SIDDC
South Island Dairying Development Centre

Partners Networking To Advance South Island Dairying

Lincoln University
Te Whare Wānaka o Aoraki
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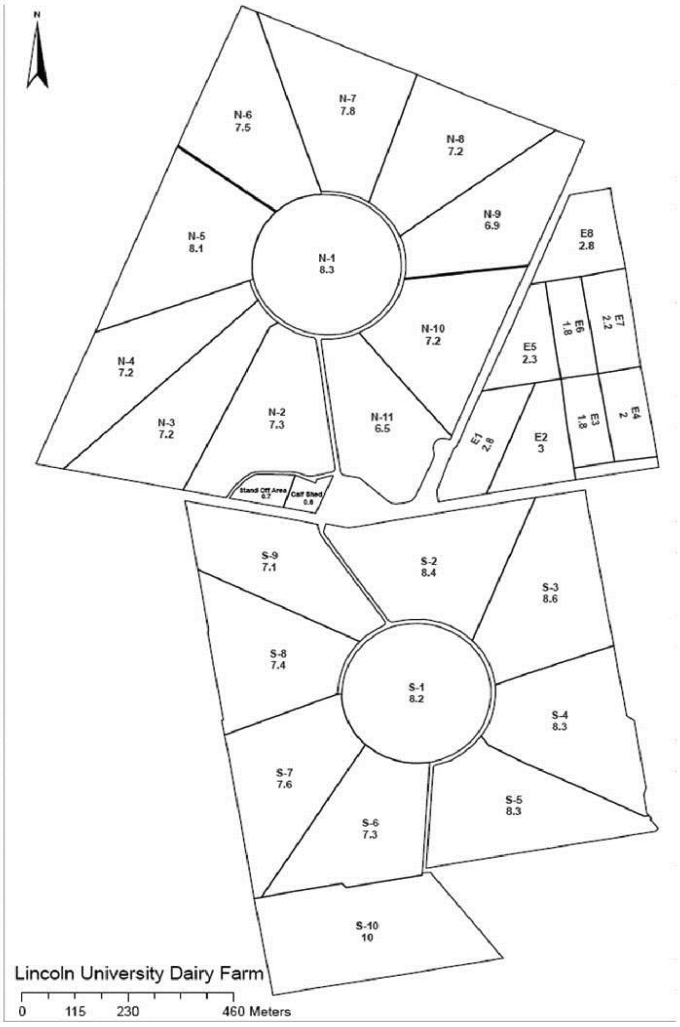
Lincoln University Dairy Farm Focus Day

9th October 2014



Staff

Peter Hancox – Farm Manager
Matt Weatherhead – 2IC
Alistair Linfoot – Dairy Assistant
Hamish Shoa – Dairy 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] from pasture 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

Mean 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

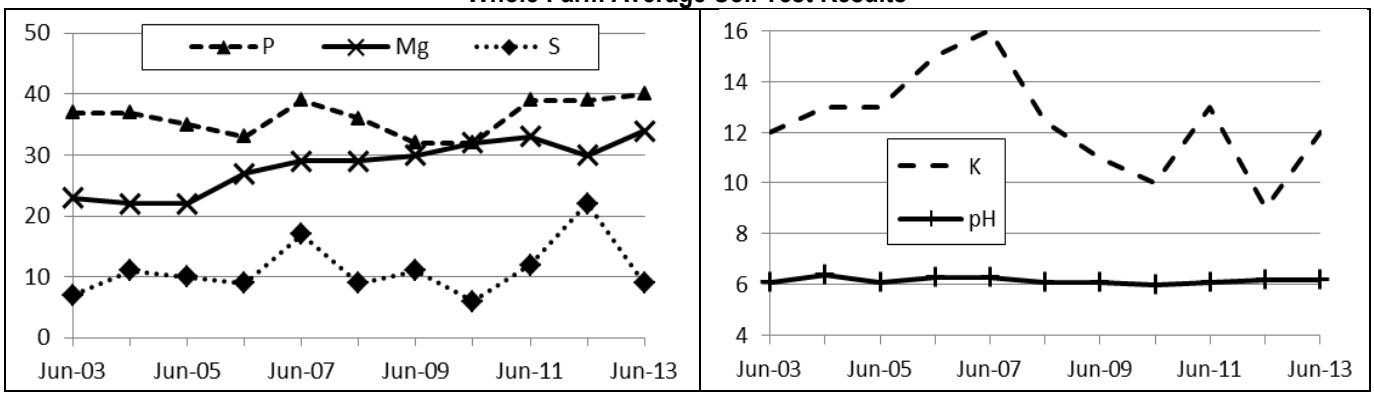
Milking Platform	160 ha
Support land [East Block]	15 ha
Unproductive land on platform	6.7 ha

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

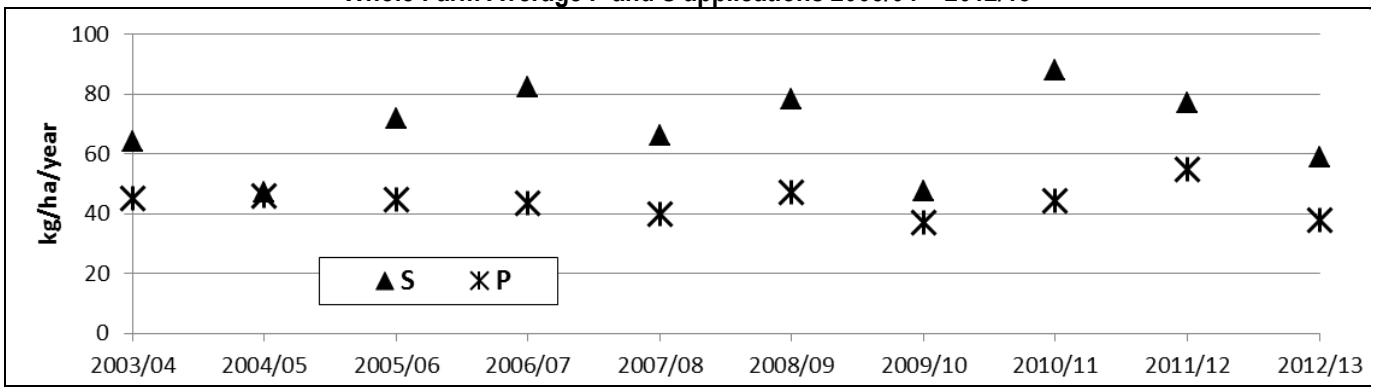
Soil test results and Fertiliser Applications

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 / Sept 13	Shogun + Chicory /Plantain	S3	Feb-10	Bealey
N4	Feb-01	Brons. Imp	S4	Dec-13	Bealey/Chicory/Plantain/Troj
N5	Dec-11 / Aug 13	Shogun	S5	Dec-08	Arrow - Alto
N6	Feb-01	Brons. Imp	S6	Dec-06	Arrow - Alto
N7	Jan -14	Bealey/Chicory/Plantain/Troj	S7	Sep-06	Arrow - Alto
N8	Jan -13	Bealey/Chicory/Plantain	S8	Oct-11	Troj. Bealey
N9	Oct-13	Bealey/Chicory/Plantain/Troj	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 – Plan – Spring 2014

KiwiX Premier Sires Daughter Proven teams for cows greater than F10. Holstein Friesian Daughter Proven for cows F9 or less. AI mating for 6 weeks in main herd then follow with Jersey bulls. Bull mating only of Heifers – starting 10 days prior to main herd. 10 weeks mating for milking herd. Expect to rear 150 heifers.

Herd details – October 2014

Breeding Worth (rel%) / Production Worth (rel%)	146 / 48% 191 / 70%
Recorded Ancestry	99%
Average weight / cow (Dec) – Herd monitored walk over weighing	475 kg [Dec 2013]
Calving start date	Heifers – 23 July, Herd 3 August 2014
Est Median calving date	15 August 2014
Mating start date	25 October 2014

Empty rate (nil induction policy) after 10 weeks mating - 12% (2013-14 mating). 6 week in-calf rate 78%.

	2002/03	**Average 03/04 - 06/07**	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	**2013/14**
Total kg/MS supplied	228,420	**277,204**	278,560	261,423	273,605	264,460	297,740	300,484	**276,019**
Average kg/MS/cow	381	**425**	409	384	415	395	471	477	**440**
Average kg/MS/ha	1414	**1720**	1744	1634	1710	1653	1861	1878	**1725**
Farm Working Expenses / kgMS	$2.98	**$2.68**	$3.37	$3.88	$3.38	$3.86	$3.91	$3.84	**$4.28**
Dairy Operating Profit/ha	$1,164	**$2,534**	$8,284	$2,004	$4,696	$6,721	$4,553	$4665	**$7578**
Payout [excl. levy] $/kg [Milk price + div.]	$4.10	**$4.33**	$7.87	$5.25	$6.37	$7.80	$6.30	$6.12	**$8.50 F**
Return on Assets	4.4%	**6.18%**	14.6%	4.8%	7%	7%	6%	6%	**10%**

Stock numbers	2002/03	**Average 03/04 - 06/07**	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	**2013/14**
1 July cow numbers	631	**675**	704	704	685	694	665	650	**650**
Max. cows milked	604	**654**	680	683	660	669	632	630	**628**
Days in milk			263	254	266	271	272	273	**259**
Stocking rate Cow equiv. / ha	3.75	**4.05**	4.2	4.3	4.13	4.18	3.95	3.94	**3.92**
Stocking rate Kg liveweight / ha	1,838	**1964**	2,058	2,107	1,941	1914	1860	1878	**1872**
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	**650/11.4**
No. Yearlings grazed On / Off	0/118	**0/157**	0/171	0/200	0/160	0/166	0/141	0/138	**0/140**
No. Calves grazed On / Off	0/141	**0/163**	0/200	0/170	0/160	0/194	0/190	0/156	**0/150**
Est. Pasture Eaten (Dairybase) (tDM/ha)			17.9	17.2	16.2	16.9	17.3	16.8	**14.9**
Purch. Suppl - fed [kgDM/cow]	550	**317**	415	342	259	463	359	434	**506.8**
Made on dairy/platform [kgDM/cow]	0	**194**	95	64	144	160	154	93	**0**
Applied N / 160 eff. Ha			164	200	185	260	340	350	**250**

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

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Focus for 2014/15 Season: Nil-Infrastructure, low input, low N-loss, high profit

- Farm system comprises 3.5 cows/ha,
- 150kgN/ha,
- 300kgDM/cow imported supplement, plus winter most cows off farm.
- FWE of less than $1.12million and
- Target production of 500kgMS/cow.

Seasonal Summary to End September

	2012/13	2013/14	2014/15
Total kgMS sold	45,896 kgMS	46,877 kgMS	46,059 kgMS
Total Cows in Milk	617	610	542
Total N fert applied	82 kgN/ha	48 kgN/ha	28 kgN/ha
Total Silage Fed/cow	63 kgDM/cow/day	135 kgDMcow	68 kgDM/cow
Total Silage Fed tDM	40 t DM	85 t DM	38 t DM
Whole Herd WOW*	466 kg	469 kg	487 kg
Herd Ave CS	4.5	4.6	4.4

* WOW – Walk Over Weighing (daily average of all cows - at the cowshed)

LUDF Plan for 2014-15

The strategic objective for LUDF is:

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.*

In addition, the proposed ECAN Land and Water Regional Plan - Variation 1 will require LUDF to operate at or below a specific N-loss to water target from 2017 and potentially at a lower N-loss level from 2022 onwards.

As a demonstration farm with the above objective, LUDF has determined it will seek to operate from now on, at lower N-loss than previously, to document how the farm can respond to these requirements, and the implications, costs and opportunities that may arise from this. As above, LUDF must also consider the whole catchment effect of meeting these requirements, not just on the milking platform.

LUDF has chosen to implement a nil-infrastructure, low input model on the basis of emerging research from Pastoral 21 (P21) conducted at the Lincoln University Research Dairy Farm (LURDF). Three years of data from this farmlet study (see LUDF focus day handouts from July 2012 and July 2013) showed milk production levels of over 500kgMS/cow were achieved with 3.5 cows/ha, 160kgN fertiliser and less than 300kgDM imported supplement/cow. Profitability was calculated as comparable to LUDF with N-losses on the milking platform approximately 12% less than LUDF.

The P21 research had 2 farmlets with 29 or 34 cows, stocked at 3.5 or 5 cows per hectare. LUDF will largely replicate the same 3.5 cows/ha system in 2014-15 by upscaling this to the 160 ha LUDF milking platform.

Nil Infrastructure / low input farming system:

The essence of the system is influenced by two factors:

- Reducing the stocking rate as much as possible so that more of the total available feed is used in milk production (and less is required for maintenance of additional animals)
- Reducing the need for brought in feed and nitrogen fertiliser due to lower animal demand for a similar level of milk production.

Note this is a low input system, but not a zero input system. It is seeking to optimise the use of inputs including the farms potential pasture production without the use of any standoff / feeding pad / housing infrastructure.

Accounting for LUDF across the Whole Farm System (the Catchment Effect)

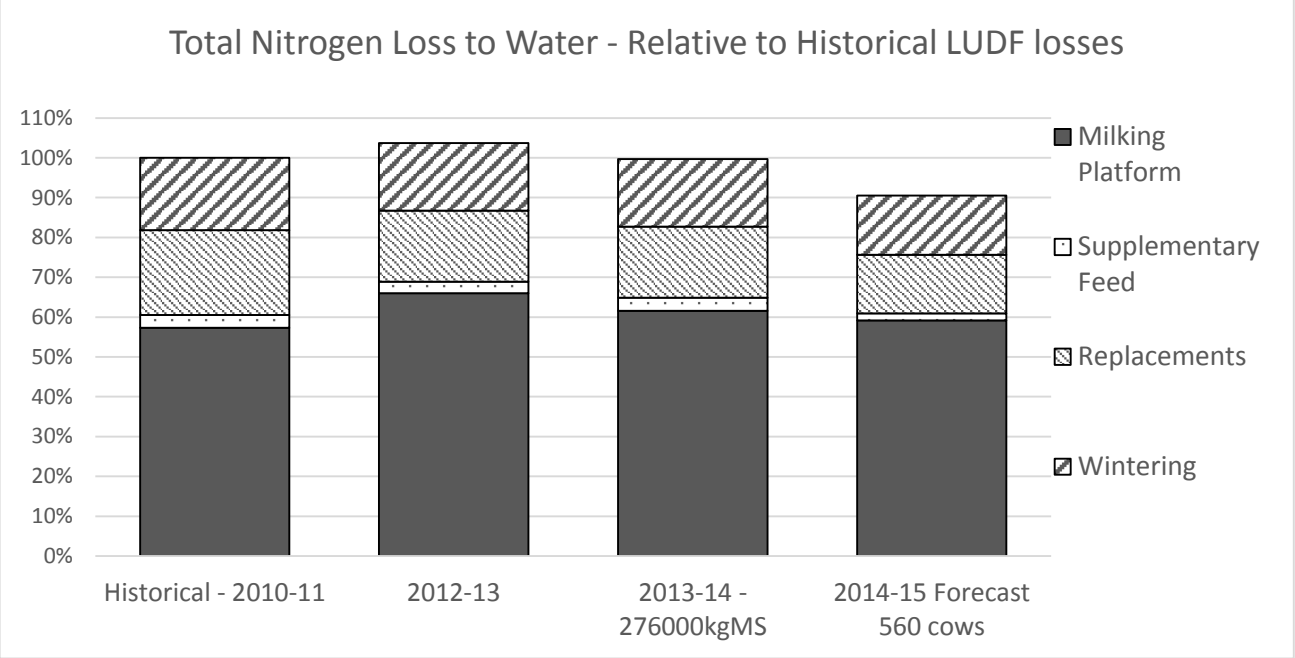
LUDF's requirement for additional land is reduced as the demand for land for wintering and replacements goes down with fewer animals farmed.

Total nitrogen loss to water within the catchment is influenced by the rate of N-loss per hectare and the amount of land required. The graph below suggests similar N-loss at the catchment level occurred in 2013-14 (compared

to historical losses) whereas the combined effect of lower losses on the milking platform and fewer animals predicts total catchment losses could be approximately 10% lower with the nil-infrastructure, low input system.

Caveat:

It is important to note the Nitrogen losses to water for the 2014-15 season will be entirely dependent on the actual feasibility of the system. The losses portrayed below are based on LUDF using 150 kgN/ha, 300kg supplement/cow, a stocking rate of 3.5 cows/ha and production of 500kgMS/cow. If the system cannot be effectively operated at this level, N-loss may be substantially different – on both the milking platform and at the catchment level – and profitability may be severely constrained.



Lincoln University Dairy Farm Budget for 2014/15 and comparison to 2013/14 Actuals

Lincoln University Dairy Farm		**Budget for 2014 – 2015 (adjusted to current forecast payout)**					
Year ending May 31		**Budget**	160.0ha	**2014/15**		**Actual 13-14**	% change
Milk production (kgMS)		$5.30/kgMS	1,750/ha	*280,000*	276,019	1,725	
Peak No Cows		560cows	3.50/ha	*500kgMS/cow*	*630cows*		
Staff - FTE's	3.70	151cows/FTE		75,676ms/FTE			
Income				*$/kgMS*	*$/kgMS*		
Milk-solids	$5.30/kgMS	1,484,000	87%	*5.30*	*5.30*	1,462,901	1%
Dividend	$0.30/share	84,000	5%	*0.30*	*0.30*	82,806	1%
Surplus dairy stock		50,750	3%	*0.18*	*0.25*	67,926	-25%
Other stock sales		87,761	5%	*0.31*	*0.47*	129,671	-32%
		1,706,511	**100%**	***6.09***	***6.32***	1,743,303	-2%
Stock Purchases		23,200			*0.08*	23,165	
Gross Farm Revenue		**1,683,311**	**10,521/ha**		***6.23***	**1,720,138**	**-2%**
Expenses				***2014/15***	***2013/14***	**Actual**	
			$/cow	***$/kgMS***	***$/kgMS***	$	
Administration		24,700	44.1	**0.09**	**0.08**	22,190	11%
Animal Health		54,200	96.8	**0.19**	**0.20**	54,275	0%
Breeding Expenses		42,340	75.6	**0.15**	**0.19**	51,929	-18%
Electricity-farm		37,200	66.4	**0.13**	**0.10**	28,654	30%
Employment		259,884	464.1	**0.93**	**0.81**	223,920	16%
Grass silage purchased	300 kgDM /cow	70,502	125.9	**0.25**	**0.41**	112,115	-37%
Silage making & delivery		9,728	17.4	**0.03**	**0.00**	0	
Replacement grazing & meal		119,744	213.8	**0.43**	**0.58**	160,642	-25%
Winter grazing - Herd incl freight		191,364	341.7	**0.68**	**0.73**	201,452	-5%
Gibberellic A.		13,120	23.4	**0.05**	**0.04**	9,768	34%
Nitrogen		38,376	68.5	**0.14**	**0.26**	71,041	-46%
Fertiliser & Lime		34,387	61.4	**0.12**	**0.14**	39,672	-13%
Freight & Cartage		0	0.0	**0.00**	**0.05**	14,483	-100%
Irrigation - All Costs		70,600	126.1	**0.25**	**0.17**	46,929	50%
Rates & Insurance		21,020	37.5	**0.08**	**0.08**	21,020	0%
Regrassing		36,985	66.0	**0.13**	**0.13**	35,181	5%
Repairs & Maintenance		54,500	97.3	**0.19**	**0.20**	55,412	-2%
Shed Expenses excld power		9,850	17.6	**0.04**	**0.02**	6,744	46%
Vehicle Expenses		31,336	56.0	**0.11**	**0.09**	25,834	21%
Weed & Pest		500	0.9	**0.00**	**0.00**	856	-42%
Cash Farm Working Expenses		**1,120,335**	**2,001**	**4.00**	**4.28**	**1,182,117**	**-5.2%**
Depreciation est		116,000		***0.41***	**0.38**	105,000	
Total Operating Expenses		1,236,335		***4.42***	**4.66**	1,287,117	
Dairy Operating Profit		**446,976**	***798***	**1.60**	**1.57**	**433,021**	
DOP/ha		**2,794**				**2,706**	
Cash Operating Surplus		**562,976**		**2.01**	**1.95**	**538,021**	
Cash Operating Surplus/ha		**3,519**				**3,363**	

Notes to the 2014/15 budget

1. The initial budget was prepared with a $6.10 milk payout. This has been modified to reflect the current forecast of $5.30/kgMS + indicative dividend of $0.25-0.35c/share.
2. Last years actual milk production and expenses are shown as a comparison. Last years milk income has been adjusted to the same as this year to enable a better comparison of profit between years.
3. The reduction in cow numbers equates to an 11% reduction in stock numbers; budgeted expenses have been proportionately reduced where possible, or as required in line with intended farm system changes. The overall reduction in expenses is budgeted as 5.2% reduction.
4. Forecast profit is slightly higher for 2014/15 than was achieved in 2013/14, however recall the 2013/14 profit was constrained by LUDF's voluntary decision to reduce the number of cows on farm in the autumn (and therefore milk production) in order to meet its historical N-losses as predicted with Overseer™.
5. The profitability of the nil-infrastructure, low input system at LUDF this year is very dependent on milk production (see table below)
6. The actual costs for employment and irrigation in 2013/14 were well below budget as the farm was only partially staffed over the summer, and the consistent wet weather reduced the number of days irrigation required.
7. Administration costs have been increased in the budget to reflect the typical administration costs incurred by similar individual farms.

Production Sensitivity in the Budget:

Production level relative to budget	**100%**	**98%**	**95%**	**90%**
Total Milk Production (kgMS)	280,000	274,400 kgMS	266,000 kgMS	252,000 kgMS
Milk production /cow (kgMS/cow)	500	490	475	450
Net Revenue	$1,683,311	$1,651,951	$1,604,911	$1,526,511
Cash Farm Working Expenses	$1,120,335	$1,120,335	$1,120,335	$1,120,335
FWE/kgMS	**$4.00/kgMS**	**$4.08/kgMS**	**$4.21/kgMS**	**$4.45/kgMS**
Total Operating Expenses	$1,236,335	$1,236,335	$1,236,335	$1,236,335
Dairy Operating Profit	$446,976	$415,616	$368,576	$290,176
DOP/ha	**$2,794**	**$2,598**	**$2,304**	**$1,814**

Budget Review in light of the revised payout (see following table):

1. As noted above the budget reflects the current forecast milk payout. This has prompted LUDF to re-look at the expenses to determine possible areas for revision given the lower payout.
2. The farm working expenses were ranked from highest to lowest to draw attention to those items with the biggest contribution to total expenditure
3. LUDF's highest single item of expenditure is staffing. LUDF made a decision at the start of the season to continue to operate the farm with four staff, even with the reduced number of cows. Staff on farm are employed on a permanent basis and therefore no revision of this will occur this season.
4. The employment costs do not include any relief milking / casual staff as the roster / systems at LUDF enable the farm to cover the workload and provide time off for staff within this level of staffing. Correspondingly there is no opportunity to reduce the amount of relief staff on farm this season.
5. Winter grazing costs largely cover the period from 1 June till calving so most of these costs have already occurred.
6. Both winter grazing and replacement costs are primarily a function of the stocking rate and therefore not items that the farm wants to change at present. In saying this, replacement costs are influenced by the number of youngstock retained. LUDF's policy of rearing additional heifers and then selling the lowest BW animals has generated additional income (not shown in the expense line) that offsets the cost of rearing and gives LUDF more options.
7. Irrigation costs as budgeted are necessary to grow the required feed and maintain the irrigation equipment.
8. LUDF expects to continue to purchase 300kgDM/cow as purchased grass silage. The reduced milk payout may lower the market price, though more often the price is driven by seasonal supply.
9. R & M costs could be deferred in some cases but are likely to result in higher future costs
10. Animal health, breeding, fertiliser spreading costs, and regrassing all provide some options for further evaluation of expenditure but risk reducing future productivity of the farm / herd.
11. AI mating of the yearling heifers will not occur this season, in part due to the expense relative to the number of heifers we are generating from this, but also impacted by the limited facilities at the current grazer. This is disappointing as the yearling heifers have grown very well over this season and are looking good.

