Lincoln University Dairy Farm - Farm Walk notes

Tuesday 23rd August 2016

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

Critical issues for the short term

1. **Monitor average pasture cover and shape of the wedge on the milking platform to match spring rotation planner through until 27 September 2016.**
2. **Monitor cow BCS to ensure remaining later calving cows also meet BCS targets at calving (min 5 for MA cows and 5.5 for R2's and R3yr's) whilst avoiding risk of over-conditioning of later calving cows.**
3. **All newborn calves receive excellent care with regards to colostrum management, feeding, housing and health care**

Key Numbers - week ending Tuesday 23rd August 2016

Ave Past Cover	2591 kgDM/ha	Past Growth Rate	46 kgDM/ha/day
Round length	56 days (for 160 ha)	Ave Supplement used	0
No Cows on farm	370	Ave Soil Temp (week)	7.0°C
Kg MS/cow (330 cows)	2.12	SCC	273

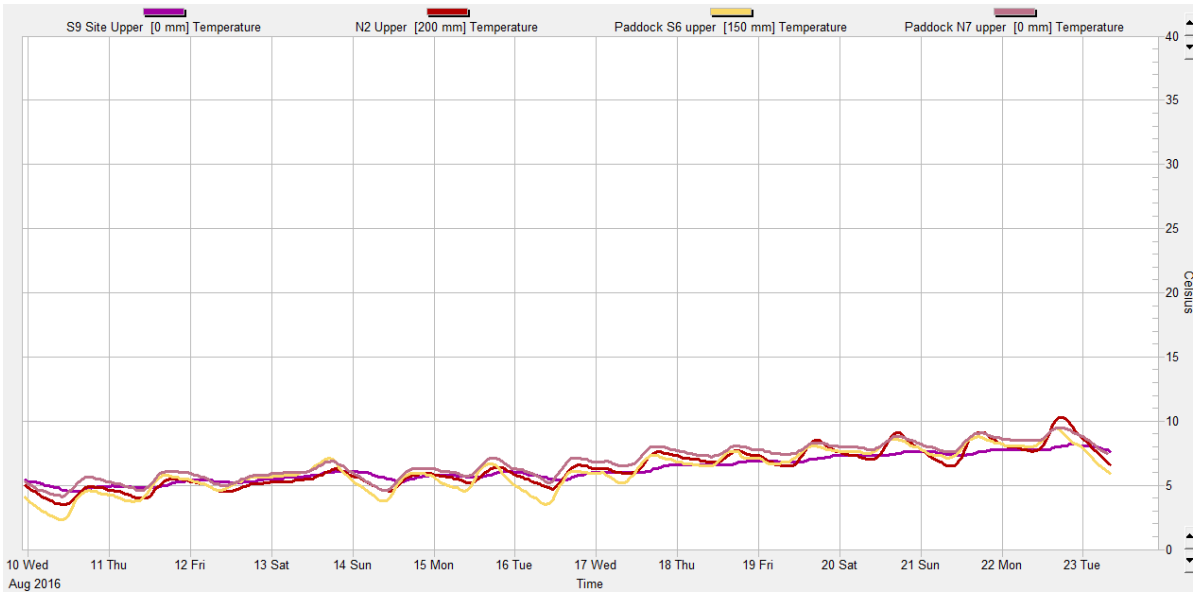
Herd Management

4. There are now 304 cows in the milking herd. Milkers are on approximately 86m^2/cow/day of pasture with no supplement, heading into pre-grazing pasture covers of an average of 3600kgDM/ha.
5. 120 dry cows are currently on the milking platform grazing behind the milking cows to tidy up post-grazing residuals. 86 pre-calving cows (calving date till 10th September) are at the East block with springing heifers in a separate group from the springing mixed age cows. All cows are now back from grazing off and are located either on the milking platform or East block.
6. 65 freshly calved colostrum cows are receiving pasture dusted with 100g of magnesium oxide and 100g of limeflour, and are receiving pasture only with no supplementary feeds.
7. Springers are being fed pasture with 100g of magnesium oxide dusted on their daily pasture break.
8. All calving cows and heifers have received a B12 and Selenium shot precalving on 20th July 2016.
9. Trace minerals and magnesium chloride are running through the stock water to all cows on the milking platform and at East block.
10. 130 heifer replacements have been tagged so far, and 80 of them are outside (40 last week and 40 this week).
11. There are 7 lame cows and 7 mastitis cows.
12. R 2 heifers away grazing will be weighed this week, have blood tests taken to check trace mineral status and receive a selenium/Vitamin B12 injection.

Growing Conditions

13. The average 9 am soil temperature for the past week was 7.0°C. This is an increase of 2°C from the previous week and is 1.3°C higher than for the same week this time last year.

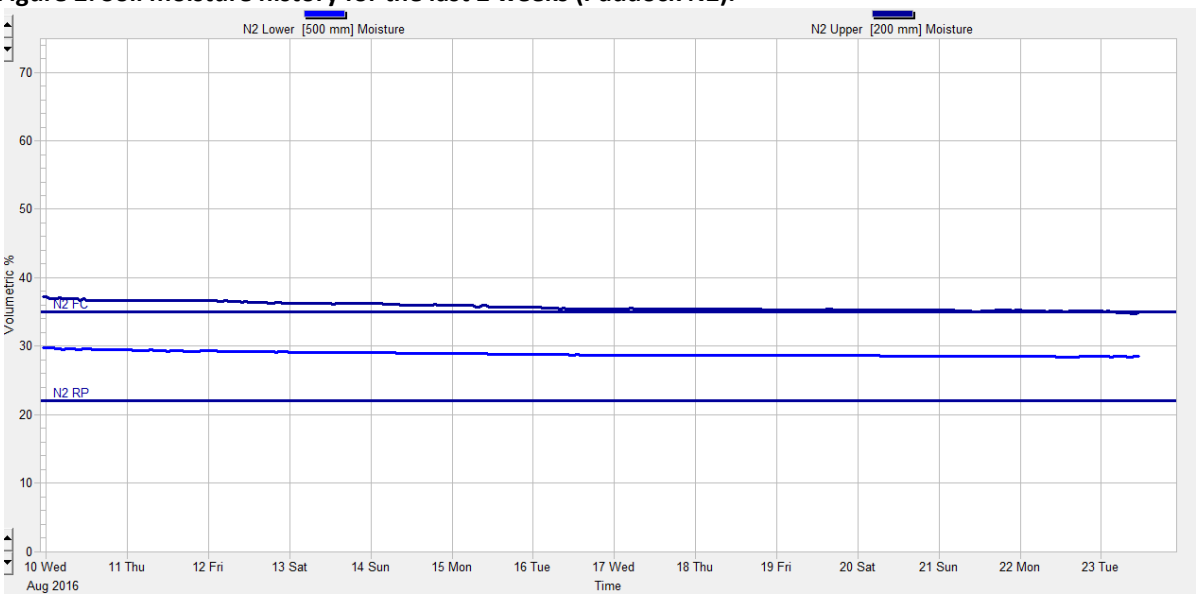
Figure 1: Soil temperature history for the last 2 weeks



14. The farm received no rain over the past week. The Aquaflex monitoring indicates that soil moisture on farm is slowly but steadily decreasing and is now just on field capacity. Pasture utilisation remains on average excellent, with minimal damage to pastures/soils by grazing cows.
15. There are still signs of mild soil moisture saturation in the south western corner of south block.

    We will continue to observe how the moisture meter readings evolve as we progress through the remainder of August and into early September.

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

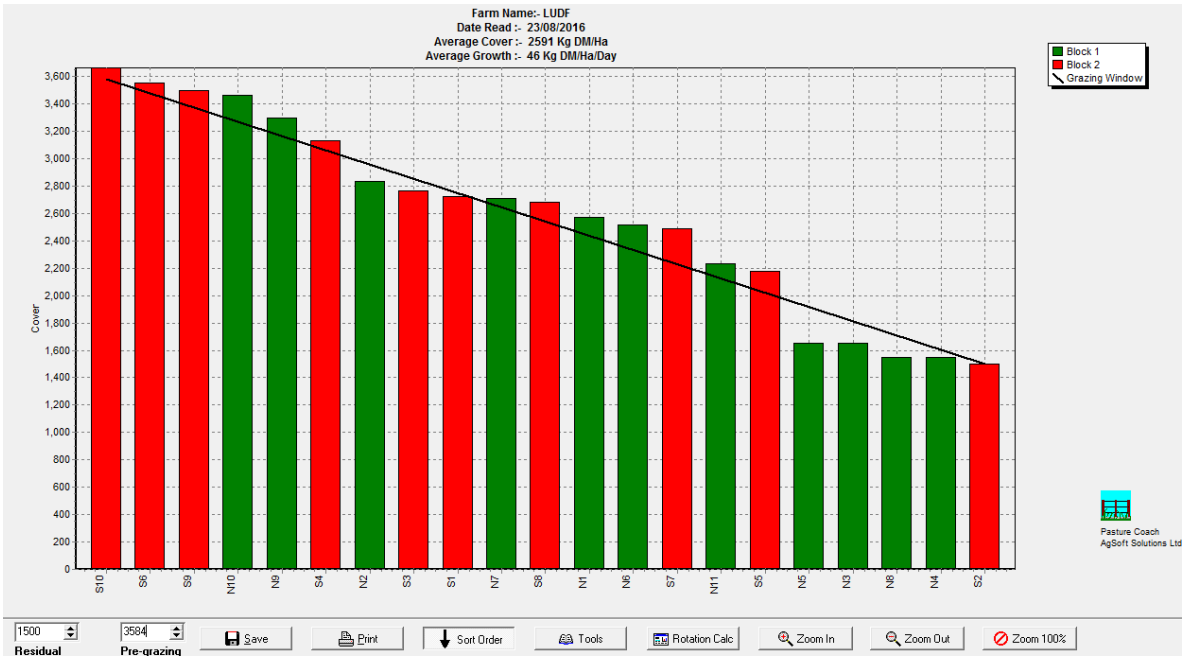


Pasture and Feed Management

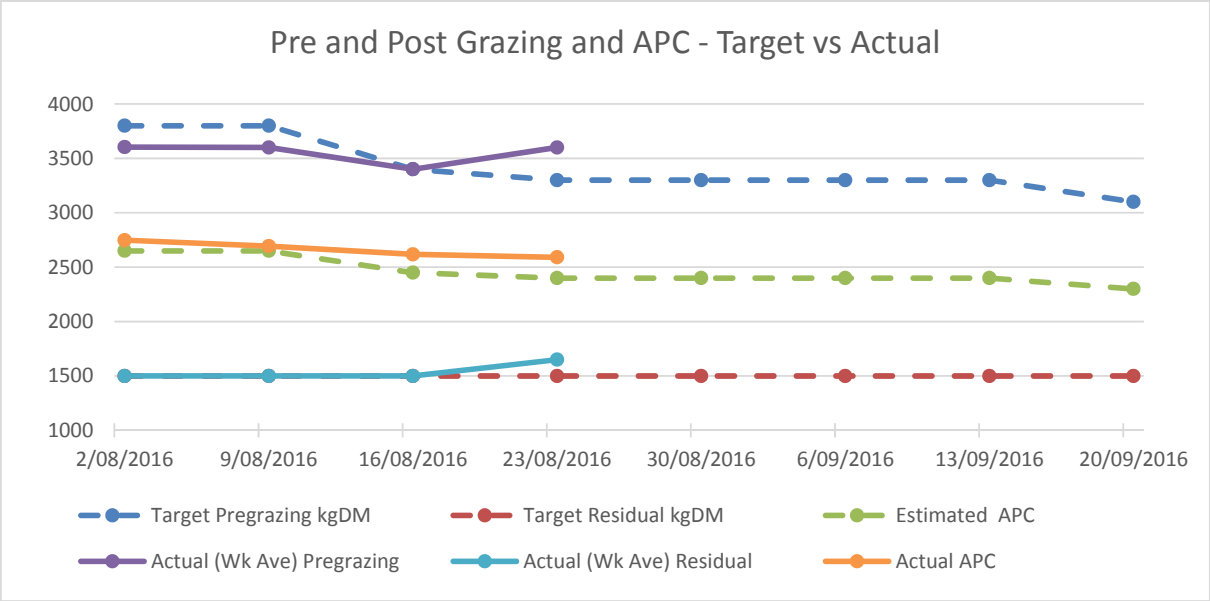
16. Fertility patches remain obvious in a number of paddocks though not necessarily at the top of the wedge.
17. Current average pasture cover is 2591 kgDM/ha, a slight drop from the previous week.
18. Growth rate this week was 46 kgDM/ha/day compared to 19 kgDM/ha/day at this same time last year. Together with the warm weather lately and the 2 degrees increase in soil temperature over the past 7 days, the increase in growth rates has been well received, allowing the farm to continue to fully feed cows on pasture even as demand continues to increase with more cows calving daily.
19. Areas that had some pugging damage in the wet weather have now been heavy rolled.

