

Lincoln University Dairy Farm – Summary Farm Walk notes

Tuesday 27th December 2016, 3 January 2017, 10th January 2017

LUDF – focus for 2016/17 Season: Nil-Infrastructure, low input, low N-loss, maximise profit.
Farm system comprises 3.5 cows/ha (peak milked), Target up to 170kgN/ha, 300kgDM/cow imported supplement, plus winter most cows off farm. FWE of less than \$1 million and Target production of over 500kgMS/cow (>100% liveweight in milk production).

Critical issues for the short term

1. **Hold the rotation length to 25 days to enable higher pasture growth**
2. **Monitor average pasture cover and pasture quality to ensure enough good quality pasture is offered daily to ensure good production and reproductive results.**
3. **Monitor cow BCS changes through lactation.**

Key Numbers - week ending Tuesday 27th December 2016

Ave Pasture Cover	2,766kgDM/ha	Pasture Growth Rate (as per Pasture Coach)	94 kgDM/ha/day
Round length	24.7 days (160 ha)	Ave Supplement used	none
No Cows on farm	548	Ave Soil Temp (week)	16°C
Kg MS/cow (549 cows)	1.99	SCC	137,000
Milk Protein : Fat ratio	0.80	Protein: 4.08%	Fat: 5.1%

Key Numbers - week ending Tuesday 3 January 2017

Ave Pasture Cover	2,879kgDM/ha	Pasture Growth Rate (as per Pasture Coach)	101 kgDM/ha/day
Round length	23.9 days (160 ha)	Ave Supplement used	none
No Cows on farm	548	Ave Soil Temp (week)	15.7°C
Kg MS/cow (549 cows)	1.95	SCC	141,000
Milk Protein : Fat ratio	0.82	Protein: 4.06%	Fat: 4.95%

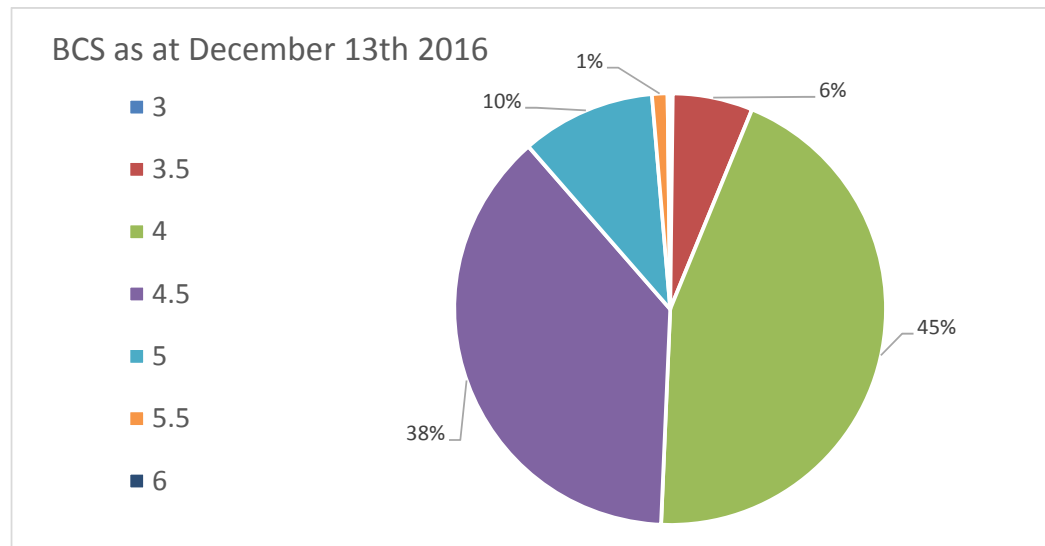
Key Numbers - week ending Tuesday 10 January 2017

Ave Pasture Cover	2,934kgDM/ha	Pasture Growth Rate (as per Pasture Coach)	97 kgDM/ha/day
Round length	25.8 days (160 ha)	Ave Supplement used	none
No Cows on farm	546	Ave Soil Temp (week)	14.9°C
Kg MS/cow (549 cows)	1.94	SCC	142,000
Milk Protein : Fat ratio	0.81	Protein: 4.15%	Fat: 5.13%

Herd Management

4. There has been 4 new cases of mastitis over the past 3 weeks (51 clinical cases season to date vs 86 cases at the same time last season).
5. There have been 5 new lame cows over the last 3 weeks. This brings us to 77 cases season to date vs 94 cases same time last year.
6. Trace minerals and magnesium chloride are running through the stock water to all cows on the milking platform.