Possible cost savings: Expenses ranked from highest to lowest

Year ending May 31		2012 -13 Actual	2013-14 Budget	2013-14 Actual	2014-15 Budget at May 2014	% of 13/14 actuals	% of 2014-15 budget
Total Milk production (kgMS)		300,484	300,000	276,019	280000		
Milk Prod / ha	160ha	1,878 kgMS/ha	1,875 kgMS/ha	1,725 kgMS/ha	1,750 kgMS/ha		
Milk Prod /cow		477 kgMS/cow	476 kgMS/cow	438 kgMS/cow	500 kgMS/cow		
Peak Cow Nos		630	630	630	560	89%	
Staff		3.7	3.7	3.7	3.70		
Income	Milksolid Payout $/kgMS	5.3	$5.30	$5.30	$5.30		
	Dividend /share	$0.30	$0.30	$0.30	$0.30		
	Milksolid Revenue	$1,592,565	$1,590,000	$1,462,901	$1,484,000		
	Dividend	$90,145	$90,000	$82,806	$84,000		
	Surplus dairy stock	$182,337	$139,015	$197,597	138511		
Stock Purchases		-$25,740	-$23,200	-$23,165	-23200		
Gross Farm Revenue		**$1,839,307**	**$1,795,815**	**$1,720,138**	**$1,683,311**		
Expenses							
Staff	Employment	$217,865	$248,037	$223,920	$259,884	116%	23%
Cow Costs	Winter grazing - Herd incl. freight	$137,904	$154,539	$201,452	$191,364	95%	17%
Cow Costs	Replacement grazing & meal	$163,852	$148,405	$160,642	$119,744	75%	11%
Feed	Irrigation - All Costs	$55,471	$70,600	$46,929	$70,600	150%	6%
Feed	Grass silage purchased	$93,492	$177,534	$112,115	$70,502	63%	6%
Land	Repairs & Maintenance	$61,766	$54,500	$55,412	$54,500	98%	5%
Cow Costs	Animal Health	$60,886	$60,066	$54,275	$54,200	100%	5%
Cow Costs	Breeding Expenses	$51,644	$48,128	$51,929	$42,340	82%	4%
Feed	Nitrogen	$112,973	$69,949	$71,041	$38,376	54%	3%
Land	Electricity-farm	$27,049	$26,600	$28,654	$37,200	130%	3%
Feed	Re-grassing	$14,790	$29,688	$35,181	$36,985	105%	3%
Feed	Fertiliser & Lime	$33,288	$27,901	$39,672	$34,387	87%	3%
Land	Vehicle Expenses	$34,922	$31,336	$25,834	$31,336	121%	3%
Land	Administration	$21,528	$24,700	$22,190	$24,700	111%	2%
Land	Rates & Insurance	$21,020	$21,020	$21,020	$21,020	100%	2%
Feed	Eco-n & Giberillin	$58,441	$10,487	$9,768	$13,120	134%	1%
Land	Shed Expenses excl. power	$7,560	$9,850	$6,744	$9,850	146%	1%
Feed	Silage making & delivery	$9,087	$9,216	$0	$9,728		1%
Land	Weed & Pest	$1,340	$500	$856	$500	58%	0%
Land	Freight & Cartage	$89	$800	$14,483	$0	0%	0%
Cash Farm Working Expenses		$1,184,967	**$1,223,856**	**$1,182,117**	**$1,120,335**	95%	
	FWE /kgMS	$3.94	**$4.08**	**$4.28**	**$4.00**	93%	
Depreciation est.		$105,000	$116,000	$116,000	$116,000		
Total Operating Expenses		$1,289,967	$1,339,856	$1,298,117	$1,236,335		
Dairy Operating Profit		$549,340	$455,959	***$422,021***	***$446,976***		
DOP/ha		**$3,433**	**$2,850**	**$2,638**	**$2,794**		

Expenses to date

Year ending May 31		2014/15 Budget	Actual to end Aug	Budget to End Aug	Variance (Act—budg)	Forecast Year End	Notes
Milk production (kgMS)		280,000	12,326	13,371		278,955	
Peak Cow Nos and Prod.		560	560	560		560	
Staff	(FTE)	3.7	3.7	3.7			
Income	Milk-solid Payout $/kgMS	$5.30	$5.30	$5.30			
	Dividend /share	$0.30/share	$0.30	$0.30			
	Milk-solid Revenue	$1,484,000	$65,329	$70,866	-$5,537	1,478,463	
	Dividend	$84,000	$3,698	$4,011	-$313	83,687	
	Surplus dairy stock	$138,511	$12,500	$9,998	$2,502	141,013	
Stock Purchases		-$23,200	$0	$0	$0	-23,200	
Gross Farm Revenue		**$1,683,311**	**$81,527**	**$84,876**	-$3,348	1,679,963	
Expenses					$0	0	
Cow Costs	Animal Health	$54,200	$16,804	$12,664	$4,140	58,340	2
	Breeding Expenses	$42,340	$9,206	$2,658	$6,548	48,888	
	Replacement grazing & meal	$119,744	$25,990	$29,469	-$3,479	116,265	
	Winter grazing - Herd incl. freight	$191,364	$176,291	$174,977	$1,314	192,678	
Feed	Grass silage purchased	$70,502	$0	$0	$0	70,502	
	Silage making & delivery	$9,728	$0	$0	$0	9,728	
	Gibberellic A.	$13,120	$0	$5,500	-$5,500	7,620	**5**
	Nitrogen	$38,376	$2,181	$10,000	-$7,819	30,557	**6**
	Fertiliser & Lime	$34,387	$1,079	$17,502	-$16,423	17,964	**6**
	Irrigation - All Costs	$70,600	$753	$3,456	-$2,703	67,897	
	Re-grassing	$36,985	$0	$0	$0	36,985	
Staff	Employment	$259,884	$53,332	$56,760	-$3,428	256,456	
Land	Electricity-farm	$37,200	$2,633	$5,700	-$3,067	34,133	
	Administration	$24,700	$5,130	$5,516	-$386	24,314	
	Freight & Cartage	$0	$1,250	$950	$300	300	
	Rates & Insurance	$21,020	$0	$0	$0	21,020	
	Repairs & Maintenance	$54,500	$3,621	$9,478	-$5,857	48,643	**7**
	Shed Expenses excl. power	$9,850	$3,445	$1,462	$1,983	11,833	
	Vehicle Expenses	$31,336	$7,418	$7,356	$62	31,398	
	Weed & Pest	$500	$0	$0	$0	500	
Cash Farm Working Expenses		**$1,120,335**	**$309,133**	**$343,448**	-$34,315	1,086,020	**8**
FWE/kgMS		**$4.00**				4	
Depreciation est.		$116,000			$0	116,000	
Total Operating Expenses		$1,236,335	$309,134	$343,448	-$34,314	1,202,021	
Dairy Operating Profit		$446,976				$477,941	
DOP/ha		**$2,794**				**$2,987**	
Cash Operating Surplus		$562,976				$593,942	
Cash Operating Surplus per ha		**$3519**				**$3712**	

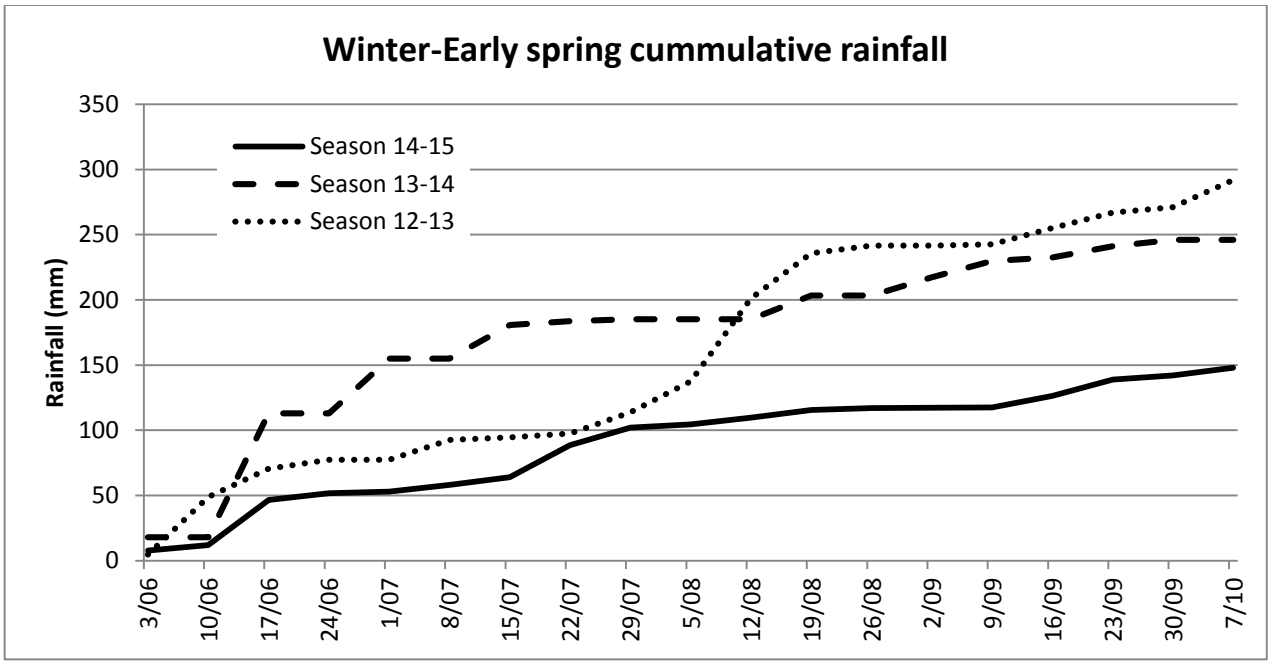
Notes on expenses to date:

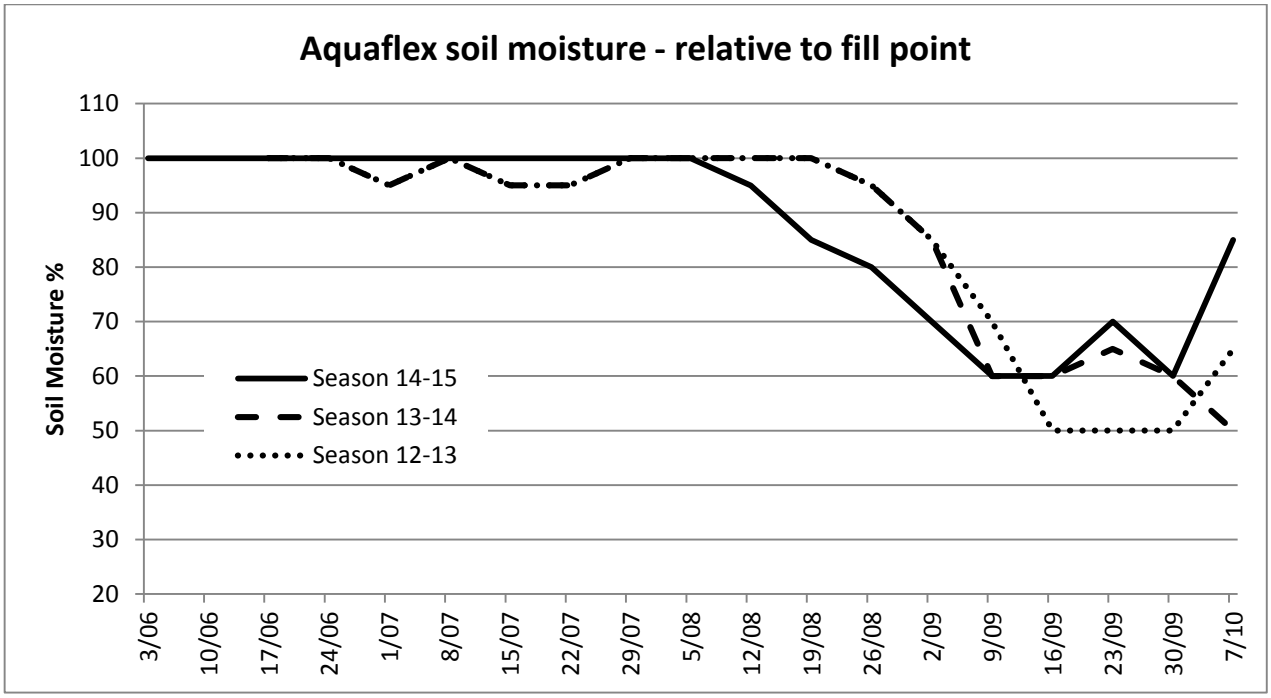
1. Most variances to date between budget and actual are simply timing differences in the budget vs actual expenses.
2. Animal health costs are tracking ahead of budget by $4000.
3. Similarly, breeding expenses are ahead $6500.
4. A $3500 saving in Replacement grazing and meal has occurred to date.
5. Less Gibberellic acid was applied than budgeted, the effect of the slow first grazing round making early applications difficult to have sufficient grazed area available, and the improved growth rates at the end of September giving confidence that little further benefit was anticipated from the use of GA.
6. Less nitrogen and almost no maintenance fertiliser was applied in August than initially budgeted. The annual nitrogen application of 150kgN/ha will occur across the season. Similarly, normal maintenance fertiliser will occur as required (based on soil tests) across the season
7. R and M costs are below budget.
8. Overall this reflects a saving against budget (to date) of $34,000 or 3%, but much of this is expenditure will occur as the season progresses.

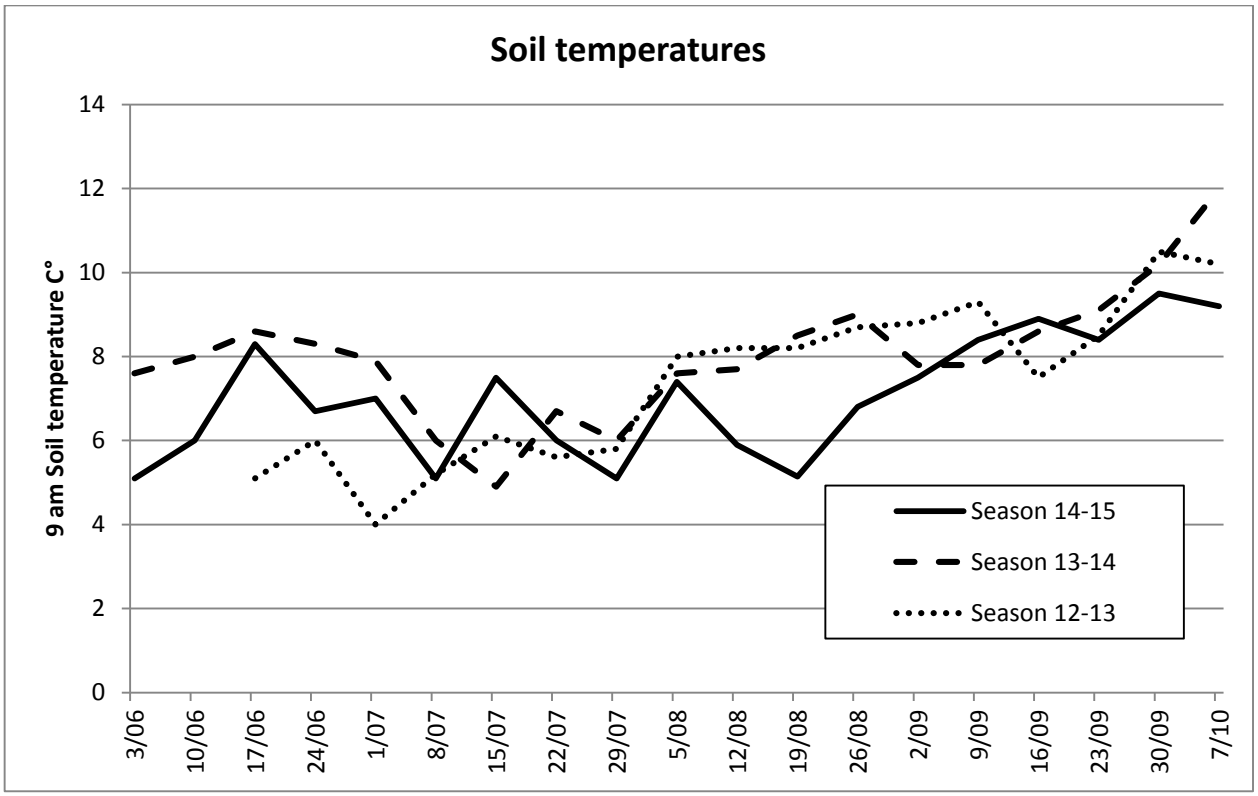
Analysis of LUDF 2014-2015 season to date

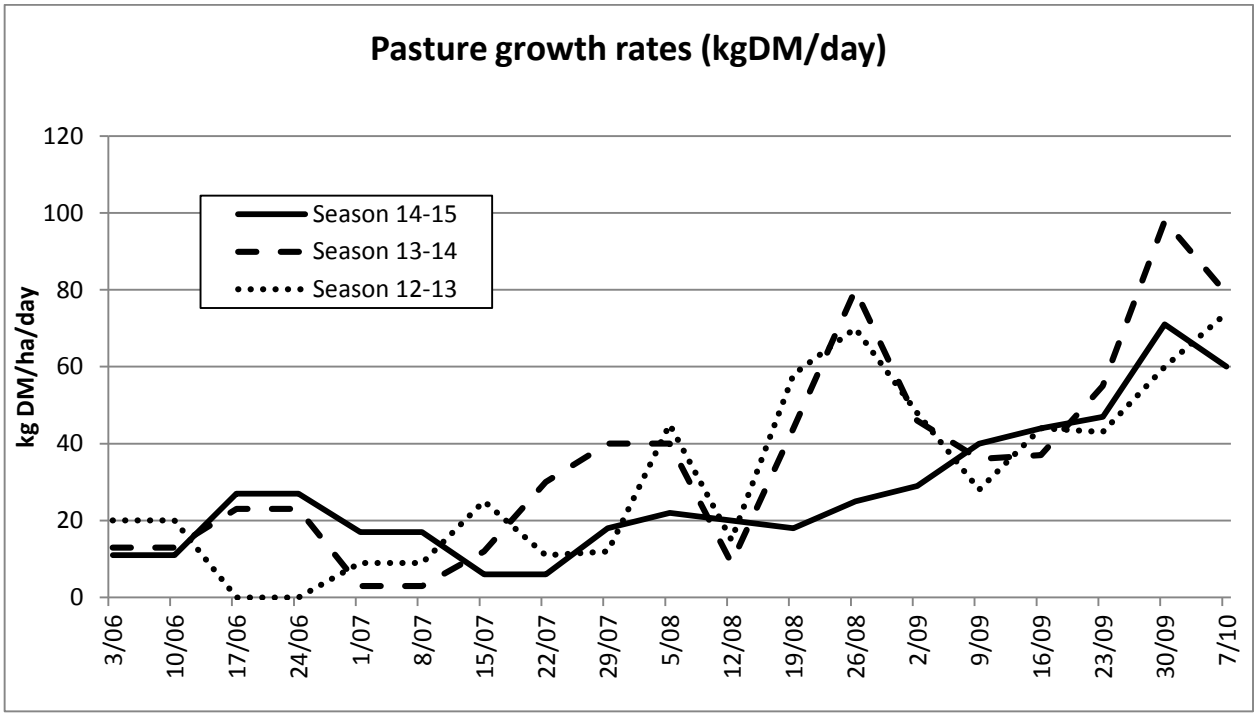
Grass and Grazing Management

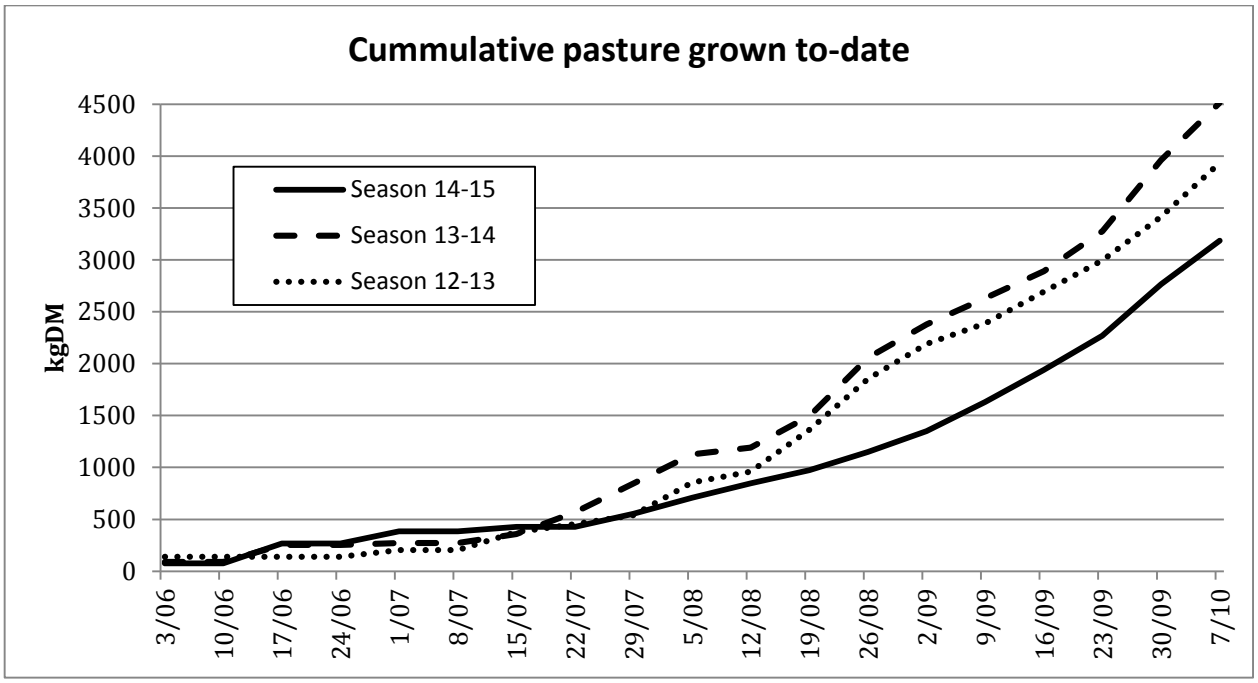
Weather and growing conditions:

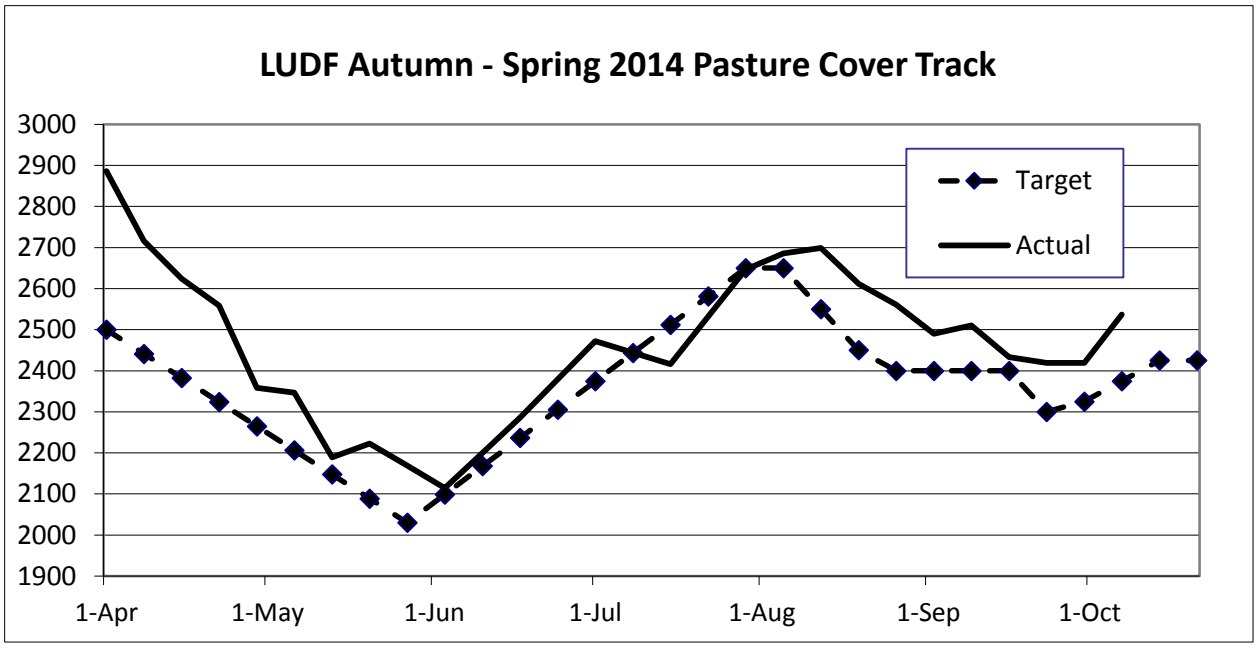










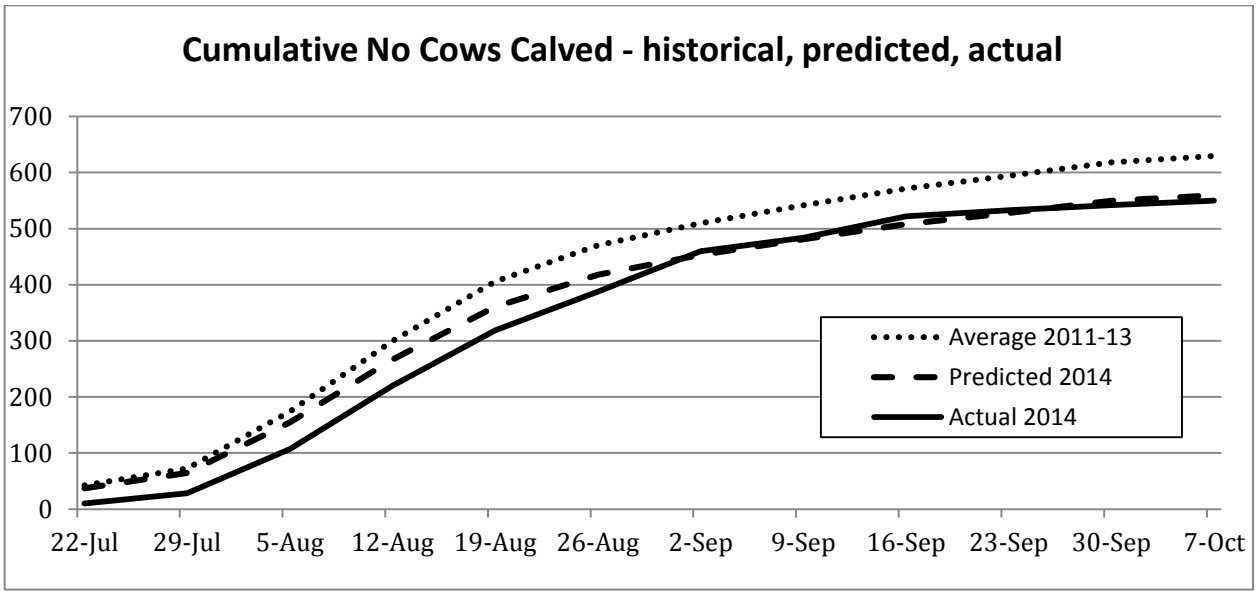


LUDF dried off with covers of around 2100kgDM/ha, a little higher than planned.

