

Lincoln University Dairy Farm - Farm Walk notes

Tuesday 29nd March 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 as head towards planned cover at end of May
2. Monitor pasture quality with the focus turning to pushing cover ahead into the autumn (while retaining pasture quality).
3. Supplement cows with Magnesium

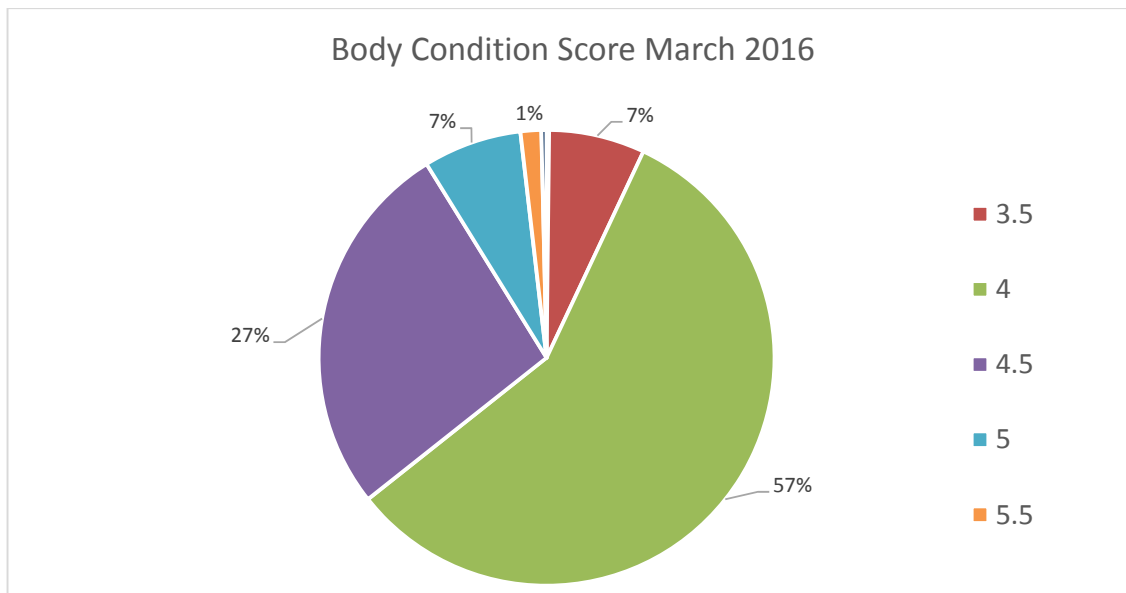
Key Numbers - week ending Tuesday 29nd March 2016

Ave Past Cover	2894 kgDM/ha	Past Growth Rate	79 kgDM/ha/day
Round length	34 days (for 160 ha)	Ave Supplement used (Total year to date*)	6.35 kgDM/cow/day (216.2kgDM/cow YTD)
No Cows on farm	545	Ave Soil Temp (week)	15.7 degrees
Ave Milk Production	1.72 kgMS/cow	SCC	169,000

* includes silage made on farm and 114 kgDM/cow imported supplement used in early spring

Herd Management

1. There are currently 545 milkers on farm. 17 cows are on once-a-day milking (lames).
2. This week we had 6 new lame cows and no new cases of mastitis.
3. Cows were body condition scored 3 weeks ago on Wednesday 9th March 2016. The average BCS for the whole herd was 4.2 – unchanged from when the herd was last scored in mid-February. The herd will be BCS again in mid-April.
4. Of significance, the farm has approx. 7% of the herd under BCS 4, and a further 57% between 4 and 4.5.



5. 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.
 - a. 138 early calving cows with BCS below 4.5 make up the small herd, which is preferentially fed to encourage weight gains by getting the first part of each paddock and not being pushed as much to achieve target grazing residuals
 - b. The large herd has the remainder of the cows (later calving and heavier BCS, 405 cows).
6. Empty cows and culls remain on farm and in milk at this stage. Cull cows are booked to leave the farm on 4th May 2016. With current high levels of production by all cows and the available pasture cover and home made (lower cost) silage we remain comfortable to retain empty cull cows on farm at the current milk price.
7. Magnesium is being supplemented to the milking herd as Mag Chloride in the stock water.
8. All 2015 born heifer replacements (total 155) are grazing on the East Block. Silage is now being fed to calves at 1.5kgDM/head/day to push some pasture cover forward. Calves were vaccinated against BVD and Leptospira on Monday the 7th March. A booster vaccination will follow up during the first week of April.
9. The incalf R2 heifers were leptovaccinated, blood samples were collected to check for BVD, Neospora and Selenium status. While heifers were clear of BVD and Neospora, Selenium levels were low and we will treat the heifers with a long acting Selenium injection to hold Selenium status up until calving
10. Bloods were collected for the same tests two weeks ago from empty MA in milk cows that had been scanned as in calf early but have now lost their pregnancies. Tests were clear for BVD and Neospora, and Selenium levels were adequate for in milk cows.
11. Cow live weight has lifted slightly over the last week, and is now at 510 (Whole herd average) and 504 kg/cow (monitor group)

Growing Conditions

12. The average 9 am soil temperature for the week lifted slightly from last week to reach 15.7°C, up 0.5°C from last week. Despite the cooler nights last week, on average, soil temperatures have supported very good growing conditions over the last week.
13. There was 7.8 mm of rain over the last week.
14. With the small amount of rain and longer, cooler nights no irrigation has been required over the last 7 days.

Figure 1: Soil temperature history for the last 2 weeks

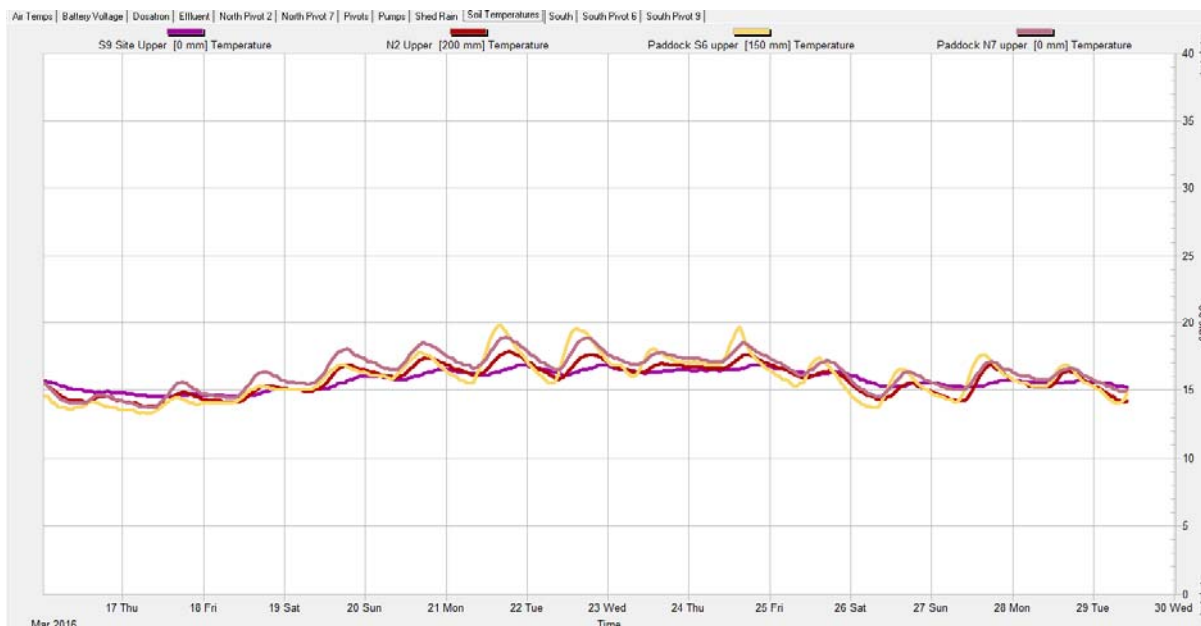
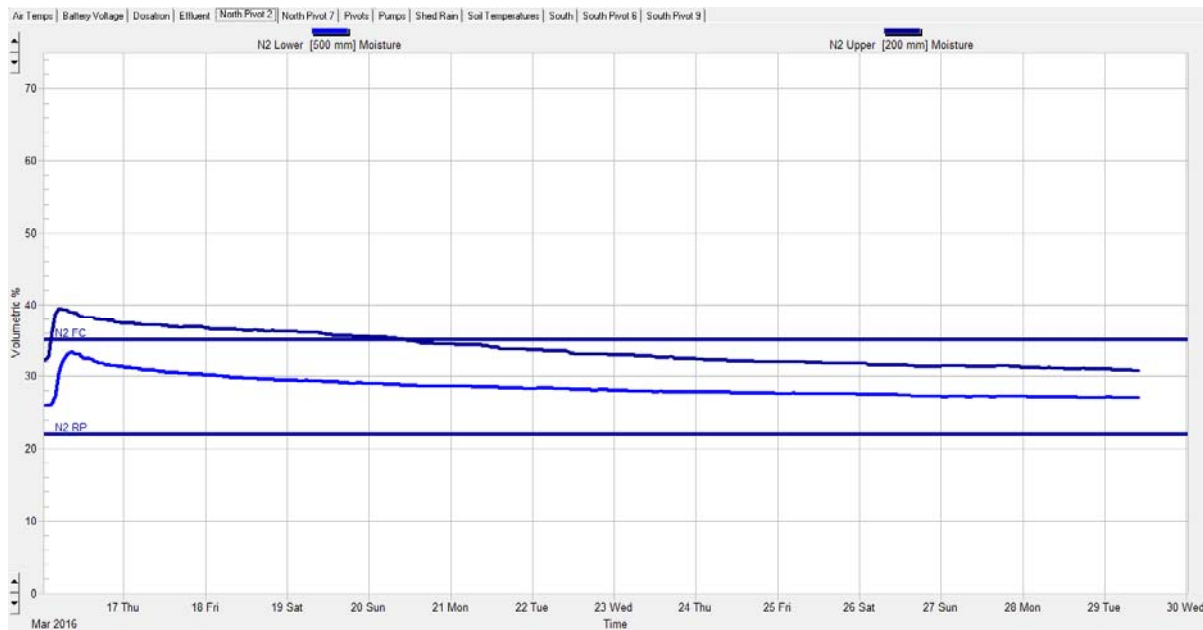


Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



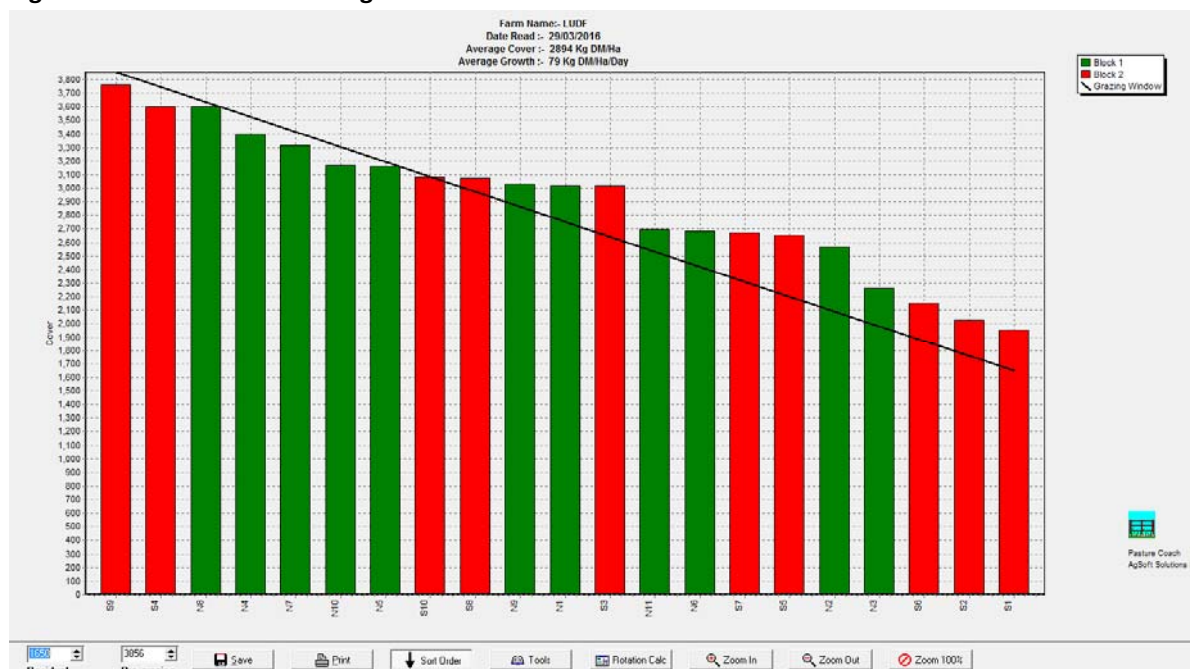
Nitrogen

- 26.9 hectares received nitrogen as urea at 20kgN/ha over the last week. Season to date we have used 179 kgN/ha. The nitrogen applications have now finished for this season.
- This level of nitrogen use has slightly exceeded the target for this season (170 kgN/ha/season) as per the modelled farms N losses through Overseer. We have decided to continue with low rates (20kgN/ha) for a slightly longer period of time, still aiming to keep below the farms N-baseline. This late strategic Nitrogen application (combined with silage use) has been an excellent tool to help achieve a slower grazing round as the farm heads into the autumn and to grow autumn feed in a highly cost effective manner whilst responses to N are likely to remain high.