20. 120 later calving dry cows are currently on the milking platform to help achieve post-grazing residuals in paddocks grazed previously by milkers. The practice will be continued as long as required to ensure good postgrazing residuals are achieved.

Figure 3: This week's feed wedge



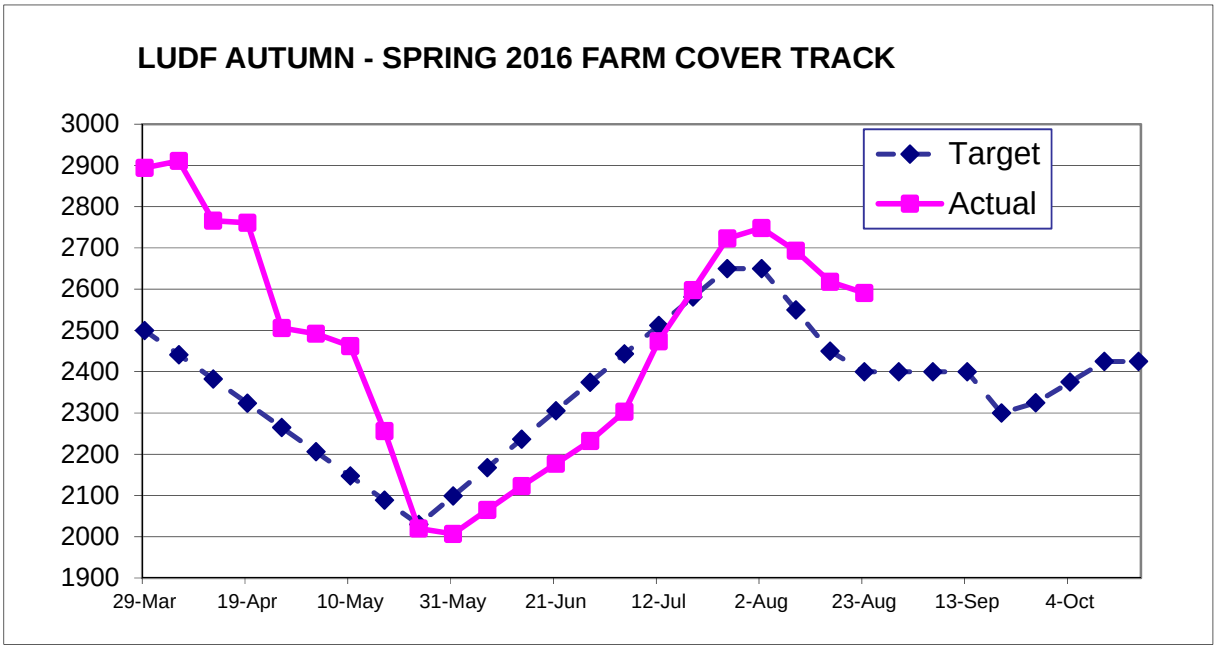
21. Average pasture covers in paddocks at the top of the wedge have increased to around 3600 kgDM/ha. Warm weather and a lift in soil temperature explains in part of this lift in covers. Rising plate meter technique may also explain part of this change between weeks, with a change in person plating the farm this week, compared to the last two weeks. However, with the increase in temperature and the relatively high DM% of the pasture (21.7%) the apparent lift in pre-grazing covers is not entirely unexpected.
22. These top end paddocks remain of good quality (12.9 MJME/kgDM) and are on average being well utilised by milkers with dry cows helping if/when required, if target post-grazing residuals are not achieved by milkers.
23. The demand line on the above pasture wedge graph is calculated as follows:
    a. For the coming week there are expected to be an average of 390 cows on the milking platform for the week
    b. Maximum milking platform area allocated per day from SRP: 3.22 ha/day
    c. The planned DM intake as per this week's spring rotation planner is 16.8 kgDM/cow/day
    d. Total demand: 16.8 kgDM/cow/day x 390 average cows for the week = 6,552 kgDM/day
    e. Demand kgDM/ha = 6,552 kgDM/3.22 ha = 2,034 kgDM available/ha is required.
    f. Pregraze covers required: 2,034 kgDM/ha + 1,550 kgDM/ha target residual = 3,584 kgDM/ha target pregraze covers required.
24. With 305 milking cows currently on the platform, and pregrazing covers of 3,600kgDM/ha grazed down to 1650kgDM/ha and an allocation of 16.8 kgDM/cow/day, the daily allocation will be lifting to around 86m^2/cow/day – both slightly above the SRP predictions.
25. With 21.7%DM in the feed test, cows are finding more grass out there than what the plate meter is measuring – therefore we will rely on the dry cows to help take these post-grazing residuals down to target of 1550kgDM/ha.
26. Below is our plan vs actual SRP:



27. Below is the target vs actual total area grazed and supplement used trackers:

Week Ending	Average Number Milking and colostrum Cows	Planned area grazed per week	Planned Cumulative area grazed	Planned Cumulative Supplements fed (kgDM/wk)	Actual area grazed per week	Actual Cumulative area grazed per week	Actual Supplements fed (kgDM/week)	Actual Cum. Suppl fed (tot kgDM)
26/07/2016								
2/08/2016	45	5.7	5.7	0	2	2	0	0
9/08/2016	141	10.9	16.6	0	6.8	8.8	0	0
16/08/2016	232	16.7	33.3	5968	13.25	22.05	0	0
23/08/2016	330	20.5	53.8	16966	19.9	41.95	0	0
30/08/2016		22.6	76.4	31084		41.95		0
6/09/2016		24.3	100.7	50614		41.95		0
13/09/2016		28.5	129.2	68429		41.95		0
20/09/2016		37.2	166.5	82394		41.95		0
27/09/2016						41.95		0

28. Season to date, we have grazed a smaller area of the farm than we had expected. By today, we'd expected to have grazed 53.8ha, yet we've only grazed 41.95 ha. The reduced demand for area reflects both the higher than planned average pasture cover at start of calving as well as excellent utilisation of pasture with very mild weather and firm conditions underfoot. This 'spare' 12 ha of pasture, combined with the higher than planned average pasture cover has enabled us to feed bank feed ahead of us – a very valuable opportunity to potentially reduce demand for supplements during September. As per the table and graph above, we still have around 12 ha feedbanked ahead vs. plan.
29. Below is our autumn/winter pasture cover tracker.



30. Currently (and through calving so far) the higher than plan APC is continuing to allow us to make some savings in terms of not needing to feed supplements. This puts the farm in a good position in terms of having a small surplus of pasture this week vs. demand (around 6.3 t DM across 160 ha).
31. This 6.3 tDM calculated surplus has decreased from last week's 23TDM, however this is also due to the change in the formula used to calculate the pre-grazing target of the demand line in Pasture Coach.
32. The surplus across the milking platform could be short lived if the wet and/or frosty conditions return.

Feeding Management for the coming week:

33. For the coming week our aim is to:
    a. Follow the spring rotation planner (SRP) in terms of area allocated for this coming week. There is confidence that between the higher than expected average pasture cover, and the lesser area of pasture grazed season to date, that we have a good feedbank of pasture ahead of us. Target post-grazing residuals must of course still be achieved, therefore we will continue to strictly follow the SRP and only offer allocated areas to cows for this coming week.
    b. Feed the colostrum and milking cows fully on pasture only, trying to encourage them to consume as much pasture as they can eat, moving fences as required. Currently, supplements are not required however this will be monitored through the week according to the weather, pasture utilisation, pre-grazing pasture covers and cow behaviour.
    c. Continue to use dry cows if milkers struggle to hit post-grazing residuals.
    d. With the soil temperature increasing to 7 degrees, we have started thinking about fertilizer applications. This coming week we will:
        i. Apply Urea at 25kgN/ha (except in the effluent area) to paddocks already grazed
        ii. Apply capital/maintenance fertilizer (Superphosphate) as per fertilizer recommendation. We anticipate that the superphosphate will supply sufficient available S, therefore we are not planning to use Ammonium Sulphate fertiliser at this point in time.
34. Springers will continue to be fed pasture at the East Block with later calving cows only coming across to the milking platform if they are required behind the milking cows.

LUDF Weekly report	26-Jul-16	2-Aug-16	9-Aug-16	16-Aug-16	23-Aug-16
Farm grazing ha (available to milkers)	160	160	160	160	160