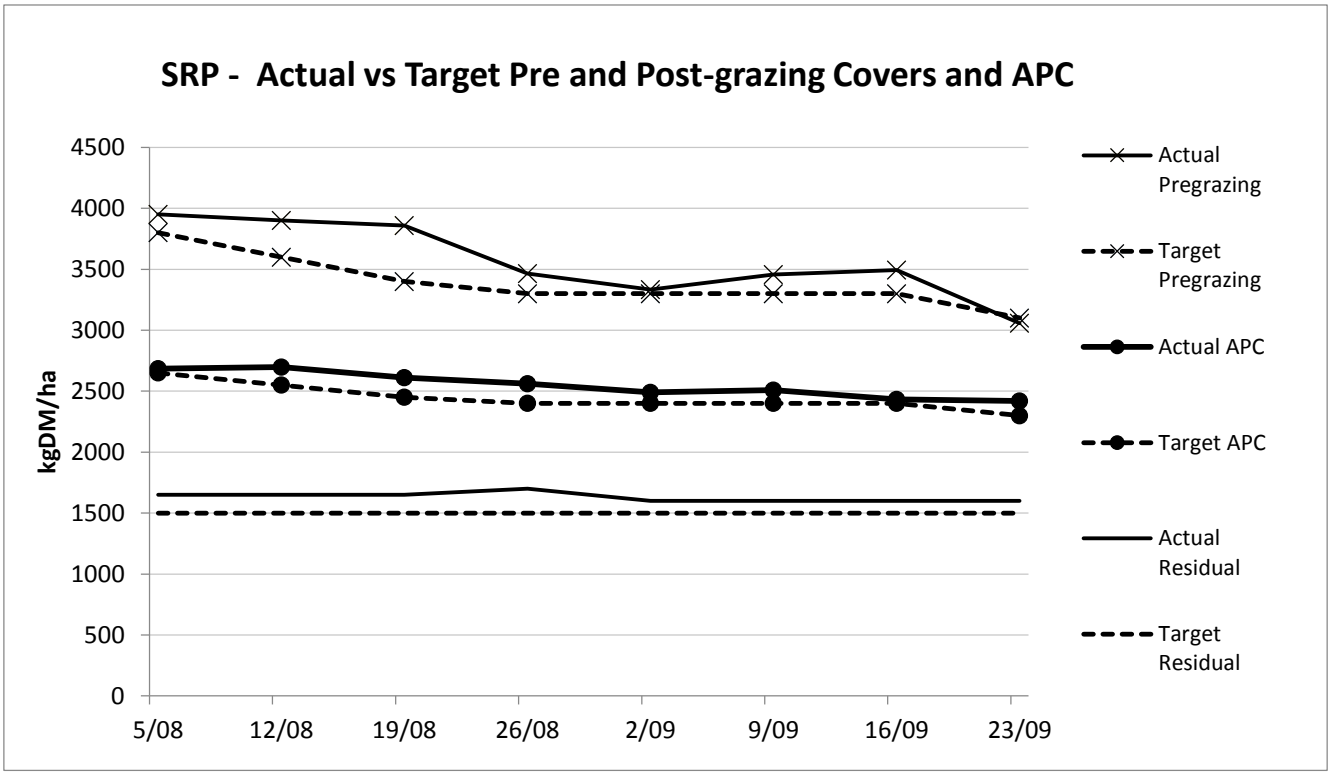
Winter conditions were mild, with temperatures ranging between 5 and 7 °C all winter and no major wind or southerly storms. Under these conditions the grass continued to grow through the winter months.

Spring weather and dry conditions resulted in slower pasture growth compared to previous years, but also smoother. Pasture growth kept consistently increasing with the increase in soil temperatures. Also, the lack of high rainfall events allowed really good pasture utilization. This meant that residuals were consistently achieved and cows did not suffer in terms of temperature of wet.

All of the above, allowed us to start calving with an APC at PSC of 2686 kgDM/ha which was higher than the farm has targeted in the past but in line with our revised Spring Rotation Plan (SRP).



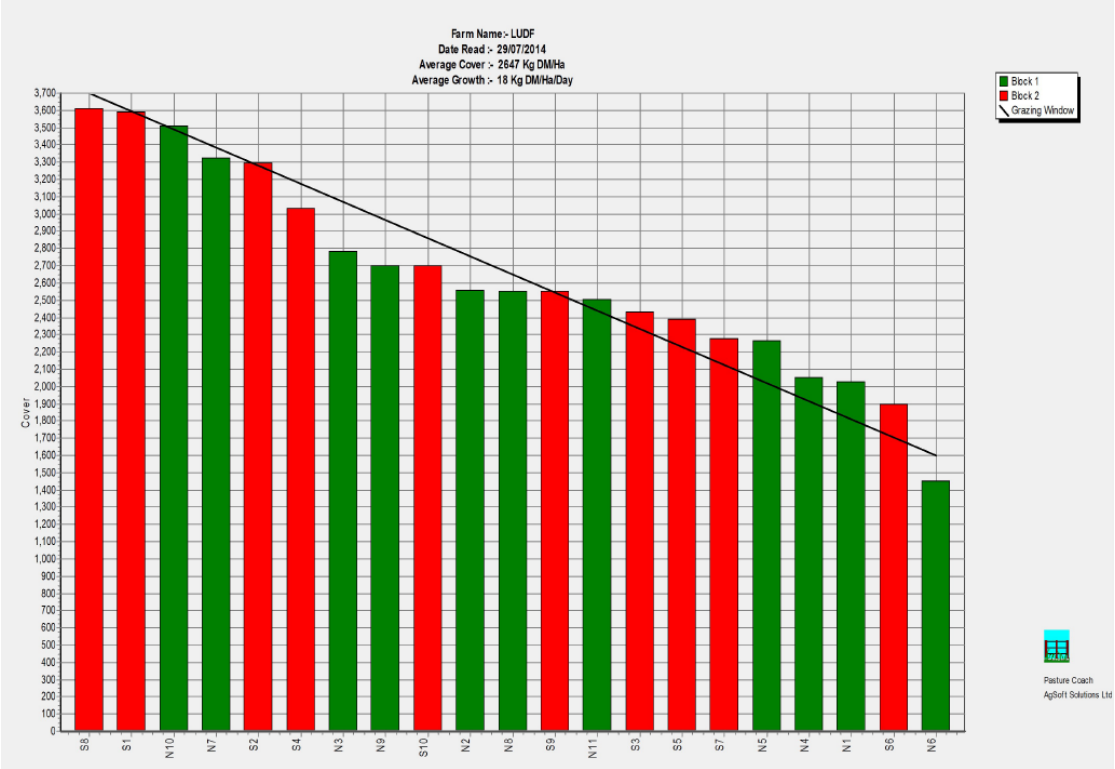
The graph above shows the cumulative number of cows calved compared to past years and the predicted number for this season based on the relative reduction in cow numbers. The graph and table below show planned APC, pre-grazing and post-grazing covers from the SRP vs actuals from week 1 of calving until the end of the SRP on 25th September. Of note was the higher pre graze covers through August, resulting in higher APC. This was partially a function of slightly slower calving (than anticipated), as feed was allocated as area per cow per week, not area per week.



The table below compares planned daily area grazed and supplements fed vs actuals.

Week Ending	Planned area grazed per week	Planned Cumulative area grazed	Planned Cumulative Suppl. fed (kgDM/wk)	Actual area grazed per week	Actual Cumulative area grazed per week	Actual Supplts fed (kgDM/ week)	Actual Cum. Suppl fed (tot kgDM)
5/08/2014	3.2	3.2	613	5	8	0	0
12/08/2014	8.6	11.8	2923	7.7	15.7	0	0
19/08/2014	14.7	26.5	10771	14.56	30.26	0	0
26/08/2014	17.6	44.1	32769	17.86	48.12	2744	2744
2/09/2014	20.8	64.9	52806	24.62	72.74	7500	10244
9/09/2014	25.4	90.3	71864	20.8	93.54	6685	16929
16/09/2014	32.9	123.2	80999	29.3	122.84	6064	22933
23/09/2014	41.3	164.5	85689	40.9	163.74	10150	33143

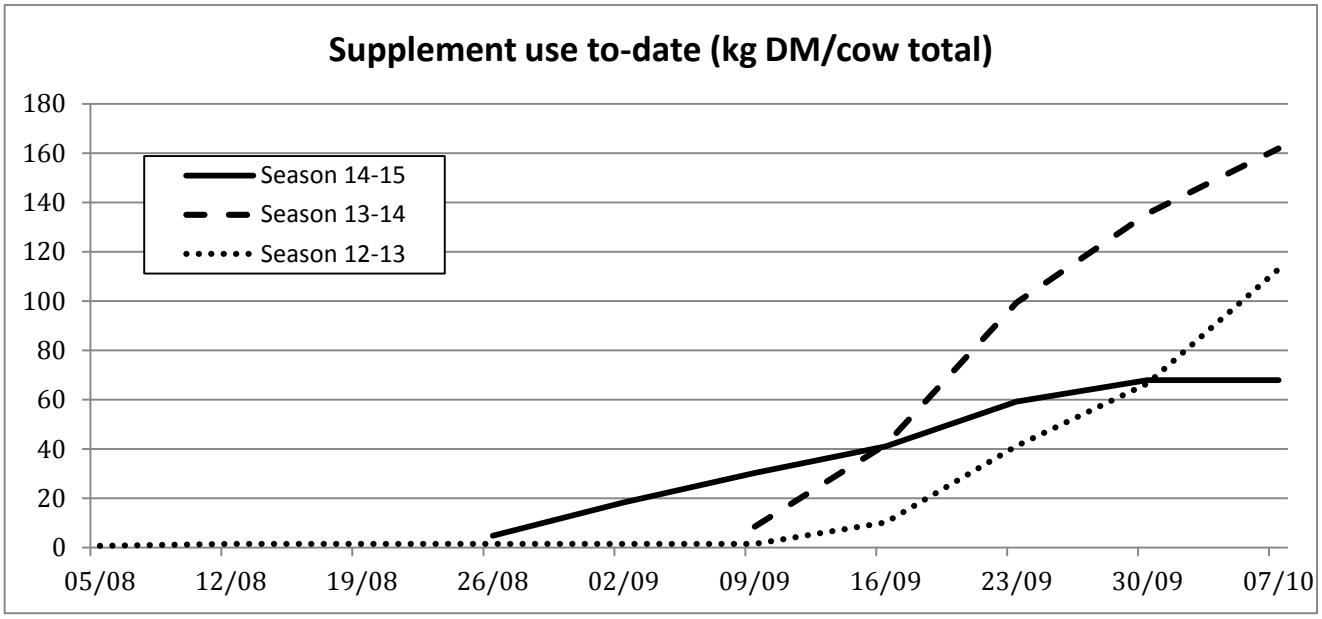
Feed Wedge as at 29 July



Given APC at the end of July, and the number of paddocks at the top of the wedge at that point, the decision was made to bring 160 early calving dry cows onto the platform to graze paddock S2 (5th from the left above). This was estimated to provide 9 days feed for these cows, in reality it lasted nearly 14 days as these cows calved and were moved to the colostrum mob. The decision was based on feed supply, predicted demand and soil conditions allowing the paddock to be grazed without doing any damage to it.

Supplement Use

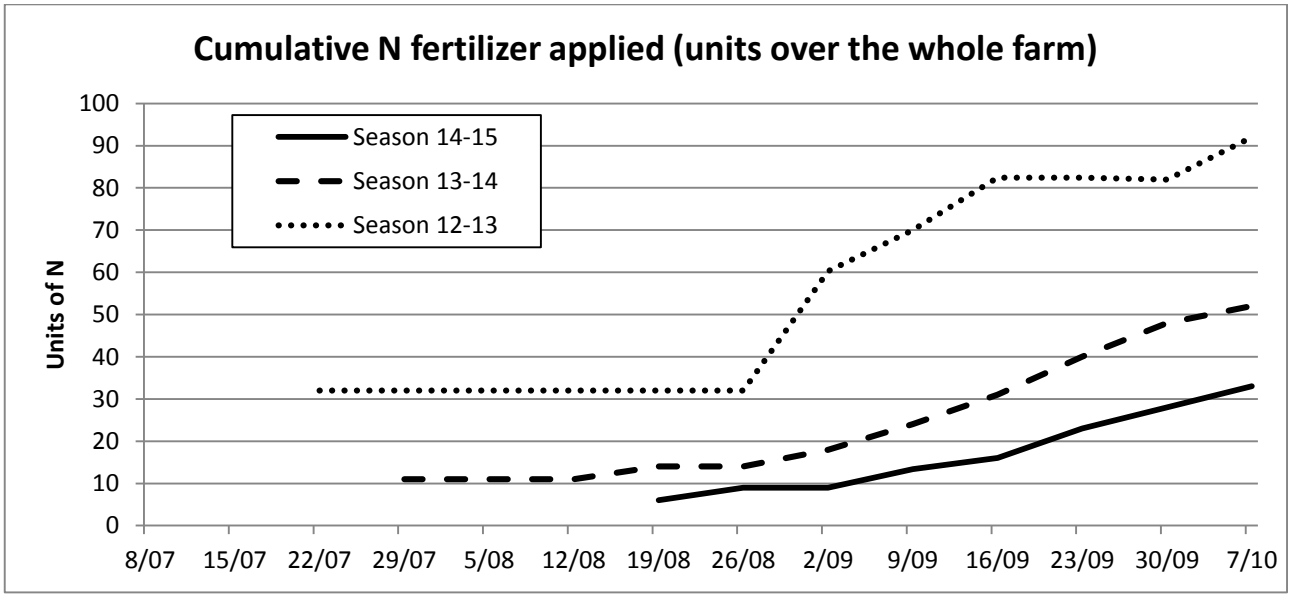
The graphs below show the actual use of supplement vs the planned use of supplement and a comparison of the supplement use to date between the last 3 seasons.



Use of N Fertilizer

As the system run this season only allows for the application of 150 units of N/ha, we need to be strategic about when this is used (timing and rate of N).

N fertilizer applications started on the week of the 19th August, once ground conditions were adequate in terms of temperature and there was enough area grazed for the fertilizer to be applied. The rate of applications was 25 kgN/ha initially applied as Ammo then as Urea from early September when the spring maintenance fertiliser (Superphosphate) was also applied and provided the sulphur otherwise supplied in Ammo.



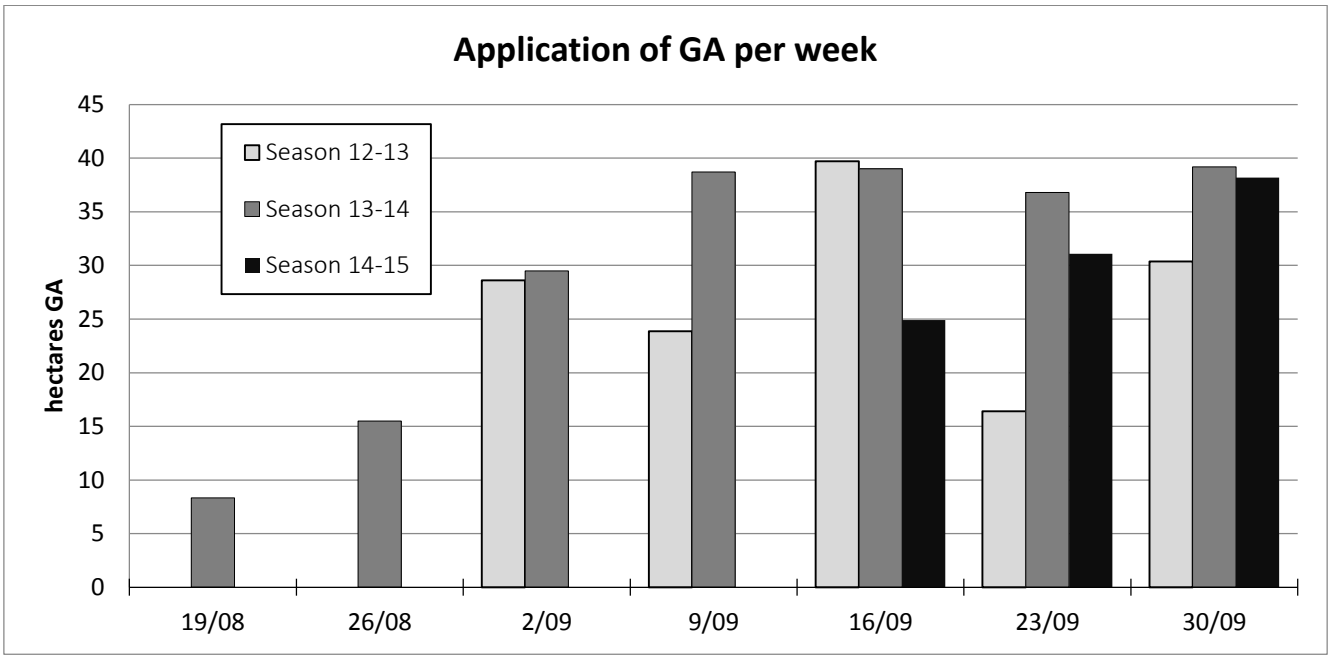
It has been determined the farm is likely to continue applying N fertilizer at this rate till mid November as below. The aim of this fertilizer policy is to keep ryegrass plants in a continuous vegetative state while going through natural seeding period for the species we have on the farm. This way we lessen the impact of seed head emergence on grass quality through the spring period. In theory this will occur as follows:

Period	N Rate	Grazing Round	General Notes
August – 23 September	25 kgN/ha	1st Grazing Round	Nitrogen applied following grazing to most paddocks, a few low cover paddocks had N applied pre grazing
24 Sept – mid November	25 kgN/ha	2nd and 3rd Grazing Rounds	Continue with 25 kgN/ha immediately following grazing on all non effluent areas. Expect two further grazing rounds of approximately 22 days/round.
Mid November	25kgN/ha	4th Grazing Round	May continue with N on part of this round, and keep total N applied per hectare no more than 90kgN/ha (season to date)
December – January	0	5th, 6th and 7th Grazing Rounds	Not anticipating applying any N fertiliser through this period.
Mid February – Mid April	25kgN/ha (per grazing)		Apply following grazing again from mid February to mid April applying no more than 150 kgN/ha over the whole season and averaged over the whole milking platform.

Use of Gibberellic Acid

Gibberellic acid was used as soon as ground conditions allowed for it, as well as when we had enough area grazed to ensure it's application occurred within 3-5 days post-grazing.

Given the slower rotation that we've had this season, this only happened in mid-September and has resulted in total application less than previous seasons.

