

Lincoln University Dairy Farm - Farm Walk notes

Tuesday 23 February 2016

LUDF – focus for 2015/16 Season: Nil-Infrastructure, low input, low N-loss, maximise profit.
 Farm system comprises 3.5 cows/ha (peak milked), Target 150kgN/ha, 300kgDM/cow imported supplement, plus winter most cows off farm. FWE of less than \$1.08 million and Target production of 500kgMS/cow (>100% liveweight in milk production).

Critical issues for the short term

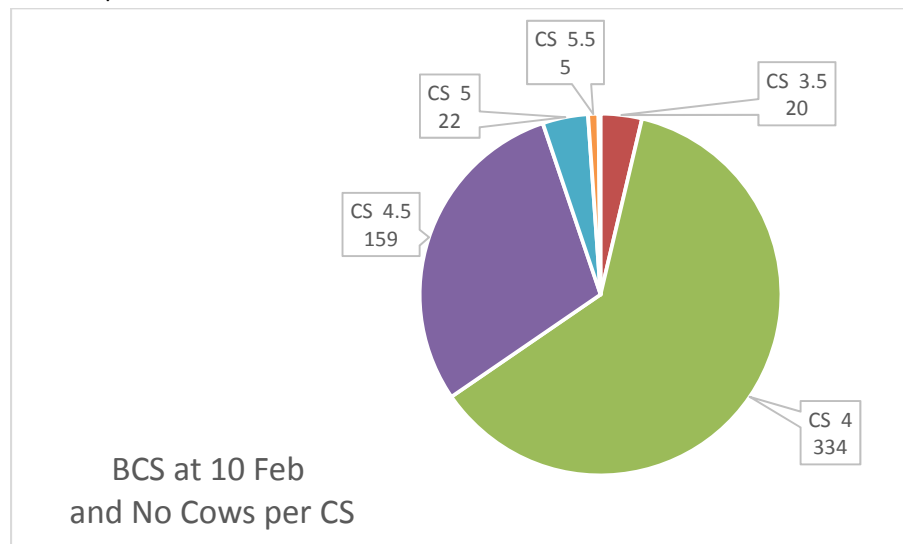
1. Monitor average pasture cover on the milking platform
2. Monitor pasture quality with the focus turning to pushing cover ahead into the autumn (while retaining pasture quality).
3. Make appropriate and timely decisions with regard to any further mowing or silage
4. Supplement cows with Magnesium

Key Numbers - week ending Tuesday 23rd February 2016

Ave Past Cover	2614 kgDM/ha	Past Growth Rate	76 kgDM/ha/day
Round length	21.1 days (for 160 ha)	Ave Supplement used	0 kgDM/cow/day
No Cows on farm	548 (all cows are milking into the vat)	Ave Soil Temp (week)	17.8 degrees
Ave Milk Production	1.81 kgMS/cow	SCC	212,000

Herd Management

1. There are currently 548 milkers on farm. 24 cows are on once-a-day milking (lames).
2. This week we had 4 new lame cows and 1 new case of mastitis.
3. Cows were body condition scored again on Wednesday 10th February. The average BCS for the whole herd was 4.2. The split is shown below:



4. The farm continues to run two herds. The make-up of these herds changed on the 18/01/16 according to the BCS information from the mid-January condition scoring. The aim of redrafting of the herds is to target preferential feeding of lighter and early calving cows, encouraging as much weight gain as possible and minimising the need to dry off light condition score cows early in the autumn.

5. The small herd has 144 early calving cows with a BCS below 4.5. The large herd has the remainder of the cows (later calving and heavier BCS (405 cows). The small herd continues to be preferentially fed, generally getting the first part of each paddock and not being pushed as much to achieve target grazing residuals.
6. Magnesium is being supplemented to the milking herd as Mag Chloride in the stock water.
7. All 2015 born heifer replacements (total 155) are grazing on the East Block. They received their second booster 7 in 1 vaccination on Monday 11th January.
8. All calves are on pasture only.
9. Cow live weight is holding steady between 490 and 497 kg/cow (monitor group)

Mating

10. Following 10 weeks of mating (6 weeks AI followed by bulls) the 6 week InCalf rate is 69%. Mating started on 25th October 2015 and bulls were removed on 5th January.
11. The final scan was completed on 10th Feb, resulting in 76 empty cows (of the 549 available)

Mating of 15 Month Old heifers

12. The 15 month old heifers were run with 8 bulls at any one time from 15th October till mid-December.
13. Pregnancy testing at the beginning of February diagnosed 15% empty in the heifers.

Growing Conditions

14. The average 9 am soil temperature for the week was 17.8 degrees (0.3 degrees lower than last week).
15. There was 14.4 mm rain over the last week, which allowed for the pivots to be off for most of the week.

Figure 1: Soil temperature history for the last 2 weeks

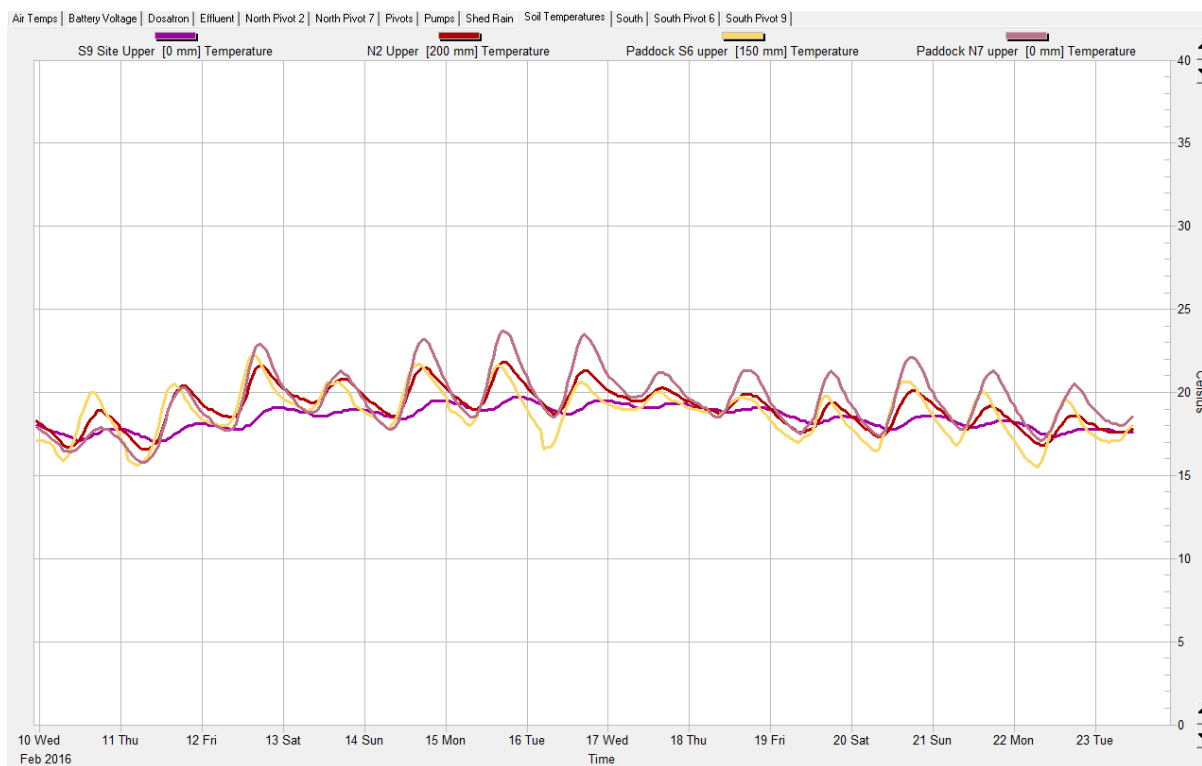
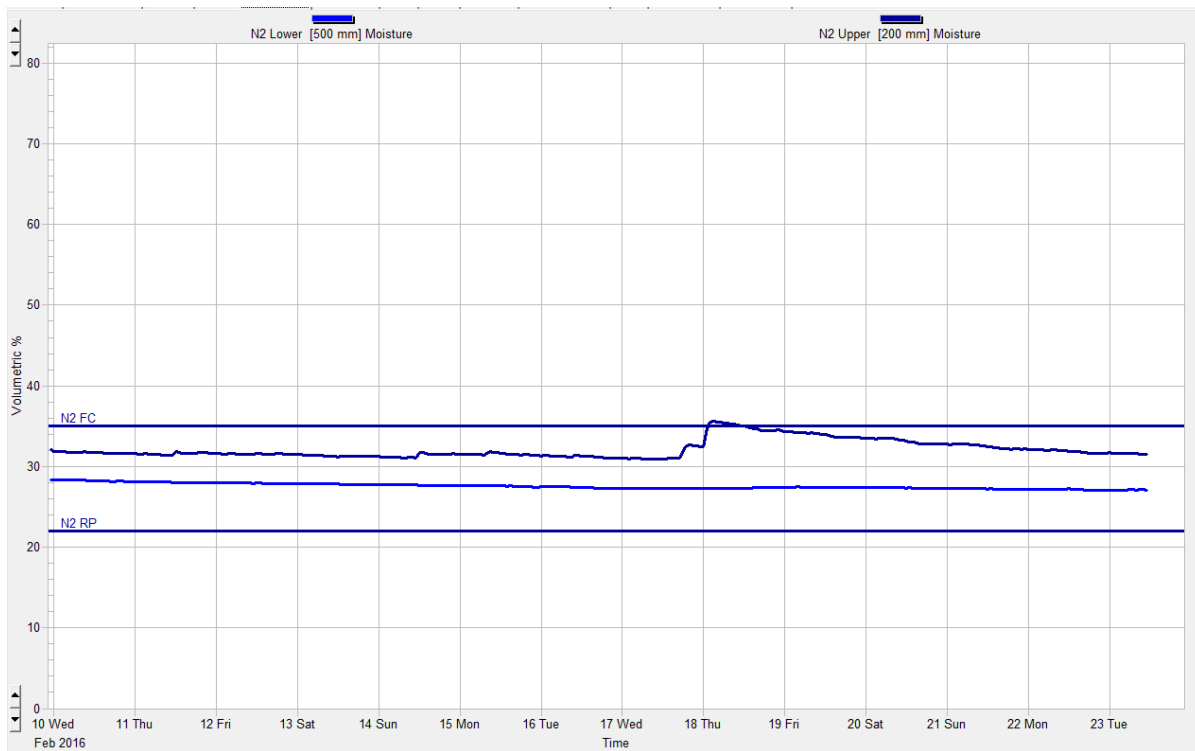


Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



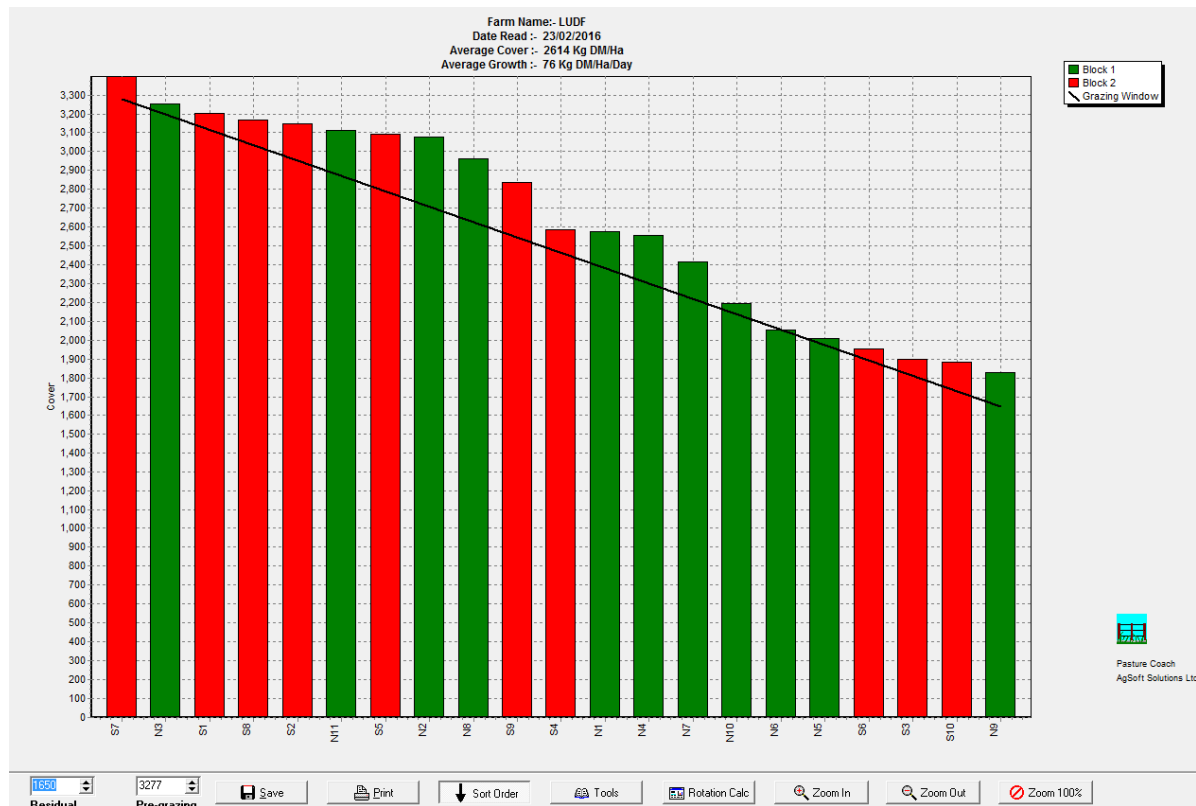
Nitrogen

16. 30.9 hectares received nitrogen as urea at 25kgN/ha over the last week. Season to date we have used 152 kgN/ha.
17. At this stage, the farm will continue to apply low rates of N to the non-effluent areas, following grazing, to maintain pasture quality and quantity, on the basis that home grown N boosted pasture remains profitable heading into the autumn (and cheaper than purchased supplement). Nitrogen use decisions continue to incorporate predicted farm N losses by Overseer. For this stage of the season, ongoing N use remains acceptable as predicted by Overseer.

Pasture and Feed Management

18. There was no silage harvested this week.
19. Our average round length this week was 21.1 day round for the week (7.59 ha grazed per day) over 160 effective ha of the milking platform. This is 2 days shorter than the previous week and 4 days shorter than the target.
20. There was no pre-graze mowing done this week.
21. Pasture quality and plating:
 - a. Pasture quality remains relatively good. Seedhead is less apparent than in previous weeks
 - b. The pregraze mowing and ex baleage areas show a slower rate of growth in the week following mowing, however, when it comes to the second and third weeks, this growth increases to over 100 kgDM/ha/day in some paddocks, with a quality that visually looks very high.
 - c. The rising plate meter is probably still over-estimating some readings as there are some paddocks where the ryegrass is standing quite straight in the first week postgrazing and the plantain is still seeding.
 - d. Fertility patches are again less evident than in previous weeks.

Figure 3: This week's feed wedge



22. Based on the full farm area of 160 ha in the grazing round, the target pregrazing cover and demand line in the feed wedge has been calculated using a target rotation length of 25 days, an intake of 19 kgDM/cow/day, 548 cows (for the week ahead) and a post grazing residual of 1650 kgDM/ha. Target pregrazing cover is therefore:

$$(\text{Stocking rate} \times \text{Intake from pasture} \times \text{Rotation}) + \text{Optimum residual} = \text{Pre-grazing Cover.}$$

$$(548 \text{ cows} / 160\text{ha} \times 19 \text{ kgDM/cow/day} \times 25 \text{ days}) + 1650 = 3276 \text{ kgDM/ha.}$$

23. This expected per cow dry matter intake demand is based on calculations that allow for milk production, a little weight gain, maintenance requirements and distance walked. (See DairyNZ facts and figures for these details). At LUDF this calculates to approx. 200 - 220MJME at present. Feed testing last week suggests pasture was approximately 11.4 MJME, therefore 220MJME requires approximately 19 kgDM / cow / day. This is equivalent to a demand of 65kgDM/ha/day across 160 ha.

24. We continue to see that the plated covers could be overestimated:

- a. The target round length was 25 but the actual was 21.1 days. This means cows found less DM than what was expected and grazed down paddocks faster than expected.
- b. The daily demand has remained the same: 65kgDM/cow/day
- c. The Average pasture cover (APC) has decreased a little, yet the RPM data suggests growth rate exceeded supply. If this was the case, APC should have increased.
- d. We had an estimated surplus on Pasture Coach of 28 tDM total last week and a surplus of 26 tDM this week

All of the above would suggest that the farm has really grown roughly on demand instead of the 76 kgDM/ha/day resulting from the covers plated. It would also indicate that the estimated surplus last week was probably not as high as the 28 tDM reported.

25. Grazing behaviour: on observation, cows were able to easily achieve the post-grazing residuals, grazing pastures that are coming back from either pre-graze mowing or silage harvesting (very good quality pastures on observation).

Feeding Management for the coming week:

26. Given all of the above, the key decisions for the week ahead:
- Our aim remains to achieve a 25 day rotation length through the next week. We remain vigilant of growth rate still since the farm could achieve high growth through late February and early March.
 - There is unlikely to be any further silage harvested or pre-graze mowing. However, should high growth rates occur this can be re-evaluated.
 - We will continue to closely observe rotation length and cow behaviour (intake and production) through the week. Temperatures are forecasted to reach daily highs of up to 22-29°C with little to no rain. This could mean pasture growth rates and quality may be affected by the high temperatures.
 - Continue to monitor rate of drop in milksolids production (stable over the past week) as an important indicator of both feed intake as well as pasture quality.

LUDF Weekly report	26-Jan-16	2-Feb-16	9-Feb-16	16-Feb-16	23-Feb-16
Farm grazing ha (available to milkers)	160	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0
Culls (Includes culls put down & empties)	0	0	0	1	1
Culls total to date	14	14	14	15	15
Deaths (Includes cows put down)	1	0	0	0	0
Deaths total to date	12	12	12	12	12
Calved Cows available (Peak Number 560)	549	549	549	548	548
Treatment / Sick mob total	0	1	3	0	1
Mastitis clinical treatment	0	1	2	0	1
Mastitis clinical YTD (tgt below 64 yr end)	86	87	89	89	90
Bulk milk SCC (tgt Avg below 150)	194	182	206	173	212
Lame new cases	5	5	6	4	4
Lame ytd	103	108	114	118	122
Lame days YTD (Tgt below 1000 yr end)	1269	1451	1577	1745	1913
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	524	522	528	524	524
Milking once a day into vat	25	26	18	24	24
Small herd	140	140	140	138	138
Main Herd	384	383	388	386	386
MS/cow/day (Actual kg / Cows into vat only)	1.91	1.85	1.84	1.79	1.81
MS/cow to date (total kgs / Peak Cows	336	348	361	373	386
MS/ha/day (total kgs / ha used)	6.54	6.34	6.27	6.12	6.18
Herd Average Cond'n Score	0.00	0.00	0.00	4.20	0.00
Monitor group LW kg WOW early MA calvers	483	490	490	488	490
Soil Temp Avg Aquaflex	18.0	16.1	17.4	18.1	17.8
Growth Rate (kgDM/ha/day)	126	108	90	109	76
Plate meter height - ave half-cms	16.3	15.3	14.1	15.4	15.1
Ave Pasture Cover (x140 + 500)	2779	2640	2477	2660	2614
Surplus/[deficit] on feed wedge- tonnes	54	34	11	28	26
Pre Grazing cover (ave for week)	3366	3517	3648	3451	3360
Post Grazing cover (ave for week)	1650	1650	1650	1650	1650
Highest pregrazing cover	3600	3636	3916	3636	3602
Area grazed / day (ave for week)	6.11	7.51	6.27	7.02	7.56
Grazing Interval	26	21	26	23	21
Milkers Offered/grazed kg DM pasture					
Estimated intake pasture MJME				220	220

Milkers offered kg DM Grass silage				0	0
Silage MJME/cow offered				0	0
Estimated intake Silage MJME				0	0
Estimated total intake MJME				220	220
Target MJME Offered/eaten (includes 6% waste)					
Pasture ME (pre grazing sample)	11.4	11.4	12.0	11.4	0.0
Pasture % Protein	23.0	23.0	20.5	22.9	0.0
Pasture % DM - Concern below 16%	9.1	9.1	14.8	13.5	0.0
Pasture % NDF Concern < 33	37.8	37.8	37.4	42.7	0.0
Mowed pre or post grazing YTD	219.3	219.3	231.5	236.5	236.5
Total area mowed YTD	268.1	283.8	307.3	312.3	312.3
Supplements fed to date kg per cow (560 peak)	113.8	113.8	113.8	113.8	113.8
Supplements Made Kg DM / ha cumulative	701.3	701.3	964.35	964.35	964.35
Units N applied/ha and % of farm	25units / 25.6%	25units / 15.6%	25units / 41.4%	25units / 31.1%	25units / 19.3%
Kgs N to Date (whole farm)	125	129	139	147	152
Rainfall (mm)	8.4	29.6	0	9.8	14.4
Aquaflex topsoil rel. to fill point target 60 - 80%	60-90	70-90	70-90	60-80	60-80

We walk the farm every Tuesday at 9am. 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.