Dry Cows on farm / East blk /Jackies/other	0/191 /126/215	0/182/50/255	0/311/0/77	120/94/0/77	120/86/0/0
Culls (Includes culls put down & empties)	0	0	0	0	3
Culls total to date	1	1	1	1	4
Deaths (Includes cows put down)	0	1	0	1	0
Deaths total to date	0	1	1	2	2
Calved Cows available (Peak Number 560)	47	0	191	288	370
Treatment / Sick mob total	1	2	3	9	8
Mastitis clinical treatment	0	0	3	4	7
Mastitis clinical YTD (tgt below 64 yr end)	0	0	3	7	14
Bulk milk SCC (tgt Avg below 150)	0	0	253	223	273
Lame new cases	0	0	0	3	7
Lame ytd	0	0	0	3	10
Lame days YTD (Tgt below 1000 yr end)	0	0	0	21	70
Other/Colostrum	0	0	72	69	44
Milking twice a day into vat	0	56	119	205	305
Milking once a day into vat	0	0	0	0	10
Small herd	0	0	0	0	0
Main Herd	0	56	119	205	305
MS/cow/day (Actual kg / Cows into vat only)	0.00	0.00	1.55	1.94	2.12
MS/cow to date (total kgs / Peak Cows	0	0	2	2	12
MS/ha/day (total kgs / ha used)	0.00	0.00	0.77	1.83	3.25
Herd Average Cond'n Score	0.00	0.00	0.00	0.00	0.00
Monitor group LW kg WOW early MA calvers	0	0	0	0	0
Soil Temp Avg Aquaflex	5.8	0.0	5.0	5.0	7.0
Growth Rate (kgDM/ha/day)	20	11	11	20	46
Plate meter height - ave half-cms	15.9	16.1	15.7	15.1	14.9
Ave Pasture Cover (x140 + 500)	2723	2748	2693	2618	2591
Surplus/[defict] on feed wedge- tonnes	0	0	0	0	0
Pre Grazing cover (ave for week)	3600	3650	3700	3800	3400
Post Grazing cover (ave for week)	1500	1500	1500	1500	1500
Highest pregrazing cover	3600	3650	3700	3800	3400
Area grazed / day (ave for week)	0.11	0.17	0.97	1.89	2.84
Grazing Interval	61	41	165	85	56
Milkers Offered/grazed kg DM pasture	0.0	0.0	0.0	0.0	0.0
Estimated intake pasture MJME	0	0	0	0	0
Milkers offered kg DM Grass silage	0	0	0	0	0
Silage MJME/cow offered	0	0	0	0	0
Estimated intake Silage MJME	0	0	0	0	0
Estimated total intake MJME	0	0	0	0	0
Target MJME Offered/eaten (includes 6% waste)	0	0	0	0	0
Pasture ME (pre grazing sample)	0.0	0.0	0.0	0.0	12.9
Pasture % Protein	0.0	0.0	0.0	0.0	18.2
Pasture % DM - Concern below 16%	0.0	0.0	0.0	0.0	21.7
Pasture % NDF Concern < 33	0.0	0.0	0.0	0.0	35.2
Mowed pre or post grazing YTD		0.0	0.0	0.0	0.0
Total area mowed YTD		0.0	0.0	0.0	0.0
Supplements fed to date kg per cow (560 peak)	0.0	0.0	0.0	0.0	0.0
Supplements Made Kg DM / ha cumulative	0	0	0	0	0
Units N applied/ha and % of farm	0	0	0	0	0
Kgs N to Date (whole farm)	0	0	0	0	0
Rainfall (mm)	2.4	3.2	20.6	3.2	0
Aquaflex topsoil rel. to fill point target 60 - 80%	80-90	70-80	90-100	80-90	80-90

Next farm walk: Tuesday 30th August 2016 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 16th August 2016

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

Critical issues for the short term

1. **Monitor average pasture cover and shape of the wedge on the milking platform to match spring rotation planner through until 27 September 2016.**
2. **Monitor cow BCS to ensure remaining later calving cows also meet BCS targets at calving (min 5 for MA cows and 5.5 for R2's and R3yr's) whilst avoiding risk of overconditioning of later calving cows.**
3. **All newborn calves receive excellent care with regards to colostrum management, feeding, housing and health care**

Key Numbers - week ending Tuesday 16th August 2016

Ave Past Cover	2618 kgDM/ha	Past Growth Rate	20 kgDM/ha/day
Round length	85 days (for 160 ha)	Ave Supplement used	0
No Cows on farm	278	Ave Soil Temp (week)	5.0°C
Milk Production (average for the week)	1.94 kg MS/cow		

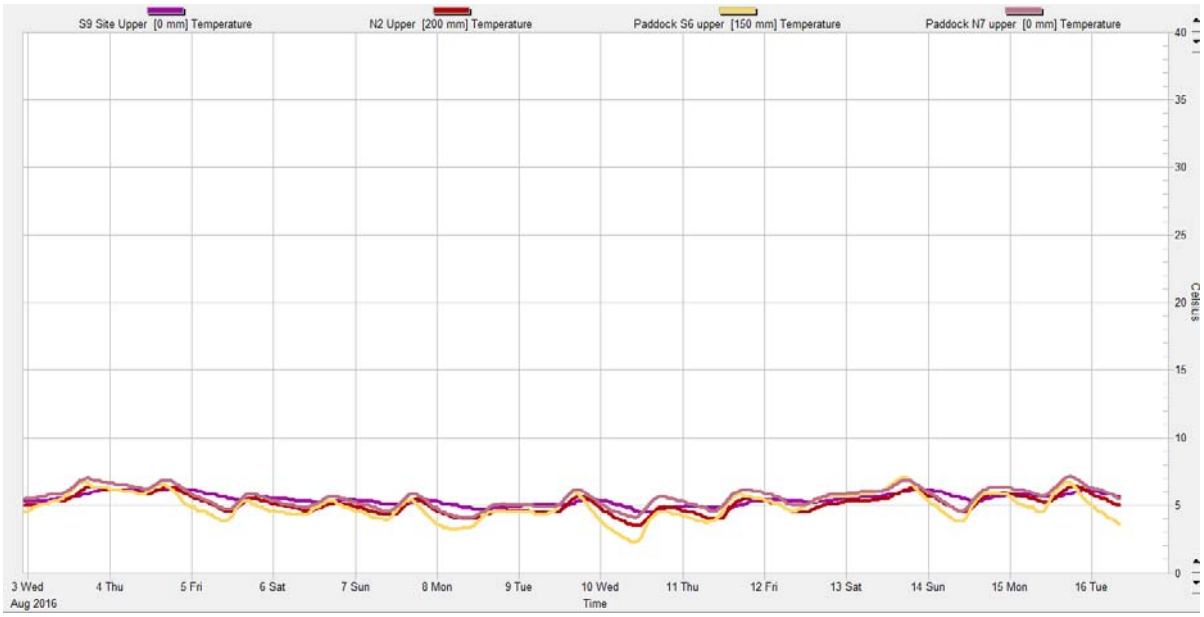
Herd Management

4. 120 dry cows are currently on the milking platform grazing behind the milking cows to tidy up post-grazing residuals. 94 pre-calving cows (calving date till 10th September) are at the East block with springing heifers in a separate group from the springing mixed age cows.
5. Springers are being fed pasture and silage with 100g of magnesium oxide dusted on their daily pasture break.
6. 64 freshly calved colostrum cows are receiving pasture dusted with 100g of magnesium oxide and 100g of limeflour, and are receiving pasture only with no supplementary feeds.
7. There are now 205 cows in the milking herd. Milkers are on approximately 82m^2/cow/day of pasture with no supplement, heading into pre-grazing pasture covers of 3400kgDM/ha.
8. 77 late calving cows remain grazing off at Hororata.
9. All calving cows and heifers have received a B12 and Selenium shot precalving on 20th July 2016.
10. Trace minerals and magnesium chloride are running through the stock water to all cows on the milking platform and at East block.
11. 96 heifer replacements have been tagged so far.

Growing Conditions

12. The average 9 am soil temperature has remained unchanged from last week's 5.0°C.

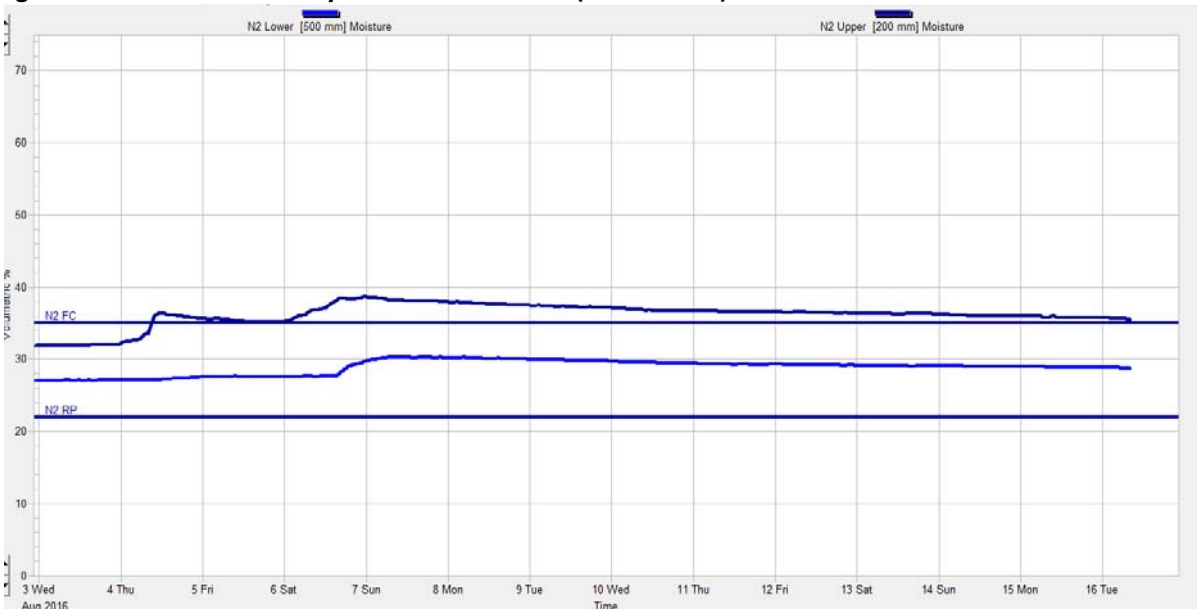
Figure 1: Soil temperature history for the last 2 weeks



13. The farm received 3.2 mm of rain over the past week. The Aquaflex monitoring indicates that soil moisture on farm is slowly but steadily decreasing and is now just above field capacity. Pasture utilisation remains on average excellent, with minimal damage to pastures/soils by grazing cows. There are still signs of mild soil moisture saturation in the south western corner of south block.

    We will continue to observe how the moisture meter readings evolve as we progress through August.