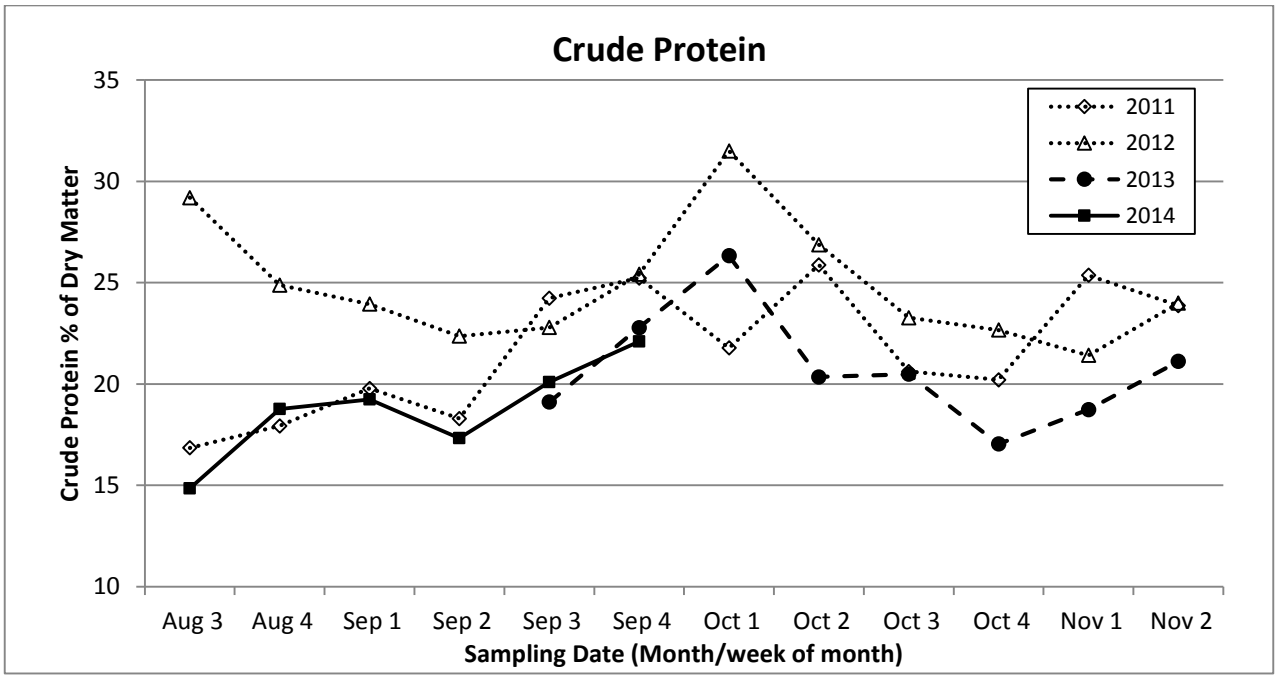


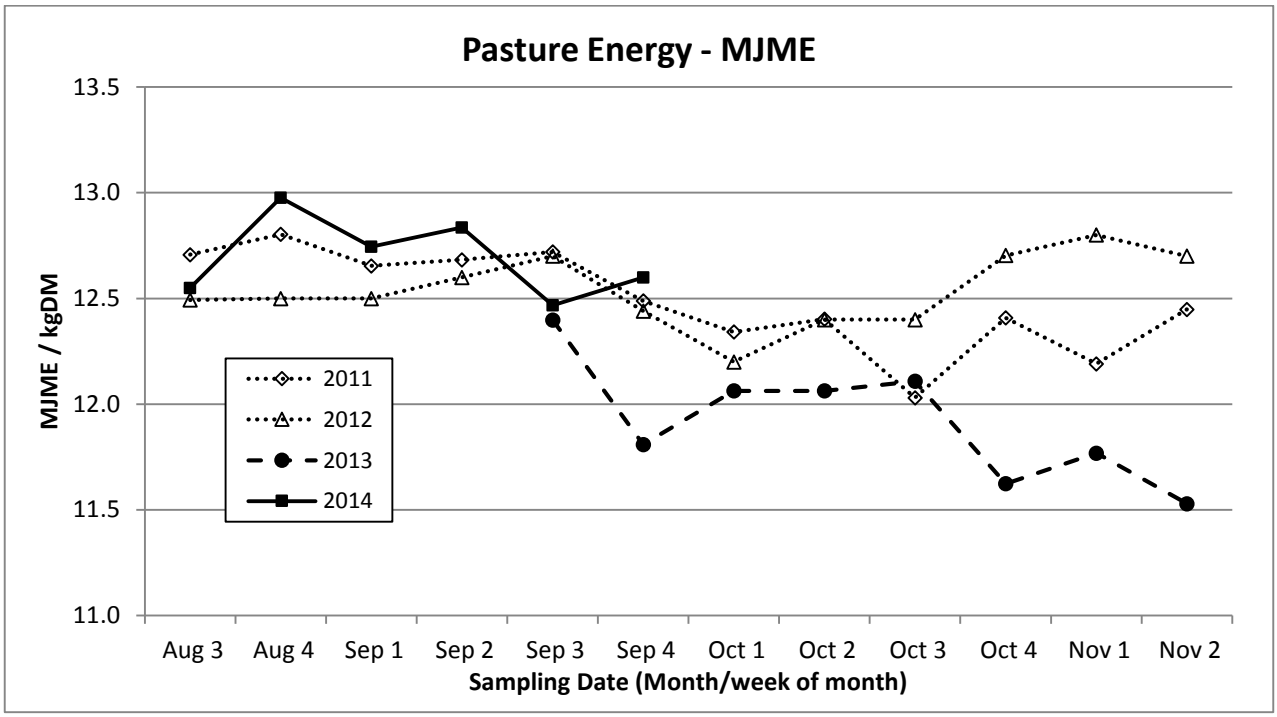
Summary of Growth Conditions

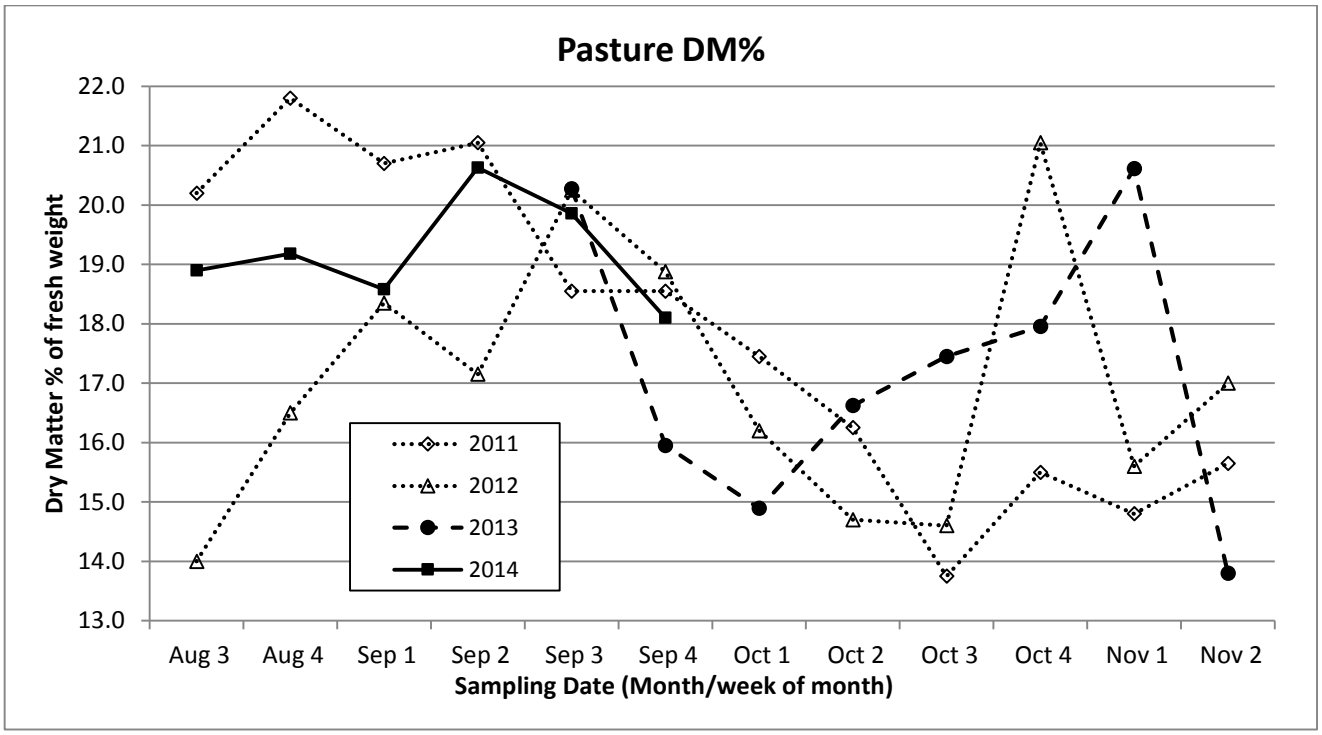
This seasons growing conditions has enabled the farm to adhere to the SRP without holding back cow performance or causing pasture damage. It also enabled less use of supplement than had been planned.

At the end of the first round we have been able to:

- Follow the SRP religiously as was required by the system we are running this season
- keep consistent residuals ensuring pasture quality is not at risk for the second round
- drop our APC to the required levels by the correct date (25th September)
- utilize pasture better due to drier conditions than usual
- Use 52.5 tonnes DM supplement less than planned.

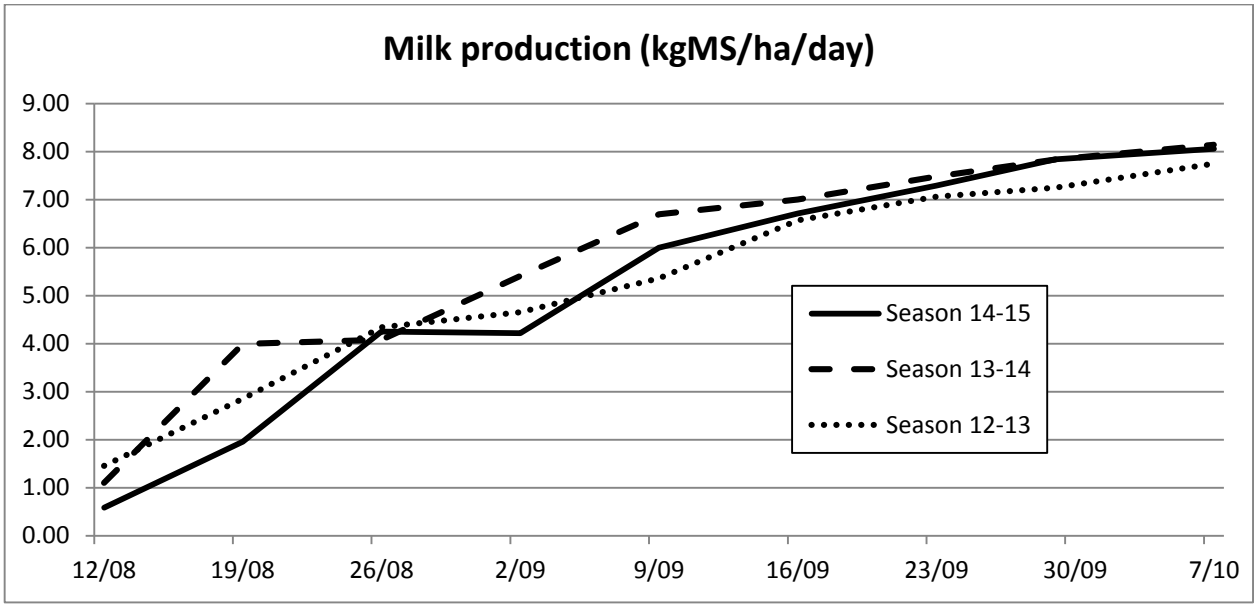

Crude Protein
Crude Protein % of Dry Matter
35
30
25
20
15
10
2011
2012
2013
2014
Aug 3
Aug 4
Sep 1
Sep 2
Sep 3
Sep 4
Oct 1
Oct 2
Oct 3
Oct 4
Nov 1
Nov 2
Sampling Date (Month/week of month)

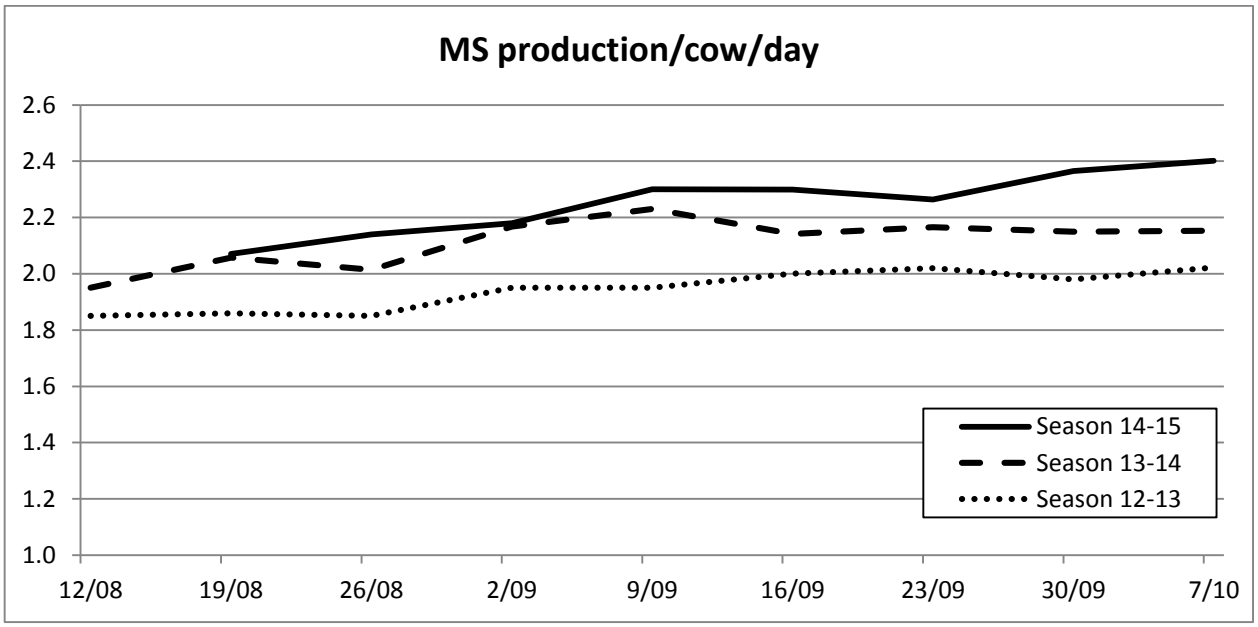

Pasture Energy - MJME
MJME / kgDM
13.5
13.0
12.5
12.0
11.5
11.0
2011
2012
2013
2014
Aug 3
Aug 4
Sep 1
Sep 2
Sep 3
Sep 4
Oct 1
Oct 2
Oct 3
Oct 4
Nov 1
Nov 2
Sampling Date (Month/week of month)



Milk production

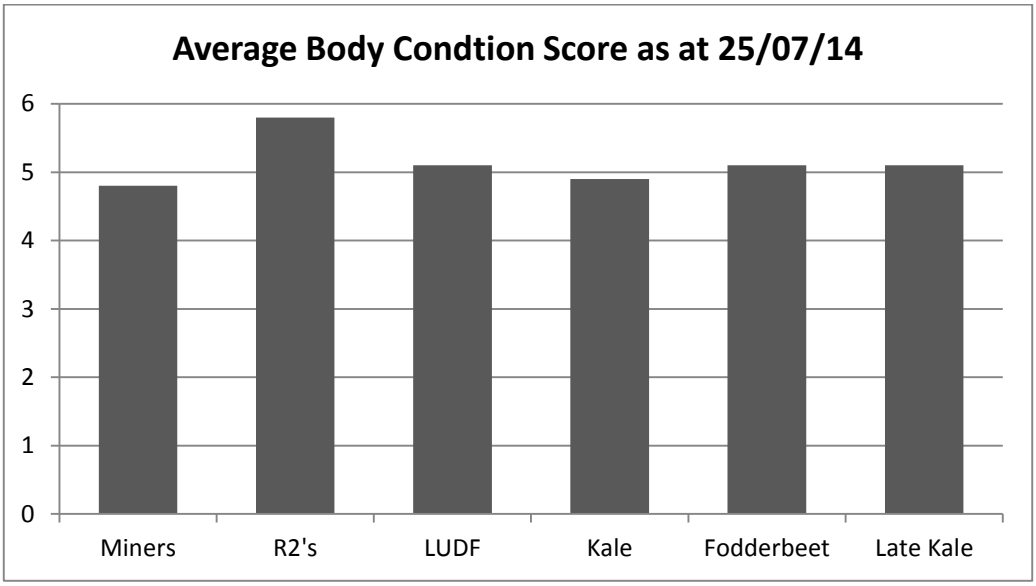
The following graphs show production on a per cow and per hectare basis.



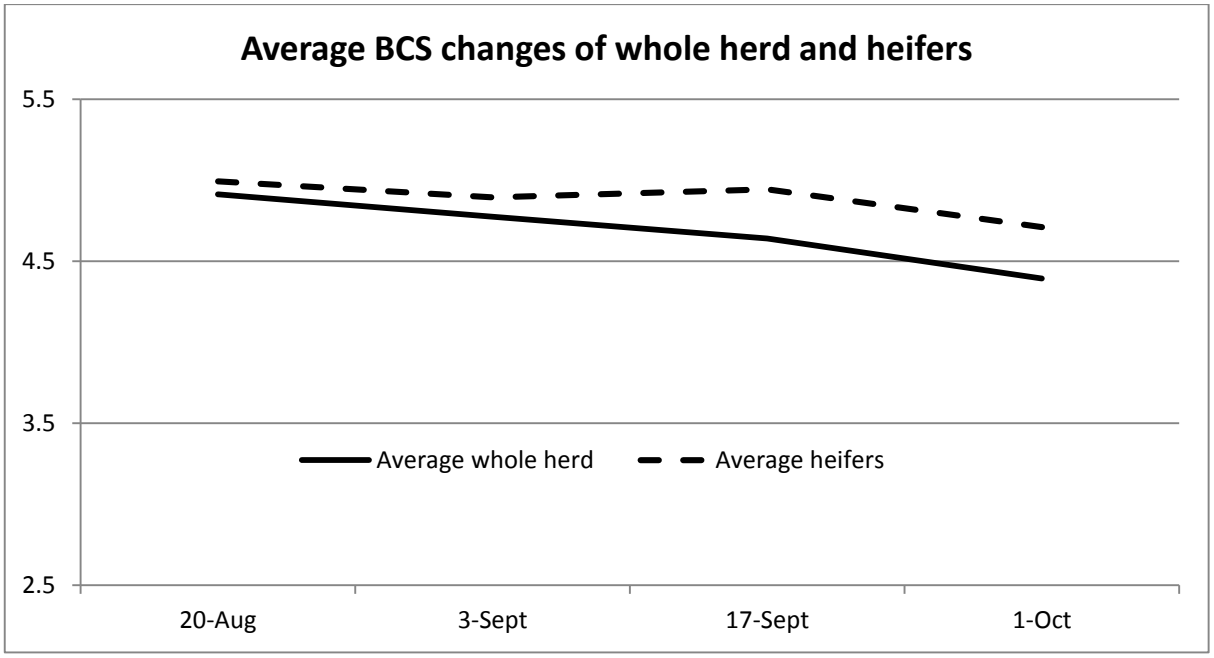


Cow condition

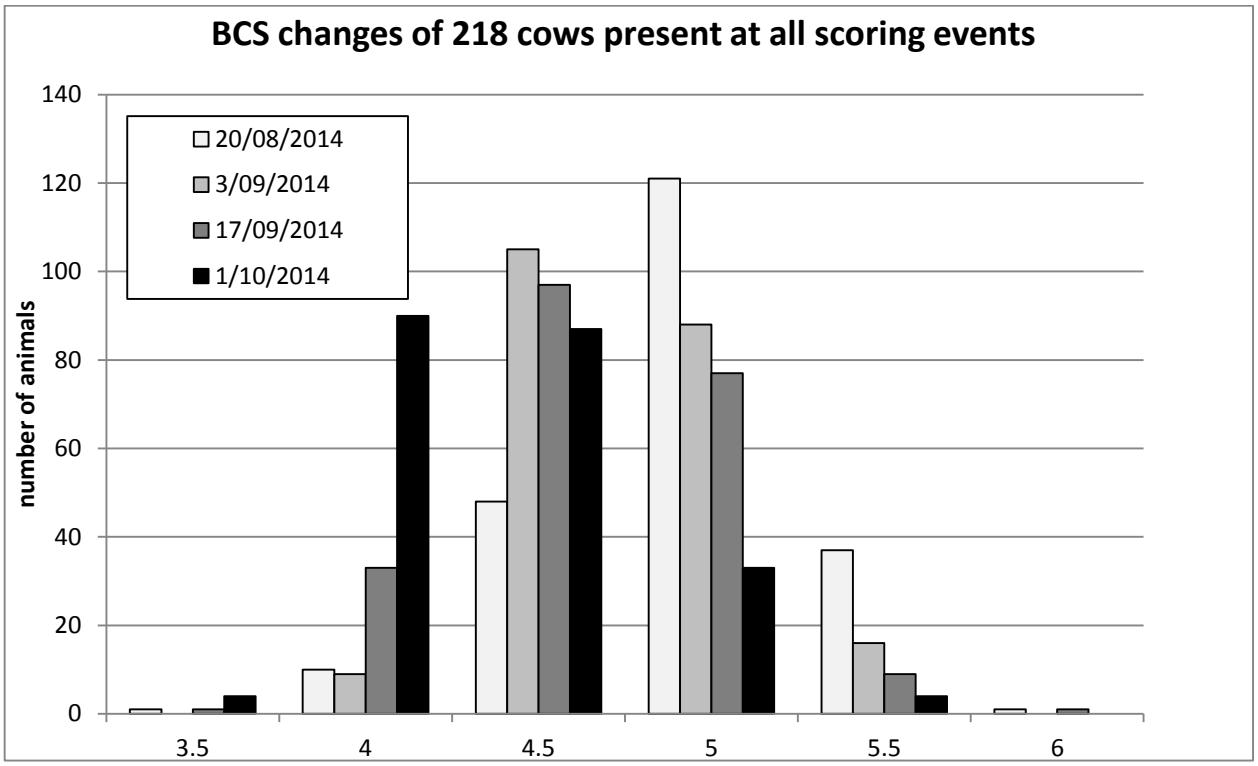
The average BCS of all cows and heifers just prior to the start of calving was as follows. While the average for the Miners Rd and Kale groups was slightly below 5.0, most of the cows in these groups would have reached a CS of 5 by the time they calved.

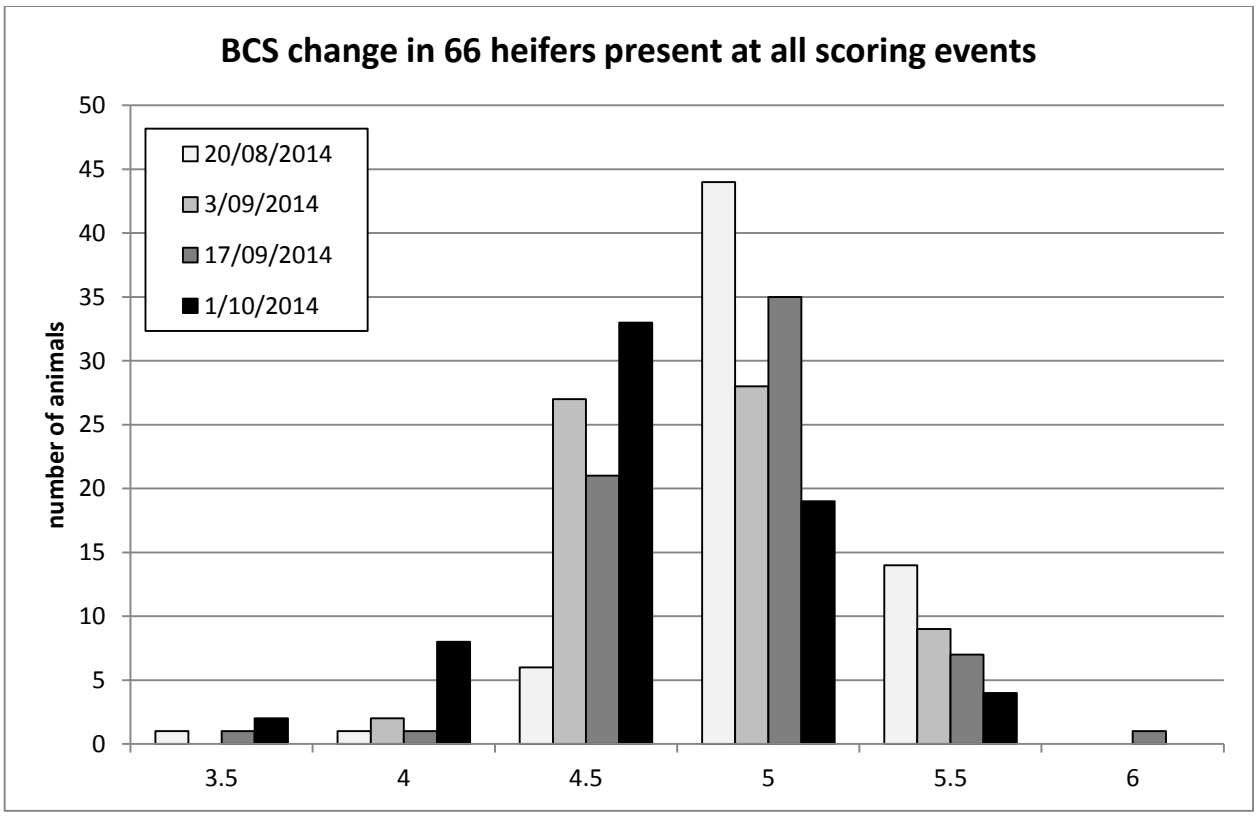


The milking herd has been Condition Scored every 2 weeks since 20th August. Results can be seen below