7. The respiratory problem that presented in our first calvers seems to have resolved now. The final diagnosis indicates the farm suffered an outbreak of the respiratory disease IBR (Infectious bovine rhinotracheitis).
8. Average herd liveweight has largely been stable over this period. The monitor group (281 early calving MA cows) has averaged 485 kg liveweight/cow.
9. 152 heifer replacement calves have been tagged, and all calves are now outside on East Block. 18 light heifer calves remain on calf meal. All calves are being offered good quality pasture
10. The herd was BCS on the 13th December. The average BCS of the whole herd was 4.3 (down 0.1 from mid November). Approximately 45% of cows are now at BC 4.0, with 38% at 4.5 and 11% at 5 or above. In late October, the average was 4.5, and in mid-July, an average of 5.3. The whole herd will be body conditioned scored again sometime in January 2017.



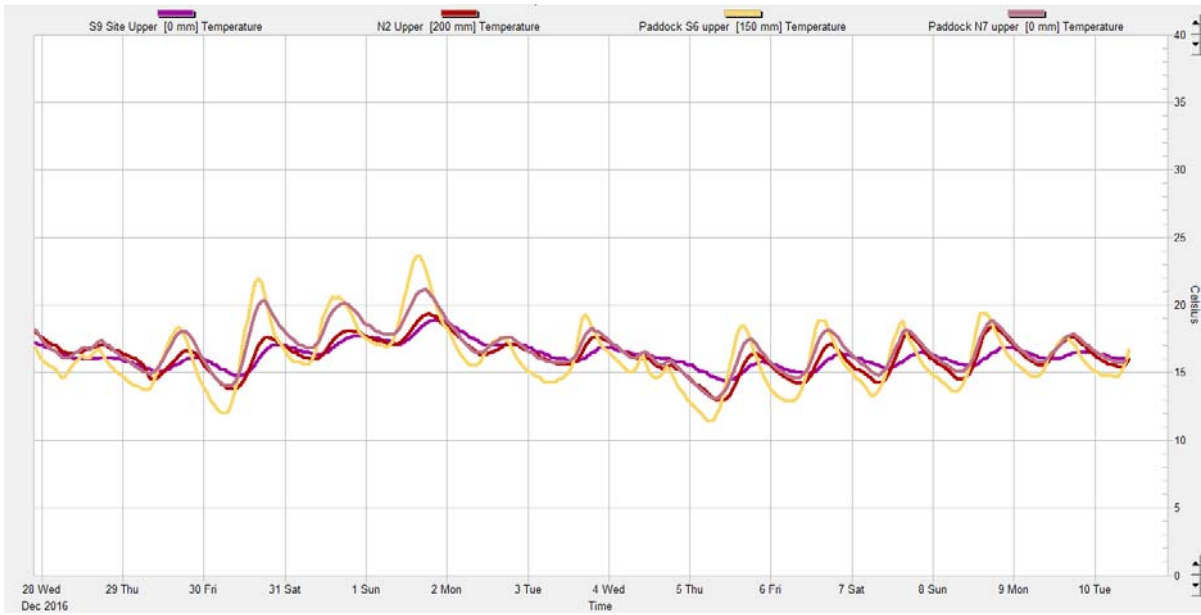
Mating progress

11. All cows were Metrichchecked 5 weeks post calving.
12. Mating started on 25 October with 82% submitted in the first three weeks, compared to the target of 90%.
13. Mating finished on Wednesday 4th January (10 weeks mating).
14. A total of 503 cows (91%) had been submitted up to the end of the fifth week of mating, but more returns were seen than desired during weeks 4-6, with initial Non-Return-Rates in the low 50's.
15. In response to the high number of returning cows in weeks 4-6, a decision was made to put bulls out 5 days earlier than initially planned (Wednesday 30th November).
16. Some of the low Non Return Rate is suspected to be related to the presence of respiratory disease noted particularly in the first calving cows during AB mating. Non-return rates were at their lowest in this group.
17. Replacement heifers: 9 weeks mating started for R2 2015 born heifers on 11th October 2016. Preliminary scanning results report 98 of the 150 heifers in calf to either the AI straw or a bull mating a day later. (65% in calf).