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

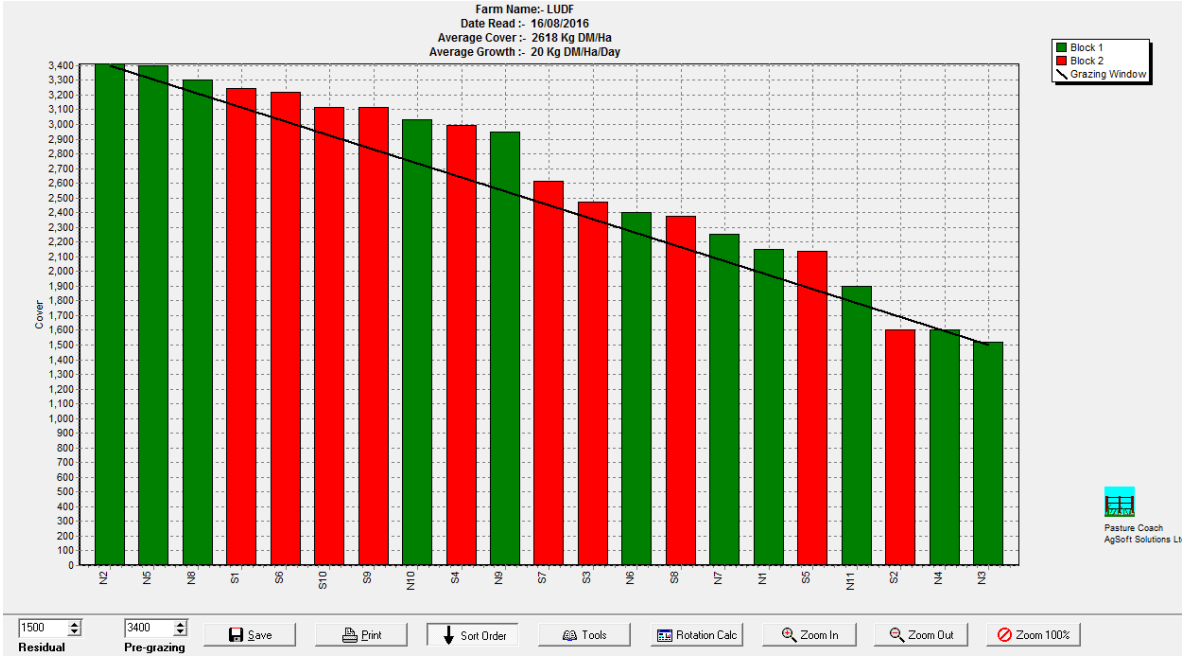


Pasture and Feed Management

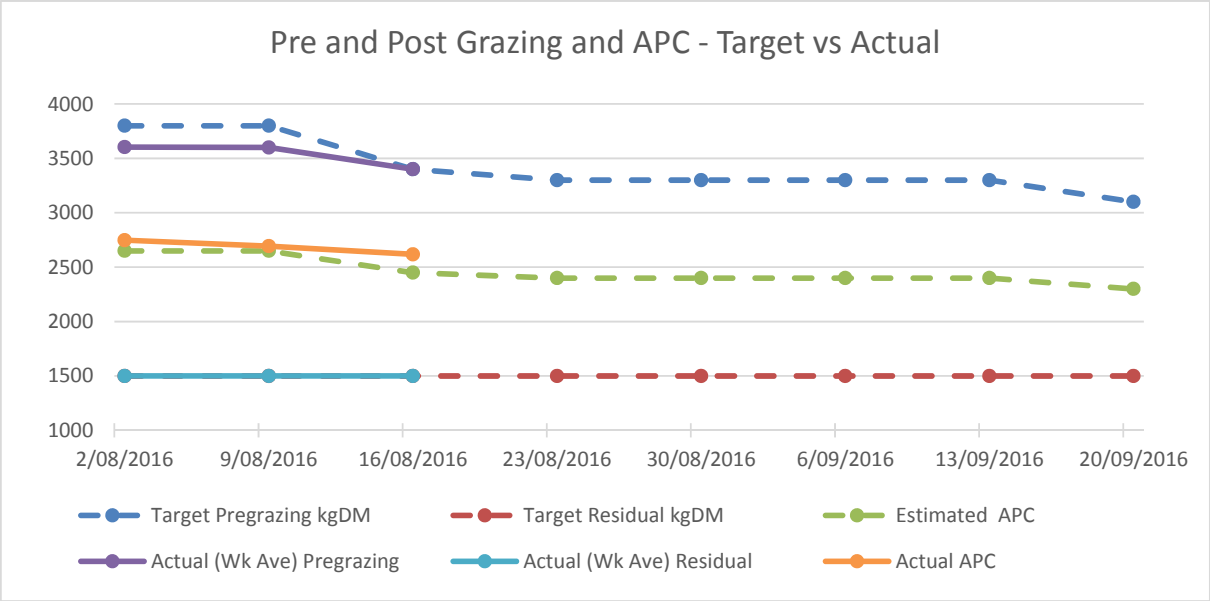
14. Fertility patches remain obvious in a number of paddocks though not necessarily at the top of the wedge.
15. Current average pasture cover is 2618 kgDM/ha, a slight drop from the previous week. This was expected as soil temperatures stayed at 5°C and cow demand is increasing daily as cows calve on East block and transfer daily across to the milking platform. Some areas of some paddocks are showing some frosting damage, particularly in lower lying areas of paddocks in South Block. Pasture utilisation remains relatively good, however the colostrum cow paddock has suffered some pugging damage and will probably need oversowing with ryegrass when conditions improve.

16. A group of 120 dry cows has been brought onto the platform from East Block to help achieve post-grazing residuals in paddocks grazed previously by milkers. This was necessary due to the high covers in those paddocks and the heavier stems at the base of these pastures, particularly in the areas of fertility patches. The practice may be discontinued in the next few paddocks as pre grazing covers are down to around 3400 kgDM/ha and should be more easily grazed by the milkers to reach acceptable post-grazing target levels.

Figure 3: This week's feed wedge



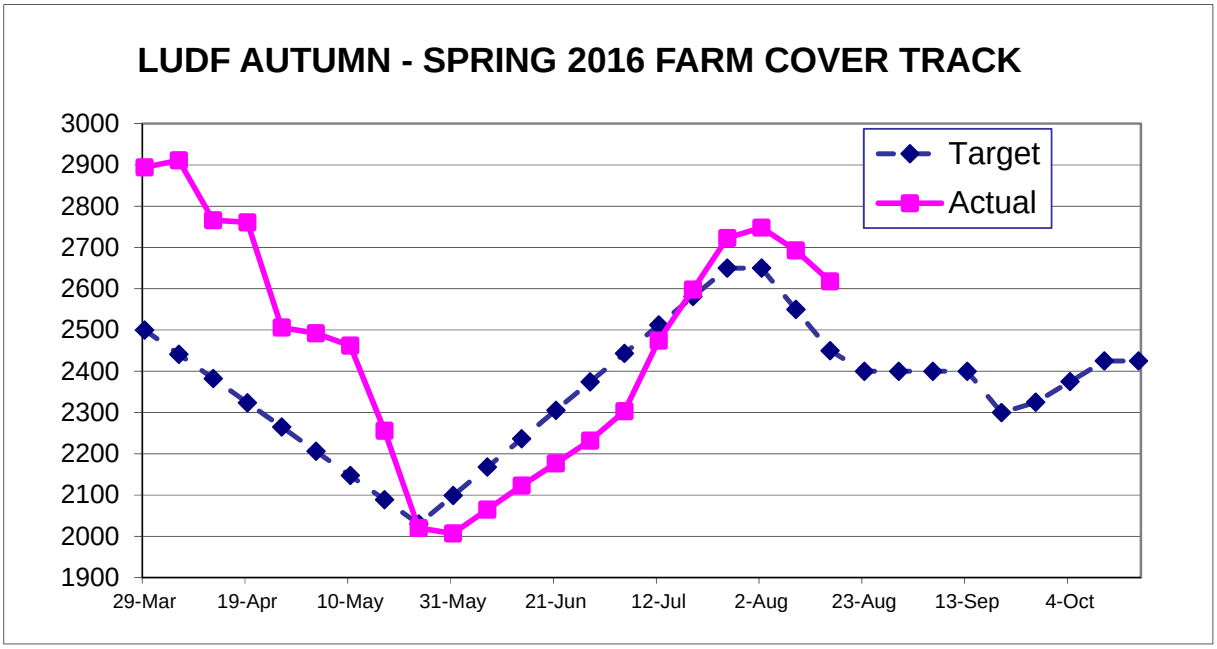
17. Whilst this weeks feed wedge does look somewhat uneven, the two key trends that we're pleased to see are that:
    (a) Average pasture covers in paddocks at the top of the wedge are around 3400 kgDM/ha. These top end paddocks remain of relatively good quality and should be well utilised by milkers. Dry cows will be used as required, if residuals are not achieved by milkers.
    (b) The bottom end of the wedge has not lifted much this week. The cold weather has definitely affected grass growth this past week with a few paddocks coming back in cover on the South block, particularly those which are much wetter underfoot than the North block.
18. The demand line on the above pasture wedge graph is calculated as follows:
    a. Target average pasture cover (APC) from the pasture tracker (see next page): 2450 kgDM/ha
    b. Target post-grazing residual: 1500 kgDM/ha
    c. Using the target APC and the target residual above, it allows the pregrazing target to be calculated as follows: Pregraze target = (targets APC-target residual) x 2+ 1500 OR, Pregraze cover = (2450-1500)x2+1500 = 3400kgDM/ha pre-grazing target
19. With 205 milking cows on the platform, and pregrazing covers of 3400kgDM/ha grazed down to 1500kgDM/ha and an allocation of 15.5 kgDM/cow/day, the daily allocation will be lifting to around 82m^2/cow/day – in line with our planned spring rotation planner.
20. Below is our plan vs actual SRP:



21. Below is the target vs actual total area grazed and supplement used trackers:

Week Ending	Average Number Milking and colostrum Cows	Planned area grazed per week	Planned Cumulative area grazed	Planned Cumulative Supplements fed (kgDM/wk)	Actual area grazed per week	Actual Cumulative area grazed per week	Actual Supplements fed (kgDM/week)	Actual Cum. Suppl fed (tot kgDM)
26/07/2016								
2/08/2016	45	5.7	5.7	0	2	2	0	0
9/08/2016	141	10.9	16.6	0	6.8	8.8	0	0
16/08/2016	232	16.7	33.3	5968	13.25	22.05	0	0
23/08/2016		20.5	53.8	16966		22.05		0
30/08/2016		22.6	76.4	31084		22.05		0
6/09/2016		24.3	100.7	50614		22.05		0
13/09/2016		28.5	129.2	68429		22.05		0
20/09/2016		37.2	166.5	82394		22.05		0
27/09/2016						22.05		0

22. Below is our autumn/winter pasture cover tracker.



23. It is pleasing to see that the June and July milder growing conditions and the decision back in June to remove the remaining dry cows has contributed to the farm now continuing to carry a higher than planned APC. This higher than plan APC into the second week of calving, is continuing to allow us (so far) to avoid the need to feed supplements. This puts the farm in a good position in terms of having a small surplus of pasture this week vs. demand (around 26 t DM across 160 ha).
24. This small surplus of 26 tonnes DM across the milking platform could be short lived if the wet and frosty conditions continue.

Feeding Management for the coming week:

25. For the coming week our aim is to:
    a. Follow the spring rotation planner in terms of area allocated per day.
    b. Feed the colostrum and milking cows fully on pasture only, trying to encourage them to consume as much pasture as they can eat, moving fences as required, and bringing in supplements if required to strictly follow the SRP. Currently, supplements are not required however this will be monitored through the week according to the weather, pasture utilisation, pre-grazing pasture covers and cow behaviour.
    c. Continue to use dry cows if milkers struggle to hit post-grazing residuals.
26. Springers will continue to be fed a diet of pasture and silage at the East Block with springers only coming across to the milking platform if they are required behind the milking cows.