Employment opportunities at LUDF:

LUDF is recruiting for a farm assistant. A flexible start date is possible for the farm assistant. Please email hancoxp@lincoln.ac.nz for further information.

Lincoln University Dairy Farm - Farm Walk notes

Tuesday 16 February 2016

LUDF – focus for 2015/16 Season: Nil-Infrastructure, low input, low N-loss, maximise profit. Farm system comprises 3.5 cows/ha (peak milked), Target 150kgN/ha, 300kgDM/cow imported supplement, plus winter most cows off farm. FWE of less than \$1.08 million and Target production of 500kgMS/cow (>100% liveweight in milk production).

Critical issues for the short term

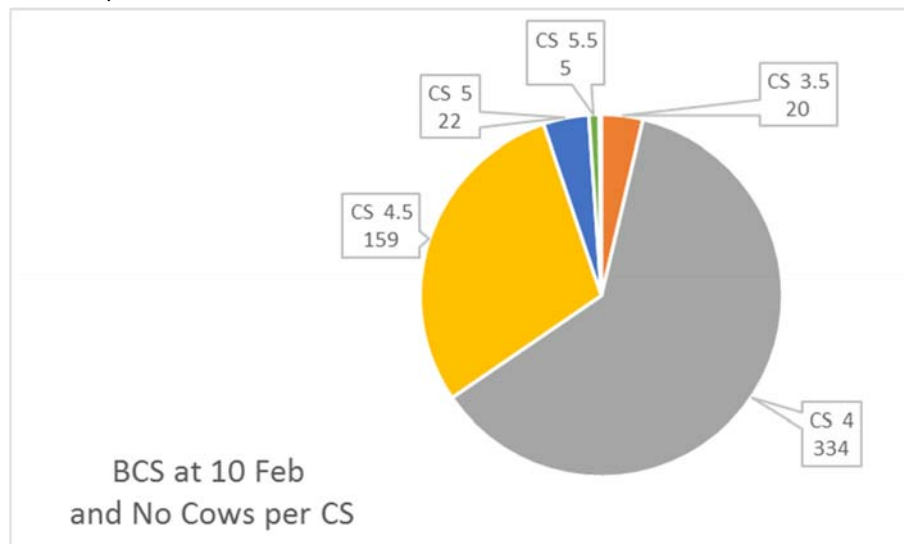
1. Monitor average pasture cover on the milking platform
2. Monitor pasture quality with the focus turning to pushing cover ahead into the autumn (while retaining pasture quality).
3. Make appropriate and timely decisions with regard to any further mowing or silage
4. Supplement cows with Magnesium

Key Numbers - week ending Tuesday 16th February 2016

Ave Past Cover	2660 kgDM/ha	Past Growth Rate	109 kgDM/ha/day
Round length	22.8 days (for 160 ha)	Ave Supplement used	0 kgDM/cow/day
No Cows on farm	548 (all cows are milking into the vat)	Ave Soil Temp (week)	18.1 degrees
Ave Milk Production	1.79 kgMS/cow	SCC	173,000

Herd Management

1. There are currently 548 milkers on farm. 24 cows are on once-a-day milking (lames).
2. This week we had 4 new lame cows and no new case of mastitis this week.
3. Cows were body condition scored again on Wednesday 10th February. The average BCS for the whole herd was 4.2. The split is shown below:



4. The farm is continuing to run two herds. The make-up of these herds changed on the 18/01/16 according to the BCS information from the mid-January condition scoring. The aim of redrafting of the herds is to target preferential feeding of lighter and early calving cows, encouraging as much weight gain as possible and minimising the need to dry off light condition score cows early in the autumn.

5. The small herd has 144 early calving cows with a BCS below 4.5. The large herd has the remainder of the cows (later calving and heavier BCS (405 cows). The small herd continues to be preferentially fed, generally getting the first part of each paddock and not being pushed as much to achieve target grazing residuals.
6. Magnesium is being supplemented to the milking herd as Mag Chloride in the stock water.
7. All 2015 born heifer replacements (total 155) are grazing on the East Block. They received their second / booster 7 in 1 vaccination on Monday 11th January.
8. All calves are on pasture only.
9. Cow live weight is holding steady between 488 and 492 kg/cow (monitor group)

Mating

10. 6 weeks AI Mating for the milking herd started on 25th October 2015 and bulls were removed on 5th January (10 weeks mating).
 - a. Our 3-week Submission rate was 89%
 - b. Our 6 week submission rate was 97.7%
 - c. Our 6 week InCalf is 68% based on the most recently available information from MINDA on the Web. These results are based on pregnancy scanning completed on 11th January 2016.
 - d. The final scan was done last week and we have 76 empty cows (of the 549 available)
 - e. More analysis on these reproductive outcomes will be provided as this becomes available to the management team.

Mating of 15 Month Old heifers

11. The 125, 15 month old heifers were run with 8 bulls at any one time from 15th October till mid-December. Bulls were rotated in and out of the heifers on a weekly basis.
12. Pregnancy testing of the R2s was completed on the 1/02/2016. 19 out of the 123 animals (125 R2s minus 2 freemartins) were empty (15% empty rate). This result is disappointing, we understand other farms have also experienced this rate of empties. It is broadly similar to past years.

Growing Conditions

13. The average 9 am soil temperature for the week was 18.1 degrees (0.7 degrees higher than last week). The soil temperatures seem to continue a steady increase, similar to that observed in December/January last season
14. There 9.8 mm rain over the last week.
15. Both North and South pivots have been on for the last 7 days.

Figure 1: Soil temperature history for the last 2 weeks

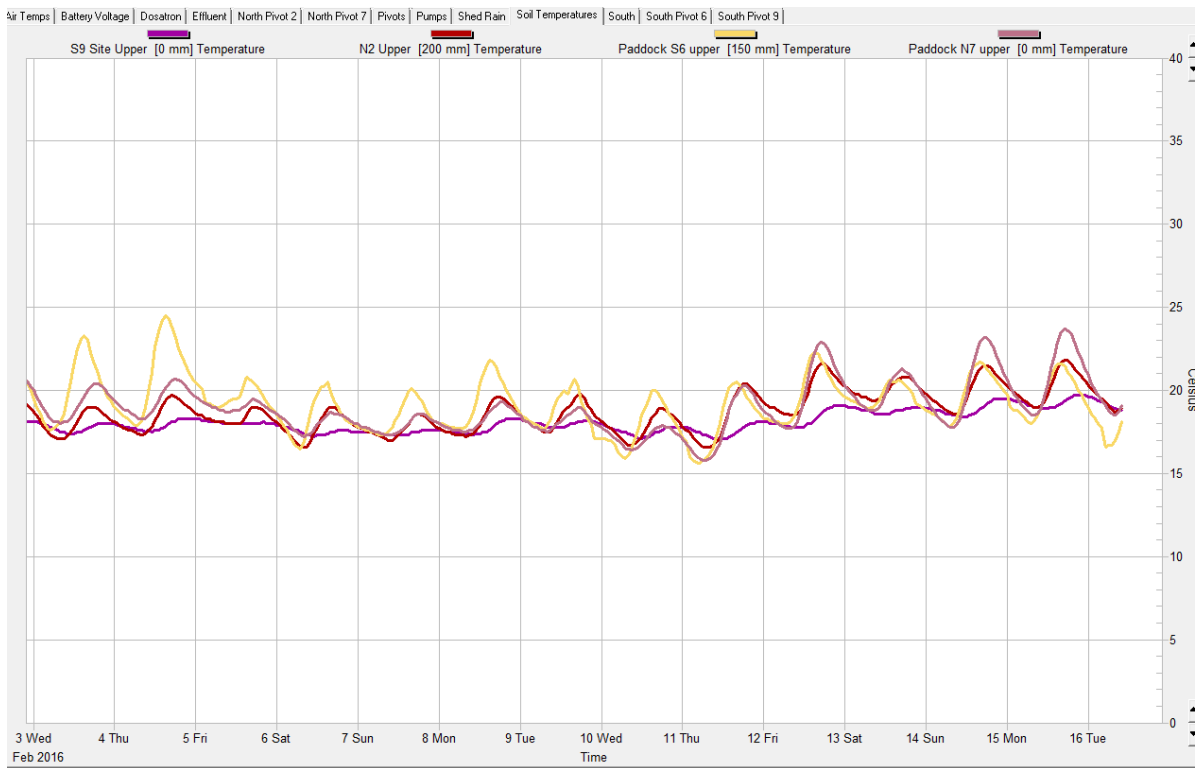
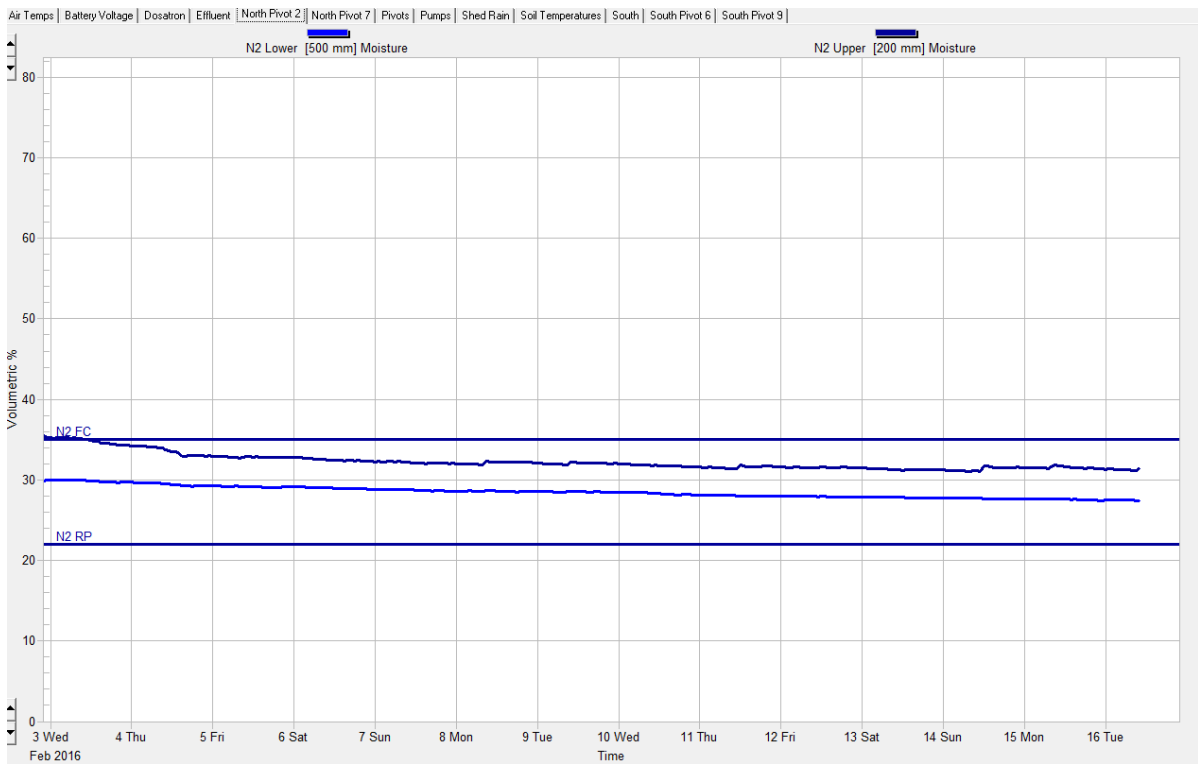


Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



Nitrogen

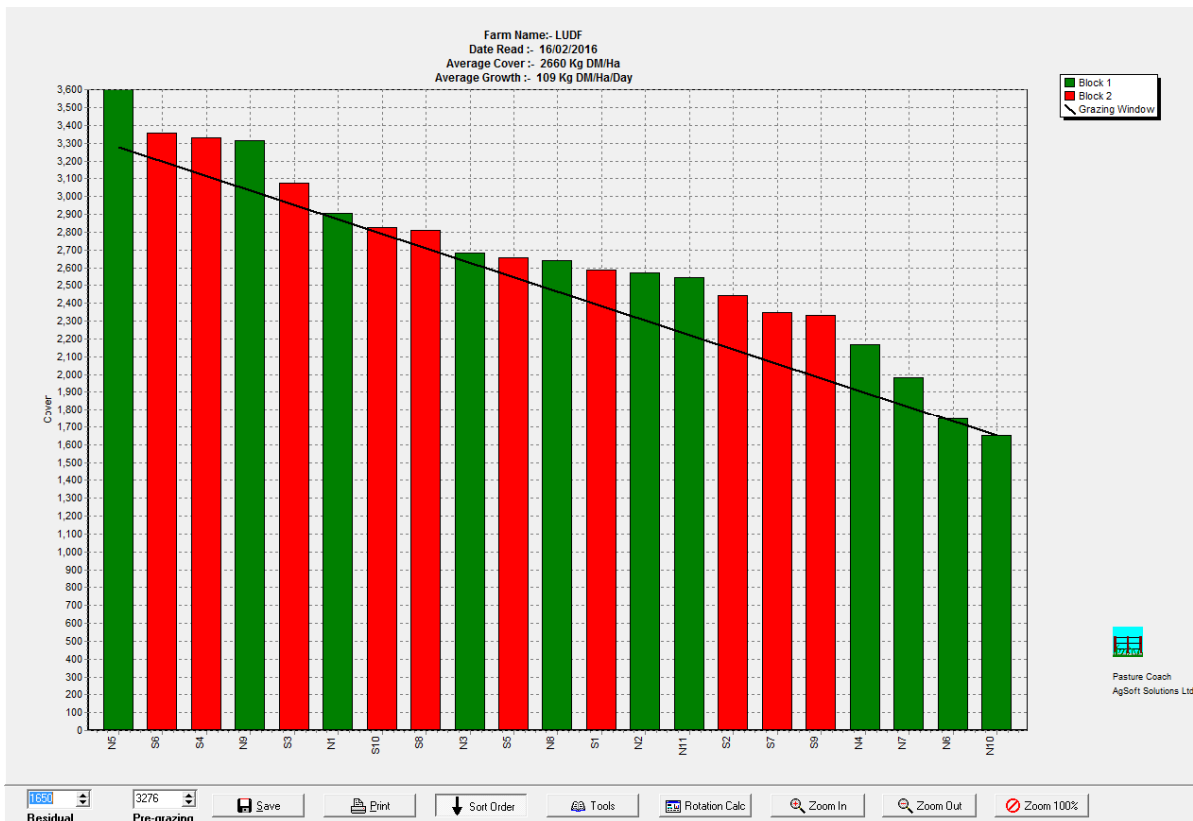
- 49.9 hectares received nitrogen as urea at 25kgN/ha over the last week. Season to date we have used 147 kgN/ha.

17. At this stage, the farm is continuing to apply low rates of N to the non-effluent areas, following grazing, to maintain pasture quality and quantity, on the basis that home grown N boosted pasture remains profitable heading into the autumn (and cheaper than purchased supplement). Nitrogen use decisions continue to incorporate predicted farm N losses by Overseer. For this stage of the season, ongoing N use remains acceptable as predicted by Overseer.

Pasture and Feed Management

1. There was no silage harvested this week.
2. Our average round length this week was 22.8 day round for the week (7.02 ha grazed per day) over 160 effective ha of the milking platform. This is 2 days longer than the previous week.
3. There were 5 ha pre-graze mown (pdk N7) done this week to help control some of the high covers on that particular paddock (first on the wedge last week).
4. Pasture quality and plating:
 - a. Pasture quality remains relatively good. Some seedhead remains apparent, mostly on N5 (highest cover on the feed wedge – 3600kgDM/ha). This could be potentially due to heat stress of the grass earlier in January.
 - b. The pregraze mowing and ex baleage areas show a slower rate of growth in the week following mowing, however, when it comes to the second and third weeks, this growth increases to over 100 kgDM/ha/day in some paddocks, with a quality that visually looks very high.
 - c. The rising plate meter is probably still over-estimating some readings due to the plantain in the mix (which continues to seed).
 - d. Fertility patches are a lot less evident this week and certainly much less evident compared with this time last year when N was not applied during January 2015.

Figure 3: This week's feed wedge



5. Based on the full farm area of 160 ha in the grazing round, the target pregrazing cover and demand line in the feed wedge has been calculated using a target rotation length of 25 days, an intake of 19 kgDM/cow/day, 548 cows (for the week ahead) and a post grazing residual of 1650 kgDM/ha. Target pregrazing cover is therefore:

(Stocking rate x **Intake from pasture** x Rotation) + Optimum residual = Pre-grazing Cover.

(548 cows / 160ha x 19 kgDM/cow/day x 25 days) + **1650** = 3276 kgDM/ha.

6. This expected per cow dry matter intake demand is based on calculations that allow for milk production, a little weight gain, maintenance requirements and distance walked. (See DairyNZ facts and figures for these details). At LUDF this calculates to approx. 200 - 220MJME at present. Feed testing last week suggests pasture was approximately 11.4 MJME, therefore 220MJME requires approximately 19 kgDM / cow / day. This is equivalent to a demand of 65kgDM/ha/day across 160 ha.
7. Average pasture cover has increased from last week's cover of 2477 kgDM/ha to 2660kgDM/ha. This is not a surprise given that the growth rate was 109 kgDM/ha/day, and our demand is still around 65 kgDM/ha/day. This resulted in a surplus of 28 tDM this week (increase from the 11 TDM surplus we had last week)
8. Grazing behaviour: on observation, cows are being able to easily achieve the post-grazing residuals, grazing pastures that are coming back from either pre-graze mowing or silage harvesting (very good quality pastures on observation). Round length this weeks was around 23 days (2 days longer than the previous week), which would mean that cows are finding more DM in the paddocks than last week.
9. Should conditions remain the same, it is likely that some more surplus could develop through the week.

Feeding Management for the coming week:

10. Given all of the above, the key decisions for the week ahead:
 - a. It was decided to capitalize on the high growths achieved to start extending the round without the need to use supplements. Our first step towards this is targeting a 25 day round for this week (6.4 ha/day). However, we need to remain very vigilant of growth rates. Previous experience and historic data indicates that, given the right conditions, this farm can grow well into the 90 kgDM/ha/Day through March, so extending the round too early and too fast could result in potential quality losses due to covers getting too high.
 - b. In light of the above, plus the observation on grazing behaviour, it was decided that no area would be harvested for silage for the week. However, it is expected that there could be some more surplus to be harvested next week if pregraze quality cant be held.
 - c. We will continue to closely observe rotation length and cow behaviour (intake and production) through the week. Temperatures are forecasted to reach daily highs of up to 22-25°C with small amount of rain so the challenge of ongoing higher than typical daily pasture growth rates (potentially around 100 kgDM/ha/day) is expected to continue.
 - d. Continue to monitor rate of drop off peak milksolids production (stable over the past week) as an important indicator of both feed intake as well as pasture quality.

LUDF Weekly report	19-Jan-16	26-Jan-16	2-Feb-16	9-Feb-16	16-Feb-16
Farm grazing ha (available to milkers)	160	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0
Culls (Includes culls put down & empties)	0	0	0	0	1
Culls total to date	14	14	14	14	15
Deaths (Includes cows put down)	0	1	0	0	0
Deaths total to date	11	12	12	12	12
Calved Cows available (Peak Number 560)	550	549	549	549	548
Treatment / Sick mob total	0	0	1	3	0
Mastitis clinical treatment	0	0	1	2	0