Growing Conditions

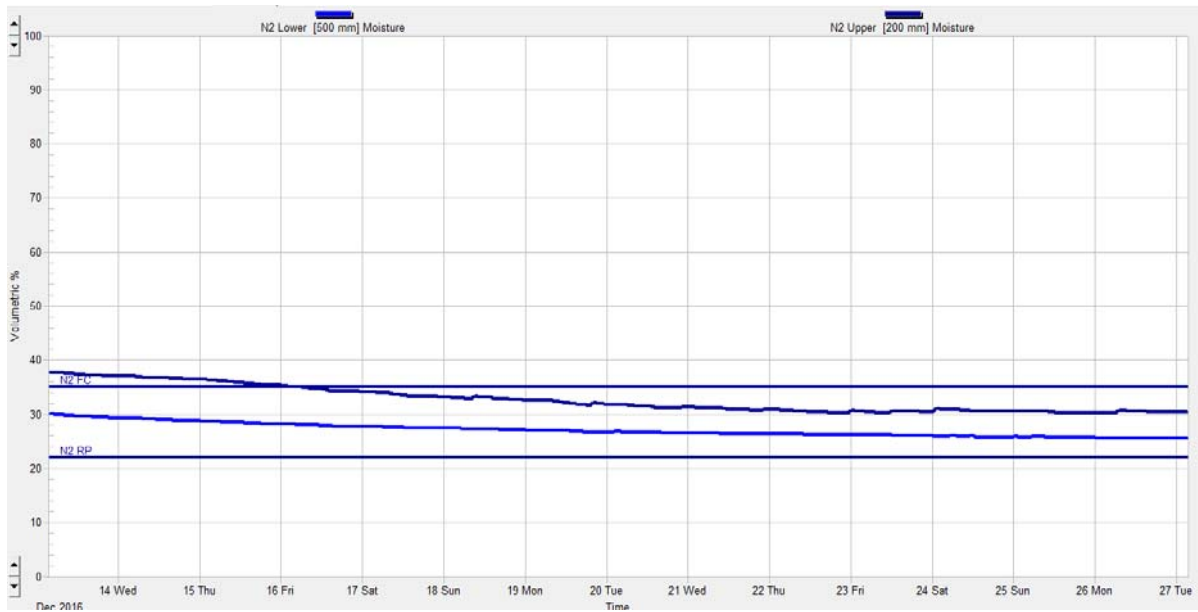
18. The average 9 am soil temperature for the weeks 20-27 Dec and 27 Dec – 3 Jan was approximately 16°C, before dropping to an average of 14.9°C in the week 3-10 Jan.

Figure 1: Soil temperature history 28 Dec – 10 Jan



19. The farm received 22 mm rain, primarily in the week 27 Dec – 3 Jan. Average evapotranspiration (ET) ranged from 28 – 34 mm/week (4-5 mm/day).

Figure 2: Soil moisture 14 - 27 December (Paddock N2).