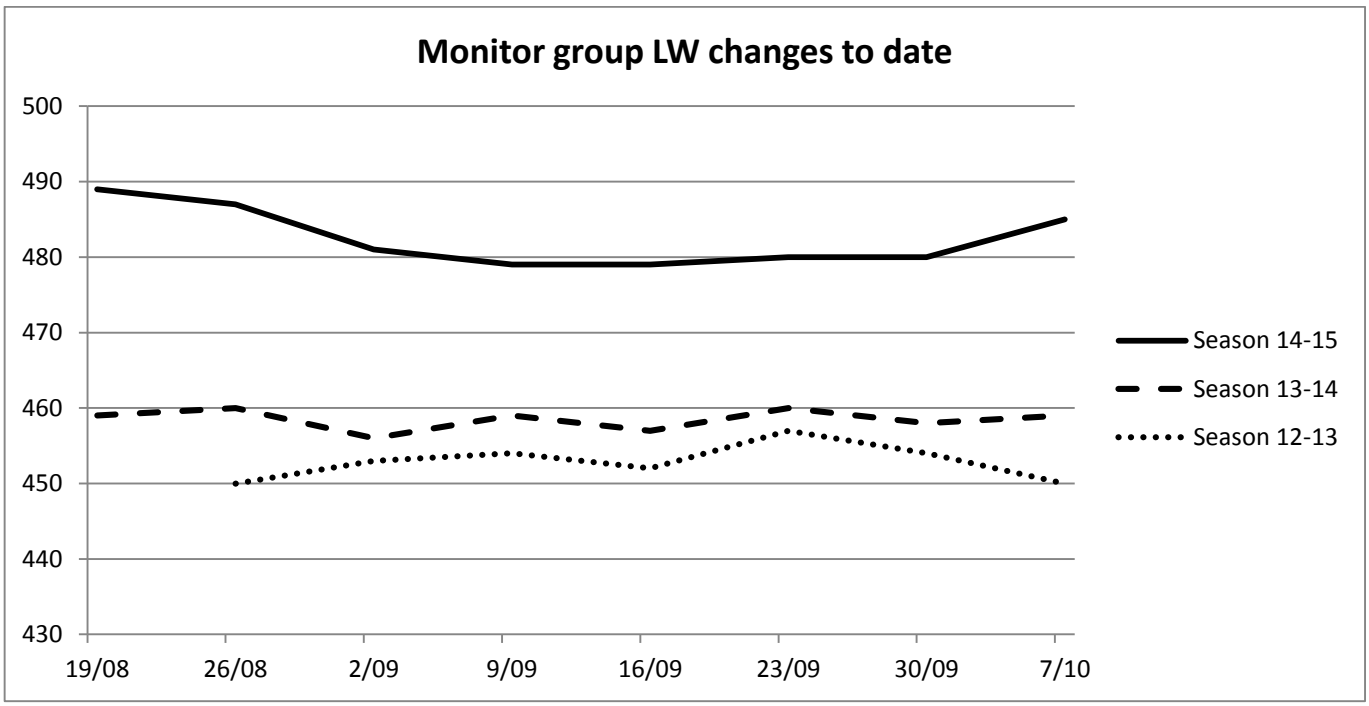


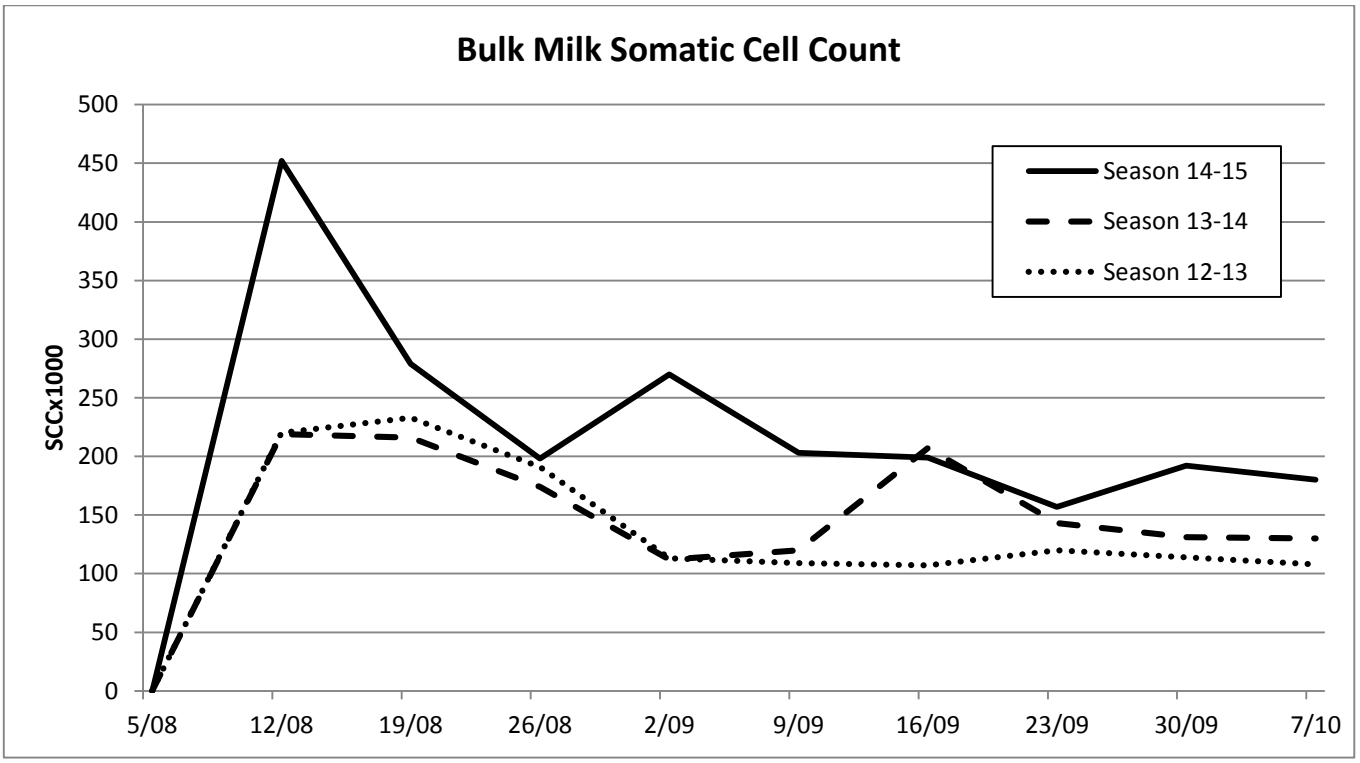
The graphs below show the BCS changes in a group of 218 mixed age cows and a group of 67 first calving heifers that have been consistently scored at every BCS event.

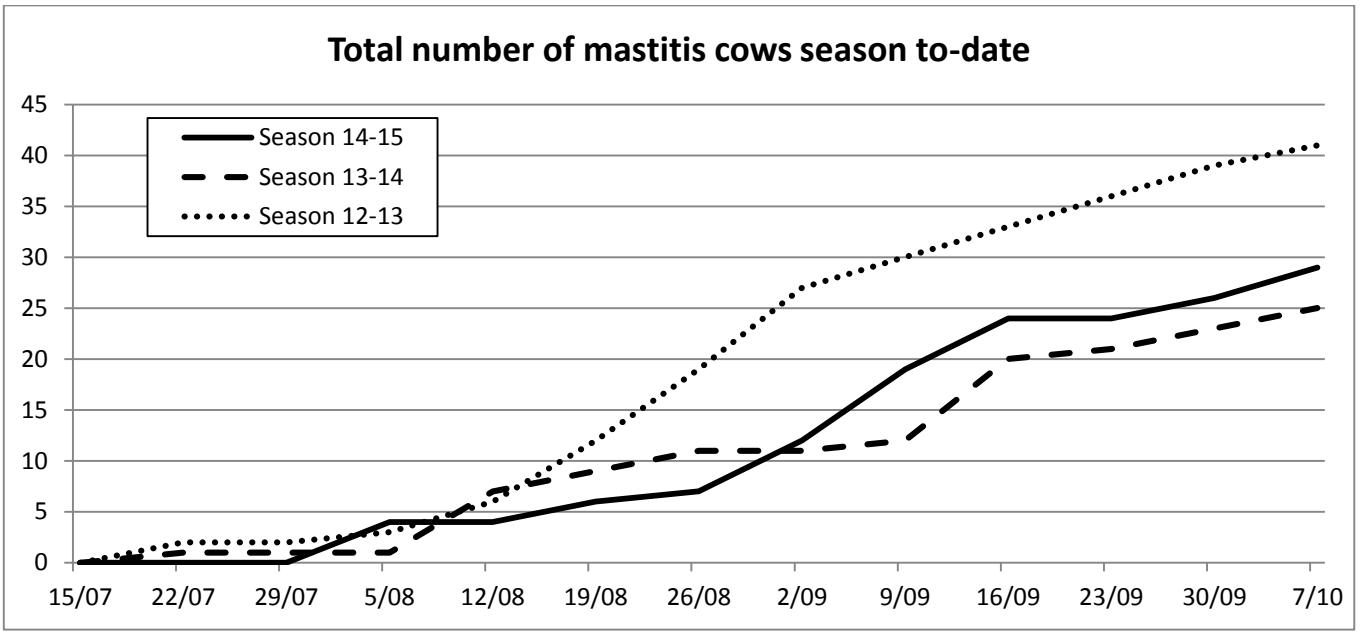


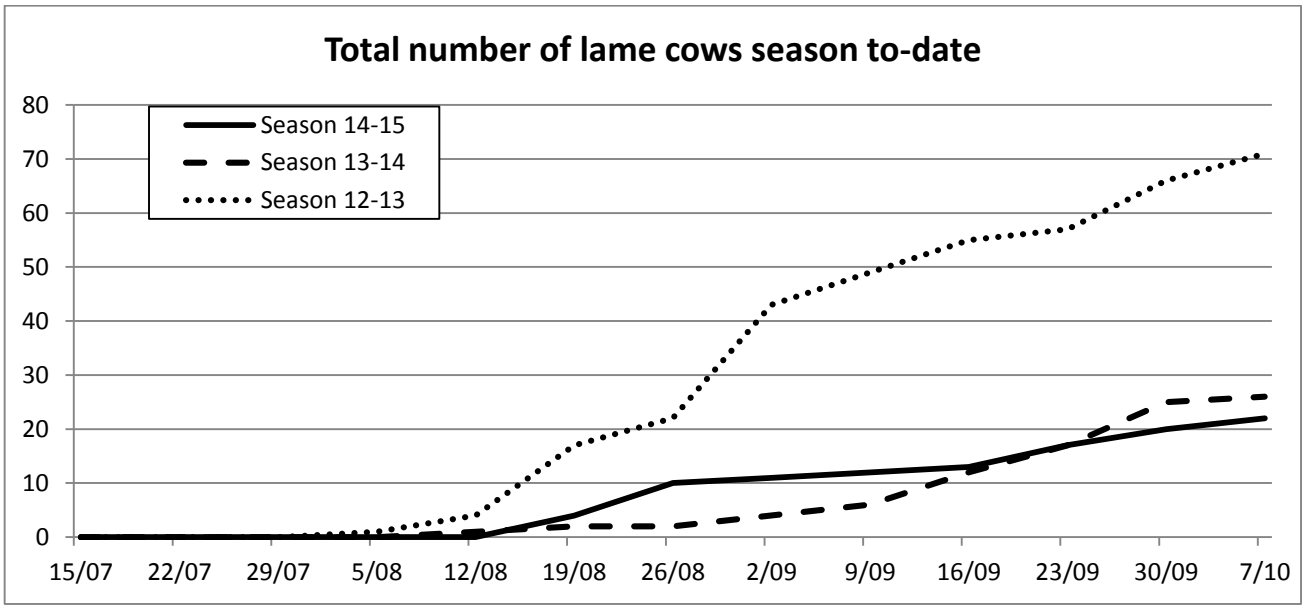


We follow a monitor group of cows, which are the cows calved in the first 16 days. The graph below shows the change in live weight of these animals.






Total number of mastitis cows season to-date
45
40
35
30
25
20
15
10
5
0
Season 14-15
Season 13-14
Season 12-13
15/07
22/07
29/07
5/08
12/08
19/08
26/08
2/09
9/09
16/09
23/09
30/09
7/10


Total number of lame cows season to-date
80
70
60
50
40
30
20
10
0
Season 14-15
Season 13-14
Season 12-13
15/07
22/07
29/07
5/08
12/08
19/08
26/08
2/09
9/09
16/09
23/09
30/09
7/10

Grazing log – example of using two herds to graze paddocks to desired residual:

	Small Herd	**Main Herd**
Saturday 27 September	• Returned to front 1.5 Ha of N-7 after morning milking • At Pm milking went to fresh break in S-1	• Big herd day feed in S-8 • At pm milking returned to S8 until 7.30pm then moved to new break in S-2
Sunday 28 September	• Small herd returned to Front 1.5 Ha of S-1 am grazing • at Pm milking went to 1.6 ha break at the front of N-3	• Day feed in S-2 • at pm milking returned till 7.30pm then went to new break in N-7
Monday 29 September	• Small herd Front 1.5 Ha of N-3 am grazing • at Pm milking returned to fresh break in N-3	• day feed in N-7 • decided at pm milking there was too much grass left to be cleaned up by 8 pm so went to new break in S-1 at milking time
Tuesday 30 September	• Front 1.5 Ha of N-3 am grazing • at Pm milking returned to fresh break in N-3 another 1.5 ha	• N-7 for the day feed • returned there till 7.30 then went to new break in second half of S-1
Wednesday 1 October	• Front 3 Ha of N-3 am grazing • at Pm milking went to 1.6 ha break at the front of N-6	• day feed in S-1 • at pm milking decided there was too much grass left in S-1 to be cleaned up by eight Pm so were put to new break N-3
Thursday 2 October	• back to break in N-6 • at Pm milking went to 1.6 ha break at the front of N-8	• day feed in S-1 • at pm milking returned to clean up N-3 till 8.15 then moved to new break N-6

	Small herd	**Main herd**
Saturday am	N7	S8
Saturday pm	S1	S8 / S2
Sunday am	S1	S2
Sunday pm	N3	S2 / N7
Monday am	N3	N7
Monday pm	N3	S1
Tuesday am	N3	N7
Tuesday pm	N3	N7 / S1
Wednesday am	N3	S1
Wednesday pm	N6	N3
Thursday am	N6	S1
Thursday pm	N8	S1 / N6

LUDF Mating Plan – Spring 2014

Breeding Objective

LUDF's breeding objective is a high BW/PW herd of F10-12 / J6-4 (ie predominantly Friesian, while retaining as much hybrid vigour as possible from the Jersey cross). The farm is targeting a mature cow liveweight of approximately 510-515kg.

The current BW of the LUDF herd is 146 and PW is 191. Nationally the top 5% of herds have a BW of 148 and PW of 183 or higher.

Milking Herd:

1. Currently the herd is 55% HF genes (45% Jersey) and the 2013 born animals are 61% HF. An F10 animal is 63% HF.
2. Cows of F0 – F9 will be mated to Holstein Friesian Premier Sires Daughter Proven Teams and cows F10 or greater will be mated to Kiwi Cross Premier Sires Daughter Proven Teams.
3. LUDF will use AI for 6 weeks followed by 4 weeks natural mating using 2 year old Jersey bulls. (10 weeks total mating period)
4. An option remains to extend AI mating for a further week (or more) and potentially use SGL (Short Gestation) semen in these later AI matings.
5. A further option considered was SGL semen over the 5% lowest BW/PW cows in the herd. This may occur from week 4-6 of mating.

Yearling Heifers:

6. LUDF has used AI mating followed by bulls for a number of years to improve genetic gain in the herd.
7. A range of tools have been used to assist this from synchronisation to daily observation and mating.
8. Analysis of the results of yearling mating shows LUDF typically has 20-30 R2 heifers enter the herd from yearling AI mating (approximately 20% of replacements).
9. Yard facilities at the current graziers are not suitable for the additional handling required for either daily mating or synchronisation. Therefore, and in light of this year's payout, LUDF is electing not to AI the yearling heifers.
10. This is a short term decision, recognising breeding decisions are long term and cumulative.

Mating Management:

11. Given the above decisions regarding heifer mating, the farm potentially has 20-30 fewer heifer calves to select its replacements from next season. It is therefore event more important to maximise the reproductive performance from the milking herd.
12. The key drivers of this will be accurate heat detection/submission rate and length of AB.
13. Observation of premating heats and early consideration of cows not cycling is important in regard to submission rate – checking all cows calved 35-42 days and not cycled 7-10 days pre PSM.

The LUDF herd performance is reaching very high levels and capitalising on many aspects of farm and animal management that have taken place in recent years. Putting farm management aside herd improvement benefits are in effect a staircase effect – permanent and cumulative. LUDF's breeding programme has created choices over which heifers to rear and which cows to cull and resulted in higher income through stock sales as buyers have identified the value of the herd.

Lincoln University Dairy Farm - Farm Walk Notes

Tuesday 7th October 2014

LUDF – focus for 2014/15 Season: Nil-Infrastructure, low input, low N-loss, high profit.
Farm system comprises 3.5 cows/ha, 150kgN/ha, 300kgDM/cow imported supplement, plus winter most cows off farm. FWE of less than $1.12million and Target production of 500kgMS/cow.

Critical issues for the short term

1. **Achieve target grazing residuals and cow intakes while managing average pasture cover, shape of the wedge and maintaining pasture quality (especially in paddocks at the top of the wedge).**
2. **Use back-fences on all herds whenever paddock grazing takes more than 36 hours.**
3. **Ensure magnesium supplementation occurring**
4. **Looking towards mating:**
    a. **Proactively monitoring cycling cows ahead of mating**
    b. **Prepare bulls**
    c. **Prepare R2s**

Key Numbers - week ending Tuesday 7th October

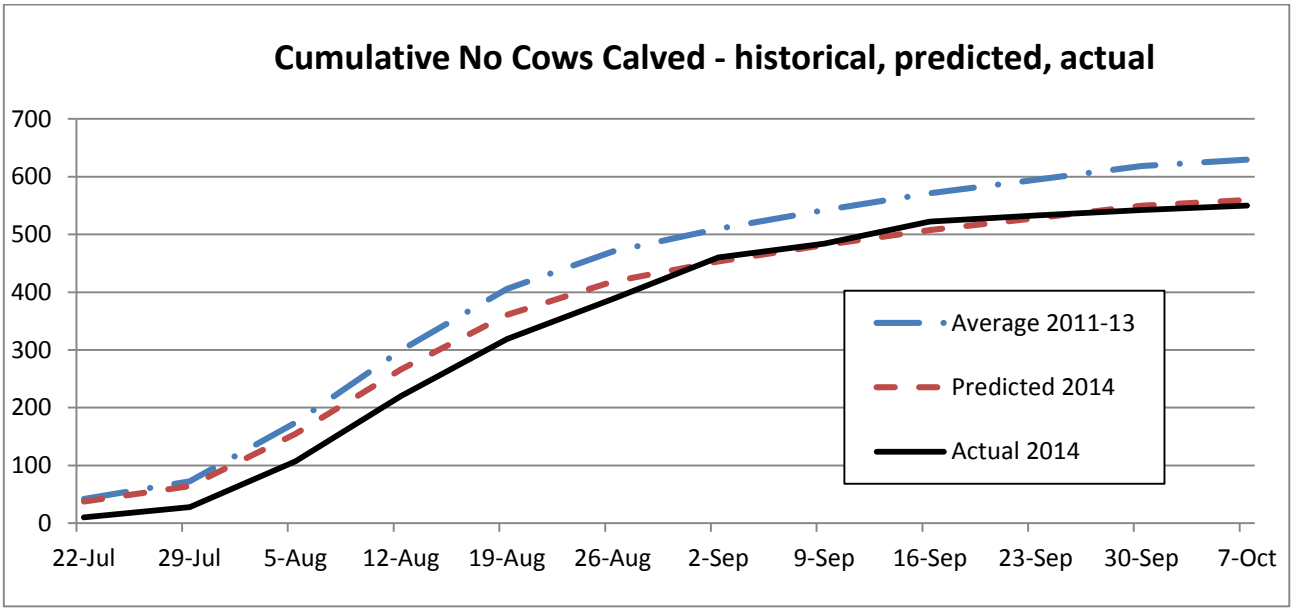
Ave Past Cover	2537kgDM/ha	Past Growth Rate	60 kgDM/ha/day
Ave Milk Production	2.4kgMS/cow*	No Cows Calved	550
Round length	34 days	Supplement used	none

** Based on cows milked in last 8 days*

Herd Management

5. Late calvers and springers: There are all still at the East Block (9 cows total).
6. We continue managing three milking herds,
    a. the colostrums + lame herd + mastitis herd (4 colostrum cows + 5 lame cows, 3 mastitis, all on OAD)
    b. the small milking herd with all the heifers + cows below 4.5 BCS (141 animals)
    c. the main herd with mixed aged cows (397 animals).
7. BCS was done on 1/10/14. Results are further into the notes
8. Live weight across the herd has increased by 5 kg this week.
9. SCC is at 180,000. 3 new cows diagnosed with mastitis and treated this week
10. We've had 3 new lame cows this week.
11. We've had 3 downer cows after the storm. It may be due to a sub-clinical ongoing lack of Mg in the system. We might need to dust paddocks ahead of the cows if another bad weather event happens to avoid this problem.
12. Metricheck was done and 14 cows were identified and treated accordingly.
13. Calving rate is holding similar to the proportional change in stocking rate. See the graph below:

Figure 1: Calving spread at LUDF comparing last season's, expected 2014 and actual calvings.



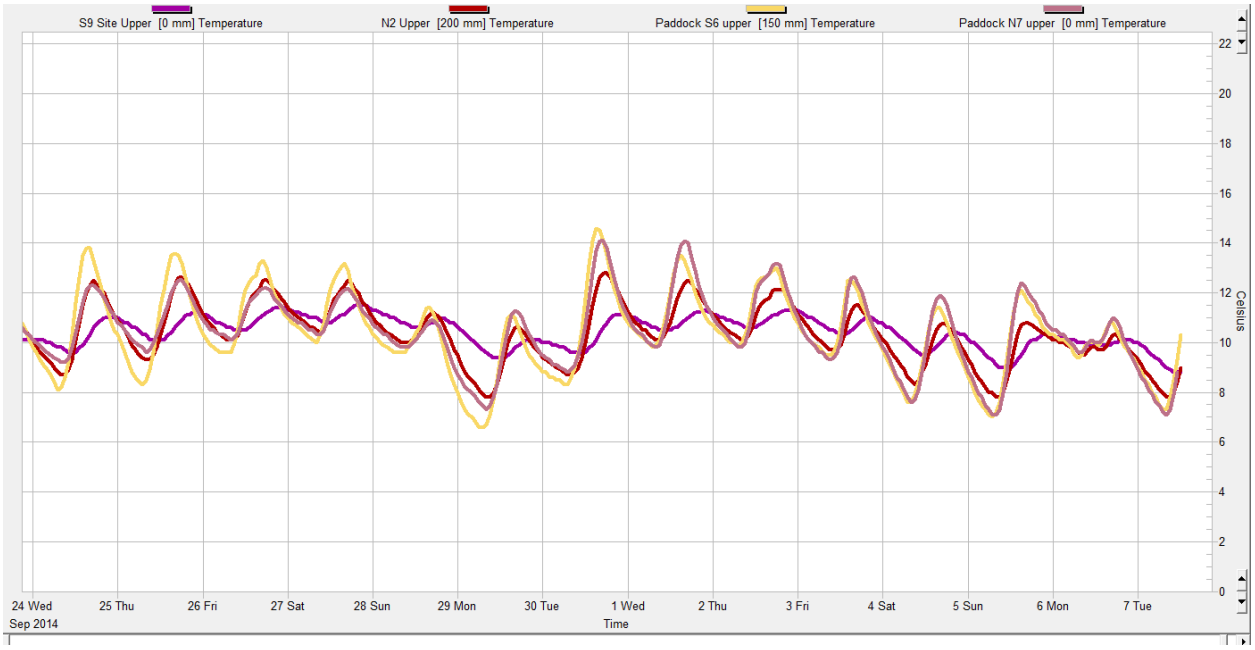
Mating preparedness:

14. Pre-mating heat detection started 2 weeks ago (orange tail paint). This week we had 128 cows showing signs of heat (23%). In a fully cycling herd of 550 cows you'd expect to get 33% of the herd showing sign of heat in one week. We are comfortable, at this stage with the level of activity shown in the herd given that we are still calving cows so there won't be 100% of animals cycling.
15. Cows will receive their pre mating BVD vaccine this Thursday
16. Blood samples for mineral and vitamin profiling were taken yesterday. Animals will be treated as required according to results.
17. R2 were weighed a week ago and averaged 333kg (weight gain of 838 gr/day over 62 days). They have been drenched, weighed, copper bulleted and given a B12 plus selenium shot last week, as part of their pre-mating set-up. They will be BVD vaccinated next week.
18. Bulls have been sourced and will be getting their pre-mating treatment done tomorrow: Copper, Selenium, BVD and Lepto vaccines, drench and blood samples will be taken to see whether they require any further mineral/vitamin top-up. They are 2-year old jersey bulls. They have also had scrotal circumference checked to assess reproductive health.

