



BLNZ Regional Case Study - Southland

Case Study Farm: Russell and Janine Drummond, Winton, (810ha)

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Executive Summary:

A combination of poor yields in winter crops and a delay in lamb processing has resulted in a feed deficit of nearly 200t DM that will impact performance next spring if not acted upon. With limited options to sell store lambs, the Drummonds considered a range of actions to reduce the impact that low spring covers would likely have on lamb survival and growth. The strategy has been to measure and know the current position and then project the likely impact interventions would have using Farmax. Management options that were considered included:

- Autumn Nitrogen application, and possibly a spring application also
- Not lambing hoggets
- Delay the mating date for main ewes
- Accepting a small weight loss on ewes (given they are already in good condition)

The final decisions made also take into consideration the practicality and ease of implementation and the expected financial impact. With this in mind the Drummonds have already applied Nitrogen and plan additional applications (120t DM feed benefit). Having come through a relatively good summer, some calculated restriction will be applied to the ewes with the proviso that ewes are not too light in Spring (40t DM feed saving). Ewe mating has been delayed by 3 days (11tDM feed benefit). The ewe hoggets will continue to be mated given other feed mitigation strategies have been used and that the financial cost of not mating the hoggets would have been significant.

We didn't eliminate the deficit predicted entirely but did manage to reduce it to 25t which we are comfortable with at this stage. However, as winter progresses, we will keep a close eye on the situation and will act to ensure feed covers in spring are sufficient

Background: The combination of adverse weather conditions and Covid-19 restrictions have caused major problems for some farmers. This case study examines the issues, analysis and management options considered by a local farmer.


Farm Overview: *Farm size, brief overview of farm system and farm performance*

The farm is 810Ha of rolling country 40 minutes west of Winton. 250Ha is oversown tussock while the remaining 560Ha has been cultivated, ranging from steep to easy rolling. Stock performance has been historically good with ewes lambing around 140% and calving 90%+. Lambs are finished on the property with final weights determined by feed availability.

Current situation: *What is the current feed position on farm, what are the key issues?*

In contrast to the rest of New Zealand, conditions through the summer of 2019-20 have been reasonably favourable enabling good lamb kill weights and also holding condition on ewes. 300 more ewes are being carried which is a return to normal after a few years recovering from dry conditions. Ewe hoggets are ahead of where they have been in the past couple of seasons through favourable conditions and also a management focus on feed quality. Winter crops however are behind where they would usually be and while the area grown is similar, yields are back due in part to the very cold spring and wet period around sowing.


The key issue being faced at present is the slow kill of works lambs and the additional pressure this places on feed. The additional feed allocated to works lambs eats into reserves intended for ewes in order to capitalise on what we expect to be a good mating. The intention is also to mate the ewe hoggets as they are in forward condition. Due to the relatively poor feed crop yields overall and more lambs than usual on hand into April the position is for a feed cover below optimal for spring.

 Supplement Percent of Demand for Drummond home <small>Apr 20 - Mar 21</small>							
Month	Percent of total demand in each month						Total
	Baleage	Kale	Swedes	Fodder beet	Sheep Nuts	Bulb turnip	
Apr 20							
May 20	1.3					5.6	6.8
Jun 20	2.9	15.8	17.1			6.5	42.3
Jul 20	2.4	24.1	14.0	12.0		5.3	57.8
Aug 20	3.1	10.2	12.1	13.8			39.3
Sep 20	0.4		1.4	2.1			3.9
Oct 20							
Nov 20							
Dec 20							
Jan 21							
Feb 21							
Mar 21							

In a more typical season supplements make up 70% of feed demand over June and July.