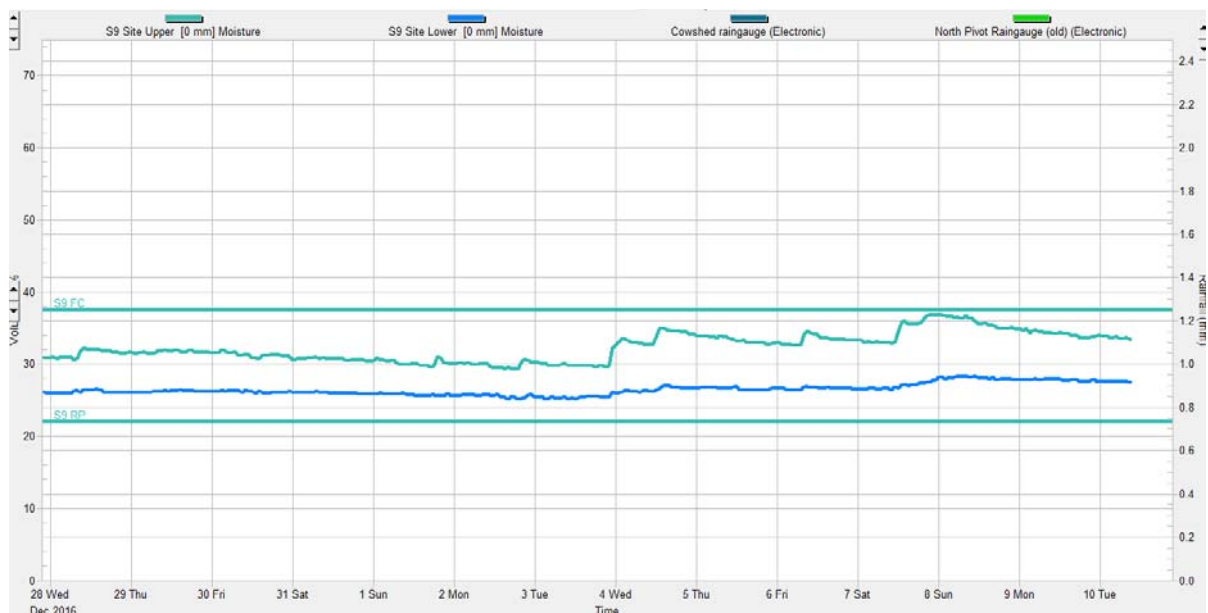


20. Soil moisture measures shown below are those for paddock S9 (compared to N2 above). Our North block pivot suffered a malfunction 2 weeks ago which has skewed moisture readings. We will be showing the readings for the south block over the next few weeks until such time that the readings in the North block normalize again.

Figure 3: Soil moisture history – 21 Dec – 3 Jan (Paddock S9)



Figure 4: Soil moisture history 28 Dec – 10 Jan (Paddock S9)

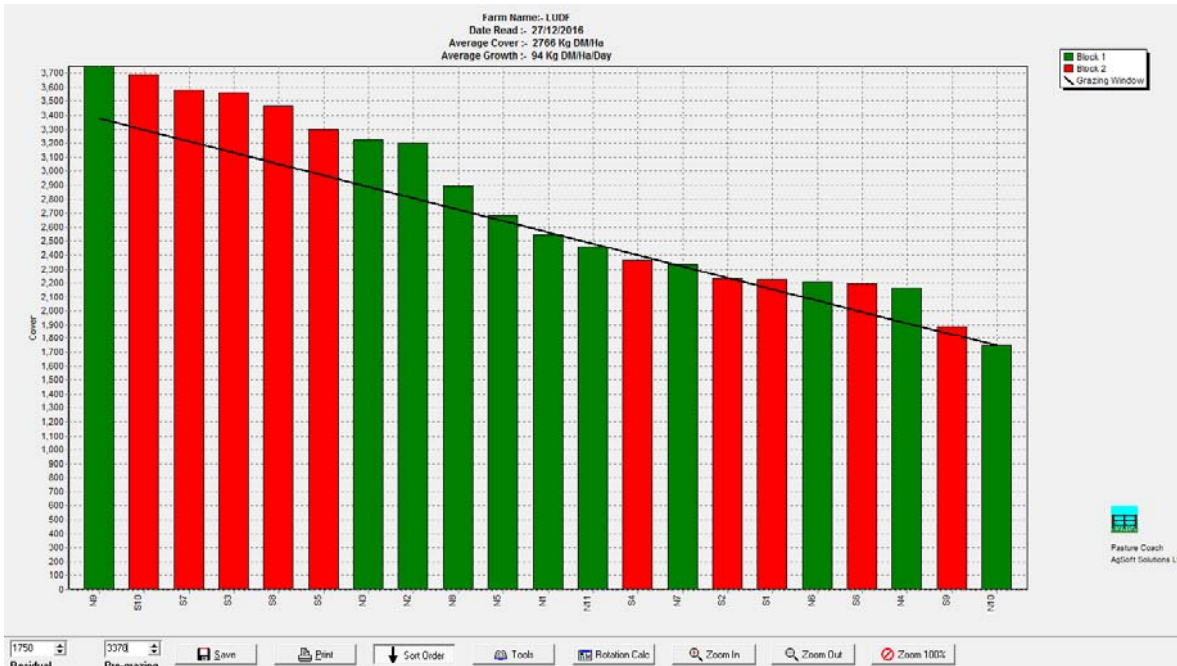


21. N Fertilizer application continued behind the cows on the non-effluent areas. A total of 104 ha received nitrogen at a rate of 25 kgN/ha as urea, over the weeks from 27 Dec – 10 Jan. Season to date, 107 kgN/ha has been applied on average across the 160 ha of the farm.

