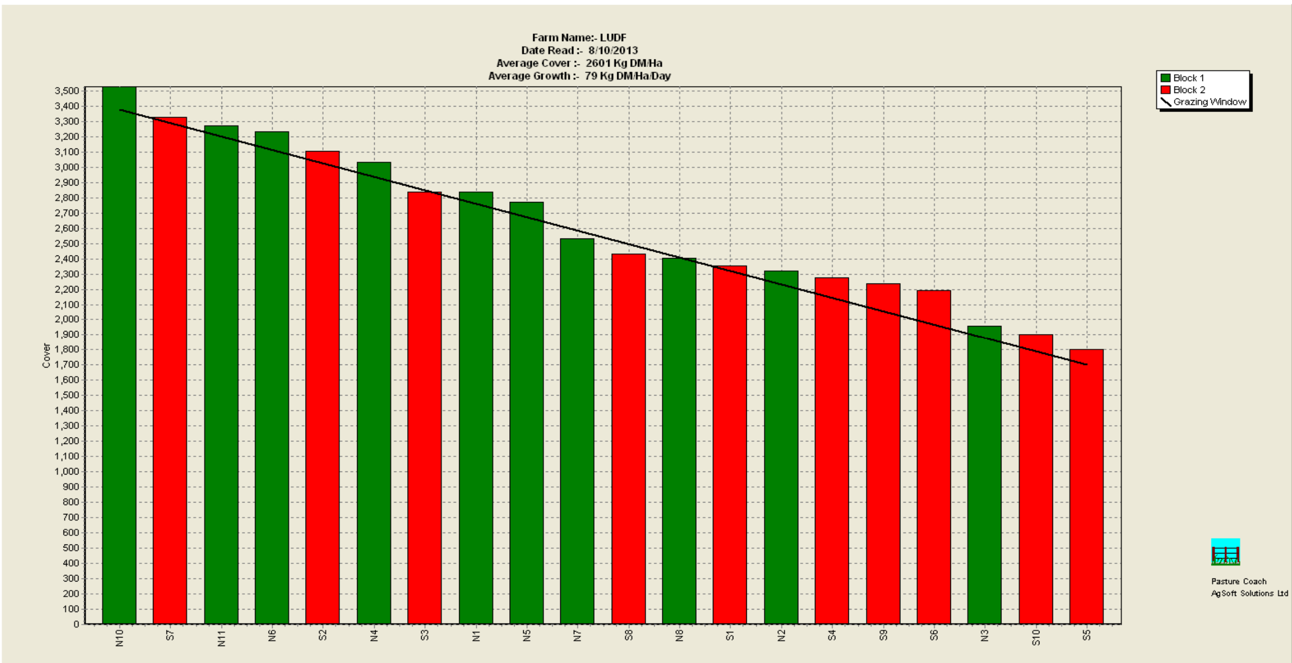
7. Soil temperatures at 9 am have averaged 12 degrees; this is 1.8 degree warmer than last week.
8. We have had no rain this week, but it is started to rain heavy this morning the Aquaflex soil moisture meter data shows irrigation will be required shortly. This will depend on the amount of rain over the next couple of days

Pasture Production and Management

9. This weeks measured average pasture cover is 2601 kg DM/ha, an increase of 47 kg Dm/ha over the week. Our estimated average daily pasture growth rate for the last week has been 79 kg DM/ha (cows have not found as much pasture as the plate meter did over the last week). We are currently experiencing very low Dm in our pasture cuts 13.9% and 15.9% on the samples taken last week.
10. This gives us a predicted surplus of 11.8 tonne between supply and demand, last week the farm should have had enough feed to feed cows but as stated above the cows didn't find as much as we measured. The round length has been 22 days this week. (see note on silage below)
11. 30ha received nitrogen this week at 25kg N/ha.
12. No gibberellic applied this week. No further GA is planned for this spring.
13. No mowing was done.
14. Paddock N9 was sprayed with Glysophate and Granstar, it has been aerated / disced, and will be surface cultivated and resown into new pasture as soon as possible. This reduces the available grazing area by 7 ha until the new grass is back in the rotation (typically 8 weeks at this time of the year).