Analysis:

If all remaining lambs were sold on 1st May (1907 lambs sold at 16.9Kg), the impact on the feed situation is that the farm would be 117t short of where we would ideally like to be in spring. However, due to Covid 19 and the necessary slowing of processing chains, lamb kill has been slow. We have assumed that of the 1907 lambs 400 will be processed in May with the remainder cleared in June. The additional lambs carried increases the deficit to 194t as indicated in the table below. **In broad terms, half of the deficit is related to poor crop yields and the rest is as a result of slow processing.**

 Intake for Drummond home <small>Jul 20 - Jun 21</small>							
Month	Head Count	kg StdDM		Daily kg Std DM Total			Total
		Daily/head	Daily Total	Pasture	Supplement	Deficit	
Jul 20	7,295	1.9	13,814	4,787	9,027		13,814
Aug 20	7,233	2.1	14,996	7,954	7,042		14,996
Sep 20	7,184	2.3	16,179	14,907	826	446	16,179
Oct 20	7,083	3.0	21,315	17,633		3,683	21,315
Nov 20	7,061	3.1	21,611	19,680		1,931	21,611
Dec 20	10,706	2.0	21,429	21,152		277	21,429
Jan 21	12,492	1.4	17,354	17,354			17,354
Feb 21	12,142	1.4	17,354	17,354			17,354
Mar 21	11,022	1.4	15,786	15,786			15,786
Apr 21	8,432	1.5	12,927	12,927			12,927
May 21	7,388	1.4	10,479	10,307	172		10,479
Jun 21	7,210	1.5	10,497	5,608	4,889		10,497
Average	8,757	1.8	16,145	13,764	1,849	532	16,145
Total		673	5,892,757	5,023,760	674,918	194,079	5,892,757

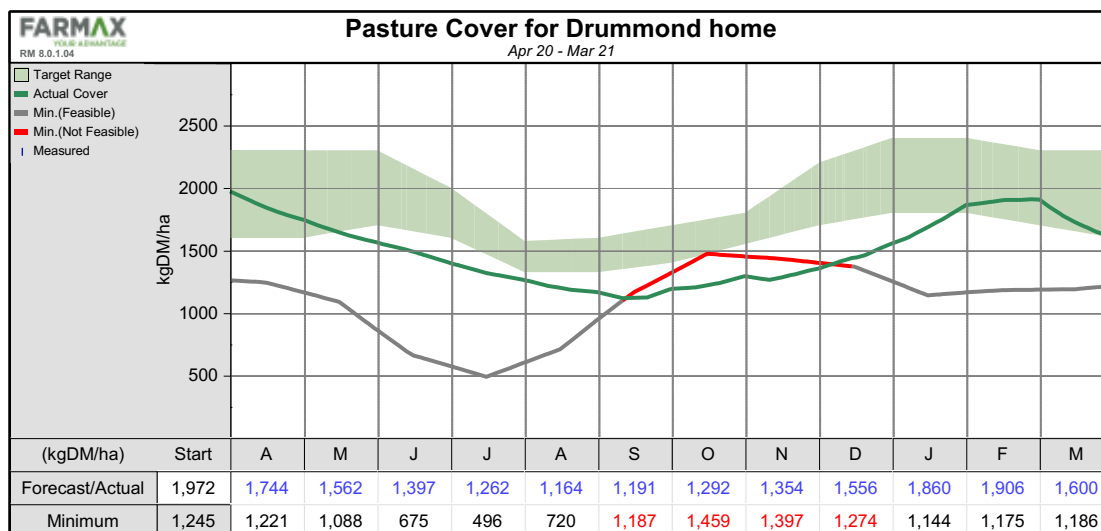
Having run Farmax for a number of years, there is a series of predicted pasture growth rates that we can refer to.

Year	August (kgDM/ha/day)	September (kgDM/ha/day)	October (kgDM/ha/day)
2015	8	25	31
2016	12	25	26
2017	17	22	25
2018	15	26	35
2019	8	23	23
2020	8	22	29

Looking at our predicted growth rates in the model, we are modelling at the low end of experienced growth in August and September. While we cannot control this factor, the gathering of data helps in evaluating the impact and can give us some confidence in making forward predictions.

We also had a look at a situation where September growth rates were 4Kg lower than normal (18Kg vrs 22KgDM/d) which increased the deficit to over 300t. We don't expect an abnormal spring but the exercise galvanises the decision to act now to correct the expected shortfall.

Pasture covers are under pressure in Spring dipping below 1200Kg at the end of September. The amount of deficit shows us we are 194t below where we would ideally like to be.