LUDF Weekly report	12-Jul-16	26-Jul-16	2-Aug-16	9-Aug-16	16-Aug-16
Farm grazing ha (available to milkers)	160	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	0/40 /177/369	0/191 /126/215	0/182/50 /255	0/311/0/77	120/94/0/77
Culls (Includes culls put down & empties)	0	0	0	0	0
Culls total to date	0	1	1	1	1
Deaths (Includes cows put down)	0	0	1	0	1
Deaths total to date	0	0	1	1	2
Calved Cows available (Peak Number 560)	4	47	0	191	288
Treatment / Sick mob total	0	1	2	3	9
Mastitis clinical treatment	0	0	0	3	4
Mastitis clinical YTD (tgt below 64 yr end)	0	0	0	3	7
Bulk milk SCC (tgt Avg below 150)	0	0	0	253	223
Lame new cases	0	0	0	0	3
Lame ytd	0	0	0	0	3
Lame days YTD (Tgt below 1000 yr end)	0	0	0	0	21
Other/Colostrum	0	0	0	72	69
Milking twice a day into vat	0	0	56	119	205
Milking once a day into vat	0	0	0	0	0
Small herd	0	0	0	0	0
Main Herd	0	0	56	119	205
MS/cow/day (Actual kg / Cows into vat only)	0.00	0.00	0.00	1.55	1.94
MS/cow to date (total kgs / Peak Cows	0	0	0	2	2
MS/ha/day (total kgs / ha used)	0.0	0.00	0.00	0.77	1.83
Herd Average Cond'n Score	0.00	0.00	0.00	0.00	0.00
Monitor group LW kg WOW early MA calvers	0	0	0	0	0
Soil Temp Avg Aquaflex	7.2	5.8	0.0	5.0	5.0
Growth Rate (kgDM/ha/day)	13	20	11	11	20
Plate meter height - ave half-cms	14.1	15.9	16.1	15.7	15.1
Ave Pasture Cover (x140 + 500)	2474	2723	2748	2693	2618
Surplus/[defict] on feed wedge- tonnes	0	0	0	0	0
Pre Grazing cover (ave for week)	0	3600	3650	3700	3800

Post Grazing cover (ave for week)	0	1500	1500	1500	1500
Highest pregrazing cover	0	3600	3650	3700	3800
Area grazed / day (ave for week)	0.00	0.11	0.17	0.97	1.89
Grazing Interval	0	61	41	165	85
Milkers Offered/grazed kg DM pasture	0.0	0.0	0.0	0.0	0.0
Estimated intake pasture MJME	0	0	0	0	0
Milkers offered kg DM Grass silage	0	0	0	0	0
Silage MJME/cow offered	0	0	0	0	0
Estimated intake Silage MJME	0	0	0	0	0
Estimated total intake MJME	0	0	0	0	0
Target MJME Offered/eaten (includes 6% waste)	0	0	0	0	0
Pasture ME (pre grazing sample)	0.0	0.0	0.0	0.0	0.0
Pasture % Protein	0.0	0.0	0.0	0.0	0.0
Pasture % DM - Concern below 16%	0.0	0.0	0.0	0.0	0.0
Pasture % NDF Concern < 33	0.0	0.0	0.0	0.0	0.0
Mowed pre or post grazing YTD			0.0	0.0	0.0
Total area mowed YTD			0.0	0.0	0.0
Supplements fed to date kg per cow (560 peak)	0.0	0.0	0.0	0.0	0.0
Supplements Made Kg DM / ha cumulative	0	0	0	0	0
Units N applied/ha and % of farm	0	0	0	0	0
Kgs N to Date (whole farm)	0	0	0	0	0
Rainfall (mm)	1.2	2.4	3.2	20.6	3.2
Aquaflex topsoil rel. to fill point target 60 - 80%	80-100	80-90	70-80	90-100	80-90

Next farm walk: Tuesday 23rd August 2016 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 9th August 2016

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

Critical issues for the short term

1. **Monitor average pasture cover and shape of the wedge on the milking platform to match spring rotation planner through until 27 September 2016.**
2. **Monitor cow BCS to ensure remaining later calving cows also meet BCS targets at calving (min 5 for MA cows and 5.5 for R2's and R3yr's) whilst avoiding risk of overconditioning of later calving cows.**
3. **All newborn calves receive excellent care with regards to colostrum management, feeding, housing and health care**

Key Numbers - week ending Tuesday 9th August 2016

Ave Past Cover	2693 kgDM/ha	Past Growth Rate	13 kgDM/ha/day
Round length	165 days (for 160 ha)	Ave Supplement used	0
No Cows on farm	191	Ave Soil Temp (week)	5.0 degrees

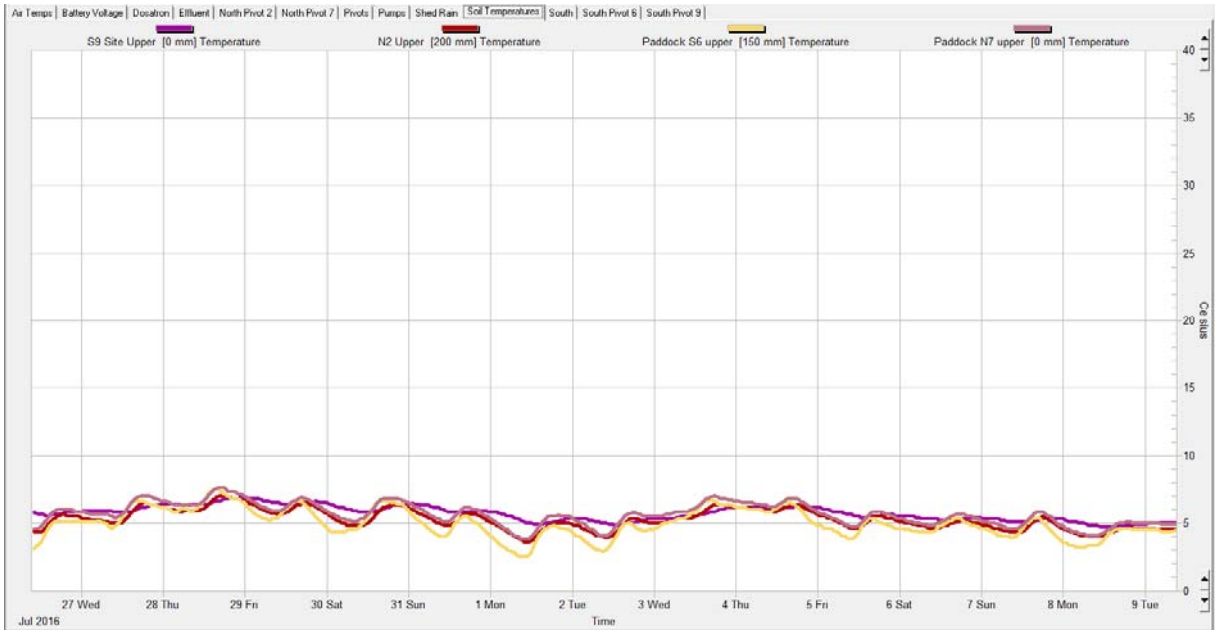
Herd Management

4. 310 pre-calving cows (calving date till 10th September) are at the East block with springing heifers in a separate group from the springing mixed age cows.
5. Springers are being fed pasture and silage with 100g of magnesium oxide dusted on their daily pasture break.
6. 72 freshly calved colostrum cows are receiving pasture dusted with 100g of magnesium oxide and 100g of limeflour, and no supplementary feeds.
7. There are now 119 milking cows. Milkers are on approximately 69m^2/cow/day of pasture with no supplement.
8. 77 late calving cows remain grazing off at Hororata.
9. All calving cows and heifers have received a B12 and Selenium shot precalving on 20th July 2016.
10. Trace minerals and magnesium chloride are running through the stock water to all cows on the milking platform and at East block.
11. 58 heifer replacements have been tagged so far.

Growing Conditions

12. The average 9 am soil temperature for the week decreased from last week by 0.1°C, to 5.0°C. This is exactly the same temperature than this time last season.

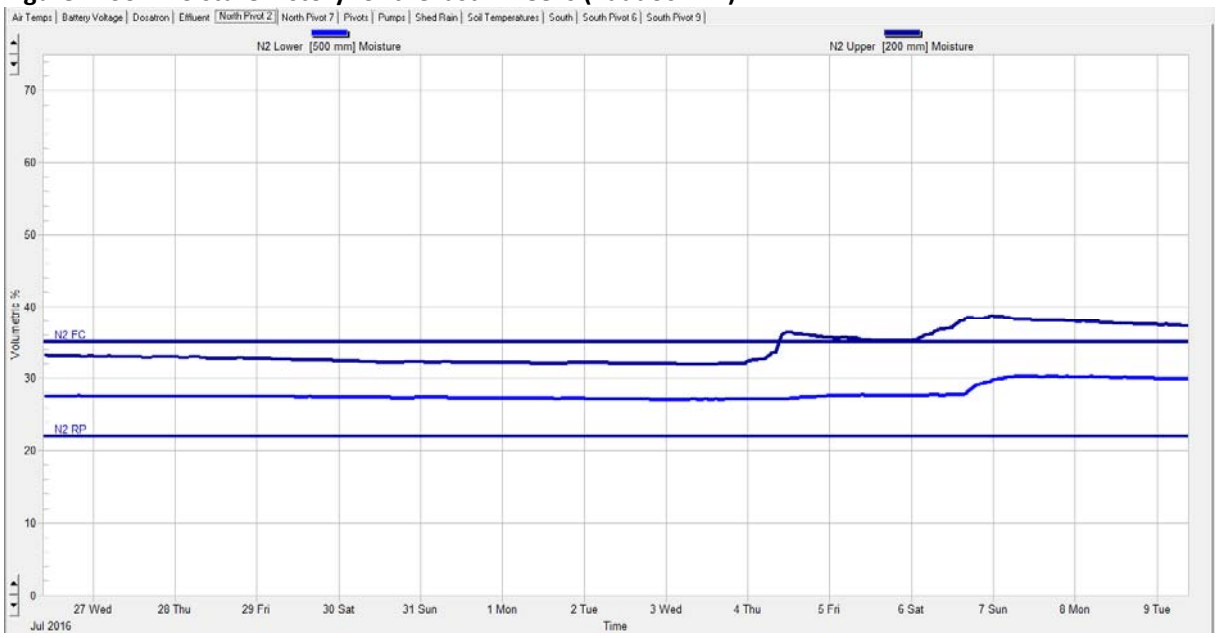
Figure 1: Soil temperature history for the last 2 weeks



13. The farm received 20.6 mm of rain over the past week. The Aquaflex monitoring indicates that the farm soils have come back well above field capacity at this time and conditions underfoot certainly agree with this, with some paddocks, mostly in the south block showing clear signs of water saturation.

    We will continue to observe how the moisture meter readings evolve as we progress through August.

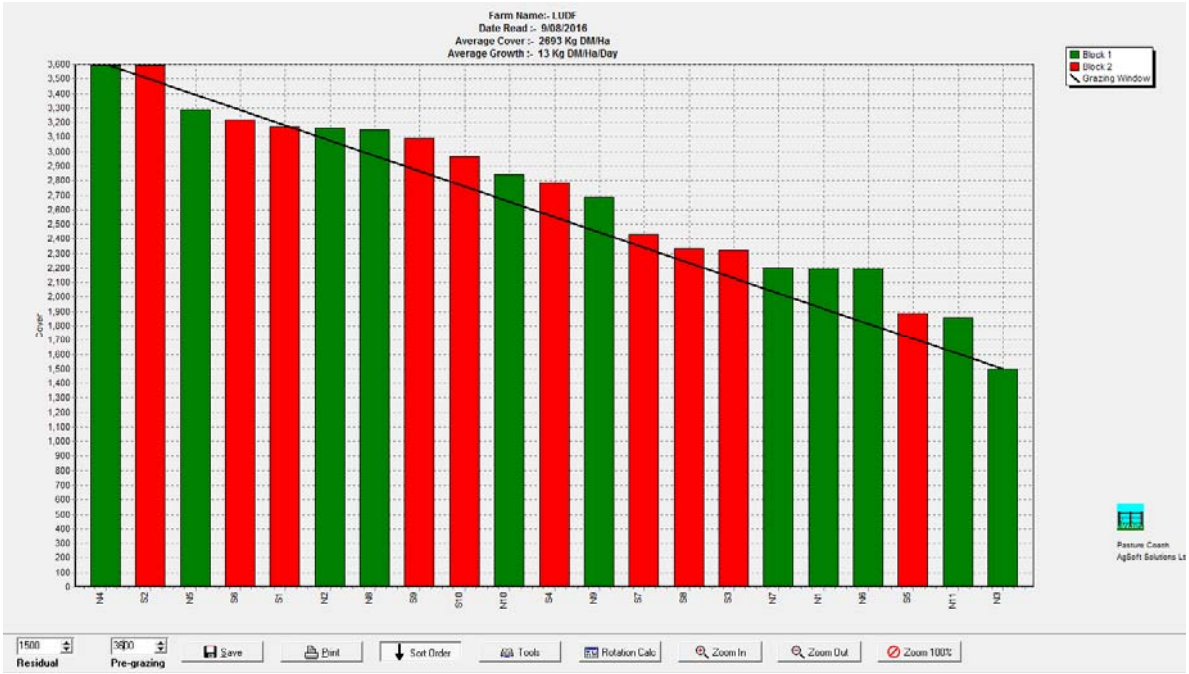
Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