Pasture and Feed Management

- There were only minimal fertility patches observed this week.
- Estimated pasture growth rates have dropped to 79kgDM/ha/day, compared to last weeks growth of 94kgDM/ha/day. Growth rates for the same week last year were 80kgDM/ha/day.

Figure 3: This week's feed wedge



19. 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 35 days
- A dry matter intake of 18.5 kgDM/cow/day
- 545 cows (for the week ahead)
- A post grazing residual of 1650 kgDM/ha.

Target pregrazing cover is therefore:

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

$$(545 \text{ cows} / 160\text{ha} \times 18.5 \text{ kgDM/cow/day} \times 35 \text{ days}) + 1650 = 3855 \text{ kgDM/ha.}$$

20. 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 remains approximately 220MJME. Feed testing last week suggests pasture quality submitted for analysis was approximately 11.4 MJME, therefore 220MJME requires approximately 19 kgDM / cow / day. This is equivalent to a demand of 64 kgDM/ha/day across 160 ha.

21. Our average round length this week was 33.6 day round for the week (4.76 ha grazed per day) over 160 effective ha of the milking platform. This is slightly longer than last week, and slightly slower than this same time last season (32.6 days).

22. As shown in pasture wedge above, slowing the round down from 30 to 35 days has created a feed deficit in the pregraze covers at the top of the wedge. This is being filled with silage in a deliberate move to push the round out while growing conditions remain reasonable and ground conditions are suitable for high utilisation of silage fed on pasture. Using the above assumptions:

- Target Pre-graze cover is for 3855kgDM/ha/day
- Average pre-graze covers are estimated to be around 3500kgDM/ha
- Per ha deficit = 3855-3500kgDM/ha = 355kgDM/ha deficit
- Allocated area of 4.6 ha/day x 355kgDM/ha deficit = daily deficit of 1633kgDM.
- 1633kgDM /day spread across 545 cows, is 3 kgDM of silage/cow/day. As above, silage fed has averaged 6.4kgDM/cow/day, suggesting a combination of

- pregraze covers are lower than 3500 kgDM/ha,
 - total available energy is less than assumed, (silage and pasture)
 - demand is higher than 220 MJME/day (more weight gain is occurring)
 - For current bales of baleage weighing 230kgDM/bale, 1633 kgDM is equivalent to 7 to 8 bales to all cows per day.
23. Average pasture cover this week has increased from 2894 kgDM/ha. This is higher than the 2750 calculated above as necessary to meet pregraze cover demands of 3855kgDM/ha and post-graze covers of 1650kgDM/ha. Hence, Pasture Coach estimates there is a potential feed surplus of about 24tDM, the 'surplus' is however in the middle and lower portion of the wedge. (1.5 weeks from today).
24. The surplus that is building in the middle of the wedge will allow LUDF to reduce or drop the supplement and still remain at a 35 day-round.
25. Carrying these high average pasture covers continues to appear feasible on our high quality tetraploid ryegrass pastures. In today's walk, only one paddock (S9 with a pasture cover of 3700kgDM/ha) has shown minor yellowing at the base in fertility patches only (more than 4 leaf stage on the ryegrass). Remaining paddocks carrying over 3000kgDM/ha all look green to the base. Note that on average diploid paddocks are less able to successfully carry these higher average pasture covers.
26. Pasture Quality:
- a. Cooler night temperatures are continuing to help us maintain good pasture quality with very little stem and seedhead present on the ryegrass, with only some seedhead on the plantain remaining.
 - b. The pastures visually look of better quality than shown at our most recent feed test result – averaging only 11.4 MJME/kgDM. This may reflect vigorous ryegrass growth at the expense of clover over the last two weeks and/or the often reported fact that autumn pasture MJME values are, on average, lower than leafy spring pasture MJME values.

Feeding Management for the coming week:

27. For the coming week our aims are to:
- i. Keep the round to 35 days enabling the previously applied Nitrogen fertiliser to help build pasture cover, while soil temperatures are still high enough to have reasonable growth rates.
 - ii. Maintain the use of baleage to hold the slower round till pregraze covers get to the required yield (however keep silage use at the lowest rates possible – assessed daily by monitoring post-grazing residuals behind cows).
 - iii. Continue to closely observe rotation length and cow behaviour (intake and production) through the week. The farm could still achieve some quite high growth rates (as have occurred historically) and supported by the forecast moderate temperatures (and absence of frost type conditions) predicted over the next week to 10 days.
 - iv. Our feedbudget predicted growth rates of only 60kgDM/ha/day for the month of March: this was exceeded by 50% last week and 31% this week – a very favourable position for us to reach.
 - v. Continue to monitor rate of drop off peak milksolids production (which continues to be remarkably stable over the last 3 weeks) as an important indicator of both feed intake as well as pasture quality.
 - vi. Not accumulate so much pasture that we lose quality in the base of higher cover paddocks before winter. As discussed previously, we continue to see the tetraploid ryegrass paddocks holding pasture quality very well at higher pasture covers compared to diploid paddocks.

LUDF Weekly report	1-Mar-16	8-Mar-16	15-Mar-16	22-Mar-16	29-Mar-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	3	3
Culls total to date	15	15	15	18	18
Deaths (Includes cows put down)	0	0	0	0	0
Deaths total to date	12	12	12	12	12
Calved Cows available (Peak Number 560)	548	548	548	545	545
Treatment / Sick mob total	0	0	2	0	0
Mastitis clinical treatment	0	0	1	0	0
Mastitis clinical YTD (tgt below 64 yr end)	90	90	91	91	91
Bulk milk SCC (tgt Avg below 150)	205	208	222	190	169
Lame new cases	9	10	4	6	6
Lame ytd	131	141	145	151	157
Lame days YTD (Tgt below 1000 yr end)	2095	2326	2557	2676	2795
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	522	515	513	528	528
Milking once a day into vat	26	33	33	17	17
Small herd	138	138	138	140	140
Main Herd	384	377	375	371	371
MS/cow/day (Actual kg / Cows into vat only)	1.82	1.75	1.76	1.76	1.72
MS/cow to date (total kgs / Peak Cows	398	410	424	435	448
MS/ha/day (total kgs / ha used)	6.22	5.98	6.01	6.00	5.85
Herd Average Cond'n Score	0.00	0.00	4.20	0.00	0.00
Monitor group LW kg WOW early MA calvers	492	493	497	499	504
Soil Temp Avg Aquaflex	17.7	16.0	14.7	15.2	15.7
Growth Rate (kgDM/ha/day)	89	89	60	94	79
Plate meter height - ave half-cms	14.9	16.1			17.1
Ave Pasture Cover (x140 + 500)	2592	2751		2767	2894
Surplus/[deficit] on feed wedge- tonnes	23	33		1	24
Pre Grazing cover (ave for week)	3381	0	3575	3762	3608
Post Grazing cover (ave for week)	1650	1650	1650	1650	1650
Highest pregrazing cover	3472	3552	3841	3700	3762
Area grazed / day (ave for week)	7.77	5.69	5.77	5.26	4.76
Grazing Interval	21	28	28	30	34
Milkers Offered/grazed kg DM pasture	19	18.5	18.5	18.5	0.0
Estimated intake pasture MJME	220	220	220	220	
Milkers offered kg DM Grass silage			3	3	
Silage MJME/cow offered					
Estimated intake Silage MJME					
Estimated total intake MJME	220	220			
Target MJME Offered/eaten (includes 6% waste)					
Pasture ME (pre grazing sample)	11.6	11.8		11.4	
Pasture % Protein	21.6	18.8		22.7	
Pasture % DM - Concern below 16%	13.4	15.5		12.4	
Pasture % NDF Concern < 33	40.4	39.6		38.5	
Mowed pre or post grazing YTD	236.5	236.5	236.5	236.5	236.5
Total area mowed YTD	312.3	312.3	312.3	312.3	312.3
Supplements fed to date kg per cow (560 peak)	113.8	129.9	149.3	172.5	216.2
Supplements Made Kg DM / ha cumulative	964.35	964.35	964.35	964.35	964.35
Units N applied/ha and % of farm	25units / 25%	25units / 35.2%	20units / 20%	20units / 20%	20units / 16.8%
Kgs N to Date (whole farm)	158	167	171	176	179
Rainfall (mm)	0	0	0.04	25.6	7.8
Aquaflex topsoil rel. to fill point target 60 - 80%	50-70	50-70	60-80	80-90	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.

Lincoln University Dairy Farm - Farm Walk notes

Tuesday 22nd March 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 as head towards planned cover at end of May
2. Monitor pasture quality with the focus turning to pushing cover ahead into the autumn (while retaining pasture quality).
3. Supplement cows with Magnesium

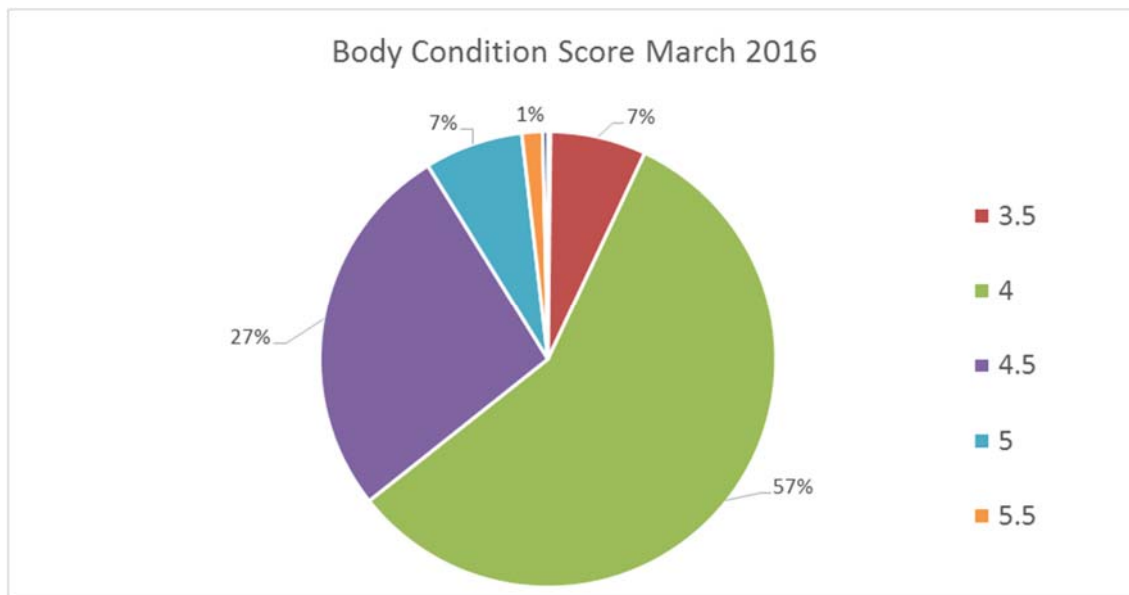
Key Numbers - week ending Tuesday 22nd March 2016

Ave Past Cover	2767 kgDM/ha	Past Growth Rate	94 kgDM/ha/day
Round length	30 days (for 160 ha)	Ave Supplement used (Total year to date*)	3.4 kgDM/cow/day (173 kgDM/cow YTD)
No Cows on farm	545	Ave Soil Temp (week)	15.2 degrees
Ave Milk Production	1.76 kgMS/cow	SCC	190,000

* includes silage made on farm and 114 kgDM/cow imported supplement used in early spring

Herd Management

1. There are currently 545 milkers on farm. 17 cows are on once-a-day milking (lames).
2. This week we had 5 new lame cows and no new cases of mastitis.
3. Cows were body condition scored two weeks ago on Wednesday 9th March 2016. The average BCS for the whole herd was 4.2 – unchanged from when the herd was last scored in mid February. The herd will be BCS again in mid-April.
4. Of significance, the farm has approx. 7% of the herd under BCS 4, and a further 57% between 4 and 4.5.