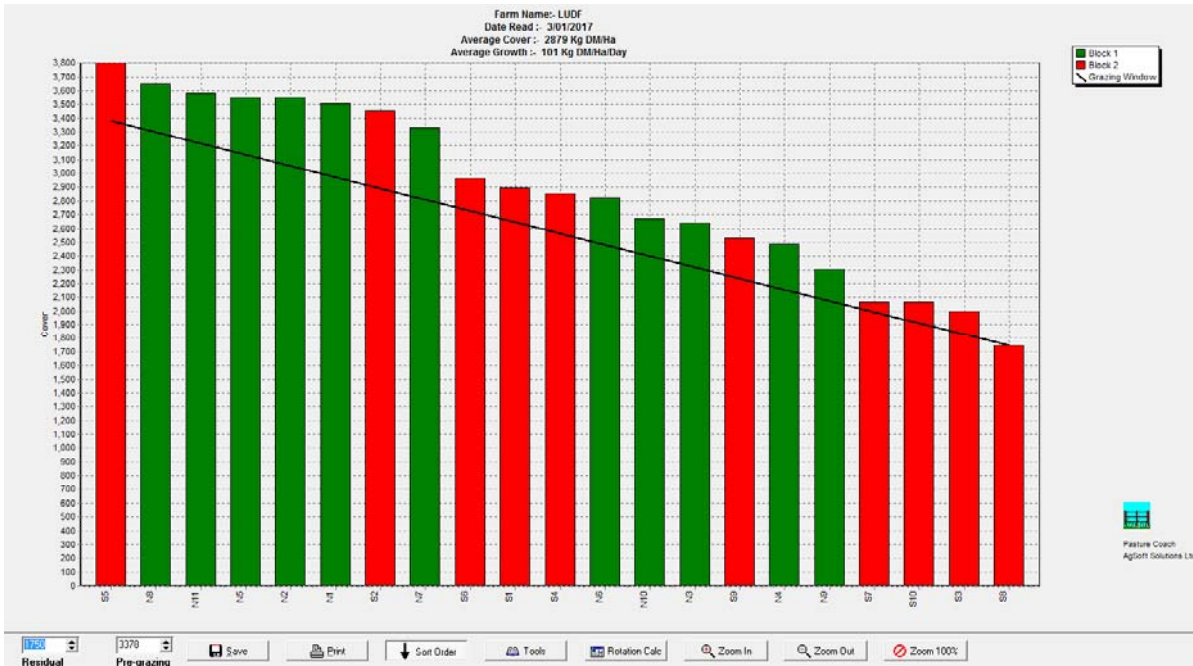
Pasture and Feed Management

22. The plan was a 25 day grazing round for this period which was largely achieved, aided by the inclusion of S5 following regrassing. No silage was fed over this time.
23. The ongoing challenge of the rising plate meter continued, with overestimation of both pregrazing covers and post grazing residuals.
24. With the slightly longer round, seedhead was more evident in pre-grazing covers in many paddocks. The previously mown areas are of very good quality on observation, yet the stemminess of the grass remains evident.
25. Clovers are becoming a stronger presence in paddocks across the whole farm. The consistent warm soil temperatures are encouraging this.
26. Three paddocks were pre-graze mown (N2, S10 and S7). Paddock N2, our only full Diploid paddocks had a dominance of seedhead present. S7 had a strong weed challenge in it with docks needing to be managed and S10 also required tidying up it had some docks that needed attention.
27. The focus remained on offering a high daily intake of high quality pasture, while achieving a low and consistent residual so that high quality pasture is available again at the next round.