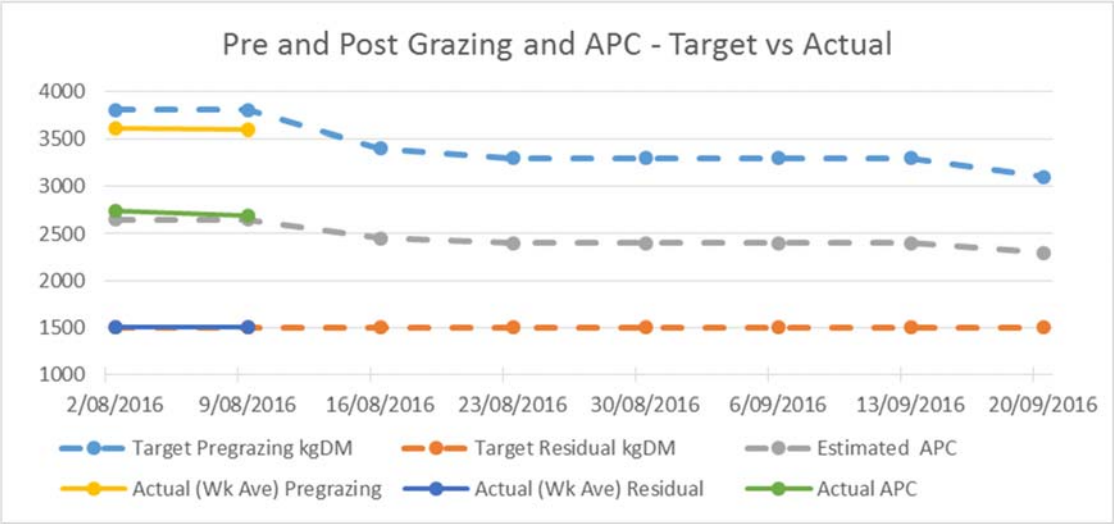
Pasture and Feed Management

14. Fertility patches remain obvious in a number of paddocks though not necessarily at the top of the wedge
15. Current average pasture cover is 2693 kgDM/ha, a slight drop on the previous week. This was expected due to the cold weather of recent days. Some of the paddocks are showing some frosting damage. The newer ryegrasses appear to be tolerating the frost better than the paddocks that still contain older germplasm.
16. Pasture utilisation remains relatively good, however the colostrum cow paddock has suffered some pugging damage and will probably need oversowing with ryegrass when conditions improve.

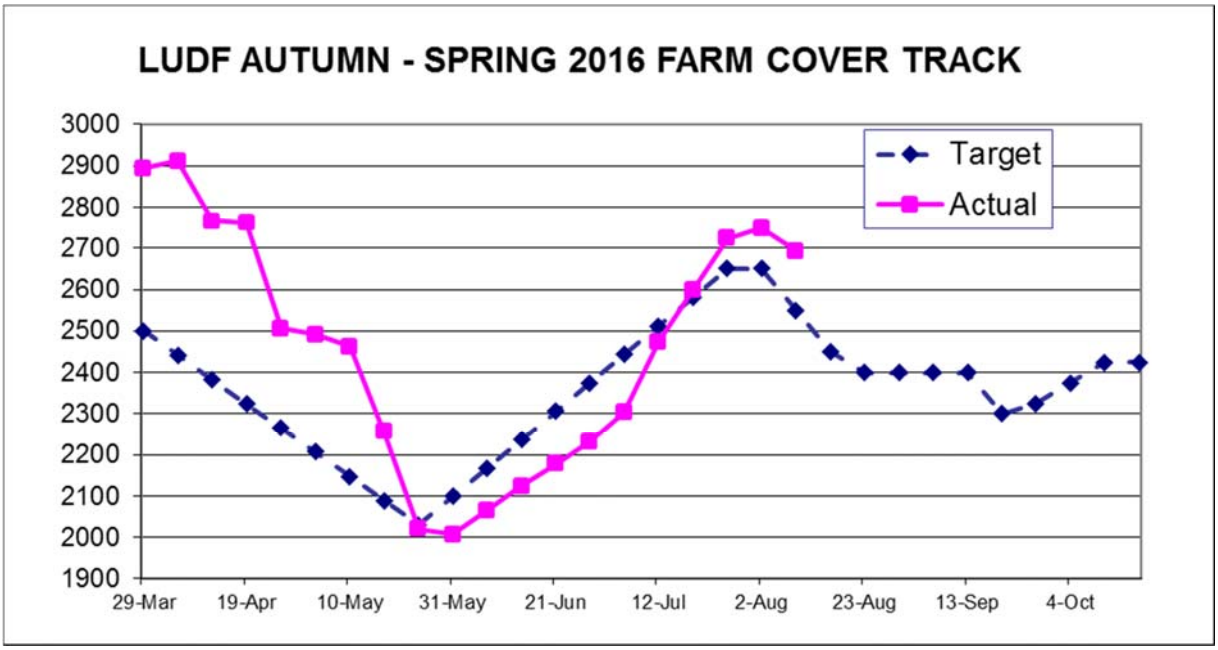
Figure 3: This week's feed wedge



17. Whilst this weeks feed wedge does look somewhat uneven, the two key trends that we're pleased to see are that:
    (a) The top area of the wedge is relatively flat, with the high paddocks (around 3600kgDM/ha) starting to tip over. These top end paddocks remain of relatively good quality and should be well utilised by milkers.
    (b) The bottom end of the wedge has not lifted much this week. The cold weather has definitely affected grass growth this past week with a few paddocks coming back in cover on the south block, particularly which are much wetter underfoot than the north block.
18. The demand line on the above pasture wedge graph is calculated as follows:
    a. Target average pasture cover (APC) from the pasture tracker (see next page): 2550 kgDM/ha
    b. Target post-grazing residual: 1500 kgDM/ha
    c. Using the target APC and the target residual above, it allows the pregrazing target to be calculated as follows: Pregraze target = (targets APC-target residual) x 2+ 1500 OR, Pregraze cover = (2550-1500)x2+1500 = 3600kgDM/ha pre-grazing target
19. With 191 cows on the platform, and pregrazing covers of 3600kgDM/ha grazed down to 1500kgDM/ha and an allocation of 14 kgDM/cow/day, the daily allocation will be lifting to around 66m^2/cow/day – in line with our planned spring rotation planner.
20. Below is our plan vs actual SRP:



21. Below is our autumn/winter pasture cover tracker.



22. It is pleasing to see that the June and July milder growing conditions and the decision back in June to remove the remaining dry cows has contributed to the farm now continuing to carry a higher than planned APC. Despite the colder, wet conditions this week, this higher than plan APC into the second week of calving, is continuing to allow us (so far) to avoid the need to feed supplements. This puts the farm in a good position in terms of having a small surplus of pasture this week vs. demand (around 22 t DM across 160 ha).
23. This small surplus of 22 tonnes DM across the milking platform could be short lived if the wet and frosty conditions continue.

Feeding Management for the coming week:

24. For the coming week our aim is to:
    a. Follow the spring rotation planner in terms of area allocated per day
    b. Feed the colostrum and milking cows fully on pasture only, trying to encourage them to consume as much pasture as they can eat, moving fences as required, and bringing in supplements if required to strictly follow the SRP. Currently, supplements are not required

however this will be monitored through the week according to the weather, pasture utilisation, pre-grazing pasture covers and cow behaviour).

25. Springers will continue to be fed a diet of pasture and silage at the East Block with no dry or springing cows coming onto the milking platform.

LUDF Weekly report	28-Jun-16	12-Jul-16	26-Jul-16	2-Aug-16	9-Aug-16
Farm grazing ha (available to milkers)	160	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	0/15 /52/512	0/40 /177/369	0/191 /126/215	0/182/50 /255	0/311/0/77
Culls (Includes culls put down & empties)	0	0	0	0	0
Culls total to date	0	0	1	1	1
Deaths (Includes cows put down)	0	0	0	1	0
Deaths total to date	0	0	0	1	1
Calved Cows available (Peak Number 560)	1	4	47	0	191
Treatment / Sick mob total	0	0	1	2	3
Mastitis clinical treatment	0	0	0	0	3
Mastitis clinical YTD (tgt below 64 yr end)	0	0	0	0	3
Bulk milk SCC (tgt Avg below 150)	0	0	0	0	253
Lame new cases	0	0	0	0	0
Lame ytd	0	0	0	0	0
Lame days YTD (Tgt below 1000 yr end)	0	0	0	0	0
Other/Colostrum	0	0	0	0	72
Milking twice a day into vat	0	0	0	56	119
Milking once a day into vat	0	0	0	0	0
Small herd	0	0	0	0	0
Main Herd	0	0	0	56	119
MS/cow/day (Actual kg / Cows into vat only)	0.00	0.00	0.00	0.00	1.55
MS/cow to date (total kgs / Peak Cows	0	0	0	0	2
MS/ha/day (total kgs / ha used)	0.0	0.0	0.00	0.00	0.77
Herd Average Cond'n Score	0.00	0.00	0.00	0.00	0.00
Monitor group LW kg WOW early MA calvers	0	0	0	0	0
Soil Temp Avg Aquaflex	8.8	7.2	5.8	0.0	5.0
Growth Rate (kgDM/ha/day)	18	13	20	11	11
Plate meter height - ave half-cms	12.4	14.1	15.9	16.1	15.7
Ave Pasture Cover (x140 + 500)	2232	2474	2723	2748	2693
Surplus/[defict] on feed wedge- tonnes	0	0	0	0	0
Pre Grazing cover (ave for week)	0	0	3600	3650	3700
Post Grazing cover (ave for week)	0	0	1500	1500	1500
Highest pregrazing cover	0	0	3600	3650	3700
Area grazed / day (ave for week)	0.00	0.00	0.11	0.17	0.97
Grazing Interval	0	0	61	41	165
Milkers Offered/grazed kg DM pasture	0.0	0.0	0.0	0.0	0.0
Estimated intake pasture MJME	0	0	0	0	0
Milkers offered kg DM Grass silage	0	0	0	0	0
Silage MJME/cow offered	0	0	0	0	0
Estimated intake Silage MJME	0	0	0	0	0
Estimated total intake MJME	0	0	0	0	0
Target MJME Offered/eaten (includes 6% waste)	0	0	0	0	0
Pasture ME (pre grazing sample)	0.0	0.0	0.0	0.0	0.0
Pasture % Protein	0.0	0.0	0.0	0.0	0.0
Pasture % DM - Concern below 16%	0.0	0.0	0.0	0.0	0.0
Pasture % NDF Concern < 33	0.0	0.0	0.0	0.0	0.0

Mowed pre or post grazing YTD				0.0	0.0
Total area mowed YTD				0.0	0.0
Supplements fed to date kg per cow (560 peak)	0.0	0.0	0.0	0.0	0.0
Supplements Made Kg DM / ha cumulative	0	0	0	0	0
Units N applied/ha and % of farm	0	0	0	0	0
Kgs N to Date (whole farm)	0	0	0	0	0
Rainfall (mm)	11.4	1.2	2.4	3.2	20.6
Aquaflex topsoil rel. to fill point target 60 - 80%	80-100	80-100	80-90	70-80	90-100