5. 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.
 - a. 138 early calving cows with BCS below 4.5 make up the small herd, which is preferentially fed to encourage weight gains by getting the first part of each paddock and not being pushed as much to achieve target grazing residuals
 - b. The large herd has the remainder of the cows (later calving and heavier BCS, 405 cows).
6. Empty cows and culls remain on farm and in milk at this stage. Cull cows are booked to leave the farm on 4th May 2016. With current high levels of production by all cows and the available pasture cover and home made (lower cost) silage we remain comfortable to retain empty cull cows on farm at the current milk price.
7. Magnesium is being supplemented to the milking herd as Mag Chloride in the stock water.
8. All 2015 born heifer replacements (total 155) are grazing on the East Block. Silage is now being fed to calves at 1.5kgDM/head/day to push some pasture cover forward. Calves were vaccinated against BVD and Leptospira on Monday the 7th March. A booster vaccination will follow up during the first week of April.
9. The incalf R2 heifers were lepto vaccinated, blood samples were collected to check for BVD, Neospora and Selenium status. While heifers were clear of BVD and Neospora, Selenium levels were low and we will treat the heifers with a long acting Selenium injection to hold Selenium status up until calving
10. Bloods were collected for the same tests two weeks ago from empty MA in milk cows that had been scanned as in calf early but have now lost their pregnancies. Tests were clear for BVD and Neospora, and Selenium levels were adequate for in milk cows.
11. Cow live weight has lifted slightly over the last week, and is now at 499 (Whole herd average) and 505 kg/cow (monitor group)

Growing Conditions

12. The average 9 am soil temperature for the week lifted slightly from last week to reach 15.2°C, up 0.5°C from last week. Despite one cooler day last week, on average soil temperatures have supported very good growing conditions over the last week and remain almost 2°C warmer than for the same week in 2015.
13. There was 25.6 mm of rain over the last week.
14. With the good rain last week, no irrigation has been required over the last 7 days. Irrigation will remain off with the forecast of some decent rain later this week.

Figure 1: Soil temperature history for the last 2 weeks

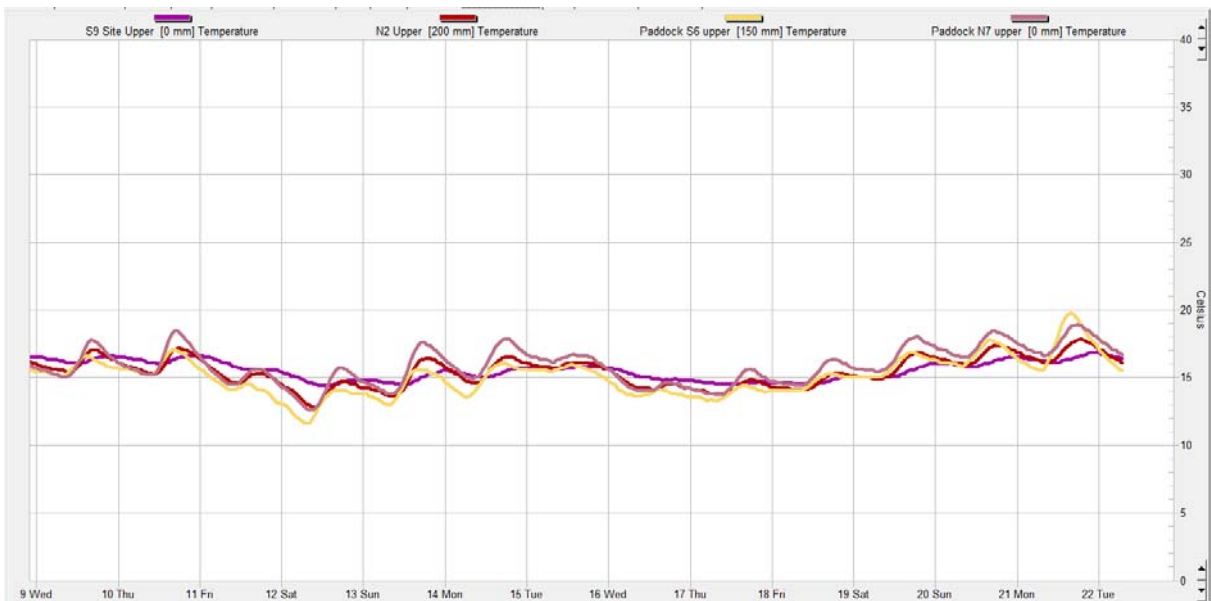
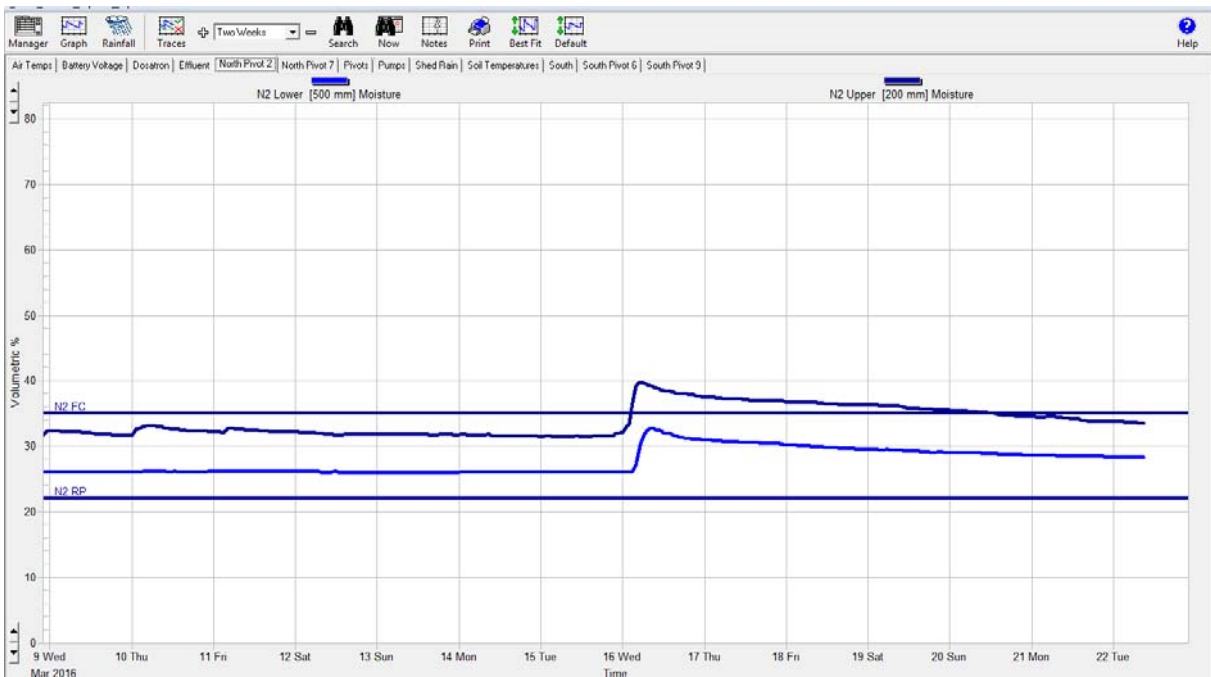


Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



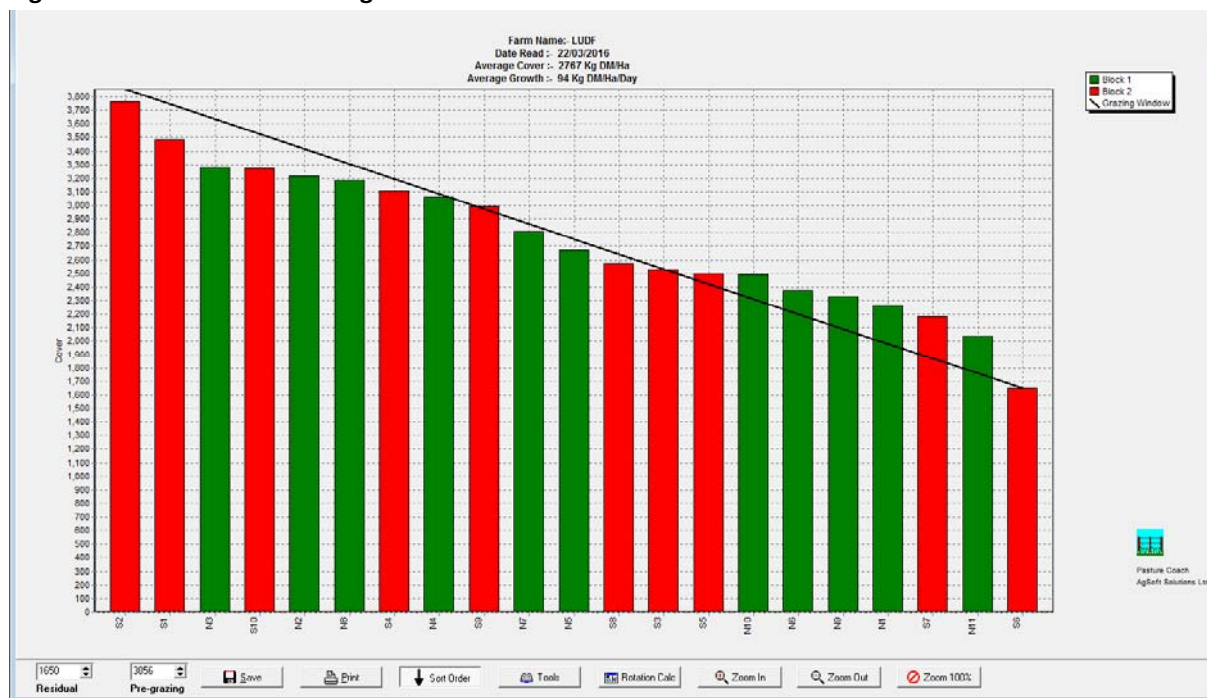
Nitrogen

15. 33.6 hectares received nitrogen as urea at 20kgN/ha over the last week. Season to date we have used 176 kgN/ha and anticipate finishing N fert use for the season later this week.
16. This level of nitrogen use has slightly exceeded the target for this season (170 kgN/ha/season) as per the modelled farms N losses through Overseer. We have decided to continue with low rates (20kgN/ha) for a slightly longer period of time, still aiming to keep below the farms N-baseline. This late application of strategically apply Nitrogen (combined with silage use) has been an excellent tool to help achieve a slower grazing round as the farm heads into the autumn and to grow autumn feed in a highly cost effective manner whilst responses to N are likely to remain high.

Pasture and Feed Management

17. There was no pre-graze mowing done this week.
18. There were only minimal fertility patches observed this week, with the exception of parts of our highest pasture cover paddock S2.
19. Pasture growth rates have lifted compared to last weeks growth of only 60kgDM/ha/day, reaching an average of 94kgDM/ha/day for this week. Growth rates for the same week last year were 73kgDM/ha/day.

Figure 3: This week's feed wedge



20. 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 35 days (slowing from last weeks calculations using a 28 day round)
 - A dry matter intake of 18.5 kgDM/cow/day
 - 545 cows (for the week ahead)
 - A post grazing residual of 1650 kgDM/ha.

Target pregrazing cover is therefore:

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

$$(545 \text{ cows} / 160\text{ha} \times 18.5 \text{ kgDM/cow/day} \times 35 \text{ days}) + 1650 = 3855 \text{ kgDM/ha.}$$

21. 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 remains approximately 220MJME. Feed testing last week suggests pasture quality submitted for analysis was approximately 11.4 MJME, therefore 220MJME requires approximately 19 kgDM / cow / day. This is equivalent to a demand of 64 kgDM/ha/day across 160 ha.
22. Our average round length this week was 30 day round for the week (5.26 ha grazed per day) over 160 effective ha of the milking platform. This is slightly longer than last week, but remains 3 days faster than this same time last season (33 days).