The direct impact of the 1900 lambs on hand from May 1st is 67t of extra feed in winter and the indirect impact is that pasture covers are driven too low in spring reducing potential pasture growth rates.

In the face of the crop production being behind usual (more than 100t in fodder beet alone), Autumn Nitrogen was considered and applied as a part of the annual maintenance fertiliser application. In the first instance, 30Ha of young grass areas were targetted and an additional application was placed on 140Ha. The impact of this application at a 10:1 response was to reduce the deficit to 144t or an improvement of 50t of feed generated at around 19c/KgDM. However there is still a considerable deficit which will put spring production in peril.

Further Strategies considered

1. Additional Nitrogen application
2. Not lambing hoggets
3. Delay the mating date for main ewes
4. Accept a small weight loss on ewes

With a 144t deficit still looming we looked at the practicality and cost of each decision.

1. Further Autumn applications of Nitrogen were possible on 60Ha of cultivated country and 40Ha of warm hill. An additional Spring Nitrogen application on 140Ha reduced the deficit by a combined 70t. All applications were assuming a 10:1 response and were applied at 40Kg of N/Ha
2. Not lambing hoggets had a large effect on feed demand. Even with the mating date of 5th May, the hogget demand from mating 1750 (expect 950 lambs weaned) is equivalent to 80t of feed. The 80t of feed is assuming the same hogget growth path is followed when the reality is that this class would take a different weight path to get to two tooth weight. However, the 80t of feed comes at a cost of 960 lambs which we discussed.
3. A delay in the mating date for the 4400 maternal ewes was tested with a 3 day shift reducing the deficit by 11t and a 1 week shift was 24t

4. While ewes are in good order leading up to mating, we were reluctant to challenge ewe condition score too much. In practical terms however, we will have some heavy ewes that may benefit from condition reduction in winter. Using this as a premise we dropped the ewe liveweight expectation by 20g/d in June and 20g/day in July resulting in a 1.2Kg reduction in the average ewe weight. The impact over 4400 ewes was a feed saving of 40t.

Decisions Made, and why:

Nitrogen

The decision to apply Nitrogen has been taken as we believe grazing opportunities will be very limited. The Autumn application is targeted to areas we believe we will get a reasonable response and are warm so that any spring response will occur in time to affect the October feed covers. The soils we are applying to are reasonably heavy and there is very little Nitrogen likely to be lost from the planned application. With the known deficit, we were uncomfortable with a wait and see approach due to the potential of driving spring covers too low. We have also assumed a 10:1 response for the Autumn N and can react with Spring application if the result is different.

The additional Nitrogen cost is \$7K in Autumn and a further \$10K in spring allowing for application. The applications are predicted to generate 96t of feed (10:1 response) from which animals are predicted to utilise around 70t of feed. The balance of feed is deemed lost which may or may not be the case depending on ground conditions. By splitting the application between Autumn and Spring we can see what actually happened with the Autumn response and adjust the spring application accordingly. Leaving all of the work for Spring was seen as too risky given the size of the deficit.

Animal Management Decisions

Mating Hoggets

With the hoggets being in forward condition as well as good ewe liveweights, the decision has been made to continue with mating of hoggets. While the expected deficit would be eliminated, there is a considerable impact on next year's income. We are confident that along with the Nitrogen, we will be able to close the gap to an acceptable level using other mitigations. While the decision is still to mate the hoggets, there is a plan to tidy up the line and sell 100 of the empty hoggets in August, with the impact on the deficit being 13t of feed. As August progresses, we will reassess and once the number of dry hoggets is known, we can look at grazing options or increasing the Nitrogen area at that stage. We are reluctant to impose a significant impact on next years income by not mating the hoggets now, particularly if the pricing is impacted by Covid 19. A comparison was made between adding Nitrogen and continuing to mate hoggets, and not mating hoggets and reducing Nitrogen inputs to end at a similar feed position. The additional income from hogget lambs outweighed the extra Nitrogen cost and even if the lambs are dropped as store the decision is still in favour of mating hoggets.