Growing Conditions and Pasture Management

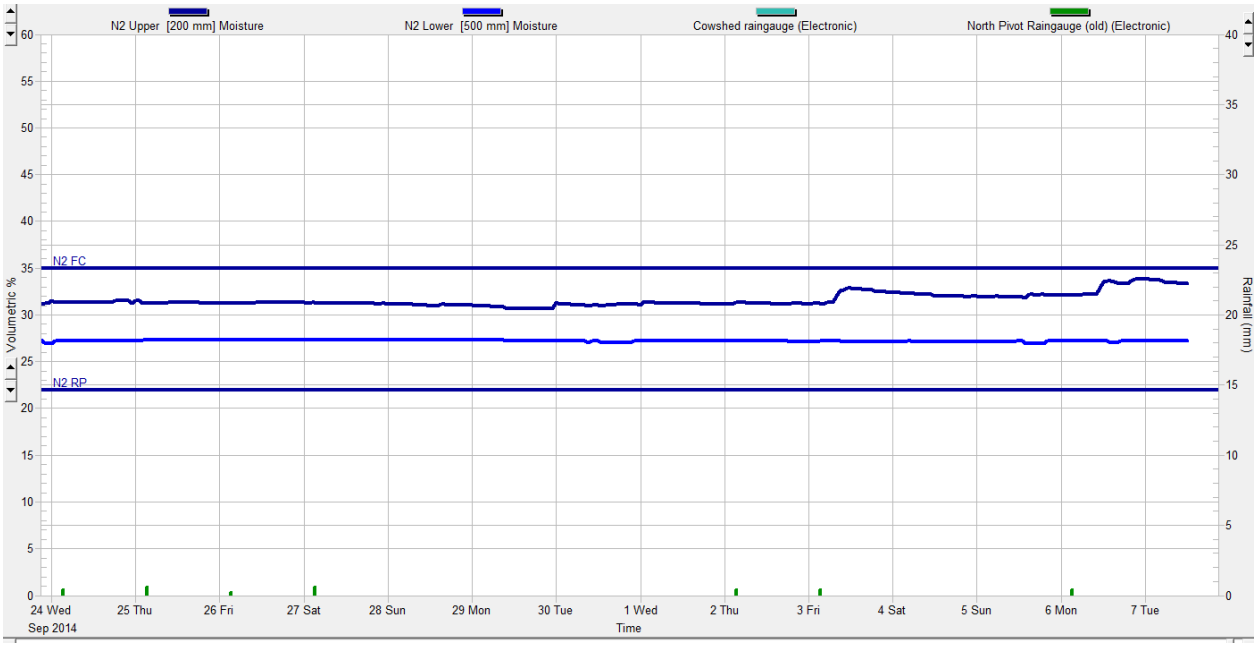
19. No supplements were fed this week.
20. Soil Temperature: 9 am average soil temperature for the week was 9.2 degrees (0.3 degrees lower than last week).

Figure 2: Soil temperature history for the last 2 weeks



21. Rain fall: 5.8 ml for the week.
22. Irrigation: We irrigated for 4 days on both blocks. Irrigation stopped during the weekend due to rainfall. Irrigation will possibly start again Friday, depending on conditions.
23. Soil moisture levels are now holding with the combination of a little rain and some irrigation.

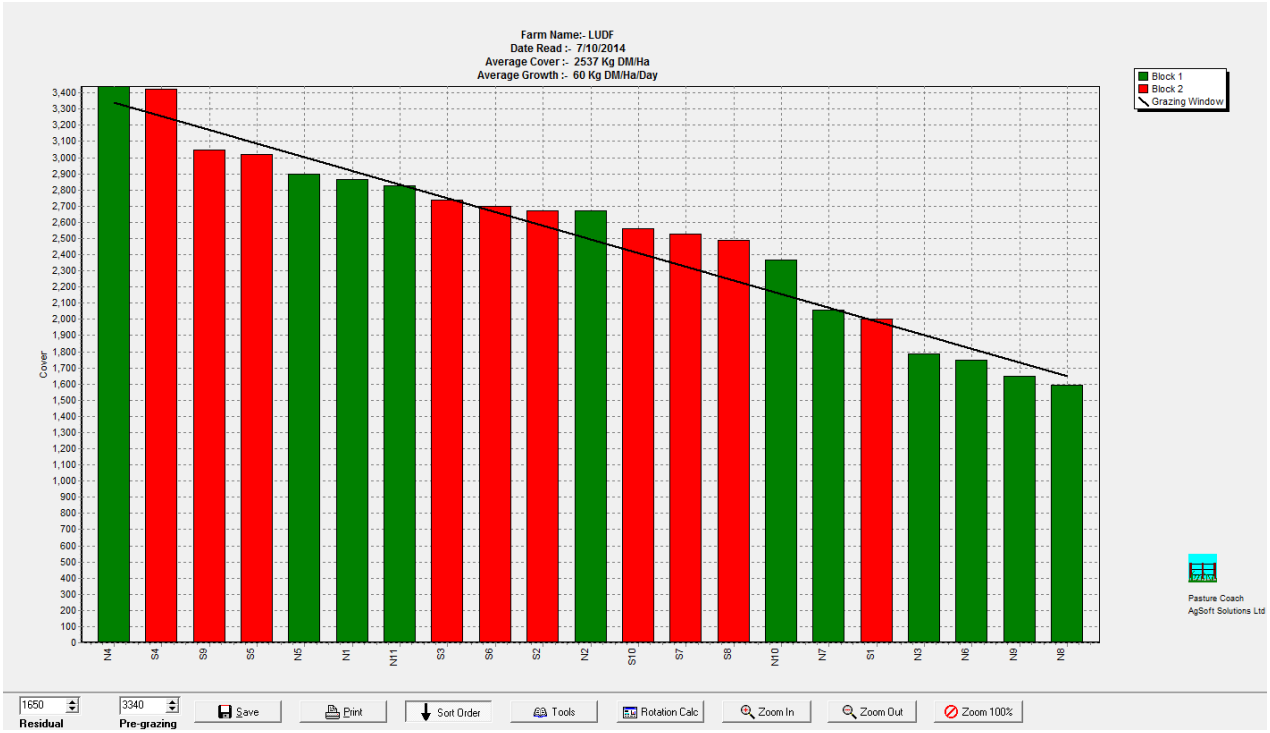
Figure 3: Soil Moisture history for the 2 weeks



24. This week fertilizer has been applied as follows:
    a. 25.4 ha have received 25 kgN/ha (as urea). We expect to continue with 25kgN/ha following grazing (on the non-effluent area) till into November.
    b. Superphosphate and selenium prills are now finished.
25. Gibberellic acid has now been stopped to allow natural tillering of the plants.

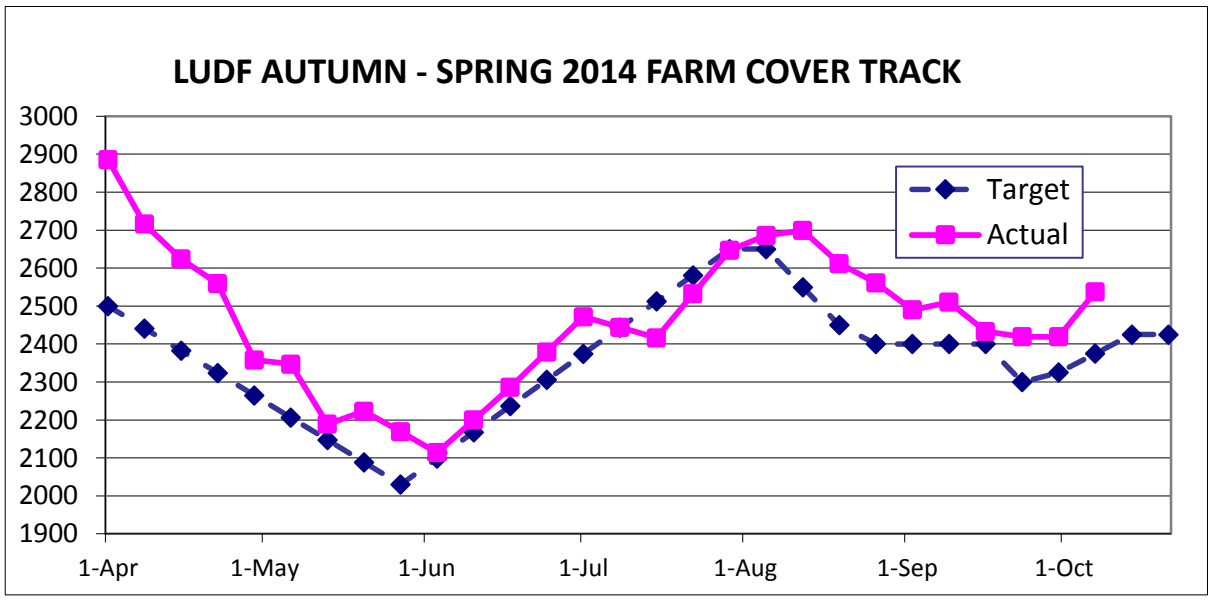
26. The current feed wedge is below. The pre-grazing target (3340 kgDM/ha) for the target line was calculated based on feeding 560 cows (3.5 cows/ha), offering 22 kgDM/day (intake required according to production and a small BCS gain) on a 22 day round, allowing for a post-grazing cover of 1650 kgDM/ha, which is in agreement with what we are achieving (3.5 cows/ha x22kgDM/cow/day x 22 days + 1650 = Pregraze target = 3340kgDM/ha).

Figure 4: This weeks feed wedge:



27. Area grazed this week was 33 ha total.
28. Below is our average pasture cover track, the budgeted track reflects our expectation of APC from the Spring Rotation Plan, based on extending the first round out till late September.

Figure 5: Average Pasture Cover

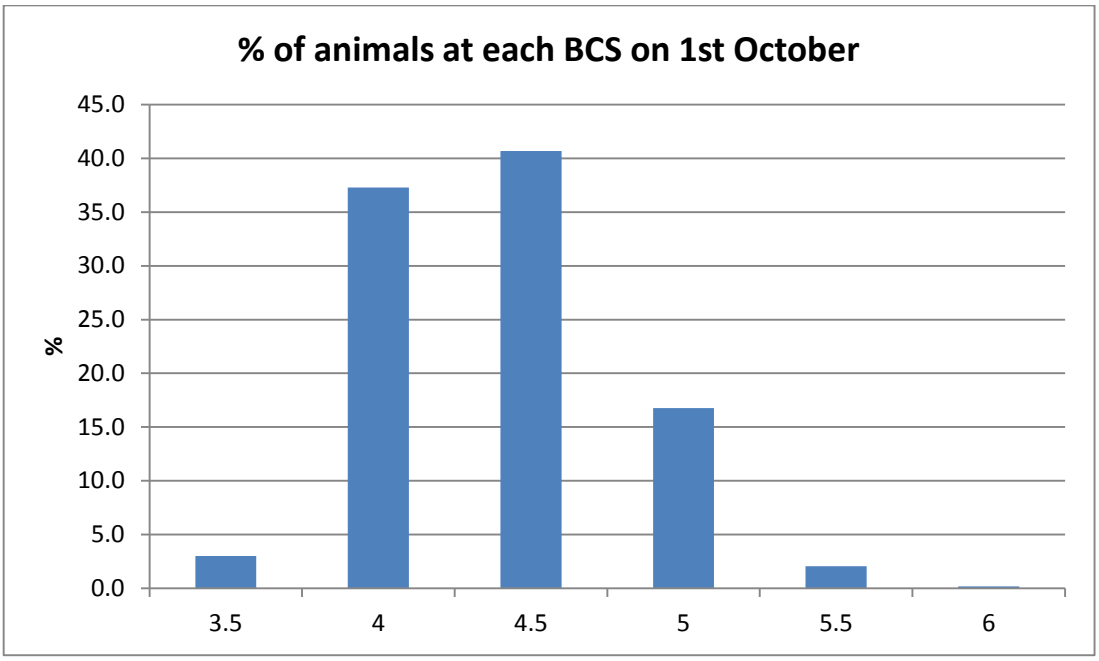


Feeding Management

29. Last week's grazing plan was extended from the planned 22 out to 34 days due to some extended grazing in 2 paddocks. The grazing residuals were 1500 kgDM/ha as cows were given more time in each paddock. This is slightly lower than has been targeted and achieved in most other paddocks.
30. The feed wedge above indicates a minimal feed surplus of about 5.5 tonnes. As pasture quality is a key driver for the farm any increase in surplus will be monitored closely and dealt with promptly.
31. Feeding management for the next week will be based on a 22-day round length (134 m2/cow/day). We will continue allocating the available area for 24 hr breaks and we are not expecting to feed supplements.
32. Some cows may struggle to eat all paddocks to the desired post-grazing target (1650 kgDM/cow) since not all cows in the herd will be at the 22 kgDM/cow/day intake level. As per point 29, we will remain vigilant of the quality of the grass coming through.
33. Management options to be used if cows do not hit targets with this round are either Pre-graze mowing and or removing a paddock for silage. This decision will be made according to pre-grazing covers and quality of the grass ahead of the cows.
34. Fertilizer: we will continue to apply 25kgN/ha for the second round and re-evaluate further applications afterwards. The aim of this is to not stress the plants, hence trying to avoid quick seeding and fast loss of quality.
35. Grazing residuals are plating around 1650-1700 kgDM/ha but are low and consistent, with few obvious clumps. Residuals will continue to be monitored, taking heading dates into account so we can pro-actively manage quality through the next round.
36. Currently, higher cover paddocks are initially grazed by the small herd with the large herd allocated the rear portions of these paddocks to achieve the desired post-grazing targets over the whole area. This allows us to adequately feed young and lower BCS cows, as well as achieving post-grazing targets, but is modified a little as required from paddock to paddock, taking account also of the paddock attributes including location, quality, previous grazing residual etc.

Cow Condition

37. The herd was BCS on 1/10/14. The average BCS was 4.4
38. This means a drop of 0.5 BCS since 20/08/14.



Young Stock

39. All calves are in the East block (out of the calf sheds) across the road.
40. All calves are still receiving milk as 700gr/head/day of reconstituted curding milk powder on OAD feeding.
41. Older calves are now consuming up to 1 kg of calf meal.
42. Weaning will start as calved reach a minimum weight of 75kg LW together with consuming more than 1 kg of meal/head + evidence of a functioning rumen.

Data sheet

LUDF Weekly report	9-Sep-14	16-Sep-14	23-Sep-14	30-Sep-14	7-Oct-14
Farm grazing ha (available to milkers)	160	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	0/80/0	0/42/0	0/30/0	0/18/0	0/10/0
Culls (Includes culls put down & empties)	0	3	0	1	0
Culls total to date	7	10	10	11	11
Deaths (Includes cows put down)	0	0	0	0	0
Deaths total to date	5	5	5	5	5
Calved Cows available (Peak Number 560)	484	520	533	542	550
Treatment / Sick mob total	0	6	0	2	3
Mastitis clinical treatment	7	5	0	2	3
Mastitis clinical YTD (tgt below 64 yr end)	19	24	24	26	29
Bulk milk SCC (tgt Avg below 150)	203	199	157	192	180
Lame new cases	1	1	4	3	2
Lame ytd	11	12	12	19	21
Lame days YTD (Tgt below 1000 yr end)	147	161	203	252	287
Other/Colostrum	15	0	0	0	0
Milking twice a day into vat	446	495	518	528	538
Milking once a day into vat	0	0	6	8	5
Small herd	121	133	138	141	141
Main Herd	325	362	380	388	397
MS/cow/day (Actual kg/Cows into vat only)	2.30	2.30	2.26	2.37	2.40

MS/cow to date (total kgs / Peak Cows	34	47	62	75	94
MS/ha/day (total kgs / ha used	6.00	6.71	7.29	7.84	8.06
Herd Average Cond'n Score	4.80	0.00	4.60	0.00	4.40
Monitor group WOW early MA calvers (kg)	479	479	480	480	485
Soil Temp Avg Aquaflex	8.4	8.9	8.4	9.5	9.2
Growth Rate (kgDM/ha/day)	40	44	47	71	60
Plate meter height - ave half-cms	14.4	13.8	13.7	14.2	14.6
Ave Pasture Cover (x140 + 500)	2510	2433	2419	2485	2537
Surplus/[defict] on feed wedge- tonnes	0	0	0	0	5T
Pre Grazing cover (ave for week)	3458	3495	3058	3289	3314
Post Grazing cover (ave for week)	1600	1600	1600	1650	1650
Highest pregrazing cover	3500	3750	3348	3358	3480
Area grazed / day (ave for week)	2.97	4.18	5.84	5.14	4.70
Grazing Interval	54	38	27	31	34
Milkers Offered/grazed kg DM pasture	11.9	17.9	16.6	20.1	23.3
Estimated intake pasture MJME	155	224	208	252	291
Milkers offered kg DM Grass silage	2	2	3	1	0
Silage MJME/cow offered	10	10	10	11	0
Estimated intake Silage MJME	20	18	28	13	0
Estimated total intake MJME	175	241	235	265	291
Target MJME Offered/eaten (incl 6% waste)				0	0
Pasture ME (pre grazing sample)	12.7	12.8	12.5	12.5	0.0
Pasture % Protein	19.2	17	20.1	22.1	0.0
Pasture % DM - Concern below 16%	18.5	20.6	19.9	18.1	0.0
Pasture % NDF Concern < 33	36.0	36.7	38.2	36.6	0.0
Mowed pre or post grazing YTD	0.0	0.0	0.0	0.0	0.0
Total area mowed YTD	0.0	0.0	0.0	0.0	0.0
Supplemts fed to date kg per cow -560 peak	8.6	41.1	59.2	68.0	68.0
Supplements Made Kg DM / ha cumulative	0	0	0	0	0
Units N applied/ha and % of farm	25units/ 18.8%	25units /8.3%	25units /34.8%	25units /16.1%	25units /15.8%
Kgs N to Date (whole farm)	13	16	23	28	32
Rainfall (mm)	0.2	8.8	12.6	3	5.8
Aquaflex topsoil relative to fill point target 60 - 80%	40-70	50-70	60-80	39 - 35	80-90

Farm walks occur every Tuesday morning. 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 and gumboots. Phone SIDDC – 03 423 0022.

Peter Hancox, Farm Manager, Natalia Benquet, Charlotte Westwood

P21 Canterbury Farmlet Weekly summary: 7 Oct 14

	Growth kg DM/day	APC kg DM /ha	Rotation length (days)	N (YTD)	Suppl (kg/cow/ day)	Suppl (kg YTD)	BCS	% in milk	MS kg/ cow	MS kg/ ha	MS /ha YTD	MS/ cow YTD
Low stocked efficient	38	2356	22	23	0	0	4.3	100	2.3	8	339	97
High stocked efficient	38	2246	27	41	2.7	114	4.4	100	2.1	10.2	395	79

Soil temperature: 9.2 Rainfall: 13 Irrigation: 0

HSE key decisions

- A pasture deficit is looming in the wedge in 6 days time at the current rotation length and we don't want to go faster than 23 days. Decided to increase grain to 5 kg/cow over the next 3 days to stay on a 27 day rotation and hold this for another 5 days
- Will consider silage supplementation from Sunday pm, depending on growth rates. Paddocks for grazing over the weekend will be reassessed on Friday and the supplement and rotation length revised if required to ensure target intakes are achieved.
- Nitrogen to continue at 30 kg N/ha
- Will apply progibb to 3 paddocks this week, weather permitting.

LSE key decisions

- After speeding up the rotation last week this needs to be slower than 22 days to avoid a deficit in 4 days time. This will be achieved by bringing the paddocks that were skipped over last week back into the grazing rotation
- Topping will be considered for the high mass paddocks, on a paddock by paddock basis, if required residuals are not achieved
- Will apply progibb and N to the last 3 paddocks and 30 kg N/ha to all other paddocks grazed in the last 10 days
- Silage may still be required in 10 days time if pasture growth remains lower than the feed budget

General

- Blood samples were taken for trace element assessment. As a result selenium levels through the dosatron have been increased as many animals were at the low end of the range.
- There will be a change to the mating management this season with a move from 10 weeks AI to 6 weeks AI followed by 4 weeks with bulls.

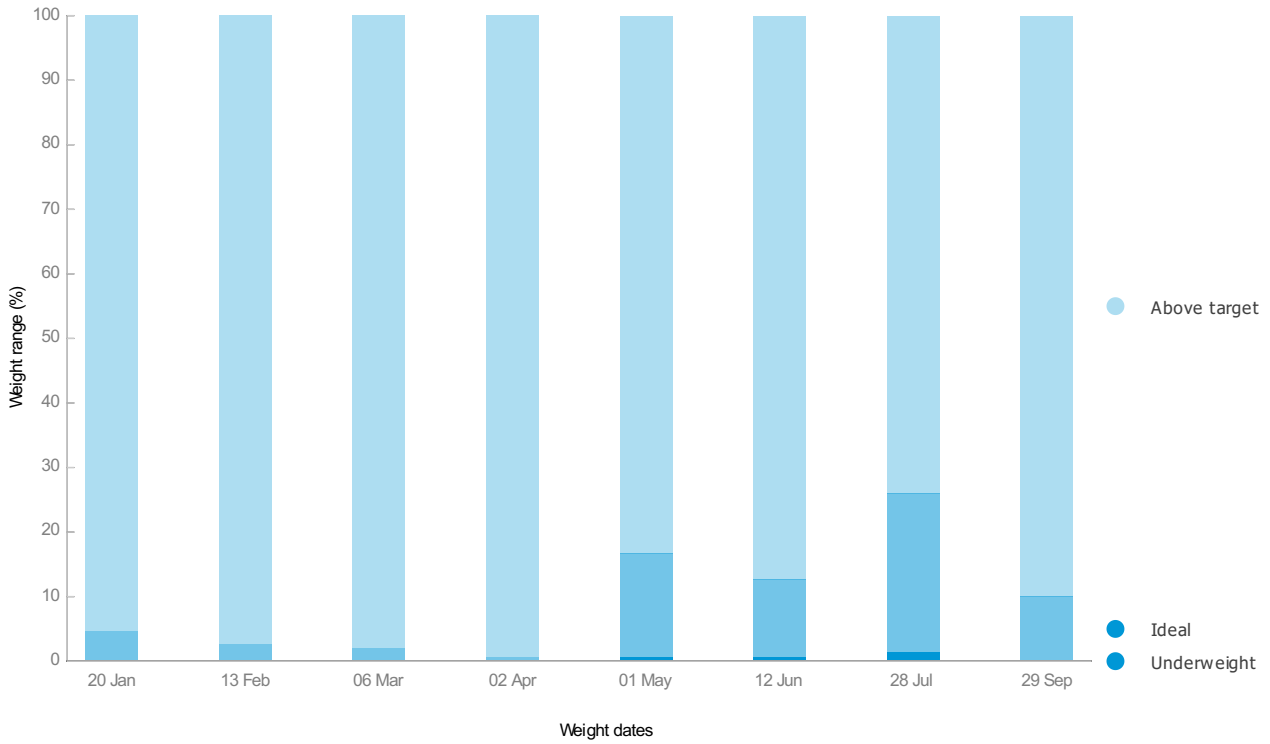
P21 Canterbury Farmlet summaries are posted weekly on the SIDDC website. These can be viewed at www.siddc.org.nz/research/p21-canterbury-farmlet/

2013 Spring Born

29/09/2014

BQCY

Weight ranges



Range	January 2014		February 2014		March 2014		April 2014		May 2014		June 2014		July 2014		September 2014	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Above target	143	95.3	146	97.3	147	98	149	99.3	125	83.3	131	87.3	111	74	135	90
Ideal	7	4.7	4	2.7	3	2	1	0.7	24	16	18	12	37	24.7	15	10
Underweight	0	0	0	0	0	0	0	0	1	0.7	1	0.7	2	1.3	0	0
Total Animals	150		150		150		150		150		150		150		150	