Mastitis clinical YTD (tgt below 64 yr end)	86	86	87	89	89
Bulk milk SCC (tgt Avg below 150)	174	194	182	206	173
Lame new cases	4	5	5	6	4
Lame ytd	98	103	108	114	118
Lame days YTD (Tgt below 1000 yr end)	1094	1269	1451	1577	1745
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	531	524	522	528	524
Milking once a day into vat	19	25	26	18	24
Small herd	144	140	140	140	138
Main Herd	368	384	383	388	386
MS/cow/day (Actual kg / Cows into vat only)	1.98	1.91	1.85	1.84	1.79
MS/cow to date (total kgs / Peak Cows)	322	336	348	361	373
MS/ha/day (total kgs / ha used)	6.80	6.54	6.34	6.27	6.12
Herd Average Cond'n Score	4.30	0.00	0.00	0.00	4.20
Monitor group LW kg WOW early MA calvers	491	483	490	490	488
Soil Temp Avg Aquaflex	16.1	18.0	16.1	17.4	18.1
Growth Rate (kgDM/ha/day)	85	126	108	90	109
Plate meter height - ave half-cms	15.0	16.3	15.3	14.1	15.4
Ave Pasture Cover (x140 + 500)	2596	2779	2640	2477	2660
Surplus/[deficit] on feed wedge- tonnes	30	54	34	11	28
Pre Grazing cover (ave for week)	3347	3366	3517	3648	3451
Post Grazing cover (ave for week)	1650	1650	1650	1650	1650
Highest pregrazing cover	3436	3600	3636	3916	3636
Area grazed / day (ave for week)	6.56	6.11	7.51	6.27	7.02
Grazing Interval	24	26	21	26	23
Milkers Offered/grazed kg DM pasture					
Estimated intake pasture MJME					220
Milkers offered kg DM Grass silage					0
Silage MJME/cow offered					0
Estimated intake Silage MJME					0
Estimated total intake MJME					220
Target MJME Offered/eaten (includes 6% waste)					
Pasture ME (pre grazing sample)	12.0	11.4	11.4	12.0	11.4
Pasture % Protein	21.4	23.0	23.0	20.5	22.9
Pasture % DM - Concern below 16%	12.0	9.1	9.1	14.8	13.5
Pasture % NDF Concern < 33	34.5	37.8	37.8	37.4	42.7
Mowed pre or post grazing YTD	214.3	219.3	219.3	231.5	236.5
Total area mowed YTD	255.6	268.1	283.8	307.3	312.3
Supplements fed to date kg per cow (560 peak)	113.8	113.8	113.8	113.8	113.8
Supplements Made Kg DM / ha cumulative	642.4	701.3	701.3	964.35	964.35
Units N applied/ha and % of farm	25units/ 33.7%	25units / 25.6%	25units / 15.6%	25units / 41.4%	25units / 31.1%
Kgs N to Date (whole farm)	119	125	129	139	147
Rainfall (mm)	17.8	8.4	29.6	0	9.8
Aquaflex topsoil rel. to fill point target 60 - 80%	80	60-90	70-90	70-90	60-80

We walk the farm every Tuesday at 9am. 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.

Next LUDF Focus day – 18th February, 10.15 – 1.00pm at LUDF.

Employment opportunities at LUDF:

LUDF is recruiting for a 2IC for the 2016-17 Season and a farm assistant. A flexible start date is possible for the farm assistant. Please email hancoxp@lincoln.ac.nz for further information.

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Critical issues for the short term

1. **Monitor average pasture cover on the milking platform**
2. **Monitor pasture quality coming through the current grazing to ensure good quality and quantity of feed, with the aim to minimise the rate of drop off peak milksolids production.**
3. **Make appropriate and timely decisions with regard to mowing or areas out for silage**
4. **Supplement cows with Magnesium**

Key Numbers - week ending Tuesday 9th February 2016

Ave Past Cover	2477 kgDM/ha	Past Growth Rate	90 kgDM/ha/day
Round length	25.5 days (for 160 ha)	Ave Supplement used	0 kgDM/cow/day
No Cows on farm	549 (all cows are milking into the vat)	Ave Soil Temp (week)	17.4 degrees
Ave Milk Production	1.84 kgMS/cow	SCC	206,000

Herd Management

1. There are currently 549 milkers on farm. 18 cows are on once-a-day milking (lames).
2. This week we had 6 new lame cows and 2 new case of mastitis this week.
3. Cows will be body condition scored again on Wednesday 10th February.
4. The farm is continuing to run two herds. The make-up of these herds changed on the 18/01/16 according to the BCS information from the mid-January condition scoring. The aim of redrafting of the herds is to target preferential feeding of lighter and early calving cows, encouraging as much weight gain as possible and minimising the need to dry off light condition score cows early in the autumn.
5. The small herd has 144 early calving cows with a BCS below 4.5. The large herd has the remainder of the cows (later calving and heavier BCS (405 cows). The small herd continues to be preferentially fed, generally getting the first part of each paddock and not being pushed as much to achieve target grazing residuals.
6. Magnesium is being supplemented to the milking herd as Mag Chloride in the stock water.
7. All 2015 born heifer replacements (total 155) are grazing on the East Block. They received their second / booster 7 in 1 vaccination on Monday 11th January.
8. All calves are on pasture only.
9. Cow liveweight is holding steady.

Mating

10. 6 weeks AI Mating for the milking herd started on 25th October 2015 and bulls were removed on 5th January (10 weeks mating).
 - a. Our 3-week Submission rate was 89%
 - b. Our 6 week submission rate was 97.7%

- c. Our 6 week InCalf is 68% based on the most recently available information from MINDA on the Web. These results are based on pregnancy scanning completed on 11th January 2016. Later calving cows will be pregnancy tested next week. More analysis on these reproductive outcomes will be provided as this becomes available to the management team.

11. Mating of 15 Month Old heifers

- 12. The 125, 15 month old heifers were run with 8 bulls at any one time from 15th October till mid-December. Bulls were rotated in and out of the heifers on a weekly basis.
- 13. Pregnancy testing of the R2s was completed on the 1/02/2016. 19 out of the 123 animals (125 R2s minus 2 freemartins) were empty (15% empty rate). This result is disappointing, we understand other farms have also experienced this rate of empties. It is broadly similar to past years.

Growing Conditions

- 14. The average 9 am soil temperature for the week was 17.4 degrees (1.3 degrees higher than last week). The soil temperatures seem to be going up and down like a yo-yo.
- 15. There has been no rain over the last week.
- 16. Both North and South pivots have been on for the last 3 days.

Figure 1: Soil temperature history for the last 2 weeks

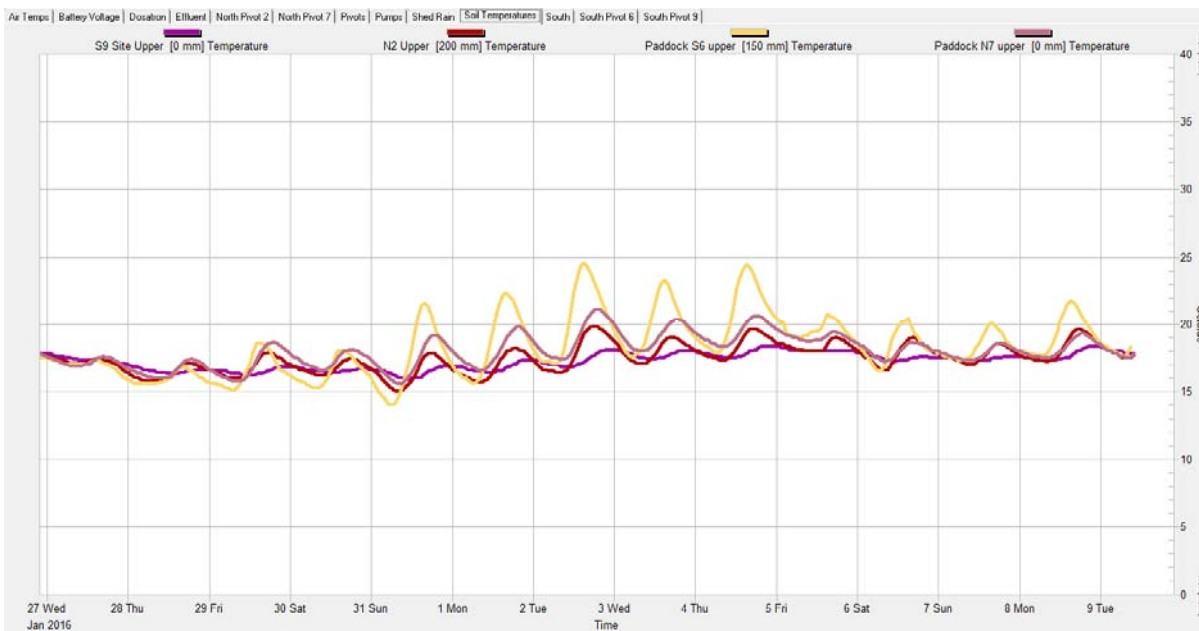
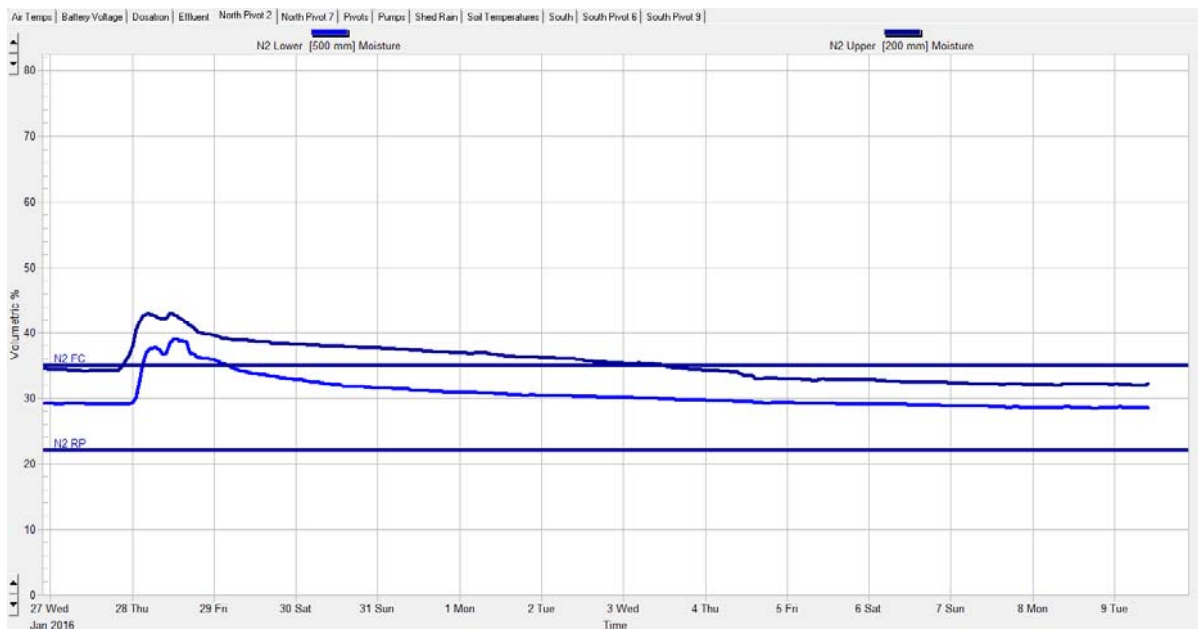


Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



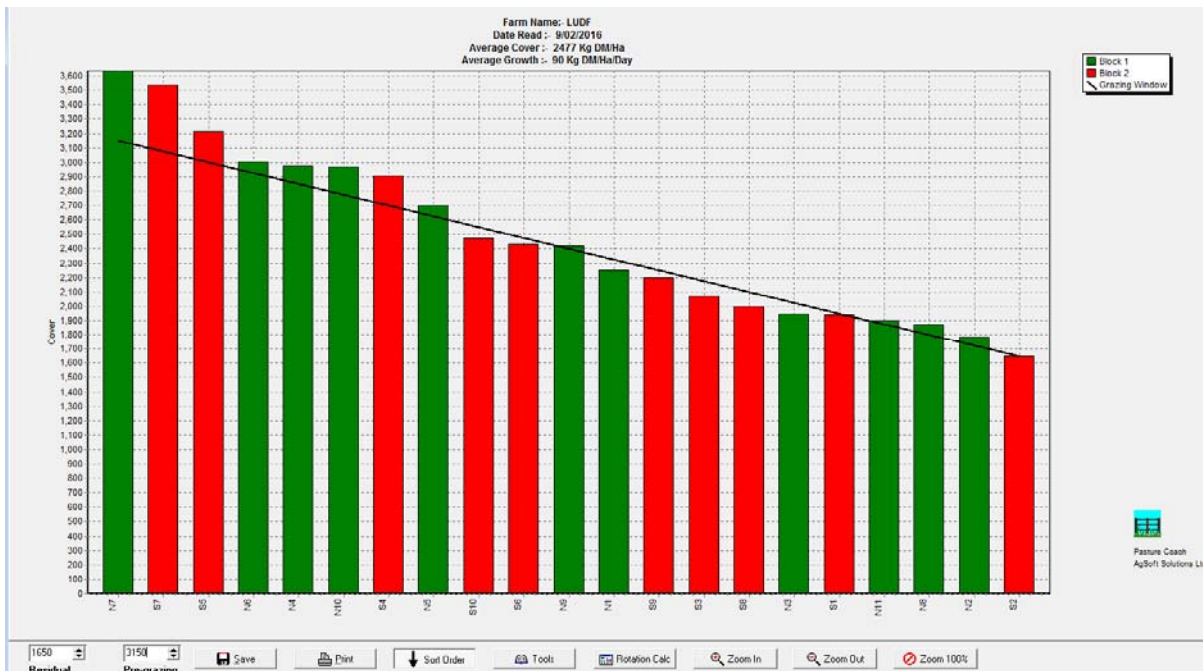
Nitrogen

17. 66.3 hectares received nitrogen as urea at 25kgN/ha over the last week. Season to date we have used 139 kgN/ha.
18. At this stage, the farm is continuing to apply low rates of N to the non-effluent areas, following grazing, to maintain pasture quality and quantity, on the basis that home grown N boosted pasture remains profitable heading into the autumn (and cheaper than purchased supplement). Nitrogen use decisions continue to incorporate predicted farm N losses by Overseer. For this stage of the season, ongoing N use remains acceptable as predicted by Overseer.

Pasture and Feed Management

1. Around 12 ha (paddocks N2, plus ¼ of S1 and ¼ of N1) have been harvested for silage this week (17.2 tonne Dm).
2. Our average round length this week was 25.5 day round for the week (6.27 ha grazed per day) over 160 effective ha of the milking platform. Excluding the 12 ha harvested for silage, this works out to a 21 day round over 148 effective ha.
3. There were 12.3 ha pre-graze mown done this week to help control some of the high covers on the feed wedge of last week.
4. Pasture quality and plating:
 - a. Pasture quality remains relatively good. Some seedhead remains apparent, mostly on N7 (highest cover on the feed wedge – 3600kgDM/ha). This could be potentially due to heat stress of the grass earlier in January.
 - b. The pregraze mowing and ex baleage areas show a slower rate of growth in the week following mowing, however, when it comes to the second and third weeks, this growth increases to over 100 kgDM/ha/day in some paddocks, with a quality that visually looks very high.
 - c. The rising plate meter is probably still over-estimating some readings due to the plantain in the mix (which continues to seed).
 - d. Fertility patches are a lot less evident this week and certainly much less evident compared with this time last year when N was not applied during January 2015.

Figure 3: This week's feed wedge



- Based on the full farm area of 160 ha in the grazing round, the target pregrazing cover and demand line in the feed wedge has been calculated using a target rotation length of 23 days, an intake of 19 kgDM/cow/day, 549 cows (for the week ahead) and a post grazing residual of 1650 kgDM/ha. Target pregrazing cover is therefore:

$$(\text{Stocking rate} \times \text{Intake from pasture} \times \text{Rotation}) + \text{Optimum residual} = \text{Pre-grazing Cover.}$$

$$(549 \text{ cows} / 160\text{ha} \times 19 \text{ kgDM/cow/day} \times 23 \text{ days}) + 1650 = 3150 \text{ kgDM/ha.}$$

- This expected per cow dry matter intake demand is based on calculations that allow for milk production, a little weight gain, maintenance requirements and distance walked. (See DairyNZ facts and figures for these details). At LUDF this calculates to approx. 200 - 220MJME at present. Feed testing during January suggests pasture was approximately 11.7 MJME, therefore 220MJME requires approximately 19 kgDM / cow / day. This is equivalent to a demand of 65kgDM/ha/day across 160 ha.
- Average pasture cover has decreased from last week's cover of 2640 kgDM/ha to 2477kgDM/ha as expected following the removal of 12 ha from the grazing round for silage. The reduction in pasture cover, combined with a drop in daily pasture growths (from 108 kgDM/ha day last week to 90 kg DM/ha this week) was enough to drop the pasture surplus from 34 tDM to 11 tDM this week.
- Daily pasture growth is still above demand (90 kgDM/ha/day vs 65 kgDM/ha/day required). On the other hand, round length this week was 25.5 days (slightly longer than the 23 targeted). Should conditions remain the same, it is likely that another small surplus could develop through the week, resulting in a longer grazing round than the targeted 23 days.

Feeding Management for the coming week:

- Given all of the above, the key decisions for the week ahead:
 - There is no area targeted for silage harvesting, so far, for the week.
 - Paddock N7 (first in the wedge) will be pre-graze mown tomorrow.
 - Cows will this week be grazing paddocks that are coming back into the round following either silage harvest or pre-graze mowing. With good pasture quality on these regrowth areas, it is expected that cows should perform well, achieving target residuals easily and in a timely manner.

- d. We will continue to closely observe rotation length and cow behaviour (intake and production) in regard to potential surplus pasture through the week. Temperatures are forecasted to reach daily highs of up to 22-25°C with no rain. Expected challenges will include ongoing higher than typical daily pasture growth rates (potentially around 100 kgDM/ha/day).
- e. We will continue to target a 23 day round (6.95 Ha/day or 48.7 ha /week) across 160 ha. This will be continuously re-evaluated based on the pasture growing conditions.
- f. Continue to monitor rate of drop off peak milk solids production (stable over the past week) as an important indicator of both feed intake as well as pasture quality.

LUDF Weekly report	12-Jan-16	19-Jan-16	26-Jan-16	2-Feb-16	9-Feb-16
Farm grazing ha (available to milkers)	160	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0
Culls (Includes culls put down & empties)	1	0	0	0	0
Culls total to date	14	14	14	14	14
Deaths (Includes cows put down)	0	0	1	0	0
Deaths total to date	11	11	12	12	12
Calved Cows available (Peak Number 560)	550	550	549	549	549
Treatment / Sick mob total	0	0	0	1	3
Mastitis clinical treatment	0	0	0	1	2
Mastitis clinical YTD (tgt below 64 yr end)	86	86	86	87	89
Bulk milk SCC (tgt Avg below 150)	162	174	194	182	206
Lame new cases	14	4	5	5	6
Lame ytd	94	98	103	108	114
Lame days YTD (Tgt below 1000 yr end)	961	1094	1269	1451	1577
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	530	531	524	522	528
Milking once a day into vat	20	19	25	26	18
Small herd	139	144	140	140	140
Main Herd	376	368	384	383	388
MS/cow/day (Actual kg / Cows into vat only)	2.00	1.98	1.91	1.85	1.84
MS/cow to date (total kgs / Peak Cows)	309	322	336	348	361
MS/ha/day (total kgs / ha used)	6.86	6.80	6.54	6.34	6.27
Herd Average Cond'n Score		4.30	0.00	0.00	0.00
Monitor group LW kg WOW early MA calvers	490	491	483	490	490
Soil Temp Avg Aquaflex	16.3	16.1	18.0	16.1	17.4
Growth Rate (kgDM/ha/day)	90	85	126	108	90
Plate meter height - ave half-cms	14.3	15.0	16.3	15.3	14.1
Ave Pasture Cover (x140 + 500)	2507	2596	2779	2640	2477
Surplus/[deficit] on feed wedge- tonnes	0	0	0	0	0
Pre Grazing cover (ave for week)	3191	3347	3366	3517	3648
Post Grazing cover (ave for week)	1650	1650	1650	1650	1650
Highest pregrazing cover	3420	3436	3600	3636	3916
Area grazed / day (ave for week)	7.30	6.56	6.11	7.51	6.27
Grazing Interval	22	24	26	21	26
Milkers Offered/grazed kg DM pasture					
Estimated intake pasture MJME					
Milkers offered kg DM Grass silage					
Silage MJME/cow offered					
Estimated intake Silage MJME					
Estimated total intake MJME					
Target MJME Offered/eaten (includes 6% waste)					
Pasture ME (pre grazing sample)					
Pasture % Protein					
Pasture % DM - Concern below 16%					

Pasture % NDF Concern < 33					
Mowed pre or post grazing YTD	203.1	214.3	219.3	219.3	231.5
Total area mowed YTD	244.4	255.6	268.1	283.8	307.3
Supplements fed to date kg per cow (560 peak)	113.8	113.8	113.8	113.8	113.8
Supplements Made Kg DM / ha cumulative	642.4	642.4	701.3	701.3	
Units N applied/ha and % of farm	25units/ 28.9%	25units/ 33.7%	25units / 25.6%	25units / 15.6%	25units / 41.4%
Kgs N to Date (whole farm)	110	119	125	129	139
Rainfall (mm)	0.04	17.8	8.4	29.6	0
Aquaflex topsoil rel. to fill point target 60 - 80%	70-90	80	60-90	70-90	70-90

We walk the farm every Tuesday at 9am. 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.