23. As indicated in pasture wedge shown above, in order to slow the round down from 30 to 35 days we have created a period of feed deficit that will require ongoing feeding of silage to fill.
- Pre-graze requirement is for 3855kgDM/ha/day
 - Average pre-graze covers are around 3500kgDM/ha
 - Per ha deficit = $(3855 - 3500) \text{kgDM/ha} = 355 \text{kgDM/ha deficit}$
 - Allocated area of area of 4.6 ha/day x 355kgDM/ha deficit = daily deficit of 1633kgDM. For 545 cows, this works out to a requirement for 3 kgDM of silage/cow/day. For current bales of baleage weighing 230kgDM/bale = 7 to 8 bales to all cows per day.
24. Pasture Coach predicts that our current average pasture cover of 2767 is basically the same as necessary average pasture cover of around 2750kgDM/ha to meet pregraze cover demands of 3855kgDM/ha and post-graze covers of 1650kgDM/ha.
25. Carrying these high average pasture covers continues to appear feasible on our high quality tetraploid ryegrass pastures because at today's walk, only one paddock (S2 with a pasture cover of 3762kgDM/ha) has shown minor yellowing at the base in fertility patches only (more than 4 leaf stage on the ryegrass). Remaining paddocks carrying over 3000kgDM/ha all look green to the base. Note that on average diploid paddocks are less able to successfully carry these higher average pasture covers.
26. Pasture Quality:
- a. Cooler night temperatures are continuing to help us maintain good pasture quality with very little stem and seedhead present on the ryegrass, with only some seedhead on the plantain remaining.
 - b. The pastures visually do look of better quality than shown at our most recent feed test result – averaging only 11.4 MJME/kgDM. This may reflect vigorous ryegrass growth at the expense of clover over the last two weeks and/or the often reported fact that autumn pasture MJME values are, on average, lower than leafy spring pasture MJME values.

Feeding Management for the coming week:

27. For the coming week our aims are to:
- i. Extend the round to reach 35 days enabling the last remaining (and low) application of Nitrogen fertiliser to help build pasture cover, while soil temperatures are still high enough to capitalize on high responses to nitrogen.
 - ii. Maintain the use of baleage to help maintain the slower round, but at the lowest rates possible – assessed daily by monitoring post-grazing residuals behind cows.
 - iii. We will continue to closely observe rotation length and cow behaviour (intake and production) through the week. The farm could still achieve some quite high growth rates during March (historic data) and supported by the forecast moderate temperatures (and absence of frost type conditions) predicted over the next week to 10 days.
 - iv. Our feedbudget predicts growth rates of only 60kgDM/ha/day for the month of March were matched exactly by pasture growth rates last week and exceeded by 50% this week – a very favourable position for us to reach.
 - v. Continue to monitor rate of drop off peak milk solids production (which continues to be remarkably stable over the last 3 weeks) as an important indicator of both feed intake as well as pasture quality.
 - vi. Not accumulate so much pasture that we lose quality in the base of higher cover paddocks before winter. As discussed previously, we continue to see the tetraploid ryegrass paddocks holding pasture quality very well at higher pasture covers compared to diploid paddocks.

LUDF Weekly report	23-Feb-16	1-Mar-16	8-Mar-16	15-Mar-16	22-Mar-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	1	0	0	3
Culls total to date	15	15	15	15	18
Deaths (Includes cows put down)	0	0	0	0	0
Deaths total to date	12	12	12	12	12
Calved Cows available (Peak Number 560)	548	548	548	548	545
Treatment / Sick mob total	1	0	0	2	0
Mastitis clinical treatment	1	0	0	1	0
Mastitis clinical YTD (tgt below 64 yr end)	90	90	90	91	91
Bulk milk SCC (tgt Avg below 150)	212	205	208	222	190
Lame new cases	4	9	10	4	6
Lame ytd	122	131	141	145	151
Lame days YTD (Tgt below 1000 yr end)	1913	2095	2326	2557	2676
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	524	522	515	513	528
Milking once a day into vat	24	26	33	33	17
Small herd	138	138	138	138	140
Main Herd	386	384	377	375	371
MS/cow/day (Actual kg / Cows into vat only)	1.81	1.82	1.75	1.76	1.76
MS/cow to date (total kgs / Peak Cows	386	398	410	424	435
MS/ha/day (total kgs / ha used)	6.18	6.22	5.98	6.01	6.00
Herd Average Cond'n Score		0.00	0.00	4.20	0.00
Monitor group LW kg WOW early MA calvers	490	492	493	497	499
Soil Temp Avg Aquaflex	17.8	17.7	16.0	14.7	15.2
Growth Rate (kgDM/ha/day)	76	89	89	60	94
Plate meter height - ave half-cms	15.1	14.9	16.1	0.0	0.0
Ave Pasture Cover (x140 + 500)	2614	2592	2751	0	0
Surplus/[deficit] on feed wedge- tonnes	26	23	33	0	1
Pre Grazing cover (ave for week)	3360	3381	0	3575	3762
Post Grazing cover (ave for week)	1650	1650	1650	1650	1650
Highest pregrazing cover	3602	3472	3552	3841	3700
Area grazed / day (ave for week)	7.56	7.77	5.69	5.77	5.26
Grazing Interval	21	21	28	28	30
Milkers Offered/grazed kg DM pasture	19	19	18.5	18.5	18.5
Estimated intake pasture MJME	220	220	220	220	220
Milkers offered kg DM Grass silage				3	3
Silage MJME/cow offered					
Estimated intake Silage MJME					
Estimated total intake MJME	220	220	220		
Target MJME Offered/eaten (includes 6% waste)					
Pasture ME (pre grazing sample)		11.6	11.8		11.4
Pasture % Protein		21.6	18.8		22.7
Pasture % DM - Concern below 16%		13.4	15.5		12.4
Pasture % NDF Concern < 33		40.4	39.6		38.5
Mowed pre or post grazing YTD	236.5	236.5	236.5	236.5	236.5
Total area mowed YTD	312.3	312.3	312.3	312.3	312.3
Supplements fed to date kg per cow (560 peak)	113.8	113.8	129.9	149.3	172.5
Supplements Made Kg DM / ha cumulative	964.35	964.35	964.35	964.35	964.35
Units N applied/ha and % of farm	25units / 19.3%	25units / 25%	25units / 35.2%	20units / 20%	20units / 20%
Kgs N to Date (whole farm)	152	158	167	171	176
Rainfall (mm)	14.4	0	0	0.04	25.6
Aquaflex topsoil rel. to fill point target 60 - 80%	60-80	50-70	50-70	60-80	80-90

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.

Lincoln University Dairy Farm - Farm Walk notes

Tuesday 15th March 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

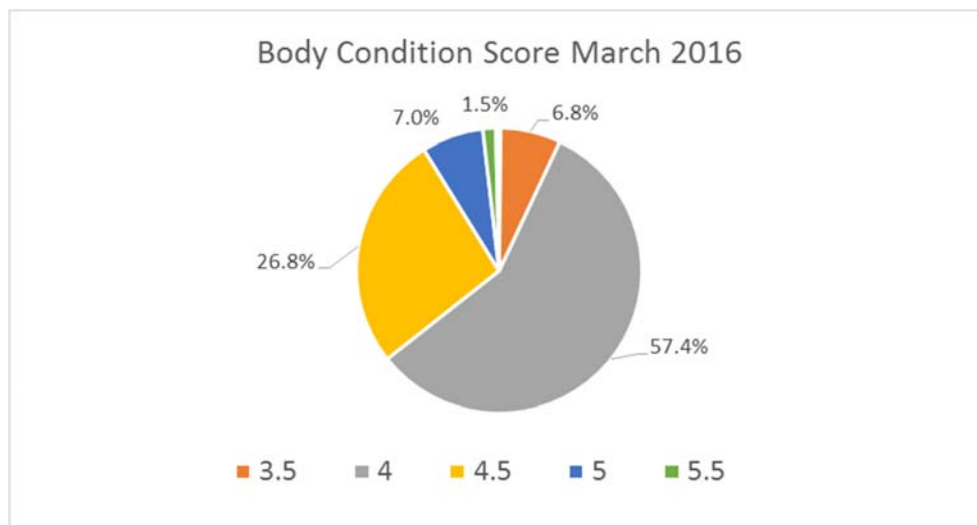
1. Monitor average pasture cover on the milking platform as head towards planned cover at end May
2. Monitor pasture quality with the focus turning to pushing cover ahead into the autumn (while retaining pasture quality).
3. Supplement cows with Magnesium

Key Numbers - week ending Tuesday 15th March 2016

Ave Past Cover	2621 kgDM/ha	Past Growth Rate	60 kgDM/ha/day
Round length	28 days (for 160 ha)	Ave Supplement used	2.77 kgDM/cow/day
No Cows on farm	546 (1 x mastitis cow, 1 x lame cow out of vat)	Ave Soil Temp (week)	14.7 degrees
Ave Milk Production	1.76 kgMS/cow	SCC	222,000

Herd Management

1. There are currently 548 milkers on farm. 27 cows are on once-a-day milking (lames). One lame cow and one mastitis cows milk is being withheld from the vat.
2. This week we had 4 new lame cows and just one new mastitis case.
3. Cows were body condition scored on Wednesday 9th March 2016. The average BCS for the whole herd was 4.2 – unchanged from when the herd was last scored in mid February. The herd will be BCS again in mid-April.



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.
 - a. 138 early calving cows with BCS below 4.5 make up the small herd, which is preferentially fed to aid weight gain by getting the first part of each paddock and not being pushed as much to achieve target grazing residuals
 - b. The large herd has the remainder of the cows (later calving and heavier BCS, 405 cows).
5. Empty cows and culls remain on farm and in milk at this stage.
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.
8. All calves are on pasture only and they have been vaccinated against BVD and Leptospira on Monday the 7th March. A booster vaccination will follow up in 4 weeks-time.
9. The incalf R2 heifers were leptovaccinated. Blood samples were collected to check for BVD, Neospora and selenium status. While heifers were clear of BVD and Neospora, selenium levels were low and we will treat the heifers with a long acting selenium injection to hold selenium status up until calving
10. Bloods were collected for the same tests from empty MA in milk cows that had been scanned as in calf early but have now lost their pregnancies. Tests were clear for BVD and Neospora, and selenium levels were adequate for in milk cows.
11. Cow live weight is holding steady between 492 and 498 kg/cow (monitor group)
12. R2 heifers remain grazing at Hororata, empty R2s have been sold.

Growing Conditions

13. The average 9 am soil temperature for the week was 14.7 degrees (1.3 degrees lower than last week). The soil temperatures have markedly dropped over the last week, notably with the cooler overnight conditions last weekend when we experienced a very light frost on Saturday morning.
14. There has been only 0.04mm of rain over the last week.
15. Both North and South pivots have run for 3 days in the last week, as have the sprinkler and K line areas. Irrigation is currently off, with the hope that we receive rain over the next 48 hours.