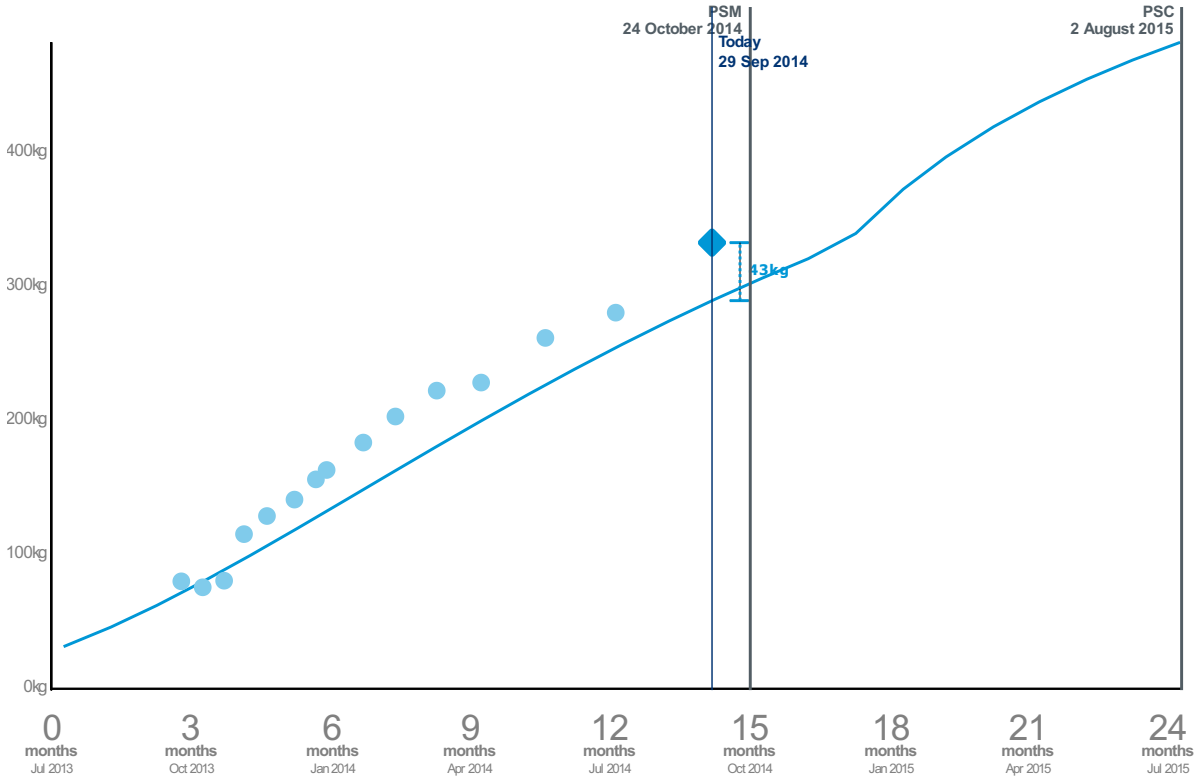
2013 Spring Born

29/09/2014

BQCY

Young stock trend

All 150 animals in this weighing are displayed



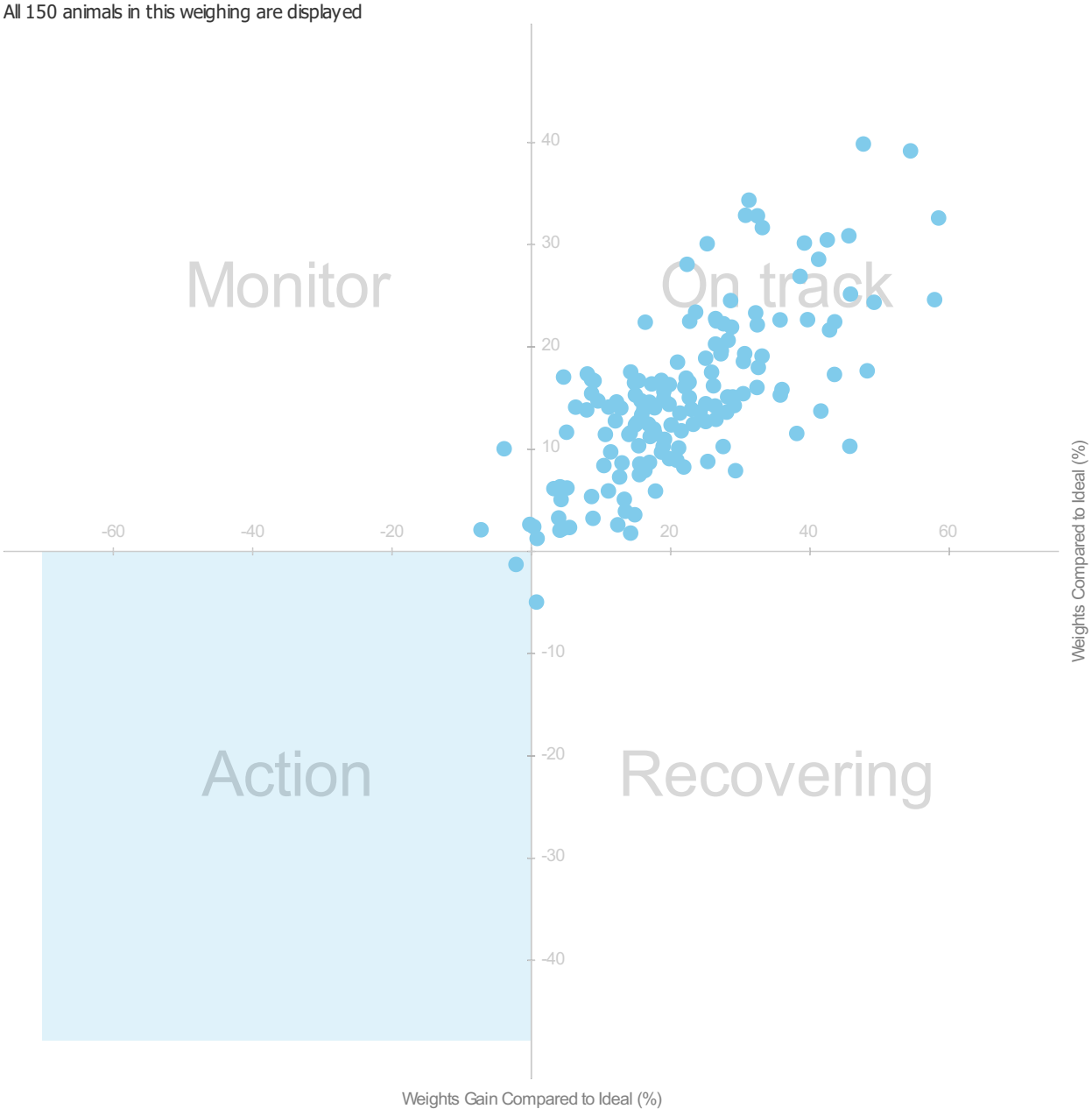
2013 Spring Born

29/09/2014

BQCY

Animal performance

All 150 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-13-99	HF x J	290	0.62	0.67	-1.27	Action

Showing 1 to 1 of 1 entries

Mating Strategies without Routine Induction

As of 1 June 2015, veterinarians cannot 'routinely' induce up to 4% of the herd. In 2013/14, 69% of farmers did not induce and at least 98% of the national herd calved without being induced. On the face of this, one third of farmers have a choice to make:

1. ***Accept late calving cows as part of your farming operation?***

or

2. ***Reduce your mating period?***

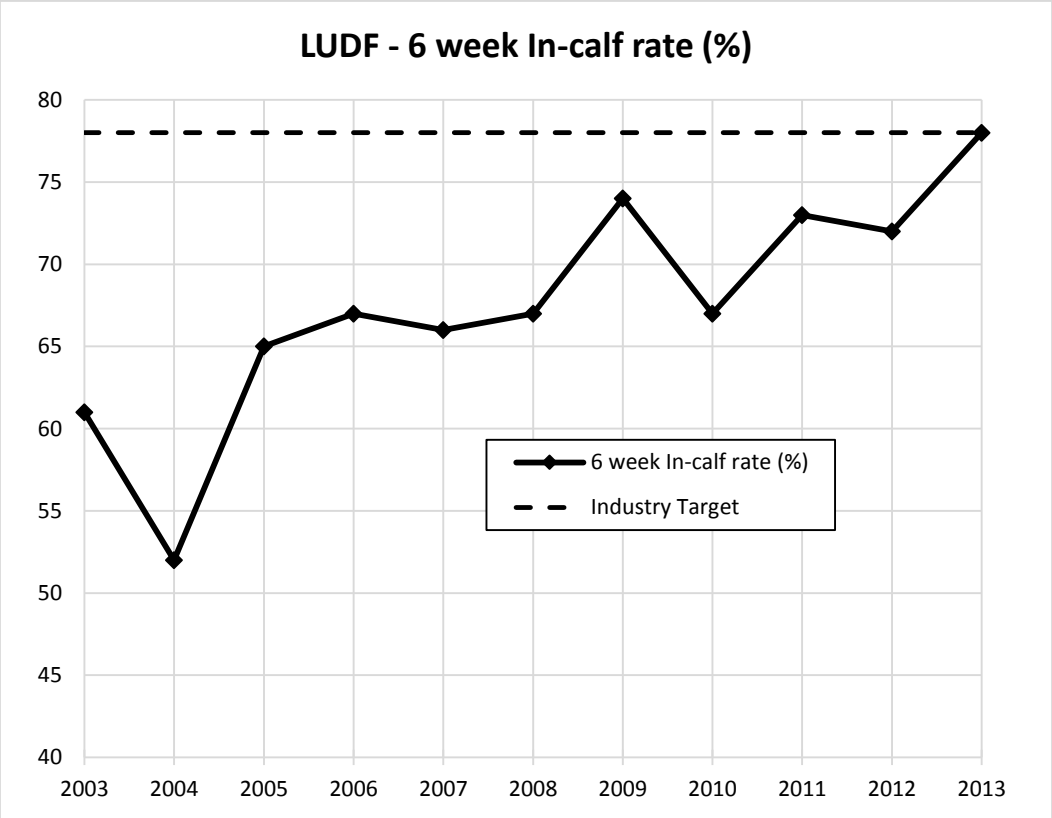
LUDF assumed a no-induction policy in 2003, despite low reproductive performance. Instead the farm actively managed all other aspects of reproduction and is now a fertile herd and still improving. How did they do it?

Mating year at LUDF	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
6-week in-calf rate (%)	61	52	65	67	66	67	74	67	73	72	78
Not–in-calf rate (%)	17	21	16	14	14	21	13	14	13	13	12
Mating length (wks)	12	12	12	12	12	11	11	10	10	10	10
3-wk submission rate (%)	84	84	85	86	87	92	90	87	88	90	88
Non-return rate (%)	-	-	51	48	44	-	-	-	-	-	-
Conception rate (%)	44	40	-	-	-	40	57	53	57	54	61
Pre-mating cycling rate (%)	66	68	77	70	80	78	90	73	85	79	81

LUDF's Journey:

- Focused on getting a tight calving pattern
- Accepted responsibility (e.g. Not the AB Techs fault)
- Made heat detection a priority job during AB
- Resisted the temptation to reduce 'empty rate' by extending mating – culling all cows not in calf at end of mating

- Aggressively identified and where appropriate treated the non-cycling cows Took advantage of having early-calved replacement heifers (10 days prior to mixed age cows)
- Ensured heifer calves were well grown (till weaning) with no replacements kept from late born heifer calves
- Since 2011, identified and separately managed the younger and lighter condition score cows, with a greater emphasis on minimum condition score at all points of the season.
- Remained patient in allowing the quality of the herd to improve - (genetics and young stock coming through).
- Included scrotal circumference in bull selection to ensure bulls were not contributing to poor fertility outcomes.



Fertility Focus 2013: Seasonal

Lincoln University
The Manager (University Dairy Farm) Hancox

Report date:	17/09/14
PTPT:	BQCY
Herd Code:	6/114
No of cows included:	627
These cows calved between:	17/06/13 and 23/12/13
Mating start & end date: (based on AB or pregnancy test data)	25/10/13 - 06/01/14
Next planned start of calving:	03/08/14
Duration of mating:	74 days
Duration of AB period:	42 days

incalf FERTILITY FOCUS
Version 2.11

DairyNZ

LIC

1 Overall herd reproductive performance

6-week in-calf rate
Percentage of cows pregnant in the first 6 weeks of mating

Your herd	78% (77-78%)
Aim above	78%

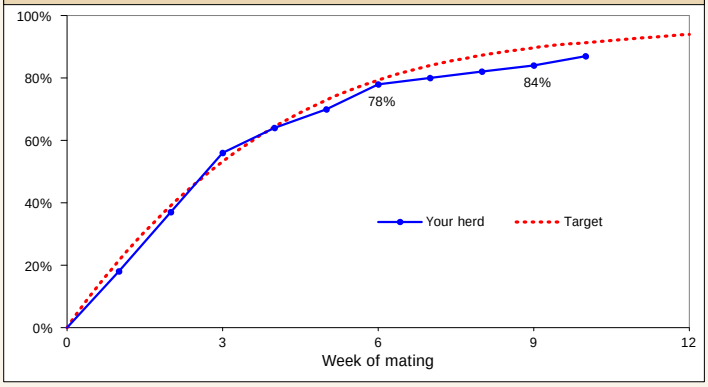
☆☆☆☆☆

Not-in-calf rate
Percentage of cows not pregnant after 74 days of mating

Your herd	12% (11-12%)
Aim for	7%

☆

% of herd in calf
Cumulative by week of mating



2 Drivers of the 6-week in-calf rate

3-week submission rate
% of cows that were inseminated in the first 3 weeks of mating

Your herd	88%
Aim above	90%

☆☆☆☆☆

Non-return rate
% of inseminations that were not followed by a return to heat

Your herd	
Aim above	

Conception rate
% of inseminations that resulted in a confirmed pregnancy

Your herd	61%
Aim above	60%

☆☆☆☆☆

3 Key indicators to areas for improvement

Calving pattern of first calvers
Well managed heifers get in calf quickly and calve early.

Calved by	Week 3	Week 6
Your herd	88%	98%
Aim above	75%	92%
	☆☆☆☆☆	☆☆☆☆☆

Calving pattern of whole herd
Did late calvers reduce in-calf rates?

Calved by	Week 3	Week 6	Week 9
Your herd	62%	86%	97%
Aim above	60%	87%	98%
	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆

Pre-mating heats
A high % of well managed cows will cycle before the start of mating.

Your herd	81%
Aim above	85%

☆☆☆☆☆

3-week submission rate of first calvers
Well managed heifers cycle early

Your herd	89%
Aim above	90%

☆☆☆☆☆

Heat detection
A high % of early-calved mature cows should be inseminated in the first 3 weeks of mating.

Your herd	95%
Aim above	95%

☆☆☆☆☆

Non-cycling cows
Treated non-cyclers get in calf earlier.

Treated	By MSD	Wks 1-3	Wks 4-6
Your herd	0%	0%	0%

Rating	What does it tell me?	What should I do?
☆☆☆☆☆	Top result	Ideal - keep up the good work!
☆☆☆	Above average	Getting there - focus on getting the details right.
☆	Below average	Plenty of room to improve - seek professional advice.
	No result	Not enough information provided - seek help with records.

Performance after week 6
Expected not-in-calf rate helps assess management affecting performance after week 6 (including bull management and herd nutrition).

Not-in-calf rate

Your herd	12%
Expected	8%

Seek advice

Behind Your Detailed Fertility Focus Report

Version 2.11

Report period: Cows calved between 17/06/13 and 23/12/13.
This was the most recent period with sufficient herd records that enabled an analysis to be completed.

Calving system: Seasonal
Your herd has been classified as seasonal calving because most calvings occurred in a single batch lasting less than 21 weeks.

Level of analysis: Detailed.
Your good record keeping means a detailed analysis was possible for your herd.

Report date:	17/09/14
PTPT:	BQCY
Herd Code:	6/114
Calvings up to this date requested for analysis:	16/09/14
No of cows included:	627
These cows calved between:	17/06/13 and 23/12/13
Mating start & end date: (based on AB or pregnancy test data)	25/10/13 - 06/01/14

Part A) Herd records cross check

Check that the herd records in the table are complete and correct.

2013/14	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
No. of calvings		70	416	136	23								645
No. of AB matings					180	567	51						798
No. of preg tests							128	625	140				893
No. of non-aged/late aged positive preg tests							128						128
No. of cows culled or died			3	5	10		1	1	3	109			132

Part B) Notes on the calculations

Use the following notes to see how your results were calculated.

1 Overall herd reproductive performance

6-week in-calf rate

Your report has been based on the mating and pregnancy test results you supplied. The ACTUAL 6 week in-calf rate is shown for your herd.

Records available for not-in-calf rate

Recorded pregnant	553
Recorded empty	70
Doubtful/recheck*	2
Culled without pregnancy test	2
No record of cull or pregnancy test	0
Cows analysed	627

*Includes cows whose most recent empty diagnosis was less than 35 days after mating end date.

2 Drivers of the 6-week in-calf rate

3-week submission rate

627 cows had calving dates in the required range and were not culled before day 21 of mating and 88% of these were submitted during the first 21 days of mating.

Non-return rate

Non-return rate is not calculated when pregnancy test results provide an accurate estimate of conception rate.

Conception rate

The conception rate was calculated for 789 AB inseminations on and between 25.10.13 and 05.12.13.

3 Key indicators to areas for improvement

Calving pattern of first calvers

122 cows with eligible calving dates were recorded as calving at less than 34 months of age. The calving pattern of first calvers was calculated from their records.

Calving pattern of whole herd

645 cows had calving dates that were eligible for this report.

3-week submission rate of first calvers

119 first calvers had calving dates in the required range and were not culled before day 21 of mating and 89% of these were submitted during the first 21 days of mating.

Heat detection

261 cows at least 4 years old at calving had calved at least 8 weeks before mating start date and were not culled before day 21 of mating and 95% of these were submitted during the first 21 days of mating.

Pre-mating heats

627 cows had calving dates in the required range and were not culled before day 21 of mating and 505 of these had a pre-mating heat recorded.

Non-cycling cows

No cows were identified as being treated for non-cycling. If you did treat non-cycling cows, please supply records to ensure those cows are identified.

Performance after week 6

Your herd's not-in-calf rate and 6-week in-calf rate were used to determine the success of your herd's mating program after the first six weeks. If bulls were used after week 6 of mating, this gives an assessment of how well they got cows in calf.

Induced cows

No cows were identified as having induced calvings. If cows were induced, ensure all inductions are recorded.

Calving again — naturally

Start mating well-grown heifers one to two weeks ahead of the herd

Farmers deserve a clean break from calving of 2-3 weeks before the herd's planned start of mating (PSM).

Cows need a break also – at least 6 weeks time post- calving, to resume cycling.

And first calvers (heifers) need 1 to 2 weeks more than that.

From 1 June 2015, routine use of inductions will not be permitted. So farmers will need to focus on other management areas, such as heifer rearing, body condition score, heat detection, genetics, AB practices, bull management and cow health to manage calving pattern.

Address fundamental issues and create more profitable options by increasing herd reproductive performance.

Focus on increasing 6-week in-calf rate, and reducing the not-in-calf rate.

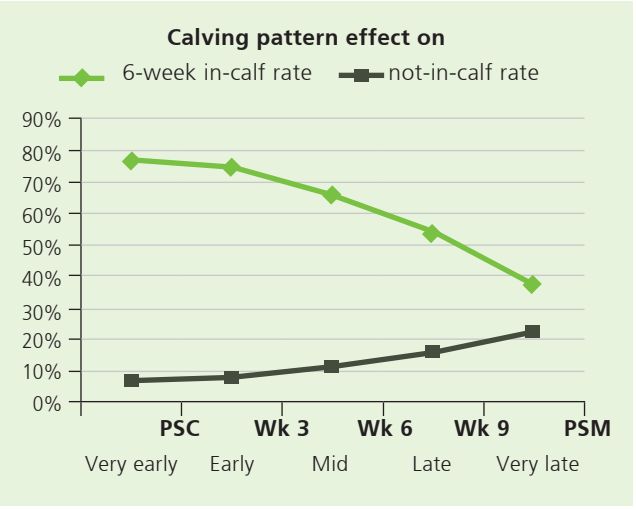
It's a fact...

Early calving cows:

- have more days in milk
- get back in calf easier
- have lower not-in-calf rates.

A condensed calving pattern:

- Simplifies management
- Helps heat detection
- Gets more early AB calves.



The 85% rule....

For your herd to be highly fertile:

- 85% of the whole herd should calve by end of week 6
- 85% of first calvers should calve by end of week 3
- 85% of all cows should be at least body condition score 4 just before PSM.

So at least 85% of all cows cycle naturally by PSM.

incalf DairyNZ

The big picture

If your herd's reproductive performance is not high, the first thing to look for is a spread calving pattern.

However many NZ herds have good calving patterns, but poor reproductive performance, as reported on the InCalf Fertility Focus Report.

A closer look might show a good calving pattern being "manufactured" by induction, high replacement rates, buying in cows, carry-over cows.

This suggests unresolved problems in other management areas are limiting performance, and a good calving pattern is "masking" areas such as heifer rearing, body condition, heat detection, genetics, AB practices, bull management, cow health.

Use InCalf tools and InCalf trained advisers to identify which management areas to prioritise.

Go to **dairynz.co.nz/incalf**

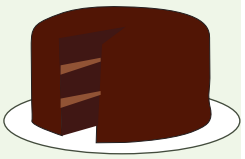
InCalf identifies eight ingredients of the herd fertility cake.

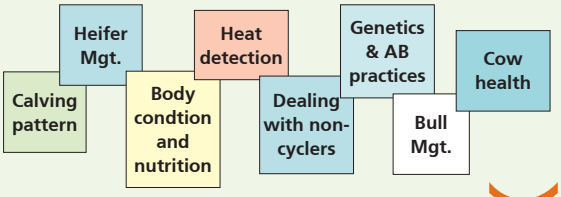
Together they influence herd reproductive performance.

Good overall performance depends on good performance in all 8 management areas.

Herd fertility:

- is like a cake
- herd management areas
  - 8 ingredients in New Zealand





Calving pattern targets – whole herd and first calvers

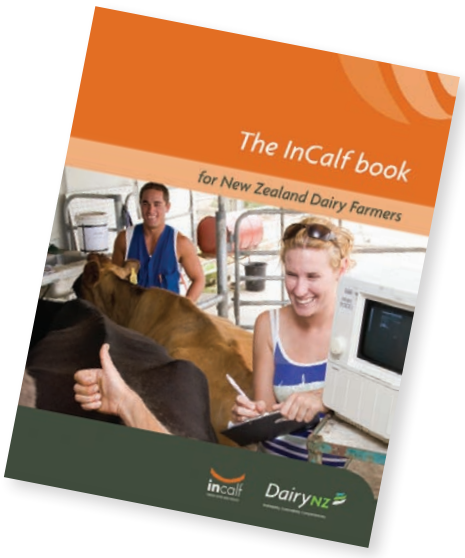
What should we be aiming at?

1. A good calving pattern for the whole herd has 85% calved by week 6.
2. A good calving pattern for first calvers has 75% calved by week 3, and 92% calved by week 6.

But first calvers need an extra 1 to 2 weeks to start cycling, so yearling heifers should start mating 1 to 2 weeks earlier than the cows.

Then 85% of first calvers will calve by end of week 3, and they will have plenty of time to resume cycling and be fertile naturally by PSM.

See *The InCalf Book (chapter 11).*



Cows need to calve at least 6 weeks, and heifers up to 9 weeks, before PSM

Strategies to better manage calving pattern

Farmers manage the herd's calving pattern by culling empties and late calvers, buying early calvers and carrying over empty cows.

To improve herd calving pattern, more cows need to calve early naturally and fewer should calve late, see *The InCalf Book (chapter 16).*

Heifer replacements

Calving pattern of first calvers is the number one strategy to increase the proportion of the herd calving before herd planned start of calving (PSC), and by end of week 3.

Mating well-grown heifers 1 to 2 weeks earlier than the herd is a good option to get 85% calved by end of week 3, and every chance of cycling naturally before PSM.

Underweight heifers will not achieve calving pattern and submission rate targets.

Assess your heifers against liveweight targets for that earlier mating start date.

Customise targets for your heifers based on liveweight breeding value. Use the updated formula: expected mature liveweight = 503 kg + Lwt BV. See *The InCalf Book (chapter 8).*

Tips about earlier heifer calving

Ask other farmers how they manage. Did they:

- train heifers to go through the dairy several weeks before calving starts, over 5-6 consecutive days
- adjust the breast rail if possible to help manage heifers within the herringbone.

Maximise 3-week submission rate and conception rate

With 85% of all cows cycling naturally by PSM, you are well on the way to a 90% submission rate and a 60% conception rate.

This will drive a high 6-week in-calf rate, and reduce the not-in-calf rate for your chosen length of mating, of 12 weeks or less. See *The InCalf Book (chapter 5).*

Feed supply and demand

Plan your feed supply for that early season feed demand.

Consider delaying the cows' PSM a few days to match heifer mating a week earlier. As calving pattern improves review your herd PSM date to balance feed demand with pasture growth.

Any farm systems changes should address root cause of reproductive performance problems.