Next LUDF Focus day – 18th February, 10.15 – 1.00pm at LUDF.
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Employment opportunities at LUDF:

LUDF is recruiting for a 2IC for the 2016-17 Season and a farm assistant. A flexible start date is possible for the farm assistant. Please email hancoxp@lincoln.ac.nz for further information.

Lincoln University Dairy Farm - Farm Walk notes

Tuesday 2 February 2016

LUDF – focus for 2015/16 Season: Nil-Infrastructure, low input, low N-loss, maximise profit.
Farm system comprises 3.5 cows/ha (peak milked), Target 150kgN/ha, 300kgDM/cow imported supplement, plus winter most cows off farm. FWE of less than \$1.08 million and Target production of 500kgMS/cow (>100% liveweight in milk production).

Critical issues for the short term

1. **Monitor average pasture cover on the milking platform**
2. **Monitor pasture quality coming through the current grazing to ensure good quality and quantity of feed, with the aim to minimise the rate of drop off peak milksolids production.**
3. **Make appropriate and timely decisions with regard to mowing or areas out for silage**
4. **Supplement cows with Magnesium**

Key Numbers - week ending Tuesday 2nd February 2016

Ave Past Cover	2640 kgDM/ha	Past Growth Rate	108kgDM/ha/day
Round length	21.3 days (for 160 ha)	Ave Supplement used	0 kgDM/cow/day
No Cows on farm	549 (all cows are milking into the vat)	Ave Soil Temp (week)	16.1 degrees
Ave Milk Production	1.85 kgMS/cow	SCC	182,000

Herd Management

1. There are currently 549 milkers on farm. 26 cows are on once-a-day milking (lames).
2. This week we had 5 new lame cows and 1 new case of mastitis this week.
3. Cows will be body condition scored again next week on Wednesday 10th February.
4. The farm is continuing to run two herds. The make-up of these herds changed two weeks ago (18/01/16) according to the BCS information from the mid-January condition scoring. The aim of redrafting of the herds is to target preferential feeding of lighter and early calving cows, encouraging as much weight gain as possible and minimising the need to dry off light condition score cows early in the autumn.
5. The small herd has 144 early calving cows with a BCS below 4.5. The large herd has the remainder of the cows (later calving and heavier BCS (405 cows). The small herd continues to be preferentially fed, generally getting the first part of each paddock and not being pushed as much to achieve target grazing residuals
6. Magnesium is being supplemented to the milking herd as Mag Chloride in the stock water.
7. All 2015 born heifer replacements (total 155) are grazing on the East Block. They received their second / booster 7 in 1 vaccination on Monday 11th January.
8. All calves are on pasture only.
9. Cow liveweight is holding steady (in spite of the reduction in condition score).

Mating

10. 6 weeks AI Mating for the milking herd started on 25th October 2015 and bulls were removed on 5th January (10 weeks mating).
 - a. Our 3-week Submission rate was 89%
 - b. Our 6 week submission rate was 97.7%

- c. Our 6 week InCalf is 68% based on the most recently available information from MINDA on the Web. These results are based on pregnancy scanning completed on 11th January 2016. Later calving cows will be pregnancy tested next week. More analysis on these reproductive outcomes will be provided as this becomes available to the management team.

11. Mating of 15 Month Old heifers

- 12. The 125, 15 month old heifers were run with 8 bulls at any one time from 15th October till mid-December. Bulls were rotated in and out of the heifers on a weekly basis.
- 13. Pregnancy testing of the R2s was completed yesterday. 19 out of the 123 animals (125 R2s minus 2 freemartins) were empty (15% empty rate). This result is disappointing, we understand other farms have also experienced this rate of empties. It is broadly similar to past years.

Growing Conditions

- 14. The average 9 am soil temperature for the week was 16.1 degrees (1.9 degrees lower than last week).
- 15. There has been 29.6 mm of rainfall over the last week.
- 16. Both North and South pivots have been off for the week, and will continue to be off as long as there is rain in the forecast.

Figure 1: Soil temperature history for the last 2 weeks

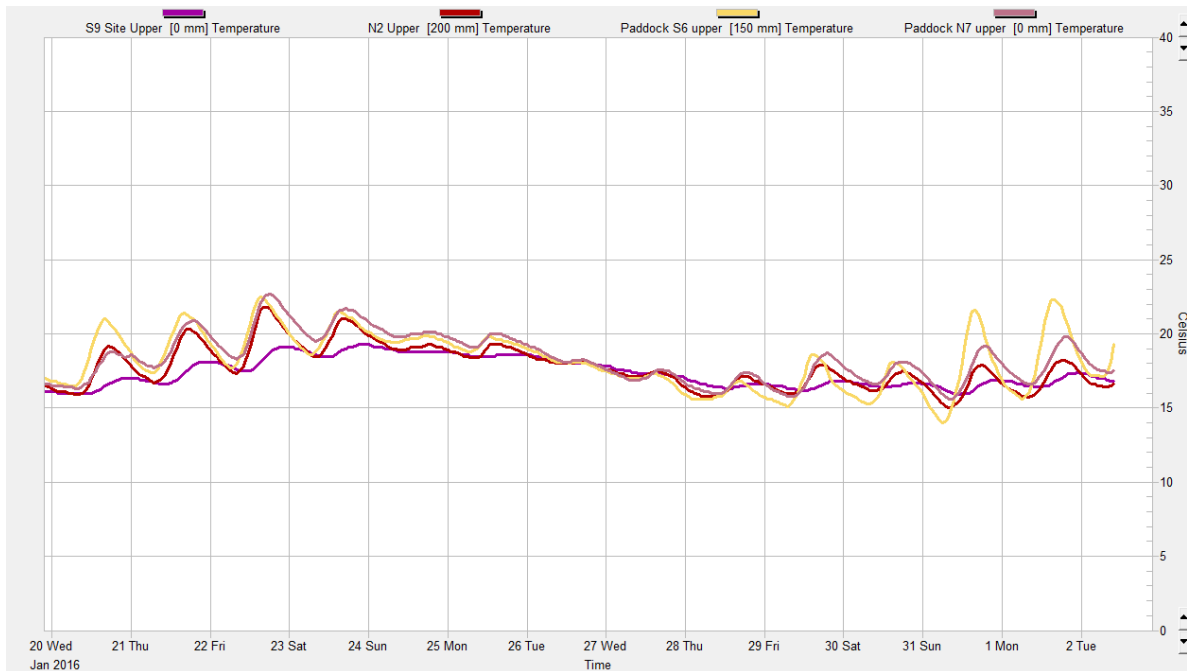
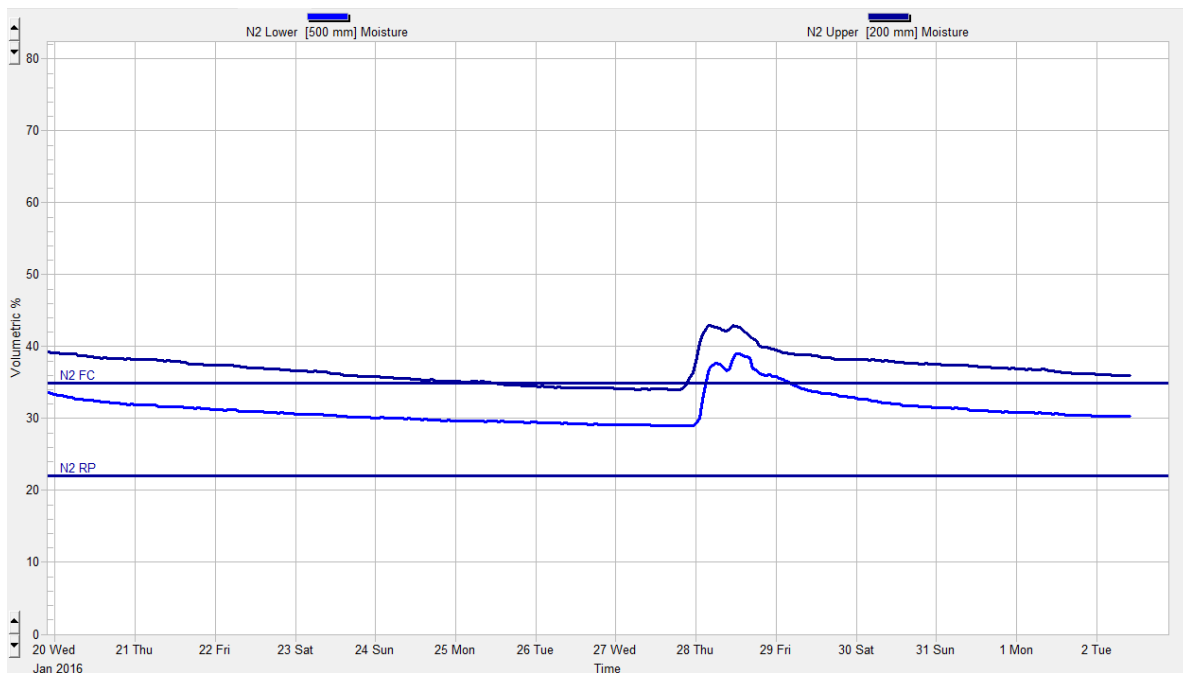


Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



Nitrogen

17. 25 hectares received nitrogen as urea at 25kgN/ha over the last week. Season to date we have used 125kgN/ha.
18. At this stage, the farm is continuing to apply low rates of N to the non-effluent areas, following grazing, to maintain pasture quality and quantity, on the basis that home grown N boosted pasture remains profitable heading into the autumn (and cheaper than purchased supplement). Nitrogen use decisions continue to incorporate predicted farm N losses by Overseer. For this stage of the season, ongoing N use remains acceptable as predicted by Overseer.