Feeding Management

15. We have fed silage all week, all cows received an average of 3.8 kg DM/cow per day, We don't intend to feed silage over the next week however we wont let the round get any faster than 19 days and if required will use silage to slow the round.
16. Our plan is to continue feeding cows as well as we can whilst concentrating on ensuring good pasture quality going forward by achieving even and consistent residuals of 1500 - 1700 kg DM/ha.
17. With a growth rate of 79 kgDM/ha /day for the past week, and a favourable weather forecast it is likely that farm will grow enough to meet cow demand in the coming week.
18. This week's wedge is printed below

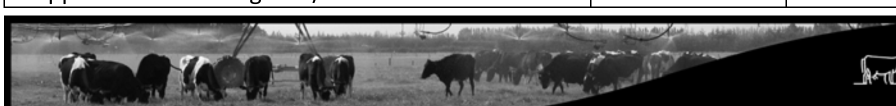


Herd Management and Mating

19. All calved cows are now receiving magnesium supplementation via water troughs.
20. All cows have had a booster BVD vaccination this week.
21. 171 pre mating heats were observed for the week – on average 24.4 cows /day / 81% of total cows expected to be milked.

Data Sheet

LUDF Weekly Report	17-Sep-13	24-Sep-13	1-Oct-13	8-Oct-13
Farm grazing ha (available to milkers)	160	160	160	160
Dry Cows on farm / East blk / other	40/0/31	0/18/27	0/26/0	0/9/0
Culls (Includes culls put down & empties)	0	2	0	0
Culls total to date	10	12	12	12
Deaths (Includes cows put down)	0	1	0	1
Deaths total to date	1	2	2	3
Calved Cows available (Peak Number 632…)	568	590	610	624
Treatment / Sick mob total	10	8	2	3
Mastitis clinical treatment	8	1	2	2
Mastitis clinical YTD (tgt below 64 year end)	20	21	23	25
Bulk milk SCC (tgt Ave below 150)	207	143	131	130
Lame new cases	6	5	8	1
Lame year-to-date	12	17	25	26
Lame days YTD (Tgt below 1000 year end)	69	104	160	216
Other/Colostrum	0/24	0/13	0/9	0/6
Milking twice a day into vat	532	569	587	614
Milking once a day into vat	0	0	0	0
Small herd	135	215	220	220
Main Herd	397	354	367	394
MS/cow/day (Actual kg / Cows into vat only)	2.14	2.17	2.15	2.15
MS/cow to date (total kgs / Peak Cows 632	48	62	76	90
MS/ha/day (total kgs / ha used	7.00	7.48	7.83	8.14
Herd Average Cond'n Score	0.00	4.60	0.00	4.70
Monitor grp LW kg WOW 157 early MA calvers	457	460	458	459
Soil Temp Ave Aquaflex	8.6	9.1	10.2	12.0
Growth Rate (kgDM/ha/day)	37	55	98	79
Plate meter height - ave half-cms	12.3	13.0	14.7	15.0
Ave Pasture Cover (x140 + 500)	2224	2326	2554	2601
Surplus/[deficit] on feed wedge- tonnes	[18]	[27]	0	11.8
Pre Grazing cover (ave for week)	3021	2680	2911	3245
Post Grazing cover (ave for week)	1650	1600	1600	1600
Highest pre-grazing cover	3300	2908	3098	3450
Area grazed / day (ave for week)	7.10	6.35	6.50	6.90
Grazing Interval	23	25	25	22
Milkers Offered/grazed kg DM pasture	0.0	11.8	14.9	16.5
Estimated intake pasture MJME	0	146	176	198
Milkers offered kg DM Grass silage	0	9	5	4
Silage MJME/cow offered	0	10	10	10
Estimated intake Silage MJME	0	90	55	39
Estimated total intake MJME	0	236	230	237
Tgt total MJME Offered/eaten (incls 6% waste)	0	0	0	0
Pasture ME (pre grazing sample)	0.0	12.4	11.8	12.0
Pasture % Protein	0.0	19.1	22.8	26.3
Pasture % DM - Concern below 16%	0.0	20.2	16.0	14.9
Pasture % NDF Concern < 33	0.0	36.2	37.6	40.0
Mowed pre or post grazing YTD	9.9	9.9	9.9	9.9
Total area mowed YTD	9.9	9.9	9.9	9.9
Supplements fed to date kg per cow (632 peak)	41.8	99.4	135.5	161.9
Supplements Made Kg DM / ha cumulative	0	0	0	0



Units N applied/ha and % of farm	25units/29%	25units/40%	25units/28%	25units/18%
Kgs N to Date (whole farm)	31	40	48	52
Rainfall (mm)	2.8	8.4	5	0
Aquaflex topsoil relative to fill point tgt 60 - 80%	60-90	50-90	50-70	40-60

Our next farm walk will be Tuesday 15th October.