Early foetal-aged pregnancy testing gives options and accuracy to:

- cull early when feed is short in late summer
- plan late lactation and dry period management
- better assess reproductive performance, expected calving order.

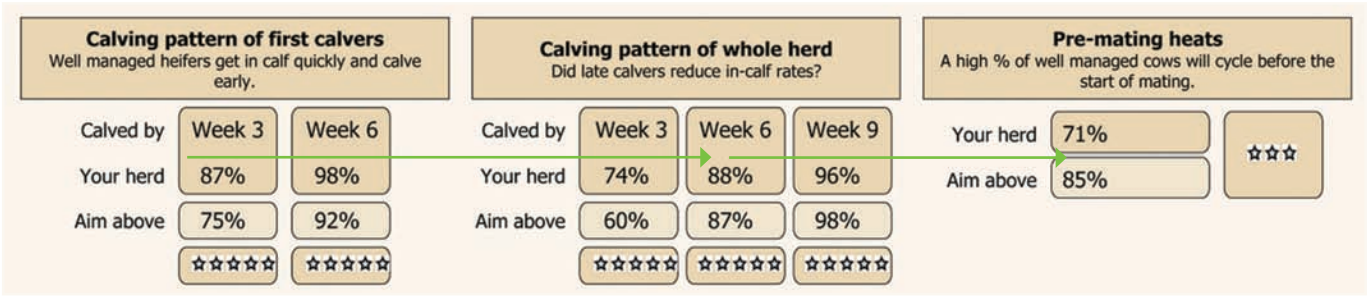
See *The InCalf Book (chapter 17).*

Discuss any date changes with bull supplier, AB company, grazier, vet.

So how does your calving pattern stack up?

When assessing your calving pattern think how that result came about.

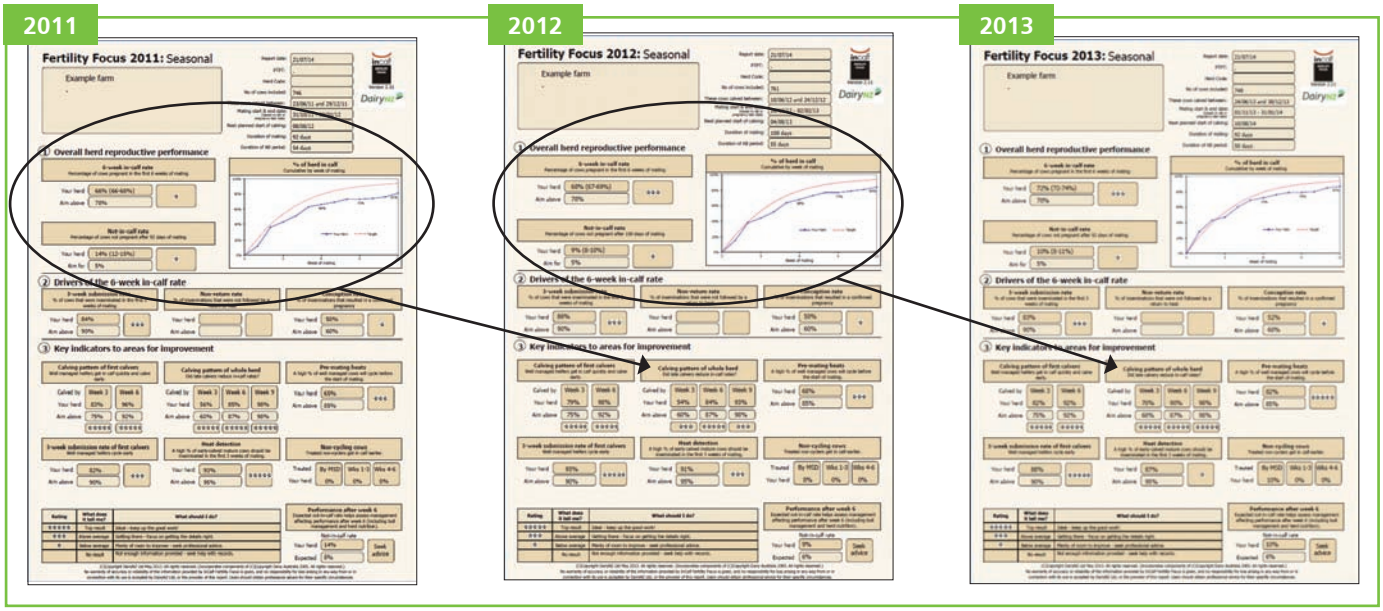
Look how calving pattern of first calvers influences calving pattern of the whole herd, and then the % of all cows cycling naturally pre-mating.



Remember calving pattern is both a contributor to, and an outcome of, herd reproductive performance.

Look at Fertility Focus Reports side-by-side to view performance over time.

- Within the same season does a 5-star whole herd calving pattern lead to a 1-star or 3-star 6-week in-calf rate? Why is this deterioration happening?
- Between two seasons does a 1-star 6-week in-calf rate lead to a 5-star whole herd calving pattern? How did that calving pattern come about?



Contact DairyNZ InCalf

Phone: 0800 4 DAIRYNZ (0800 4 324 7969)
Email: info@dairynz.co.nz or mark.blackwell@dairynz.co.nz
Web: dairynz.co.nz/incalf

Get Fertility Focus from LIC MINDA, CRV Ambreed, Infovet.

Pasture Renewal: Using the DairyNZ Forage Value Index and paddock information to get the best returns

David Chapman and Jeremy Bryant (DairyNZ); Graham Kerr (Agriseeds)

Key points

1. Pasture renewal is best determined by looking at the variation of paddock performance across a property, and the benefits that are likely through a renewal process (from extra DM yield, feed quality or palatability).
2. Within the renewal process, the DairyNZ Forage Value Index (FVI) is an evaluation system for forages designed to help dairy farmers select the cultivars that will give the highest profitability for their farm system.
3. FVI information is presented for each of four regions in NZ:

Upper North Island

Lower North Island

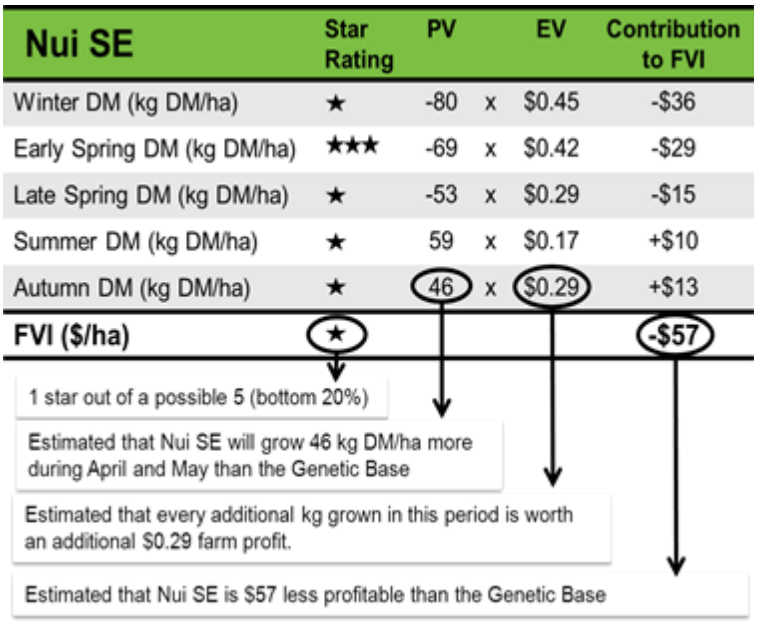
Upper South Island

Lower South Island

4. The FVI takes into account:
   a) The economic value (EV) to dairy farm businesses of different forage production traits in each region – seasonal dry matter yield.
      - For example: ***"how much is an additional tonne of pasture dry matter worth to my business?"***
   b) The differences between pasture cultivars in these traits. Each cultivar has its own performance value (PV) based on how it performs in trials in the region
      - For example: ***"How much more dry matter could I expect to get from cultivar A versus cultivar B?"***
   c) The trade-offs between different traits
      - For example: ***"If I go for high <u>early spring</u> dry matter yield in cultivar X, does this mean that growth will be poorer in other seasons?"***

5. The FVI weighs up all of these factors and assigns an overall index value to individual cultivars. The overall index takes into account the relative strengths and weaknesses of different cultivars for the production traits.

FVI information for Nui with standard endophyte (SE) in Upper South Island



6. Cultivars are then grouped into star-rating categories which have a $/ha range. This indicates the estimated extra or reduced profit that is available to farmers if they choose cultivars in that star-rating category compared to selecting cultivars that were first evaluated in New Zealand before 1996.

Star-rating categories for perennial ryegrass in Upper South Island

Star-rating category		$ value (per hectare/year)
Five star	*****	$346 to $470
Four star	****	$222 to $345
Three star	***	$99 to $221
Two star	**	-$25 to $98
One star	*	-$149 to -$26

The difference in overall FVI values between top-ranked and bottom-ranked cultivars is between $400 and $650/ha per year, depending on region and ryegrass species

7. All of the cultivars in each star-rating category can be considered equally as good as each other. Typically, there are between 2 and 6 cultivars in each category.

The cultivars within the four- and five-star categories can be viewed in a similar way to the 'elite bull team' in the animal selection and breeding system.

8. A confidence value is also given for each cultivar, which reflects the number of trials that the cultivar has been through. A high confidence value means a lot of data is available for that cultivar, and vice-versa. To be included in Forage Value Lists, a cultivar must have been through at least 3 National Forage Variety Trials.

Current FVI lists for the Upper South Island

Perennial Ryegrass Forage Value List

Upper Sth. Island

Note: Perennial ryegrass FVI is currently a combination of seasonal dry matter performance values and economic values only

DairyNZ Forage Value Index

Evaluation date: 1 Dec 2013

Cultivar	FVI[1] (Star Rating)	FVI Star Band ($/ha)	Conf[2]	Performance Values[3] (1 to 5 Rating[1])					Endo[4]	PI[5]	HD[6]	Marketer
				WIN	ES	LS	SUM	AUT				
One50 AR37	★★★★★	$346 to $470	8.0	5	2	3	4	5	AR37	D	L	Agricom
Base AR37	★★★★★		4.3	5	3	5	5	3	AR37	T	VL	PGG Wrightson Seeds
Arrow AR1	★★★★	$222 to $345	10+	3	5	5	4	3	AR1	D	M	Agriseeds
Ultra AR1	★★★★		10+	4	3	4	4	4	AR1	D	L	Cropmark Seeds
Matrix SE	★★★★		9.7	3	4	3	3	3	SE	D	VL	Cropmark Seeds
Alto AR37	★★★★		5.0	5	4	5	4	3	AR37	D	L	Agriseeds
Bealey NEA2	★★★	$99 to $221	10+	3	1	2	3	2	NEA2	T	VL	Agriseeds
Alto AR1	★★★		10+	3	2	4	3	2	AR1	D	L	Agriseeds
One50 AR1	★★★		10+	3	1	3	4	3	AR1	D	L	Agricom
Halo AR37	★★★		9.7	4	1	2	4	4	AR37	T	VL	Agricom
Expo AR1	★★★		8.7	3	3	3	3	2	AR1	D	L	PGG Wrightson Seeds
Extreme AR37	★★★		7.3	4	5	2	1	3	AR37	D	M	PGG Wrightson Seeds
Bronsyn AR1	★★	-$25 to $98	10+	1	3	4	2	2	AR1	D	M	Agriseeds
Banquet II Endo5	★★		9.0	3	1	1	3	2	Endo5	T	L	PGG Wrightson Seeds
Samson AR37	★★		3.3	3	5	2	1	1	AR37	D	M	Agricom
Nui SE	★	-$149 to -$26	10+	1	2	1	1	1	SE	D	M	Common

12 Month – Ryegrass Forage Value List

Upper Sth. Island

- The short term ryegrasses are sown by dairy farmers for 12 month production
- The FVI for 12 Month is a combination of seasonal dry matter performance and economic values only
- WE is without endophyte or also referred to as nil endophyte
- 12 Month options include annual, Italian and hybrid ryegrasses.

DairyNZ Forage Value Index

Evaluation date: 7 Nov 2013

Type	Cultivar	FVI[1] (Star Rating)	FVI Star Band ($/ha)	Conf[2]	Performance Values[3] (1 to 5 Rating[1])					Endo[4]	PI[5]	Marketer
					EST	WIN	ES	LS	SUM			
Italian	Tabu WE	★★★★★	$430 to $623	10+	5	5	5	5	5	WE	D	Agriseeds
Italian	Feast II WE	★★★★★		10+	5	4	4	5	5	WE	T	PGG Wrightson Seeds
Italian	Sonik WE	★★★★★		8.1	5	5	4	5	5	WE	D	Cropmark Seeds
Italian	Crusader WE	★★★★	$236 to $429	10+	5	4	3	4	5	WE	D	Agricom
Italian	Asset WE	★★★★		4.2	4	3	2	5	5	WE	D	Agricom
Annual	Zoom WE	★★★★		4.2	5	4	4	4	4	WE	T	Cropmark Seeds
Hybrid	Delish WE	★★★★		2.6	1	1	4	5	5	WE	T	PGG Wrightson Seeds
Annual	Concord WE	★★★	$43 to $235	10+	5	3	1	2	4	WE	T	PGG Wrightson Seeds
Annual	Winter Star II WE	★★★		3.2	5	5	4	3	1	WE	T	PGG Wrightson Seeds
Italian	Moata WE	★★	-$151 to $42	10+	3	2	3	3	3	WE	T	Common
Annual	Tama WE	★	-$344 to -$152	10+	2	4	2	2	1	WE	T	Common
Annual	Progrow WE	★		7.4	5	1	1	1	1	WE	D	Agricom
Annual	Archie WE	★		6.1	4	5	2	1	1	WE	T	Agriseeds

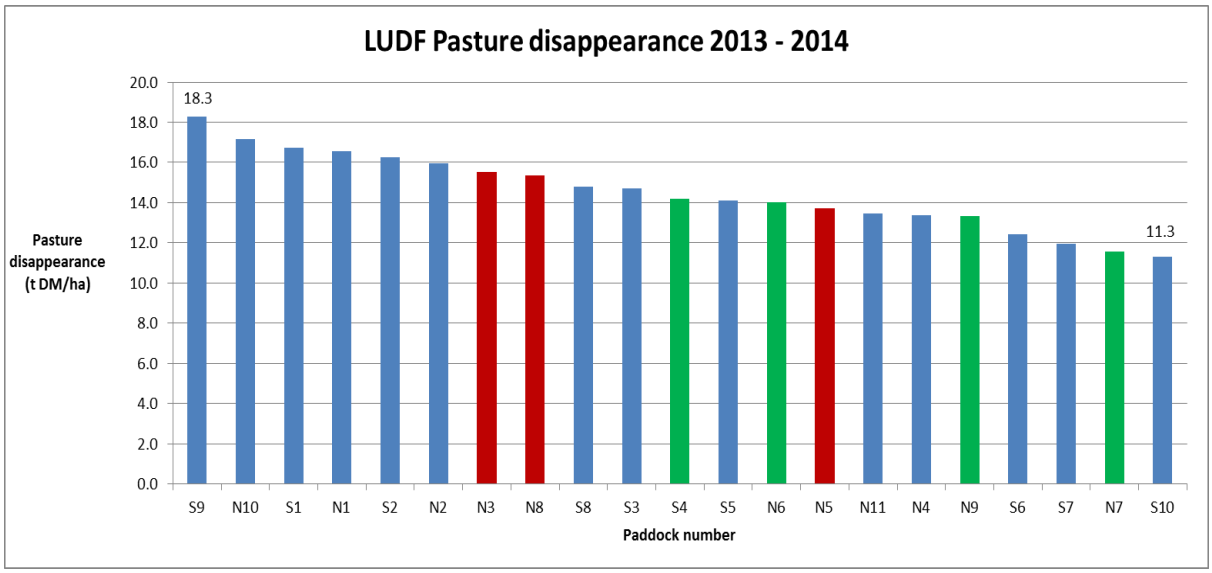
Annual Italian Hybrid

Also available – Winter Feed Forage Value List.

Lincoln University Dairy Farm paddock growth estimate 2013/14

Why?

Pasture renewal programmes vary widely across NZ dairy farms, typically ranging from 0% to greater than 15% of farm area each year. The amount you should sow depends on the potential gains it can deliver. These can be estimated by comparing the performance of different paddocks as in the diagram below.



The best paddocks often show what can be achieved. The difference between these and the worst paddocks illustrates the potential for improvement - provided you compare paddocks with similar potential (e.g. soil type, drainage, topography).

Typically there is a 6 to 10 t DM/ha/year difference in production between best and worst paddocks on farms!

For LUDF in 2014/15 we are investigating drainage options for our wet paddocks S10, S6 and S7. Regrassing alone would only provide a temporary benefit.

How to estimate current yield:

1. Grazing days:

Pasture disappearance (t DM/ha) = Days stock in each paddock (grazing days)
x Feed requirement stock (kgDM/day)
+ Pasture made into silage (none 2013/14)
- Supplement fed (assume 100% substitution).

2. Weekly farm walk data:

Alternatively this paddock growth calculation can be produced automatically from weekly farm walk data from software such as 'Pasture Coach' or 'Land & Feed'

Both options provide estimates and can over or under estimate total yield, for example a paddock that is harder to graze to the desired residual may mean more time grazing – giving the appearance of more yield when conducting the grazing days analysis above. Equally, a paddock that consistently plates higher than what cows find when grazing can overestimate the yield when using weekly farm walk data.

Example - economics of pasture renewal

The value derived from renewal depends largely on the amount of feed grown, as shown in the table below. (Note there is typically a 0.5 – 0.9 improvement in ME from new pasture which should increase the figures here).

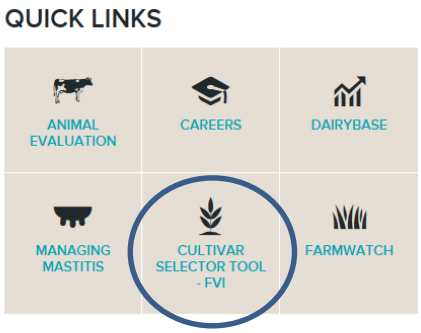
Benefit	**Extra pasture grown**	0 t DM/ha	2 t DM/ha	4 t DM/ha	6 t DM/ha
	Profit of extra pasture @27c/kgDM*	0	$540/ha	$1080/ha	$1620/ha
	Profit over 5 years	0	$2700/ha	$5400/ha	$8100/ha
Less costs	**Cost of renewal**	$1000/ha	$1000/ha	$1000/ha	$1000/ha
= Return		-$1000/ha	$1700/ha	$4400/ha	$7100/ha

* 27 c/kgDM is average profit from extra pasture grown in DairyNZ Forage Value Index for the upper South Island. This varies through year (winter = 45c; early spring =42c; late spring = 29c; summer = 17c; autumn = 29c), based on payout of $7.22/kgMS (rolling 4 year Fonterra average). http://www.dairynz.co.nz/feed/cultivar-selection/about-fvi/economic-values/).

Profitable pasture renewal comes from:

- Identifying underperforming paddocks, then addressing the reasons for this – regrassing is one of a number of strategies to consider (including correcting soil fertility, soil compaction, drainage, weed issues etc.).
- Choosing the best ryegrass cultivars for your farm – the FVI is designed to help here
- Utilising the extra feed grown efficiently.

To find the FVI, go to DairyNZ website and click on 'Cultivar Selector Tool – FVI' in the Quick Links panel



We would like you to join us at our Community Open Day to hear about our Living Water programme, and to introduce the work underway with the local community in the Te Waihora Catchment.

Open Day activities include a welcome and speeches at 10am, interactive displays showcasing local plants, fish and insects as well as an opportunity to 'launch' the project with students from Lincoln Primary School at the Ararira/Liffey/L1 Creek at the ECAN Depot after lunch.

DATE: Thursday 23 October 2014

TIME: 10:00am to 1:00pm
Morning tea and BBQ lunch provided

LOCATION: Lincoln University Dairy Farm (Ellesmere Junction Rd, Lincoln)

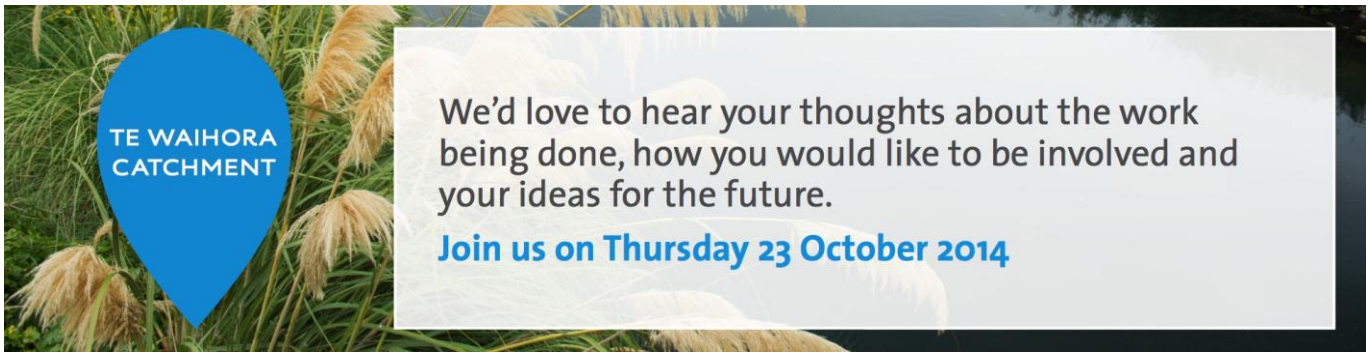
Followed by a trip to the Lincoln township (ECAN Depot, Ellesmere Centre, 24 Edward Street) to the head of the Ararira/LI/Liffey River.

PLEASE RSVP: livingwater@fonterra.com by Friday 17 October 2014

DRESS: Dress for a spring day on the farm (gumboots recommended)

Fonterra and the Department of Conservation have a common interest in protecting New Zealand's waterways. To start with we're focusing on five sensitive water catchments across New Zealand through our partnership.

For questions or more information email livingwater@fonterra.com



Lincoln University Dairy Farm [LUDF] Focus Day – 9th October 2015

Evaluation Form (tear off and return)

Please circle your role on farm:

Farm Owner	Sharemilker	Farm Manager	Farm Staff
Farm Consultant	Rural Professional	Other – please specify:	

Which topics covered today were most useful to you?

_____

_____

Which topics covered today were not so useful to you?

_____

_____

Any other comments/suggestions for future Focus Days:

_____

_____

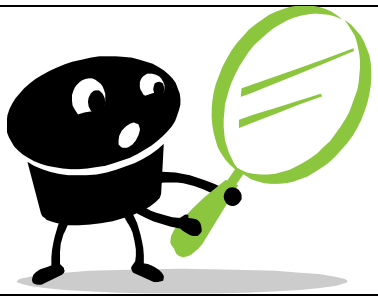
Name: (Optional)

Welcome to Lincoln University Dairy Farm (LUDF).

The farm is a fully operational, commercial dairy farm with a number of potential hazards for both visitors and staff. Many of the potential hazards cannot be eliminated while also providing access to visitors therefore all staff and visitors MUST watch for potential hazards and act with caution.

Hazard Summary: Look, think, act.

The following chart provides a reminder of the types of hazards at LUDF. Watch for these and any other hazards that may be on farm today.

People: • Uninformed / ill prepared visitors may be the greatest risk	**Animals:** • **You are in their space**	**Milking shed:** • Moving rotary platform • Confined animals • Chemicals
Eyes / Ears: • Water / oil / milk / chemical splashes • Welding flashes • Loud machinery		**Touch:** • Hot / cold surfaces, hot water, chemical burns • Electric fences – treat them as high voltage power sources
On farm machinery and tools • Chainsaws, hand tools etc. generate noise, fragments	**Potential slips / trips:** • Uneven surfaces occur across the farm • Fences • Drains • Underpass • Effluent pond	**Vehicles:** • Contractors and farm equipment – **act as though they can't see you** – keep out of their way • Centre Pivot takes precedence over your plan

ARE YOU TRAINED FOR WHAT YOU ARE ABOUT TO DO? If not, STOP.

If you are uncertain how you should act or proceed stop and contact the farm manager, other farm staff or your host.

By entering this farm, you are acknowledging your receipt of this hazard summary, and your agreement to take personal responsibility to watch out for potential hazards, and act in such a manner as to protect yourself and any others also on-farm.