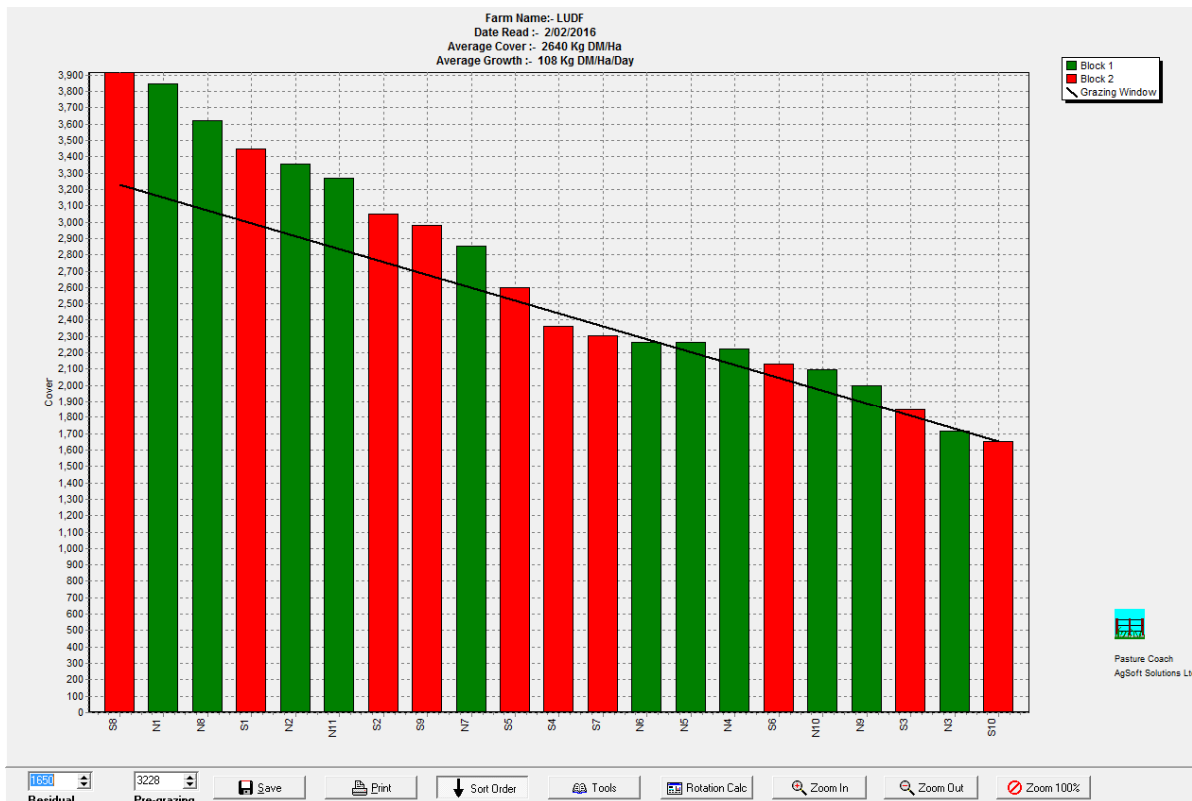
Pasture and Feed Management

1. 15.8 ha (paddocks N3 and S3) have been harvested for silage this week (tonnage to be confirmed).
2. Our round length this week was 21.3 day round for the week (6.56 ha grazed per day) over 160 effective ha of the milking platform. Excluding the 15.8 ha harvested for silage, this works out to a 17 day round over 144 effective ha.
3. There was no pre-graze mowing done this week. The new pasture paddock S6 was post-graze mown to help control annual weeds in that paddock.
4. Pasture quality and plating:
 - a. Pasture quality remains relatively good. Some seedhead remains apparent - potentially due to heat stress of the grass earlier in January. Seed head presence appears somewhat more prominent this week than last week.
 - b. The pregraze mowing and ex baleage areas will be grazed in this coming week. These paddocks are looking leafy and of good quality.
 - c. The rising plate meter could be over-estimating some readings due to the plantain in the mix (which continues to seed). Also the base of the hybrid ryegrass paddocks appears to be "lifting" and appears more stemmy compared to earlier in January.
 - d. Dung consistency of the cows has firmed up somewhat from very loose consistency last week. This may reflect a higher DM% of the pasture, higher fibre or lower digestibility compared to this time

last week. We have not received the quality results from last week's cuts yet, which could explain some of the visual findings.

- e. Fertility patches are a lot less evident this week and certainly much less evident compared with this time last year when N was not applied during January 2015.

Figure 3: This week's feed wedge



5. Based on the full farm area of 160 ha in the grazing round, the target pregrazing cover and demand line in the feed wedge has been calculated using a target rotation length of 23 days, an intake of 20kgDM/cow/day, 549 cows (for the week ahead) and a post grazing residual of 1650 kgDM/ha. Target pregrazing cover is therefore:

$$(\text{Stocking rate} \times \text{Intake from pasture} \times \text{Rotation}) + \text{Optimum residual} = \text{Pre-grazing Cover.}$$

$$(549 \text{ cows} / 160\text{ha} \times 20 \text{ kgDM/cow/day} \times 23 \text{ days}) + 1650 = 3228 \text{ kgDM/ha.}$$

6. This expected per cow dry matter intake demand is based on calculations that allow for milk production, a little weight gain, maintenance requirements and distance walked. (See DairyNZ facts and figures for these details). At LUDF this calculates to approx. 230 - 240MJME at present. Feed testing during January suggests pasture was approximately 11.9 MJME, therefore 240MJME requires approximately 20 kgDM / cow / day. This is equivalent to a demand of 69kgDM/ha/day across 160 ha.
7. Average pasture cover has decreased from last week's cover of 2779 kgDM/ha to 2640kgDM/ha as expected following the removal of two paddocks from the grazing round for silage. The reduction in pasture cover was not as profound as we'd predicted last week – explained now by the ongoing high pasture growth rates of more than 100kgDM/ha/day, more than 30kgDM/ha above daily demand by the cows.

8. Given the growth rates we are seeing in the past 3 weeks (85 kgDM/ha/day 2 weeks ago, 126 kgDM/ha/day the previous week and 108 kgDM/ha this last week) the farm is producing consistent surpluses, which we are managing by harvesting silage weekly.
9. The feed wedge on the previous page shows a surplus of 34 tDM across the farm, compared to a surplus of 55 TDM the previous week.

Feeding Management for the coming week:

10. Given all of the above, the key decisions for the week ahead:
 - a. There will be around 12 ha of silage harvested this week. Paddock N2 (7.3 ha) plus ¼ of N1 (has not been pre-graze mown and presents a weed challenge; 2.1 ha) plus ¼ of S1 (has not been pre-graze mown and presents a weed challenge; 2.1 ha). It is expected this would take care of 20 tDM of the 34 tDM surplus.
Harvesting the ¼ paddocks in N1 and S1 will take care of 3.7 tDM in each one of them, which would drop their cover to 3,400kgDM/ha for N1 (vs the current 3,846 kgDM/ha) and 3,000kgDM/ha for S1 (vs the current 3,450kgDM/ha).
 - b. Paddock S8 (first in the wedge) will be pre-graze mown today.
 - c. Cows will this week be grazing paddocks that are coming back into the round following either silage harvest or pre-graze mowing. With good pasture quality on these regrowth areas, it is expected that cows should perform well.
 - d. We will continue to observe closely pasture growth rate and cow behaviour through the week as temperatures are forecasted to reach daily highs of up to 30°C (as well as 2 days of rain). Expected challenges will include ongoing higher than typical daily pasture growth rates (potentially around 100 kgDM/ha/day), as well as possible drop in pasture quality and/or reduced grazing time by cows on very hot days.
 - e. Should growth rates appear very high, we will drop a third paddock out for silage later this week.
 - f. We will continue to target a 23 day round (6.95 Ha/day or 48.7 ha /week) across 160 ha. This will be continuously re-evaluated based on the pasture growing conditions.
 - g. Continue to monitor rate of drop off peak milksolids production as an important indicator of both cow feed intake as well as pasture quality.

LUDF Weekly report	5-Jan-16	12-Jan-16	19-Jan-16	26-Jan-16	2-Feb-16
Farm grazing ha (available to milkers)	160	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0
Culls (Includes culls put down & empties)	0	1	0	0	0
Culls total to date	13	14	14	14	14
Deaths (Includes cows put down)	0	0	0	1	0
Deaths total to date	11	11	11	12	12
Calved Cows available (Peak Number 560)	551	550	550	549	549
Treatment / Sick mob total	0	0	0	0	1
Mastitis clinical treatment	0	0	0	0	1
Mastitis clinical YTD (tgt below 64 yr end)	86	86	86	86	87
Bulk milk SCC (tgt Avg below 150)	179	162	174	194	182
Lame new cases	7	14	4	5	5
Lame ytd	80	94	98	103	108
Lame days YTD (Tgt below 1000 yr end)	842	961	1094	1269	1451
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	535	530	531	524	522
Milking once a day into vat	16	20	19	25	26
Small herd	139	139	144	140	140
Main Herd	396	376	368	384	383
MS/cow/day (Actual kg / Cows into vat only)	1.97	2.00	1.98	1.91	1.85
MS/cow to date (total kgs / Peak Cows	295	309	322	336	348

MS/ha/day (total kgs / ha used)	6.78	6.86	6.80	6.54	6.34
Herd Average Cond'n Score			4.30	0.00	0.00
Monitor group LW kg WOW early MA calvers	488	490	491	483	490
Soil Temp Avg Aquaflex	15.9	16.3	16.1	18.0	16.1
Growth Rate (kgDM/ha/day)	90	90	85	126	108
Plate meter height - ave half-cms	15.2	14.3	15.0	16.3	15.3
Ave Pasture Cover (x140 + 500)	2631	2507	2596	2779	2640
Surplus/[deficit] on feed wedge- tonnes	0	0	0	0	0
Pre Grazing cover (ave for week)	3464	3191	3347	3366	3517
Post Grazing cover (ave for week)	1750	1650	1650	1650	1650
Highest pregrazing cover	3692	3420	3436	3600	3636
Area grazed / day (ave for week)	7.75	7.30	6.56	6.11	7.51
Grazing Interval	21	22	24	26	21
Milkers Offered/grazed kg DM pasture					
Estimated intake pasture MJME					
Milkers offered kg DM Grass silage					
Silage MJME/cow offered					
Estimated intake Silage MJME					
Estimated total intake MJME					
Target MJME Offered/eaten (includes 6% waste)					
Pasture ME (pre grazing sample)					
Pasture % Protein					
Pasture % DM - Concern below 16%					
Pasture % NDF Concern < 33					
Mowed pre or post grazing YTD	176.9	203.1	214.3	219.3	219.3
Total area mowed YTD	209.8	244.4	255.6	268.1	283.8
Supplements fed to date kg per cow (560 peak)	113.8	113.8	113.8	113.8	113.8
Supplements Made Kg DM / ha cumulative	521.7	642.4	642.4	701.3	701.3
Units N applied/ha and % of farm	0	25units/ 28.9%	25units/ 33.7%	25units / 25.6%	25units / 15.6%
Kgs N to Date (whole farm)	103	110	119	125	129
Rainfall (mm)	52	0.04	17.8	8.4	29.6
Aquaflex topsoil rel. to fill point target 60 - 80%	90-100	70-90	80	60-90	70-90

We walk the farm every Tuesday at 9am. 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.

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