Figure 1: Soil temperature history for the last 2 weeks

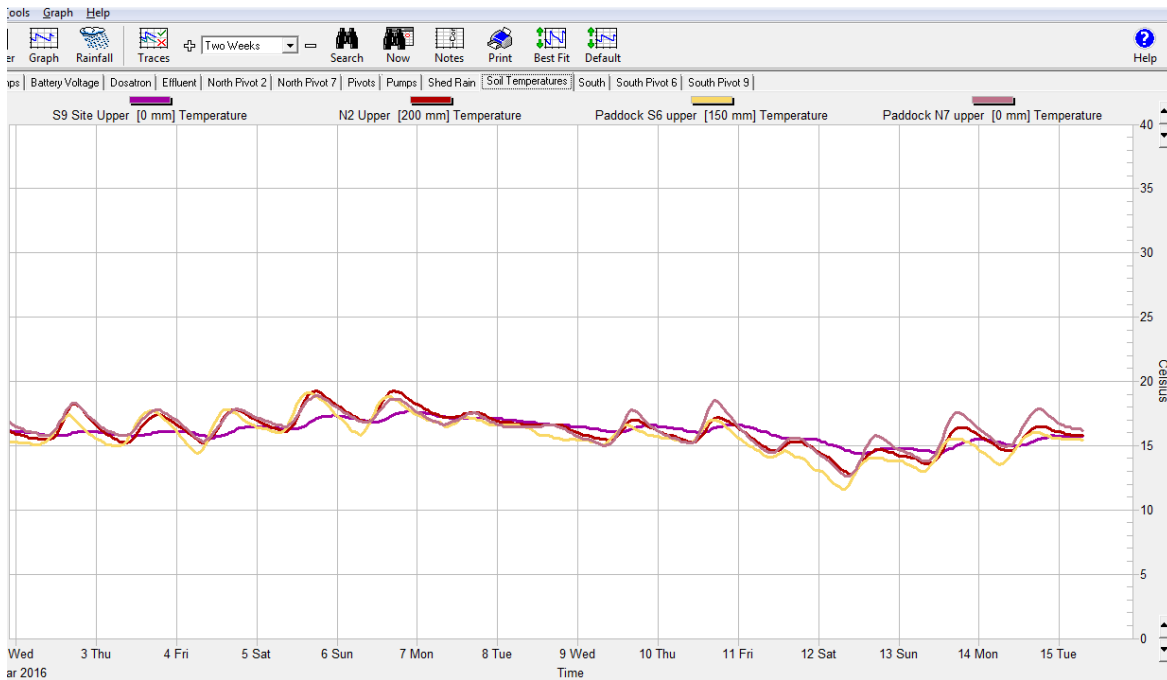
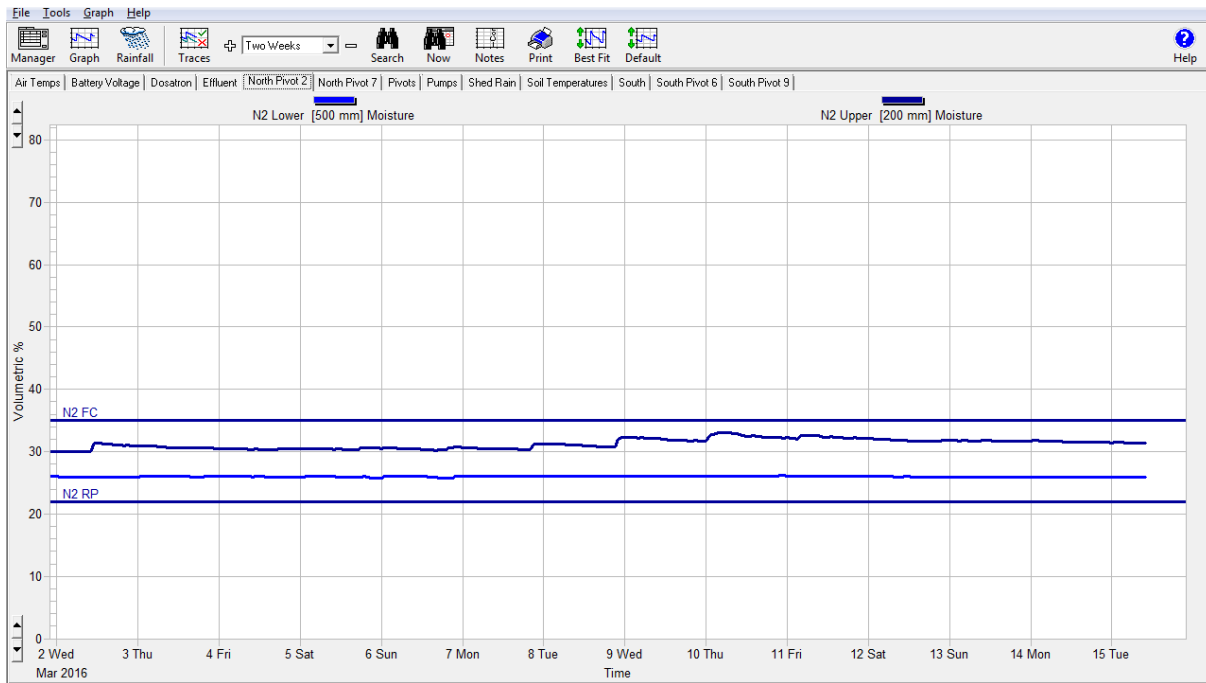


Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



Nitrogen

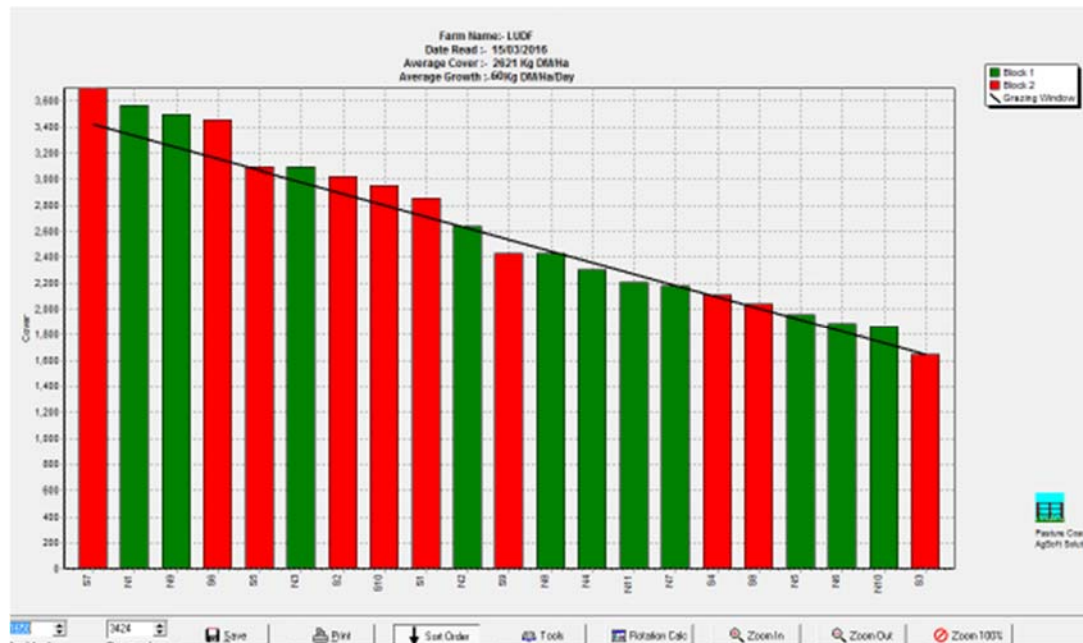
16. 32.2 hectares received nitrogen as urea at 20kgN/ha over the last week. Season to date we have used 171 kgN/ha.
17. This level of nitrogen use has just reached the new threshold allowed for this season (170 kgN/ha/season) as per the modelled farms N losses through Overseer. We have decided to continue with low rates (20kgN/ha) for a slightly longer period of time, still well within the farms N-baseline for the season. We are continuing to apply Nitrogen, combined with silage use to help

maintain a slower grazing round as we head further into the autumn and grow autumn feed in a highly cost effective manner whilst responses to N are likely to remain high.

Pasture and Feed Management

18. There was no pre-graze mowing done this week nor any silage harvested.
19. There were few obvious fertility patches present at this weeks walk.

Figure 3: This week's feed wedge



20. 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 28 days, an intake of 18.5 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 18.5 kgDM/cow/day x 28 days) + **1650** = 3424 kgDM/ha.

21. 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. 220MJME at present. Feed testing last week suggests pasture was approximately 11.8 MJME, therefore 220MJME requires approximately 18.5 kgDM / cow / day. This is equivalent to a demand of 63.5kgDM/ha/day across 160 ha.
22. Our average round length this week was 28 day round for the week (5.71 ha grazed per day) over 160 effective ha of the milking platform. This is the same as last week, but remains 2 days faster than this same time last season (30 days).
23. The need for silage continues so we can hold the round at 28 days given the cooler conditions and slower pasture growth rates over the last week.
24. Pasture meter estimates of pasture growth rates suggest that we are growing close to demand and therefore theoretically do not need to feed pasture silage. Despite this, we believe that without silage, cows would need to be grazing on a faster round than the targeted 28 days to maintain desired intake (based on the even and appropriate post grazing residuals being left behind the cows currently). Further, our average pasture cover has dropped this week from 2751kgDM/ha last week

to 2621kgDM this week, despite the feeding out of 2.8kgDM of silage per cow per day for the last week.

25. This suggests that the rising plate meter is likely to be over estimating DM on offer to the cows – possibly as a result of the ongoing presence of plantain and chicory, by the presence of docks in some paddocks and/or by the upright nature of the cool season active hybrid ryegrass paddocks. We have concluded therefore that if we wish to continue to remain at a 28 day round, continuing to slow down to a 30 day round by later in March, we do indeed require some silage to be fed despite the feedwedge from Pasture Coach suggesting otherwise.
26. Pasture Quality: Cooler night temperatures are helping us maintain good pasture quality with very little stem and seedhead present on the ryegrass, with only some seedhead on the plantain remaining. Our aim over the coming weeks will be to:
 - i. Continue to gradually extend the round using our remaining low rates of Nitrogen to build pasture cover, while soil temperatures are still high enough to capitalize on the last few weeks of high responses to nitrogen
 - ii. Maintain the use of baleage to help maintain the slower round, but at the lowest rates possible – assessed daily by monitoring post-grazing residuals behind cows.
 - iii. Not accumulate so much pasture that we lose quality in the base of higher cover paddocks before winter. As discussed previously, we continue to see the tetraploid ryegrass paddocks holding pasture quality very well at higher pasture covers compared to diploid paddocks.

Feeding Management for the coming week:

27. Given all of the above, the key decisions for the week ahead:
 - a. Our aim is to remain at a minimum 28 day rotation length through the next week. We’re aiming to continue to monitor post-grazing residuals and baleage utilisation very closely – given that the farm could still achieve some quite high growth rates during March (historic data). Our feedbudget predicts growth rates of only 60kgDM/ha/day for the month of March - which has been matched exactly by pasture growth rates over the last week. We expect that forecast conditions over the next week may continue to hold back pasture growth rates over coming days. We will use baleage to ensure we can maintain the target 28 days round.
 - b. We will continue to closely observe rotation length and cow behaviour (intake and production) through the week.
 - c. Continue to monitor rate of drop off peak milksolids production (which continues to be remarkably stable over the past week) as an important indicator of both feed intake as well as pasture quality.

LUDF Weekly report	16-Feb-16	23-Feb-16	1-Mar-16	8-Mar-16	15-Mar-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	1	1	0	0
Culls total to date	15	15	15	15	15
Deaths (Includes cows put down)	0	0	0	0	0
Deaths total to date	12	12	12	12	12
Calved Cows available (Peak Number 560)	548	548	548	548	548
Treatment / Sick mob total	0	1	0	0	2
Mastitis clinical treatment	0	1	0	0	1
Mastitis clinical YTD (tgt below 64 yr end)	89	90	90	90	91
Bulk milk SCC (tgt Avg below 150)	173	212	205	208	222
Lame new cases	4	4	9	10	4
Lame ytd	118	122	131	141	145
Lame days YTD (Tgt below 1000 yr end)	1745	1913	2095	2326	2557
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	524	524	522	515	513

Milking once a day into vat	24	24	26	33	33
Small herd	138	138	138	138	138
Main Herd	386	386	384	377	375
MS/cow/day (Actual kg / Cows into vat only)	1.79	1.81	1.82	1.75	1.76
MS/cow to date (total kgs / Peak Cows)	373	386	398	410	424
MS/ha/day (total kgs / ha used)	6.12	6.18	6.22	5.98	6.01
Herd Average Cond'n Score	4.20		0.00	0.00	4.20
Monitor group LW kg WOW early MA calvers	488	490	492	493	497
Soil Temp Avg Aquaflex	18.1	17.8	17.7	16.0	14.7
Growth Rate (kgDM/ha/day)	109	76	89	89	0
Plate meter height - ave half-cms	15.4	15.1	14.9	16.1	0.0
Ave Pasture Cover (x140 + 500)	2660	2614	2592	2751	2621
Surplus/[deficit] on feed wedge- tonnes	28	26	23	33	0
Pre Grazing cover (ave for week)	3451	3360	3381	0	3575
Post Grazing cover (ave for week)	1650	1650	1650	1650	1650
Highest pregrazing cover	3636	3602	3472	3552	3841
Area grazed / day (ave for week)	7.02	7.56	7.77	5.69	5.77
Grazing Interval	23	21	21	28	28
Milkers Offered/grazed kg DM pasture	19	19	19	18.5	0.0
Estimated intake pasture MJME	220	220	220	220	
Milkers offered kg DM Grass silage					
Silage MJME/cow offered					
Estimated intake Silage MJME					
Estimated total intake MJME	220	220	220	220	220
Target MJME Offered/eaten (includes 6% waste)					
Pasture ME (pre grazing sample)	11.4		11.6	11.8	11.8
Pasture % Protein	22.9		21.6	18.8	
Pasture % DM - Concern below 16%	13.5		13.4	15.5	
Pasture % NDF Concern < 33	42.7		40.4	39.6	
Mowed pre or post grazing YTD	236.5	236.5	236.5	236.5	236.5
Total area mowed YTD	312.3	312.3	312.3	312.3	312.3
Supplements fed to date kg per cow (560 peak)	113.8	113.8	113.8	129.9	149.3
Supplements Made Kg DM / ha cumulative	964.35	964.35	964.35	964.35	964.35
Units N applied/ha and % of farm	25units / 31.1%	25units / 19.3%	25units / 25%	25units / 35.2%	20units / 20%
Kgs N to Date (whole farm)	147	152	158	167	171
Rainfall (mm)	9.8	14.4	0	0	0.04
Aquaflex topsoil rel. to fill point target 60 - 80%	60-80	60-80	50-70	50-70	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.