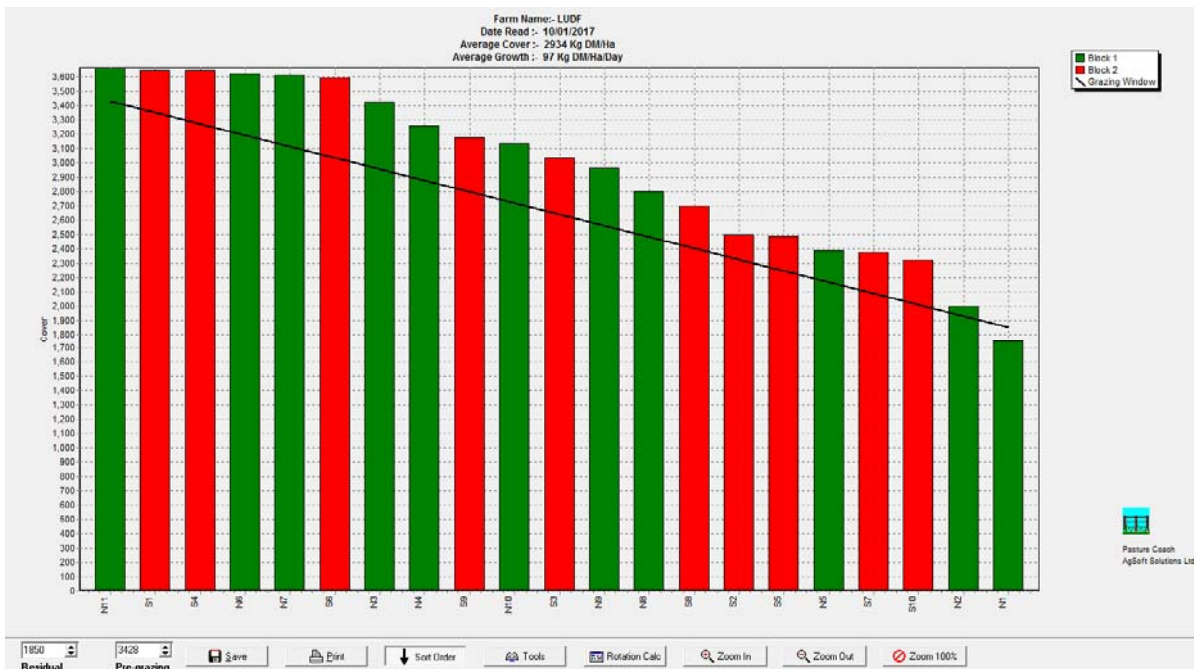
Figure 5: Feed wedge – 27/12/2016



Feed Wedge 3 January:



Feed Wedge – 10 January



28. The demand line on the pasture wedge graph is calculated as follows:

- 546-548 cows on 160 ha: 3.4 cows/ha.
- Planned minimum round length for the coming week is 25 days over 160 ha or 6.4 ha/day
- The dry matter intake for the current level of milksolids production is around 18.5 kgDM/cow/day
- Total demand: 18.5 kgDM/cow/day x 548 average cows for the week = 10,138 kgDM/day PLUS 19 bulls x 15kgDM/head/day = 285kgDM/day. Total demand cows & bulls = 10,423kgDM/day (65.1 kgDM/ha/day over the 160ha milking platform)
- Demand of 10,423 kgDM/day from 6.4 ha /day requires 1,628 kgDM/ha available.
- As the target residual has lifted from last week to 1750kgDM/ha, target pregraze covers are as follows: 1,750 kgDM/ha + 1,628 kgDM/ha = 3,378 kgDM/ha pregraze covers required.
- Target APC would therefore be $(3378+1750)/2 = 2,564$ kgDM/ha
- The Pasture Coach feed wedges above show a surplus of 35 tonnes DM, rising to 50 tonnes DM by the end of week 10 Jan.

29. Average pasture cover increased from 2,766 kgDM/ha to 2879 to 2934 kgDM/ha over this period.

30. Demand was approx 65 kgDM/ha/day with growth rates as estimated by Pasture Coach of 94 - 101 – 97 kgDM/ha/day per week.

31. With no silage in the system and having achieved the round length targeted in the period to 27 Dec, the lack of change in average pasture cover in would suggest the farm only grew to demand at that time. In the subsequent two weeks, the increase in APC suggests the farm was growing approximately 12 kgDM/ha/day more than demand (rather than the 90-100kgDM stated above).

Feeding Management:

32. The key objective was to hold to a 25 day rotation - to achieve the farms target of feeding cows as much high quality pasture as they can effectively eat, every day - while holding cow condition, milk production and achieving low and consistent grazing residuals.

33. Silage will be fed if and as required, though this is not anticipated to be required. It would be adjusted on a daily basis to maintain low and consistent residuals and total intakes of around 18.5-19kgDM/cow/day grazing 1/25 of the farm per day.

34. Pre-graze mowing is targeted for as few paddocks in the next round due, mostly, to a heavy weed challenge (docks).

35. Grazing decisions will continue to be influenced by cow behaviour and pasture growing conditions, taking particular note of area grazed per day.

36. The farm will continue to apply Nitrogen fertilizer following grazing, applying Urea at 25kgN/ha to the non-effluent areas of the farm.