Next farm walk: Tuesday 16th August 2016 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 2nd August 2016

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

Critical issues for the short term

1. **Monitor dry cows for health issues.**
2. **Monitor average pasture cover and shape of the wedge on the milking platform to match spring rotation planner through until 27 September 2016.**
3. **Monitor cow BCS to ensure remaining later calving cows also meet BCS targets at calving (min 5 for MA cows and 5.5 for R2's and R3yr's) whilst avoiding risk of overconditioning of later calving cows.**

Key Numbers - week ending Tuesday 2nd August 2016

Ave Past Cover	2748 kgDM/ha	Past Growth Rate	11 kgDM/ha/day
Round length	80 days (for 160 ha)	Ave Supplement used	0
No Cows on farm	96	Ave Soil Temp (week)	5.1 degrees

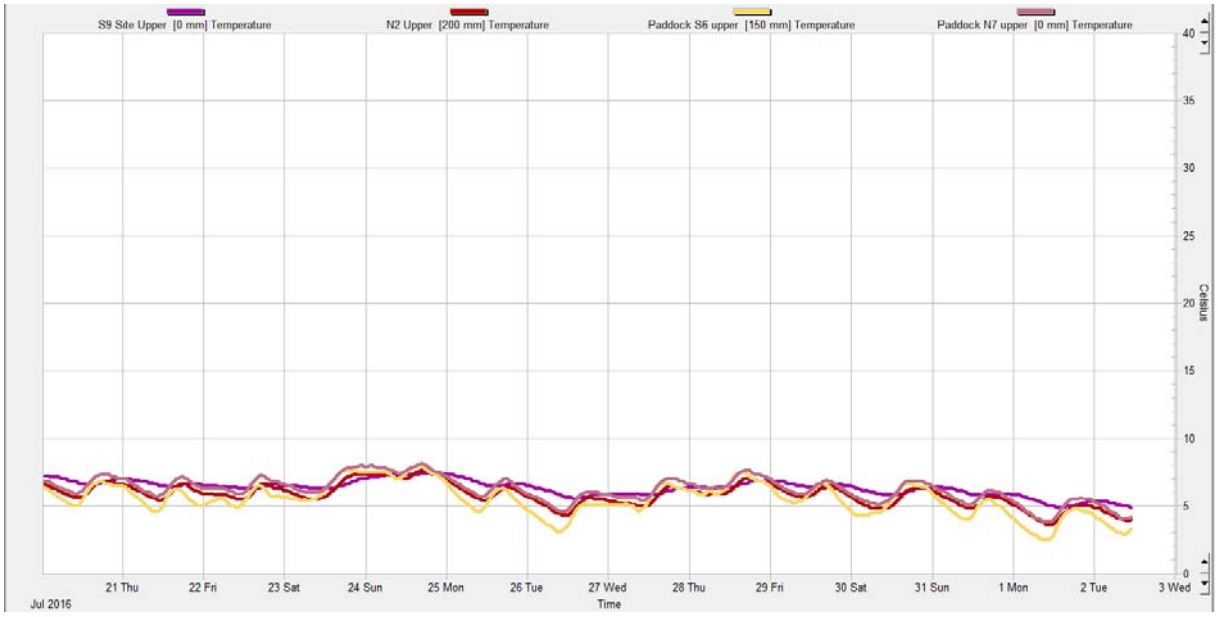
Herd Management

4. 182 pre-calving cows (calving date till 10th August) are at the East block with springing heifers in a separate group from the springing mixed age cows.
5. Springers are being fed pasture and silage with 100g of magnesium oxide dusted on their daily pasture break.
6. 38 freshly calved colostrum cows are receiving pasture dusted with 100g of magnesium oxide and 100g of limeflour, and no supplementary feeds.
7. There are now 58 milking cows with the first milk pick up this morning. Milkers are on approximately 50m^2/cow/day of pasture with no supplement. Pasture is being dusted with 100g of magnesium oxide per cow per day and will soon also start receiving 100g of limeflour per cow per day.
8. 382 cows remain grazing off.
9. The next draft from the dry cows will be done tomorrow, Wednesday the 3rd August when all cows calving up until 10th September will also be brought to the East block.
10. All calving cows and heifers have received a B12 and Selenium shot precalving on 20th July 2016.
11. Trace minerals and magnesium chloride are running through the stock water to all cows on the milking platform and at East block.
12. 24 heifer replacements have been tagged so far.

Growing Conditions

13. The average 9 am soil temperature for the week decreased from last week by 0.7°C, to 5.1°C. This is 1.1°C colder than at the same time last season.

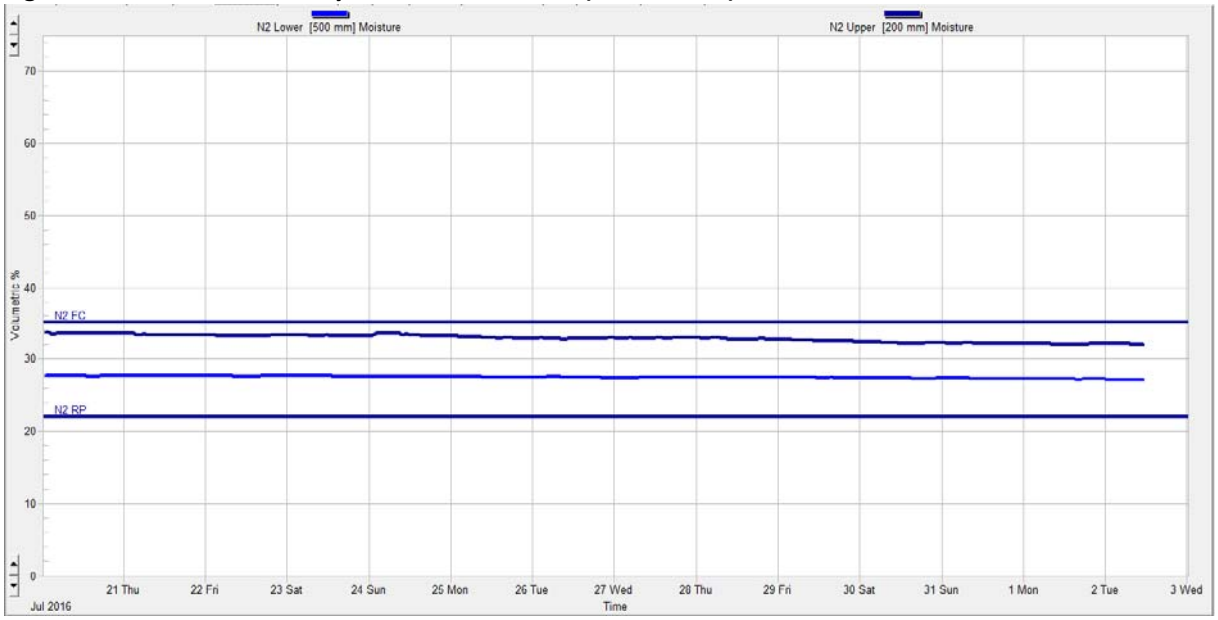
Figure 1: Soil temperature history for the last 2 weeks



14. The farm received 3.2 mm of rain over the past week. The Aquaflex monitoring indicates that the farm soils continue to fall below field capacity and conditions – not unsurprising given that the weekly evapotranspiration (ET) was 7.3 mm for the week. Conditions underfoot remain very firm and pasture utilisation remains excellent.

    We will continue to observe how the moisture meter readings evolve as we progress through August.

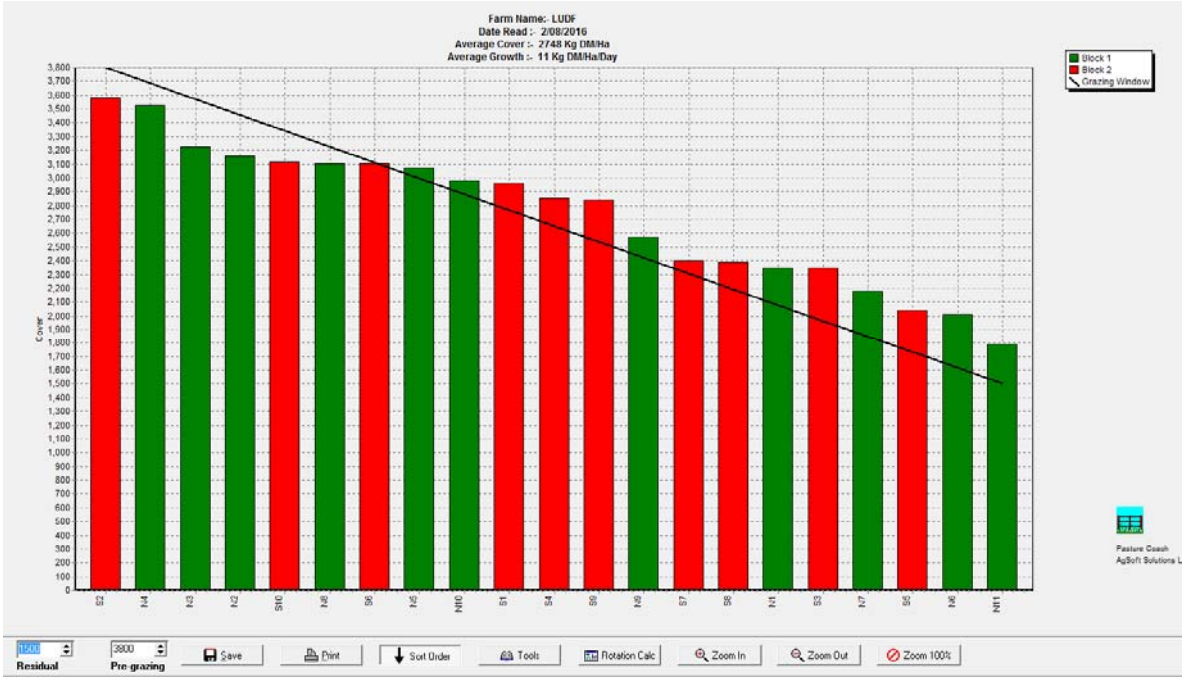
Figure 2: Soil moisture history for the last 2 weeks (Paddock N2).



Pasture and Feed Management

15. Fertility patches remain obvious in a number of paddocks though not necessarily at the top of the wedge
16. Current average pasture cover is 2748 kgDM/ha, a slight lift on the previous week. This was pleasing to see given the severe frosts of recent days. We had expected some of the paddocks at the top end of the wedge to have shown frosting damage but this doesn't seem to be the case. The tetraploid ryegrasses seem to be holding up well, in comparison the few paddocks that still contain straight diploid ryegrasses appear to have taken more frost damage.
17. Pasture utilisation continues to be excellent with ongoing dry conditions underfoot.