Lincoln University Dairy Farm - Farm Walk notes

Tuesday 8th March 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 as head towards planned cover at end May
2. Monitor pasture quality with the focus turning to pushing cover ahead into the autumn (while retaining pasture quality).
3. Supplement cows with Magnesium

Key Numbers - week ending Tuesday 8th March 2016

Ave Past Cover	2751 kgDM/ha	Past Growth Rate	89 kgDM/ha/day
Round length	28 days (for 160 ha)	Ave Supplement used	2.34 kgDM/cow/day
No Cows on farm	548 (all cows are milking into the vat)	Ave Soil Temp (week)	16 degrees
Ave Milk Production	1.75 kgMS/cow	SCC	208,000

Herd Management

1. There are currently 548 milkers on farm. 33 cows are on once-a-day milking (lames).
2. This week we had 10 new lame cows but fortunately no new mastitis cases.
3. Cows were body condition scored three weeks ago on Wednesday 10th February. The average BCS for the whole herd was 4.2. The herd will be BCS again in mid-March.
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.
 - a. 138 early calving cows with BCS below 4.5 make up the small herd, which is preferentially fed to encourage weight gains by getting the first part of each paddock and not being pushed as much to achieve target grazing residuals
 - b. The large herd has the remainder of the cows (later calving and heavier BCS, 405 cows).
5. Empty cows and culls remain on farm and in milk at this stage.
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.
8. All calves are on pasture only and the have been vaccinated against BVD and Leptospira on Monday the 7th March. A booster vaccination will follow up in 4 weeks-time.
9. Cow live weight is holding steady between 492 and 498 kg/cow (monitor group)
10. The 6 week In calf result was 69% and the herd had 76 empty cows (of the 549 cows available for scanning in mid-February). This is approx. 14% empty.
11. Pregnancy testing of the R2's on 1 February reported 15% empty, reducing the available number of heifers entering the herd to below the target number.

Growing Conditions

12. The average 9 am soil temperature for the week was 16 degrees (1.9 degrees lower than last week).
The soil temperatures have markedly dropped over the last two days with the cooler weather that has followed three very hot days late and week and in the weekend.
13. There has been no rain over the last seven days.
14. Both North and South pivots have run for 5 days in the last week, as have the sprinkler and K line areas.

Figure 1: Soil temperature history for the last 2 weeks

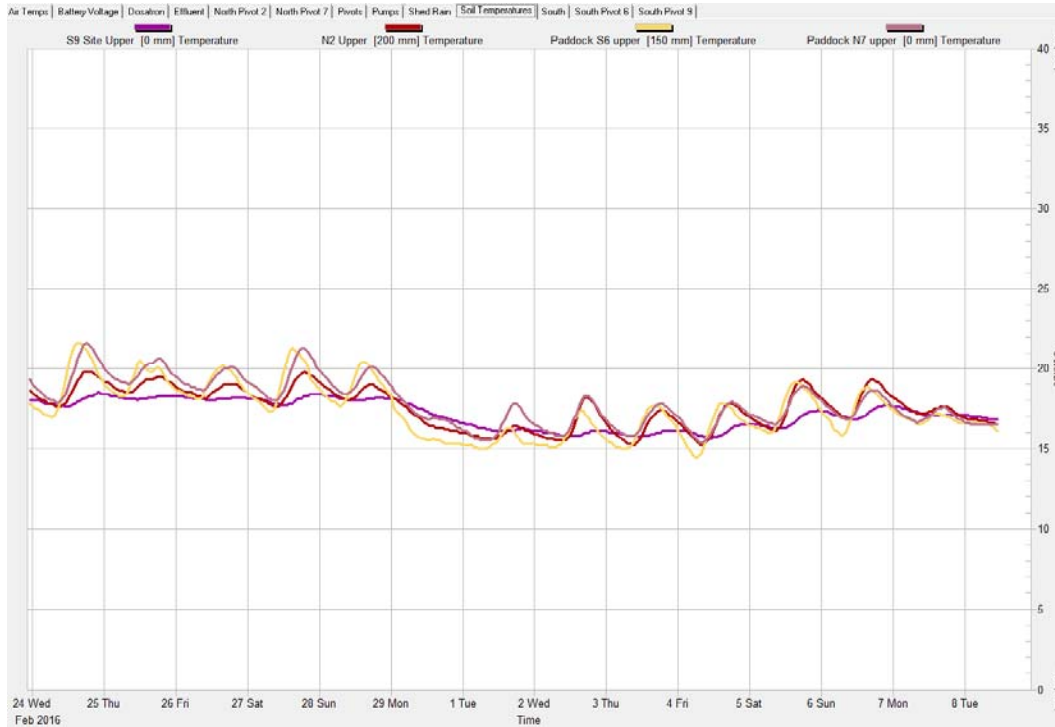
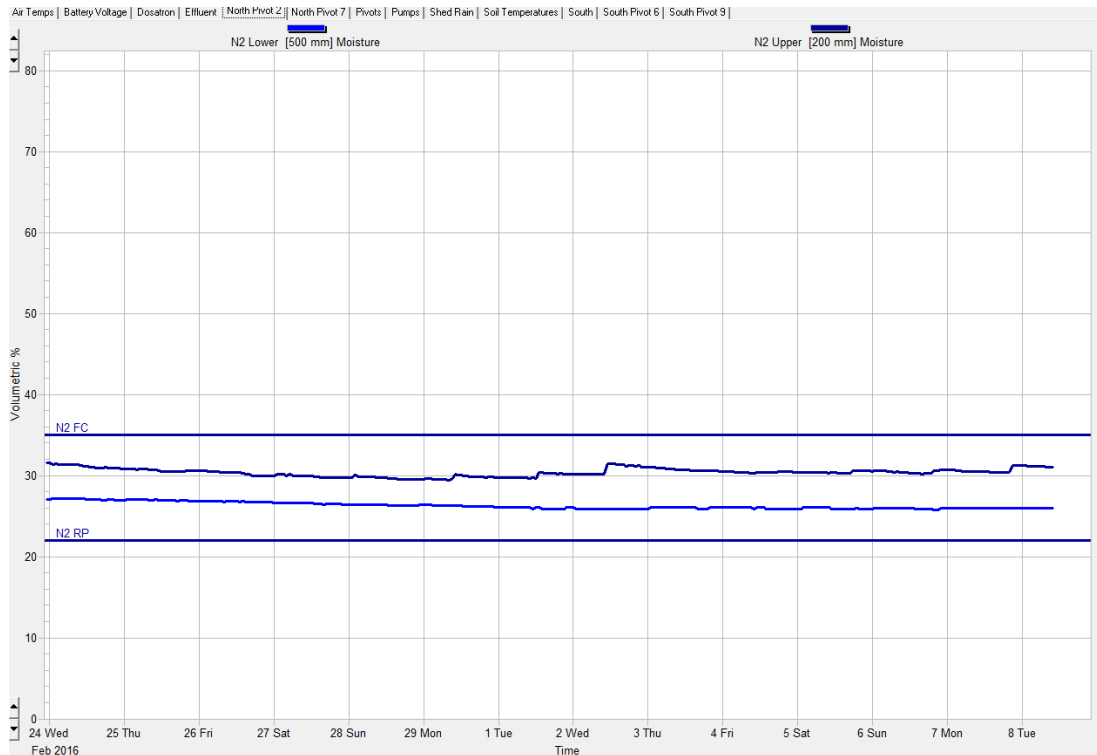


Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



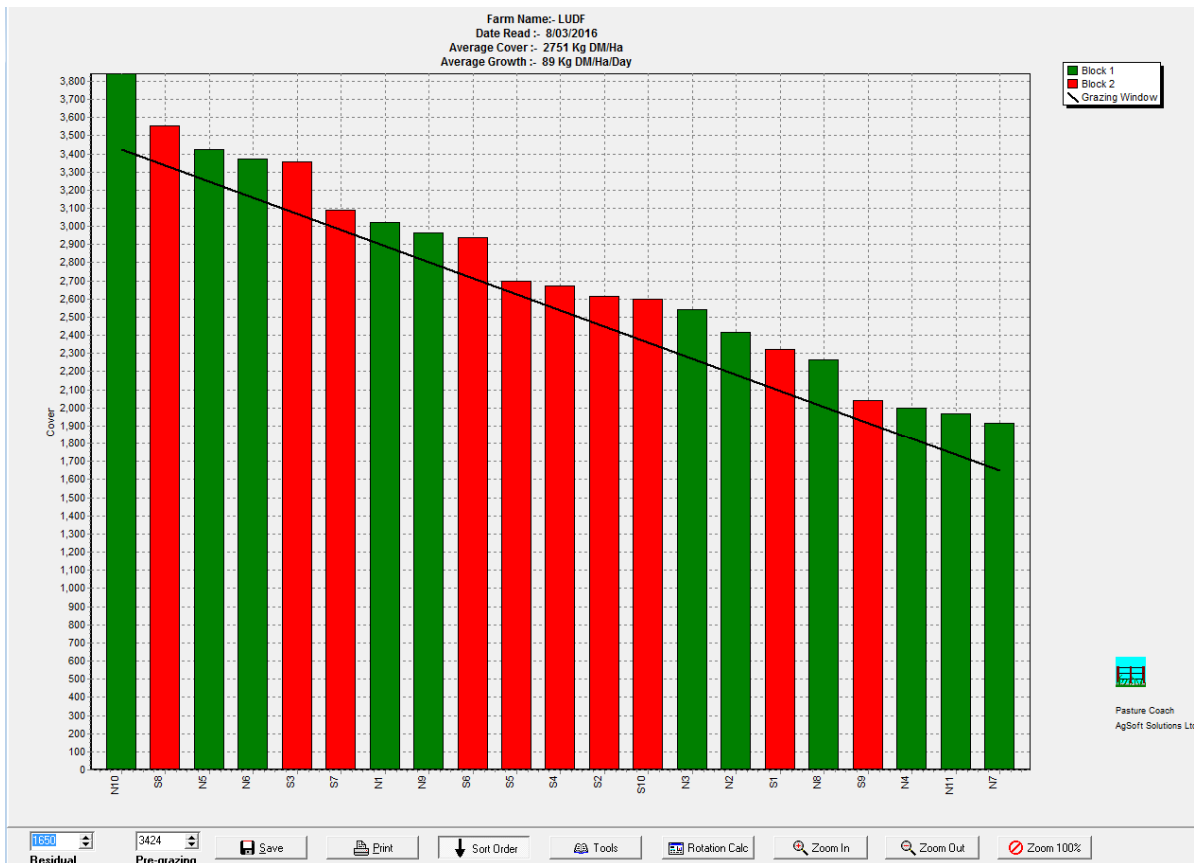
Nitrogen

15. 56.4 hectares received nitrogen as urea at 25kgN/ha over the last week. Season to date we have used 167 kgN/ha.
16. This level of nitrogen use is very close to the new threshold allowed for this season (170 kgN/ha/season) as per the farms N losses through Overseer. This means that farm will now lose its ability to use Nitrogen for the rest of season. This motivated us to apply as much of the Nitrogen through the high growth periods to capitalize on the high responses by either harvesting silage or extend the round in Autumn (which is what has happened this week)

Pasture and Feed Management

17. There was no pre-graze mowing done this week nor any silage harvested.
18. Fertility patches are continuing to appear less evident that during January.

Figure 3: This week's feed wedge



19. 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 28 days, an intake of 18.5 kgDM/cow/day, 548 cows (for the week ahead) and a post grazing residual of 1650 kgDM/ha. Target pregrazing cover is therefore:

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

$$(548 \text{ cows} / 160\text{ha} \times 18.5 \text{ kgDM/cow/day} \times 28 \text{ days}) + 1650 = 3424 \text{ kgDM/ha.}$$

20. 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. 220MJME at present. Feed testing

last week suggests pasture was approximately 11.8 MJME, therefore 220MJME requires approximately 18.5 kgDM / cow / day. This is equivalent to a demand of 63.5kgDM/ha/day across 160 ha.