Farmers or their managers and staff are always welcome to walk with us. Please call to notify us of your intention and bring your plate meter. Phone SIDDC – 03 423 0022.

Management Group

Peter Hancox (Farm Manager), Steve Lee (DairyNZ).

Note: LUDF focus day this Thursday at LUDF 10.15 start
Note: Please ensure you take up the opportunity to vote in the industry elections.

Simple Feed Budget

Name ______________________ Starting date for feed budget ______________________

Current herd size ______________________ Effective Hectares on milking platform ______________________

Feed Supply

Start Pasture Cover kg DM/ha V______________

1. Pasture Growth

Month	Days		Growth kg DM/ha/day		kg DM
		x		=	
		x		=	
		x		=	
		x		=	
		x		=	
Total DM/ha from growth (kg DM)			**A**	**=**	

2. Nitrogen Boosted Growth

No. ha nitrogen applied to	Appl'n Rate kg N/ha		Response kg DM/kgN		kg DM
		x		=	
		x		=	
		x		=	
Total DM/ha from growth (kg DM)			**B**	**=**	

3. Pasture Utlilisation (%) C = ______________

4. Total Pasture Supply (kg DM)=(A+B) x C = D ______________

5. Supplement feed available over budget period

Type	kg DM		Wastage (%)		kg DM
		x		=	
		x		=	
		x		=	
		x		=	
Total DM/ha from growth (kg DM)			**E**	**=**	

6. Grazing Off

No. of Cows x	DM/cow		Days		kg DM
		x		=	
		x		=	
		x		=	
Total feed saved from grazing off (kg DM) F				**=**	

Total feed supply (kg DM)	**D+E+F**	**=**

Feed Demand

Target pasture cover eg at calving start date or balance date kg DM/ha Y______________

1. Milking Cows Only on milking platform (in calf heifers below)

Month	Number	kg DM/ cow/day		Days		kg DM
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
Total DM Required for Milkers (kg DM)				**G**	**=**	

2. Required by Dry Cows on milking platform

Month	Number	kg DM/ cow/day		Days		kg DM
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
Total DM required (kg DM)				**H**	**=**	

3. Required by other stock on milking platform

Month	Number	kg DM/ cow/day		Days		kg DM
			x		=	
			x		=	
			x		=	
			x		=	
Total DM required (kg DM)				**I**	**=**	

4. Body Condition Score Gain (use DM/BCS) from table below)

No. of Cows x	CS gain per cow=	Total CS needed		DM/CS		kg DM
			x		=	
			x		=	
			x		=	
Total feed saved from grazing off (kg DM)				**J**	**=**	

Total Demand = (kg DM)	**G+H+I+J**	**=**

Feed Surplus/Deficit of	**kg DM or**	**kg DM/ha**	**M**

Feed Surplus/Deficit *(before change in pasture cover)* = M	kg DM/ha	APC Required at Start of Feed Budget to achieve Target Pasture Cover
Change in pasture cover to meet target cover V-Y= N	kg DM/ha	=V-P if P is a Surplus, or V+P if P is a deficit kg DM/ha

=M+N	**Total Feed Surplus/Deficit of**	**kg DM/ha**	(P)

Feed Requirements

Refer to Facts and Figures page 10 for more information

kg DM/cow at 10.5 MJME/kg DM		kg MS/c/d				
		0.8	1	1.2	1.4	1.6
Jersey	400 kg Lwt	10.9	12.4	13.9	15.4	16.9
Cross	450 kg Lwt	11.6	13.1	14.7	16.3	17.8
Friesian	500 kg Lwt	12.1	13.7	15.3	17	18.6
Friesian	550 kg Lwt	12.6	14.2	15.8	17.4	19
kg DM/cow at 11.0 MJME/kg DM		**kg MS/c/d**				
		1.0	1.2	1.4	1.6	1.8
Jersey	400 kg Lwt	11.5	12.9	14.3	15.7	17.2
Cross	450 kg Lwt	12.2	13.7	15.2	16.6	18.1
Friesian	500 kg Lwt	12.8	14.3	15.8	17.3	18.8
Friesian	550 kg Lwt	13.3	14.8	16.3	17.8	19.3
kg DM/cow at 12 MJME/kg DM		**kg MS/c/d**				
		1.4	1.6	1.8	2.0	2.2
Jersey	400 kg Lwt	12.6	13.9	15.1	16.3	17.6
Cross	450 kg Lwt	13.3	14.6	15.9	17.2	18.5
Friesian	500 kg Lwt	13.9	15.2	16.5	17.8	19.1
Friesian	550 kg Lwt	14.3	15.6	16.9	18.2	19.5