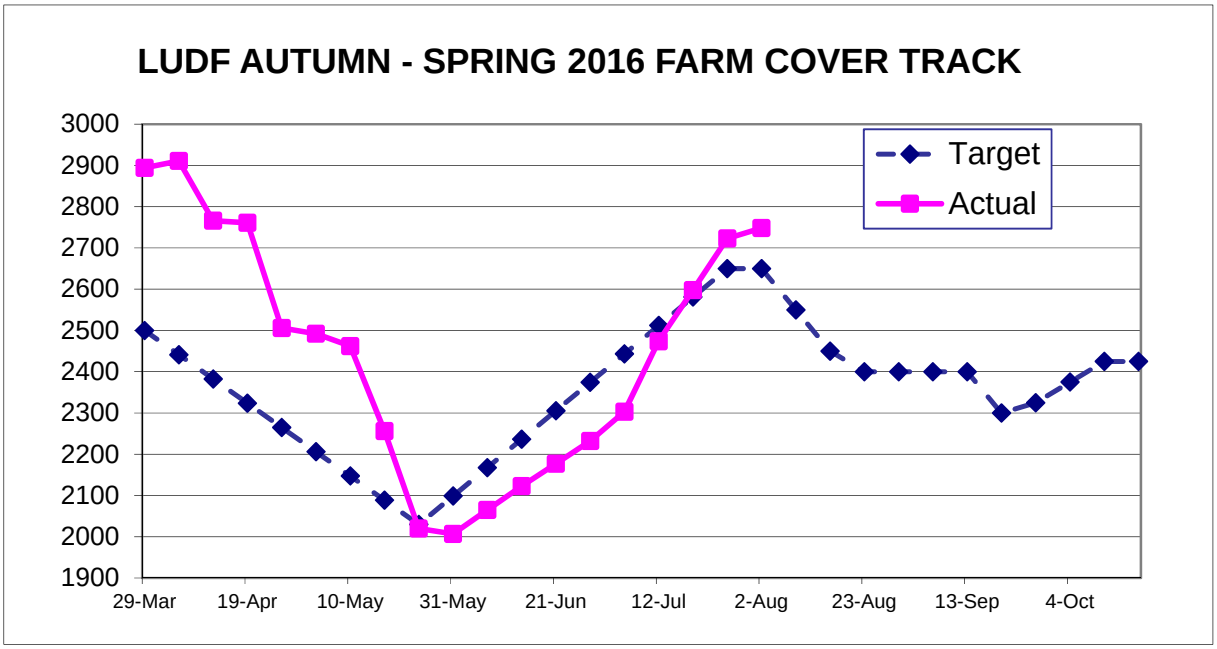
Figure 3: This week's feed wedge



18. Whilst this weeks feed wedge does look somewhat uneven, the two key trends that we're pleased to see are that:
    (a) The top area of the wedge is relatively flat, with no very high paddocks (greater than 3800kgDM/ha) starting to get too tall / tip over. These top end paddocks remain of relatively good quality and should be well utilised by milkers.
    (b) The bottom end of the wedge has lifted quite well and as these paddocks come up through the wedge over coming weeks, average pasture covers should be somewhat easier to manage as we move through into September.
19. The demand line on the above pasture wedge graph is calculated as follows:
    a. Target average pasture cover (APC) from the pasture tracker (see next page): 2650 kgDM/ha
    b. Target post-grazing residual: 1500 kgDM/ha
    c. Using the target APC and the target residual above, it allows the pregrazing target to be calculated as follows: Pregraze target = (targets APC-target residual) x 2+ 1500 OR, Pregraze cover = (2650-1500)x2+1500 = 3800kgDM/ha pre-grazing target
20. The target pregraze cover of 3800kgDM/ha is slightly higher than the current pre-graze cover of the paddock the cows are going into where they are grazing at the moment. The cows are reaching good residuals currently of around 1500kgDM/ha, it may be that the DM% of the pasture is slightly higher than we'd expect and cows are managing to find slightly more than the currently plated 3600 pre-grazing pasture covers.

21. With 96 cows on the platform, and pregrazing covers of 3600kgDM/ha grazed down to 1500kgDM/ha and an allocation of 14 kgDM/cow/day, the daily allocation will be lifted to around 65m^2/cow/day – in line with our planned spring rotation planner.

22. Below is our autumn/winter pasture cover tracker.



23. It is pleasing to see that the June and July milder growing conditions and the decision back in June to remove the remaining dry cows has contributed to the farm now continuing to carry a higher APC now than planned for start of calving (officially this week), and reducing the need to feed supplements. This puts the farm in a good position in terms of having a small surplus of pasture.
24. The feed wedge above estimates a feed surplus of 14 tonnes DM at this stage. This could be short lived if we have wet conditions or if grass stops growing

Feeding Management for the coming week:

25. For the coming week our aim is to feed the colostrum and milking cows as much grass as they can eat (moving fences as required) and monitor growth through the week. We don't anticipate needing to feed supplements for the coming week however we are watching forecast rain and cold conditions later this week.
26. With planned start of calving official starting this week, we have started following our Spring Rotation planner to make sure we allocate a fixed area of pasture per week – so that we don't reach the end of our first grazing rotation before the end of September.

LUDF SPRING 2016; Milking & Colostrum Cows - Targeting end of first round out to 27-9-2016 — Total Grazing area (MP) 160. ha

PLAN

Week	Date (week ending on this Tuesday)	Average Milking & colostrum cows	Area/cow/day (m^2)	Pregrazing Cover	Residual Cover	Approx APC	Pasture Intake/cow (kgDM)	Supplement eaten Intake (consumed kgDM)	Supplement offered (20% loss) (kgDM)	Total Intake (consumed kgDM)	Area grazed per day (ha)	Calc whole farm rotation length (days)	Area grazed per week (ha)	Cummulative area grazed (ha)	Silage fed out kgDM Per week	Silage fed out kgDM Cummulative	Total Silage fed/total cows
	26/07/2016	45				2650											
Week 1	2/08/2016	135	60	3800	1500	2650	13.8		0.0	13.8	0.81	197.5	5.7 ha	5.7	0	0	0.0
Week 2	9/08/2016	240	65	3800	1500	2650	15.0		0.0	15.0	1.56	102.6	10.9 ha	16.6	0	0	0.0
Week 3	16/08/2016	341	70	3400	1500	2450	13.3	2.0	2.5	15.3	2.39	67.0	16.7 ha	33.3	5968	5,968	11
Week 4	23/08/2016	419	70	3300	1500	2400	12.6	3.0	3.8	15.6	2.93	54.6	20.5 ha	53.8	10999	16,966	30
Week 5	30/08/2016	461	70	3300	1500	2400	12.6	3.5	4.4	16.1	3.23	49.6	22.6 ha	76.4	14118	31,084	56
Week 6	6/09/2016	496	70	3300	1500	2400	12.6	4.5	5.6	17.1	3.47	46.1	24.3 ha	100.7	19530	50,614	90
Week 7	13/09/2016	509	80	3300	1500	2400	14.4	4.0	5.0	18.4	4.07	39.3	28.5 ha	129.2	17815	68,429	122
Week 8	20/09/2016	532	100	3100	1500	2300	16.0	3.0	3.8	19.0	5.32	30.1	37.2 ha	166.5	13965	82,394	147
Round end									Total Area grazed from PSC to 27-9-2016				166.5 ha	Round end	0	82,394	147
Week 9	27/09/2016	545	130	3000	1650	2325	17.6	1.5	1.9	19.1	7.09	22.6	49.6 ha		7153	89,548	160
Week 10	4/10/2016	557	135	3100	1650	2375	19.6		0.0	19.6	7.52	21.3	52.6 ha		0	89,548	160
Week 11	11/10/2016	563	135	3200	1650	2425	20.9		0.0	20.9	7.60	21.1	53.2 ha		0	89,548	160
Week 12	18/10/2016	563	135	3200	1650	2425	20.9		0.0	20.9	7.60	21.1	53.2 ha		0	89,548	160
Week 13	25/10/2016	563	135	3200	1650	2425	20.9		0.0	20.9	7.60	21.1	53.2 ha		0	89,548	160

27. Springers will continue to be fed a diet of pasture and silage at the East Block with no dry or springing cows coming onto the milking platform.

LUDF Weekly report	14-Jun-16	28-Jun-16	12-Jul-16	26-Jul-16	2-Aug-16
Farm grazing ha (available to milkers)	160	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	15/0 /52/372	0/15 /52/512	0/40 /177/369	0/191 /126/215	0/182/50/ 255
Culls (Includes culls put down & empties)	0	0	0	0	0
Culls total to date	0	0	0	1	1
Deaths (Includes cows put down)	0	0	0	0	1
Deaths total to date	0	0	0	0	1
Calved Cows available (Peak Number 560)	0	1	4	47	0
Treatment / Sick mob total	0	0	0	1	2
Mastitis clinical treatment	0	0	0	0	0
Mastitis clinical YTD (tgt below 64 yr end)	0	0	0	0	0
Bulk milk SCC (tgt Avg below 150)	0	0	0	0	0
Lame new cases	0	0	0	0	0
Lame ytd	0	0	0	0	0
Lame days YTD (Tgt below 1000 yr end)	0	0	0	0	0
Other/Colostrum	0	0	0	0	0
Milking twice a day into vat	0	0	0	0	56
Milking once a day into vat	0	0	0	0	0
Small herd	0	0	0	0	0
Main Herd	0	0	0	0	56
MS/cow/day (Actual kg / Cows into vat only)	0.00	0.00	0.00	0.00	0.00
MS/cow to date (total kgs / Peak Cows	0	0	0	0	0
MS/ha/day (total kgs / ha used)	0.0	0.0	0.0	0.00	0.00
Herd Average Cond'n Score	0.00	0.00	0.00	0.00	0.00
Monitor group LW kg WOW early MA calvers	0	0	0	0	0
Soil Temp Avg Aquaflex	8.7	8.8	7.2	5.8	0.0
Growth Rate (kgDM/ha/day)	12	18	13	20	11
Plate meter height - ave half-cms	11.6	12.4	14.1	15.9	16.1
Ave Pasture Cover (x140 + 500)	2123	2232	2474	2723	2748
Surplus/[defict] on feed wedge- tonnes	0	0	0	0	0
Pre Grazing cover (ave for week)	2720	0	0	3600	3650
Post Grazing cover (ave for week)	1500	0	0	1500	1500
Highest pregrazing cover	2720	0	0	3600	3650
Area grazed / day (ave for week)	0.25	0.00	0.00	0.11	0.17
Grazing Interval	640	0	0	61	41
Milkers Offered/grazed kg DM pasture	0.0	0.0	0.0	0.0	0.0
Estimated intake pasture MJME	0	0	0	0	0
Milkers offered kg DM Grass silage	0	0	0	0	0
Silage MJME/cow offered	0	0	0	0	0
Estimated intake Silage MJME	0	0	0	0	0
Estimated total intake MJME	0	0	0	0	0
Target MJME Offered/eaten (includes 6% waste)	0	0	0	0	0
Pasture ME (pre grazing sample)	0.0	0.0	0.0	0.0	0.0
Pasture % Protein	0.0	0.0	0.0	0.0	0.0
Pasture % DM - Concern below 16%	0.0	0.0	0.0	0.0	0.0
Pasture % NDF Concern < 33	0.0	0.0	0.0	0.0	0.0
Mowed pre or post grazing YTD					0.0
Total area mowed YTD					0.0
Supplements fed to date kg per cow (560 peak)	0.0	0.0	0.0	0.0	0.0
Supplements Made Kg DM / ha cumulative	0	0	0	0	0
Units N applied/ha and % of farm	0	0	0	0	0
Kgs N to Date (whole farm)	0	0	0	0	0
Rainfall (mm)	3.8	11.4	1.2	2.4	3.2
Aquaflex topsoil rel. to fill point target 60 - 80%	90-100	80-100	80-100	80-90	70-80

Next farm walk: Tuesday 9th August 2016 and weekly thereafter, always 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.