21. Our average round length this week was 28 day round for the week (5.69 ha grazed per day) over 160 effective ha of the milking platform. This is 7 days slower than last week, slower than last week's target of 25 days and 2 days faster than this same time last season.
22. The use of silage was required to push the round out to 28 days as cows were achieving 21-23 days round for the past month and it is getting too far into the autumn to stay at such fast rounds.
23. This decision was prompted by the observation over the 2 previous weeks and through the last week that, even though our Pasture Coach readings said we were growing well above demand, cows were grazing faster than the targeted 25 days, and the Average Pasture Cover (APC) of the farm remained between 2590 and 2660 kgDM/ha. This was suggesting that actual daily pasture growths were more on par with demand rather than well above it. This suggested that, if we wanted the round to be extended (which is really required at this time of year) we needed to use some of our stored feed to help us achieve this.
24. Our Average Pasture Cover (APC) has thus increased from 2592 kgDM/ha last week to 2751 kgDM/ha this week and Pasture coach reports a feed surplus of about 33 tonnes DM (about 3 days of grazing). However, with the observation made above regarding potential overestimation of plate meter readings, it could be that this surplus feed is actually not as high as reported.
25. Pasture quality and plating:
 - a. Cooler night temperatures are a small assurance that maintaining pasture quality could become less of a challenge as the season goes into the cooler months. However, there is a fine balance between:
 - i. extending the round enough to capitalize on the last few weeks of high responses to nitrogen
 - ii. Bring supplements in to allow this to happen, but at the lowest rates possible
 - iii. Not accumulate too much pasture that we lose quality in the base of those high cover paddocks before winter.
 - b. On observation, quality remains relatively good. Seedhead is less apparent than during previous weeks, with the only seedhead seen on some areas of plantain.

Feeding Management for the coming week:

26. Given all of the above, the key decisions for the week ahead:
 - a. Our aim is to remain at 28 day rotation length through the next week. We remain vigilant of growth rates compared to demand – given that the farm could still achieve some quite high growth rates during March (historic data). Our feedbudget predicts growth rates of only 60kgDM/ha/day for the month of March. Cooler conditions over the last couple of nights may start to slow pasture growth rates over coming days. We will use baleage to ensure we can achieve the target 28 days round.
 - b. We will continue to closely observe rotation length and cow behaviour (intake and production) through the week.
 - c. Continue to monitor rate of drop off peak milksolids production (which continues to be remarkably stable over the past week) as an important indicator of both feed intake as well as pasture quality.

LUDF Weekly report	9-Feb-16	16-Feb-16	23-Feb-16	1-Mar-16	8-Mar-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	1	1	0
Culls total to date	14	15	15	15	15
Deaths (Includes cows put down)	0	0	0	0	0
Deaths total to date	12	12	12	12	12
Calved Cows available (Peak Number 560)	549	548	548	548	548

Treatment / Sick mob total	3	0	1	0	0
Mastitis clinical treatment	2	0	1	0	0
Mastitis clinical YTD (tgt below 64 yr end)	89	89	90	90	90
Bulk milk SCC (tgt Avg below 150)	206	173	212	205	208
Lame new cases	6	4	4	9	10
Lame ytd	114	118	122	131	141
Lame days YTD (Tgt below 1000 yr end)	1577	1745	1913	2095	2326
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	528	524	524	522	515
Milking once a day into vat	18	24	24	26	33
Small herd	140	138	138	138	138
Main Herd	388	386	386	384	377
MS/cow/day (Actual kg / Cows into vat only)	1.84	1.79	1.81	1.82	1.75
MS/cow to date (total kgs / Peak Cows)	361	373	386	398	410
MS/ha/day (total kgs / ha used)	6.27	6.12	6.18	6.22	5.98
Herd Average Cond'n Score		4.20		0.00	0.00
Monitor group LW kg WOW early MA calvers	490	488	490	492	493
Soil Temp Avg Aquaflex	17.4	18.1	17.8	17.7	16.0
Growth Rate (kgDM/ha/day)	90	109	76	89	89
Plate meter height - ave half-cms	14.1	15.4	15.1	14.9	16.1
Ave Pasture Cover (x140 + 500)	2477	2660	2614	2592	2751
Surplus/[deficit] on feed wedge- tonnes	11	28	26	23	33
Pre Grazing cover (ave for week)	3648	3451	3360	3381	0
Post Grazing cover (ave for week)	1650	1650	1650	1650	1650
Highest pregrazing cover	3916	3636	3602	3472	3552
Area grazed / day (ave for week)	6.27	7.02	7.56	7.77	5.69
Grazing Interval	26	23	21	21	28
Milkers Offered/grazed kg DM pasture		19	19	19	18.5
Estimated intake pasture MJME		220	220	220	220
Milkers offered kg DM Grass silage					
Silage MJME/cow offered					
Estimated intake Silage MJME					
Estimated total intake MJME		220	220	220	220
Target MJME Offered/eaten (includes 6% waste)					
Pasture ME (pre grazing sample)	12.0	11.4		11.6	11.8
Pasture % Protein	20.5	22.9		21.6	18.8
Pasture % DM - Concern below 16%	14.8	13.5		13.4	15.5
Pasture % NDF Concern < 33	37.4	42.7		40.4	39.6
Mowed pre or post grazing YTD	231.5	236.5	236.5	236.5	236.5
Total area mowed YTD	307.3	312.3	312.3	312.3	312.3
Supplements fed to date kg per cow (560 peak)	113.8	113.8	113.8	113.8	129.9
Supplements Made Kg DM / ha cumulative	964.35	964.35	964.35	964.35	964.35
Units N applied/ha and % of farm	25units / 41.4%	25units / 31.1%	25units / 19.3%	25units / 25%	25units / 35.2%
Kgs N to Date (whole farm)	139	147	152	158	167
Rainfall (mm)	0	9.8	14.4	0	0
Aquaflex topsoil rel. to fill point target 60 - 80%	70-90	60-80	60-80	50-70	50-70

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.

Lincoln University Dairy Farm - Farm Walk notes

Tuesday 1st March 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

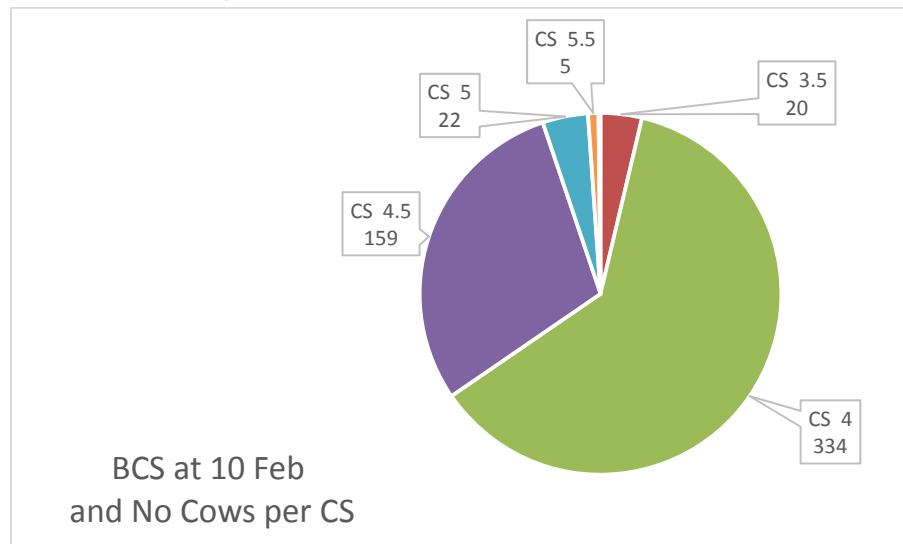
1. Monitor average pasture cover on the milking platform as head towards planned cover at end May
2. Monitor pasture quality with the focus turning to pushing cover ahead into the autumn (while retaining pasture quality).
3. Supplement cows with Magnesium

Key Numbers - week ending Tuesday 1st March 2016

Ave Past Cover	2592 kgDM/ha	Past Growth Rate	89 kgDM/ha/day
Round length	20.6 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)	17.9 degrees
Ave Milk Production	1.82 kgMS/cow	SCC	205,000

Herd Management

1. There are currently 548 milkers on farm. 26 cows are on once-a-day milking (lames).
2. This week we had 9 new lame cows but fortunately no new mastitis cases.
3. Cows were body condition scored three weeks ago 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 was last reviewed on the 18/01/16 according to the BCS information from the mid-January condition scoring. Lighter and early calving cows continue to be preferentially fed and held in the smaller herd to encourage as much weight gain as possible during early autumn. The herd is due to be condition scored again in mid March.

5. The small herd has 138 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. Empty cows and culls remain on farm and in milk at this stage.
7. Magnesium is being supplemented to the milking herd as Mag Chloride in the stock water.
8. All 2015 born heifer replacements (total 155) are grazing on the East Block.
9. All calves are on pasture only.
10. Cow live weight is holding steady between 492 and 498 kg/cow (monitor group)
11. The 6 week In calf result was 69% and the herd had 76 empty cows (of the 549 cows available for scanning in mid-February). This is approx. 14% empty.
12. Pregnancy testing of the R2's on 1 February reported 15% empty, reducing the available number of heifers entering the herd to below the target number.

Growing Conditions

13. The average 9 am soil temperature for the week was 17.7 degrees (0.1 degrees lower than last week). The soil temperatures have markedly dropped over the last two days with the cooler weather that has followed three very hot days late last week.
14. There has been no rain over the last seven days.
15. Both North and South pivots have run continuously for the last seven days, as have the sprinkler and K line areas.

Figure 1: Soil temperature history for the last 2 weeks

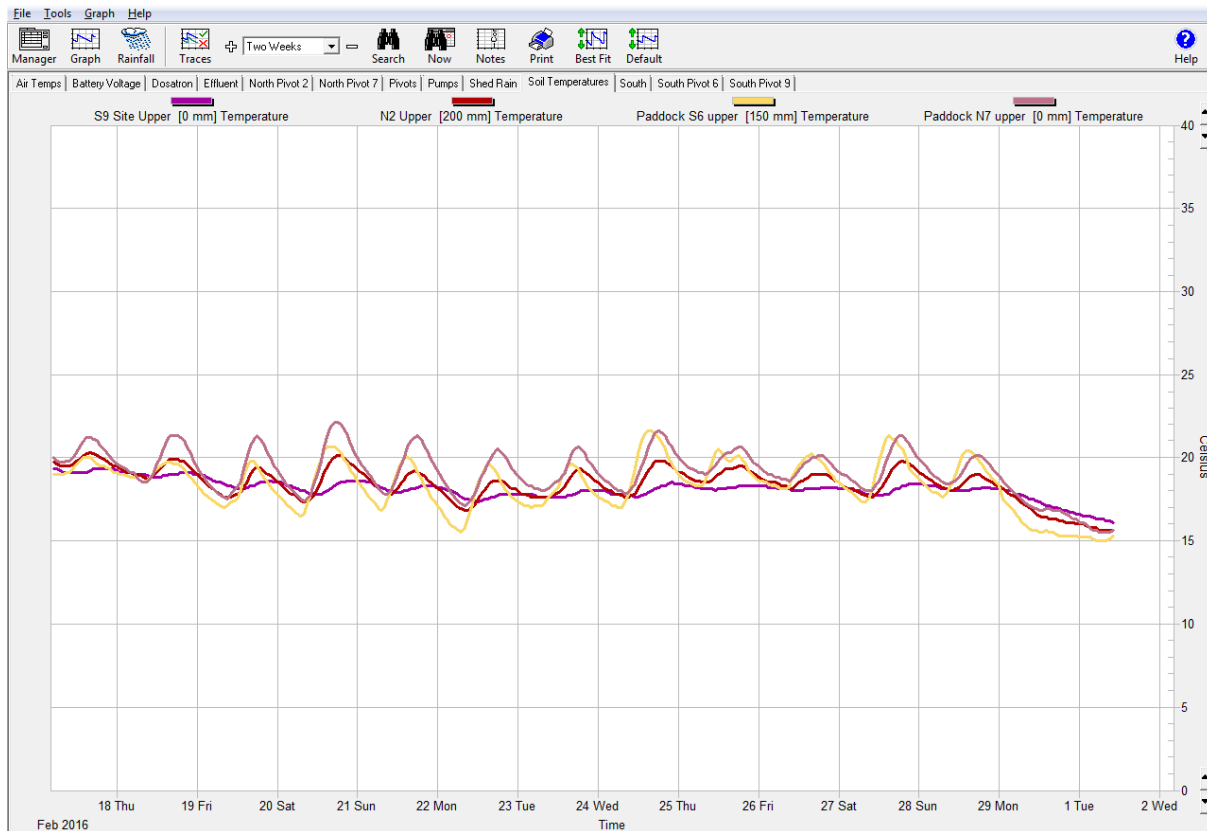
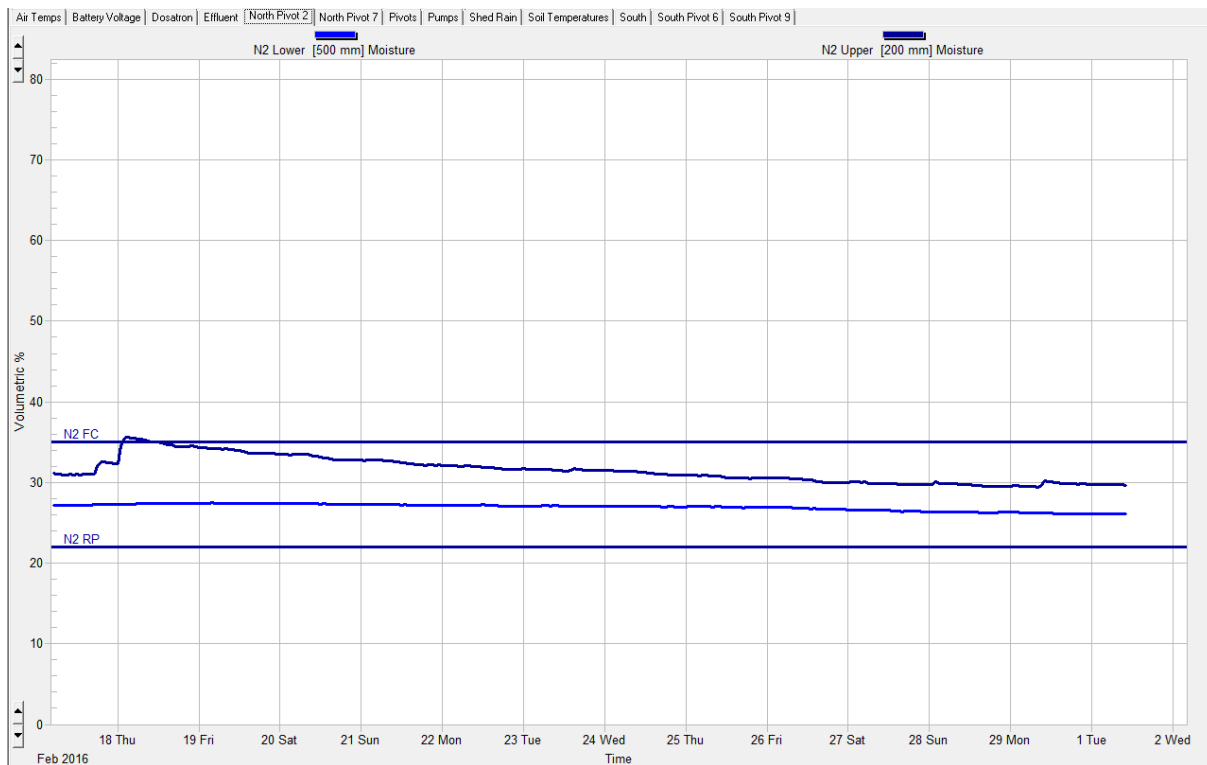


Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



Nitrogen

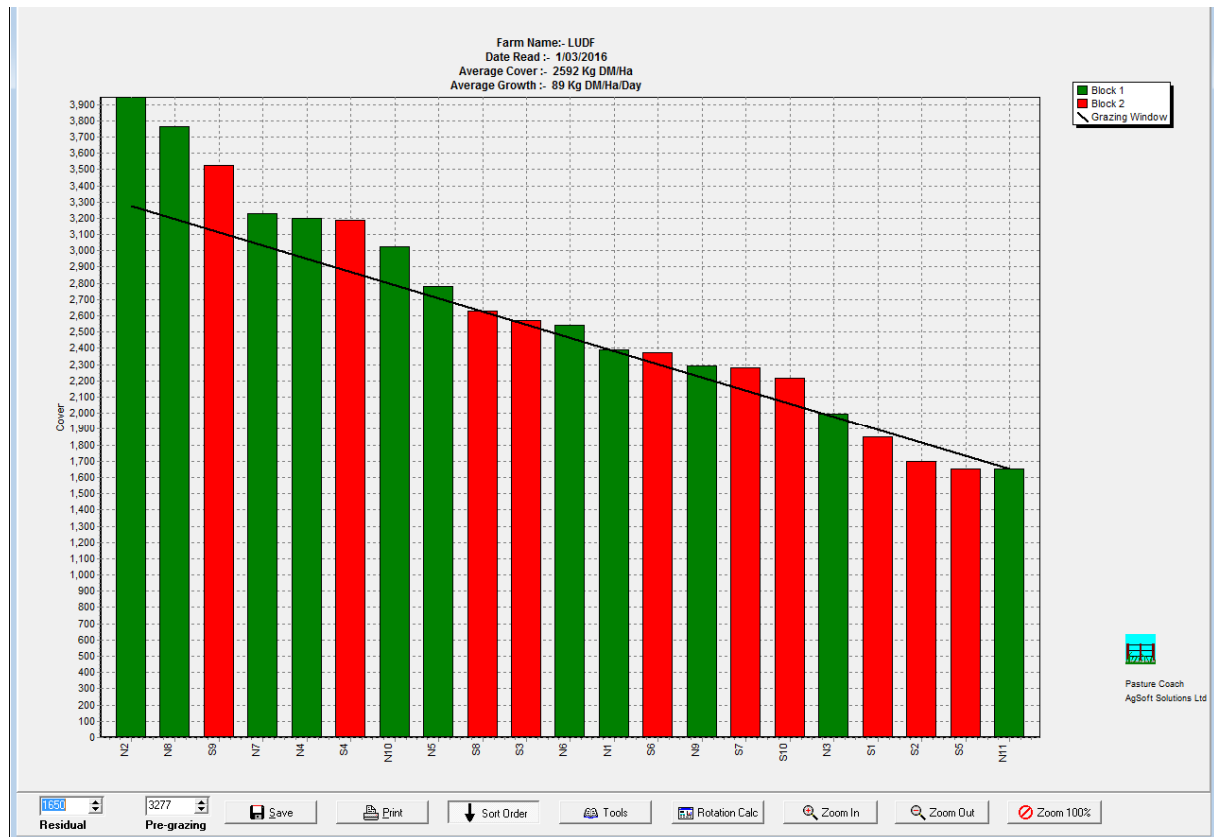
16. 40.1 hectares received nitrogen as urea at 25kgN/ha over the last week. Season to date we have used 158 kgN/ha.
17. At this stage, the farm has continued to apply low rates of N to the non-effluent areas, following grazing, to maintain pasture quality and quantity, on the basis that home grown N 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.

Pasture and Feed Management

18. Our average round length this week was 20.6 day round for the week (7.8 ha grazed per day) over 160 effective ha of the milking platform. This is similar to last week and remains 4 days shorter than the target of a 25 day round.
19. The faster round indicates that cows aren't finding quite as much feed in each paddock as the rising plate metre is indicating. We will ideally aim to slow the round down to reach our target of 25 days by taking advantage of the ongoing high pasture growth rates. If growth rates start to slow to match rates closer to our daily per hectare demand of 65kgDM/ha/day, we will consider using small quantities of baleage to hit our 25 day round target.
20. Target grazing round length remains at 25 days for the month of March.
21. There was no pre-graze mowing done this week nor any silage harvested.
22. Pasture quality and plating:
 - a. Pasture quality remains relatively good. Seedhead is less apparent than during previous weeks, with the only seedhead seen on some areas of plantain.
 - b. The pregraze mowing and ex baleage areas that appeared somewhat slower to recover from mowing now appear to be growing well. Quality appears very good on these regrowth areas.

- c. The rising plate meter continues to apparently over-estimate some readings as there are some paddocks where the ryegrass is standing quite upright in the first week postgrazing and the plantain is still seeding. Upright chicory plants in paddock N4 are also contributing to an apparent high average pasture cover in that paddock.
- d. Fertility patches are continuing to appear less evident than during January.

Figure 3: This week's feed wedge



23. 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:

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

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

24. 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 11.6 MJME, therefore 220MJME requires approximately 19 kgDM / cow / day. This is equivalent to a demand of 65kgDM/ha/day across 160 ha.

25. We continue to see that the rising plate meter predicted covers appear to be somewhat overestimated because:

- a. The target round length was 25 days but the actual round was faster at 20.6 days (as cows were moved on when target residuals were achieved). This means cows grazed down paddocks faster than expected, suggesting also they found less DM than what was expected.

- b. The daily demand has remained the same: 65kgDM/ha/day
- c. The average pasture cover (APC) has decreased by 22kgDM/ha (from 2614 kgDM/ha last week to 2592kgDM/ha) despite the apparent growth rates (89kgDM/ha/day) exceeding calculated demand (65kgDM/ha/day).
- d. We had an estimated surplus on Pasture Coach of 26 tDM total last week and a surplus of 23 tDM this week

All of the above would suggest that the farm has really grown closer to demand (65kgDM/ha/day) instead of the 89kgDM/ha/day result from this weeks farm walk. This would also suggest that the predicted surplus by the Pasture Coach software was probably not as high as the 23 tDM reported.

- 26. Grazing behaviour: on observation, cows have been easily achieving the target post-grazing residuals of 1650kgDM/ha. Recently grazed pastures are coming back into the round with apparently very good quality.

Feeding Management for the coming week:

- 27. Given all of the above, the key decisions for the week ahead:
 - a. Our aim remains to achieve a 25 day rotation length through the next week. We remain vigilant of growth rates compared to demand – given that the farm has recorded some apparent very high growth rates over recent weeks. Our feedbudget predicts growth rates of only 60kgDM/ha/day for the month of March. Cooler conditions over the last couple of nights may start to slow pasture growth rates over coming days. If we are unable to work towards achieving our target of 25 days using pasture alone, we will use baleage to help slow the round.
 - b. There are no plans to harvest silage or pre-graze mow for the coming week. It is now unlikely the farm will have any surplus to harvest or need to pregraze mow.
 - c. We will continue to closely observe rotation length and cow behaviour (intake and production) through the week.
 - d. Continue to monitor rate of drop off peak milksolids production (which continues to be remarkably stable over the past week) as an important indicator of both feed intake as well as pasture quality.

LUDF Weekly report	2-Feb-16	9-Feb-16	16-Feb-16	23-Feb-16	1-Mar-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	1	1	1
Culls total to date	14	14	15	15	15
Deaths (Includes cows put down)	0	0	0	0	0
Deaths total to date	12	12	12	12	12
Calved Cows available (Peak Number 560)	549	549	548	548	548
Treatment / Sick mob total	1	3	0	1	0
Mastitis clinical treatment	1	2	0	1	0
Mastitis clinical YTD (tgt below 64 yr end)	87	89	89	90	90
Bulk milk SCC (tgt Avg below 150)	182	206	173	212	205
Lame new cases	5	6	4	4	9
Lame ytd	108	114	118	122	131
Lame days YTD (Tgt below 1000 yr end)	1451	1577	1745	1913	2095
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	522	528	524	524	522
Milking once a day into vat	26	18	24	24	26
Small herd	140	140	138	138	138
Main Herd	383	388	386	386	384
MS/cow/day (Actual kg / Cows into vat only)	1.85	1.84	1.79	1.81	1.82
MS/cow to date (total kgs / Peak Cows)	348	361	373	386	398
MS/ha/day (total kgs / ha used)	6.34	6.27	6.12	6.18	6.22
Herd Average Cond'n Score			4.20		

Monitor group LW kg WOW early MA calvers	490	490	488	490	492
Soil Temp Avg Aquaflex	16.1	17.4	18.1	17.8	17.7
Growth Rate (kgDM/ha/day)	108	90	109	76	89
Plate meter height - ave half-cms	15.3	14.1	15.4	15.1	
Ave Pasture Cover (x140 + 500)	2640	2477	2660	2614	2592
Surplus/[deficit] on feed wedge- tonnes	34	11	28	26	23
Pre Grazing cover (ave for week)	3517	3648	3451	3360	3381
Post Grazing cover (ave for week)	1650	1650	1650	1650	1650
Highest pregrazing cover	3636	3916	3636	3602	3472
Area grazed / day (ave for week)	7.51	6.27	7.02	7.56	7.77
Grazing Interval	21	26	23	21	21
Milkers Offered/grazed kg DM pasture					
Estimated intake pasture MJME			220	220	220
Milkers offered kg DM Grass silage			0	0	0
Silage MJME/cow offered			0	0	0
Estimated intake Silage MJME			0	0	0
Estimated total intake MJME			220	220	220
Target MJME Offered/eaten (includes 6% waste)					
Pasture ME (pre grazing sample)	11.4	12.0	11.4		11.6
Pasture % Protein	23.0	20.5	22.9		21.6
Pasture % DM - Concern below 16%	9.1	14.8	13.5		13.4
Pasture % NDF Concern < 33	37.8	37.4	42.7		40.4
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