LUDF Weekly report	13-Dec-16	20-Dec-16	27-Dec-16	3-Jan-17	10-Jan-17
Farm grazing ha (available to milkers)	152	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	0/0/0	0/0/0	0/0/0	0/0/0	0/0/0
Culls (Includes culls put down & empties)	0	0	0	2	0
Culls total to date	18	18	18	20	20
Deaths (Includes cows put down)	1	2	1	1	0
Deaths total to date	11	13	14	14	14
Calved Cows avail. (Peak Number 560)	551	549	548	546	546
Treatment / Sick mob total	2	1	0	2	4
Mastitis clinical treatment	1	1	0	2	2
Mastitis clinical YTD (tgt below 64 yr end)	46	47	47	49	51
Bulk milk SCC (tgt Avg below 150)	174	155	142	141	142
Lame new cases	12	6	2	3	0
Lame ytd	66	72	74	77	77
Lame days YTD (Tgt below 1000 yr end)	1552	1692	1832	1972	2119
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	531	528	528	524	521
Milking once a day into vat	18	20	20	20	21
Small herd	157	157	157	156	156
Main Herd	374	371	371	368	365
MS/cow/day (Actual kg / Cows into vat only)	1.99	2.00	1.99	1.95	1.94
Milk Protein/Fat ratio	0.81	0.81	0.80	0.82	0.81
Milk Fat %	4.90	4.95	5.10	4.95	5.13
Milk Protein %	3.94	4.02	4.08	4.06	4.15
MS/cow to date (total kgs / Peak Cows 560)	245	258	272	286	299
MS/ha/day (total kgs / ha used)	6.83	6.87	6.81	6.63	6.57
Herd Average Cond'n Score		4.30	0.00	0.00	0.00
Monitor group LW kg WOW 281 early calvers	479	483	487	484	484
Soil Temp Avg Aquaflex	15.3	15.7	16.0	16.0	14.9
Growth Rate (kgDM/ha/day)	92	102	94	101	97
Plate meter height - ave half-cms	16.9	16.2	16.2	17.0	17.4
Ave Pasture Cover (x140 + 500)	2866	2765	2766	2879	2934
Surplus/[deficit] on feed wedge- tonnes	45	35	30	52	50
Pre Grazing cover (ave for week)	3494	3690	3681	3689	3576
Post Grazing cover (ave for week)	1750	1650	1750	1750	1750
Highest pregrazing cover	3597	3902	3972	3750	3610
Area grazed / day (ave for week)	6.42	7.30	6.46	6.69	6.18
Grazing Interval	24	22	25	24	26
Milkers Offered/grazed kg DM pasture	18.8	20.0	19.4	17.6	17.3
Estimated intake pasture MJME	224	238	231	209	206
Milkers offered kg DM Grass silage	0	0	0	0	0
Silage MJME/cow offered	0	0	0	0	0

Estimated intake Silage MJME	0	0	0	0	0
Estimated total intake MJME	224	238	231	209	206
Target total MJME Offered/eaten (includes 6% waste)			0	0	0
Pasture ME (pre grazing sample)	11.8		11.8	11.8	11.6
Pasture % Protein	22.1		18.3	18.3	18.0
Pasture % DM - Concern below 16%	11.4		15.2	15.2	12.9
Pasture % NDF Concern < 33	40.0		40.2	40.2	41.3
Mowed pre or post grazing YTD	163.3	203.2	218.1	235.6	242.9
Total area mowed YTD	180.6	220.4	235.3	252.9	260.2
Supplements fed to date kg per cow (555peak)	55.2	55.2	55.2	55.2	55.2
Supplements Made Kg DM / ha cumulative	150.25	150.25	174.6	174.6	174.6
Units N applied/ha and % of farm	25units /22%	25units /22.7%	25units /23.5%	25units /21.4%	25units /21%
Kgs N to Date (whole farm)	107	114	97	102	107
Rainfall (mm)	37.2	1.6	3.4	3.2	19
Aquaflex topsoil relative to fill point target 60 - 80%	90-100	80-90	70-80	70-80	70-80

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To view the weekly updates from the DairyNZ grazing / mowing trial at the Lincoln University Research dairy farm:

http://www.dairynz.co.nz/about-us/research/key-projects/pre-grazing-and-mowing-trial/?_cldee=cm9uLnBlbGxvd0BzaWRkYy5vcmcubno%3d&recipientid=contact-548dfc0e4e29e2119d66005056ba000b-549bf4cfc165401b871710bc4f8eff8b&esid=be6dfe97-f3a5-e611-bd66-005056ba000b&urlid=0