Pasture Utilisation

The DM feed requirements used are 'eaten' feed demand plus 6% to allow for feed wastage observed under good feeding conditions of pasture in farmlet trials i.e. feed offered. Where pasture wastage rates are greater than 6%, this utilisation figure needs to be reduced below 94%. Typically most farms sit around 15% wastage of pasture or 85% utilisation which would equate to 91% in this spreadsheet after allowing for 6% that has aready been included.

Supplements

DairyNZ Farm Facts page 20-21

Typical DM%

PKE	90%
Concentrates	97-90%
Kale	11-15%
Turnips	9-11%
Fodder Beet	14-20%
Chicory	8-19%

Maintenance and Pregnancy Requirements

DairyNZ Farm Facts page 11

Maintenance and pregnancy requirements, no body condition score gain (kg DM/c/d) 11 MJME/kg DM autumn pasture, averaged across 8-0 weeks pre calving

		8-0 weeks calving
Jersey	350	8.0
Jersey	400	9.0
Cross	450	10.0
Friesian	500	10.5
Friesian	550	10.8

Young Stock Requirements

DairyNZ Farm Facts page 16

Autumn Winter feed budgets

	Rising 1 year	R 2 year Incalf Heifers
Jersey	5.0	8.0
Cross	6.0	9.0
Friesian	7.0	10.0

Increase R 2yr feed requirements if underweight and not on target for BCS 5.5

Supplements - estimates of % wasted in storage and feeding out (1)

	Storage			Feeding Out Paddock(2)			Feeding Out Bins(3)	
Supplement	**Excellent**	**Average**	**Poor**	**Excellent**	**Average**	**Poor**	**Very Good**	**Poor(4)**
Grass Silage	5%	10-15%	20-40%	10%	20%	40%	5-10%	25%
Maize & Cereal Silage	6%	10-15%	20-40%	15%	20-25%	40%	5-10%	25%
Palm Kernel	0%	10-15%	20%	25%	30%	40%	10%	25%
Concentrates(5)	0%	5%	15%				5%	25%

1. As research on wastage of supplements is limited, figures are based on best estimates from scientists and industry experts
2. Includes losses at the stack face and when loading the wagon
3. Bins = Feed trough for PKE fed in the paddock or feed pad for forages or in-shed feeding for concentrates
4. Excludes refusal in the bin for rotten silage
5. There can be additional losses feeding concentrates. 30-50% of starch (energy) can be lost if grain is not cracked. This can occur if whole grains are fed or if high level of small grains in mix

Supplements

DairyNZ Facts and Figures 19-27

Type	kgDM pasture equivalent
Grass silage	
Direct cut	150-200 kg per cubic metre
Wilted grass	160-180 kg per cubic metre
Baleage	130-180 per 500kg bale
Hay	
Small bales	15-20 kg per 18-25kg bale
Round bales	150-250 kg per 180-300 kg bale

Type	kgDM pasture equivalent
Maize silage	
Maize stack	170-250 kg per cubic metre(avg 200)
Maize bunker	200-270 kg per cubic metre(avg 220)
kgDM in wagon	
Grass Silage	45-60kg per cubic metre
Maize Silage	80-120kg per cubic metre

Approximate amounts (kg DM) of commonly used feeds required for 1.0 unit increase in BCS

Breed	Weight	Aut Past 11.5	Past Silage 10.5	Maize Silage 10.5	PKE 11	Kale 11	Swedes 12	Fodder Beet 12.5
J	400	165	130	130	100	175	145	125
JF	450	185	145	145	110	195	160	140
FR	500	205	160	160	125	215	180	155
FR	550	225	180	180	135	235	195	170

The requirements are above maintenance and pregnancy requirements and do not include any wastage refer to *DairyNZ Body Condition Scoring: The Reference Guide for New Zealand Farmers* page 49 for latest figures.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