		Compare Gross Margin			
		Drummond home		Drummond home	Difference
		Monitoring winter 2020 back	No HM		
Revenue	Sheep	Sales - Purchases	1,653,425	1,521,871	-131,555
		Wool	238,147	238,093	-54
		Capital Value Change	16,510	16,510	0
		Total Sheep	1,908,082	1,776,474	-131,609
	Beef	Sales - Purchases	292,729	292,729	0
		Capital Value Change	-102,272	-102,272	0
		Total Beef	190,457	190,457	0
Total Revenue		2,098,539	1,966,930	-131,609	
Expenses	Crop & Feed	Forage Crops	309,250	309,250	0
		Regrassing	57,600	57,600	0
		Nitrogen	58,396	28,850	-29,546
		Total Crop & Feed	425,246	395,700	-29,546
	Stock Costs	Animal Health	57,705	57,030	-675
		Shearing	45,209	45,209	0
		Total Stock Costs	102,914	102,239	-675
	Interest on Capital (livestock & feed)		273,698	270,752	-2,946
Total Variable Expenses		801,858	768,692	-33,166	
Gross Margin		1,296,682	1,198,239	-98,443	
Gross Margin per ha		1,601	1,479	-122	

Delay Mating 3 days

The 11t impact is so simple to implement and we are confident that the lamb weight impact of the delay will be more than corrected by a small improvement in pre wean growth rates. We are reluctant to defer mating further as it limits options to deal with early summer dry conditions. The terminal sire lambing date remains in early September which gives us better options to move a line of old ewes in lamb if we observe the situation deteriorating.

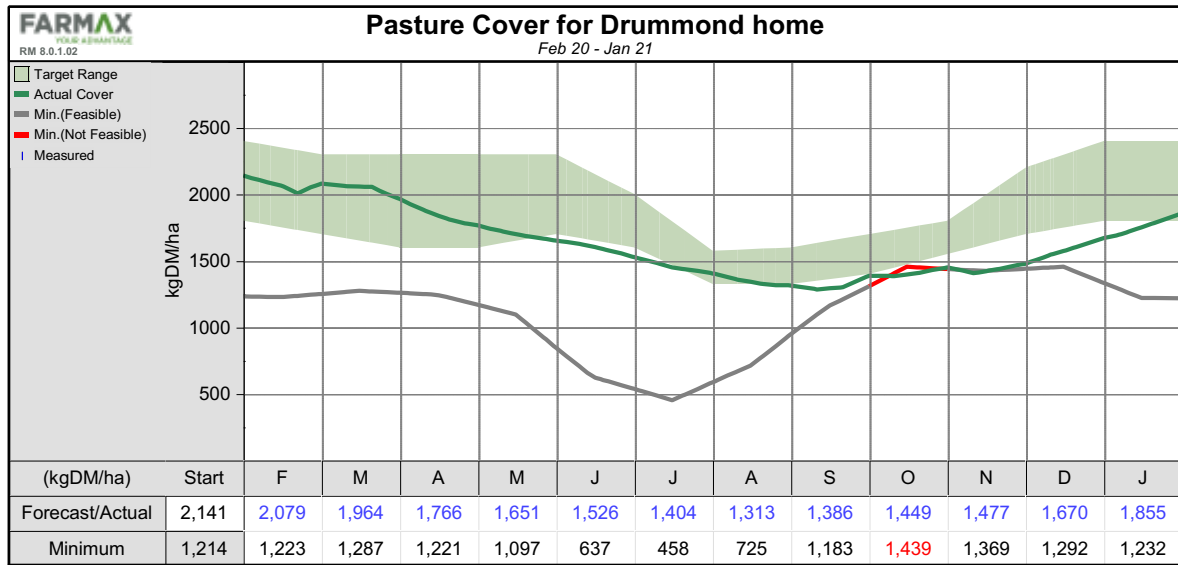
Tighten allocation to ewes

We have a plan to tighten up the feed to ewes in a strategic way over June and July. The 40t saving is only available as an option due to the ewes being heavier than usual as we enter winter. In previous seasons where we have carried ewe condition through, we have also noticed an increase in the incidence of bearings. We are hoping the benefit of evening up ewe condition can provide both a small feed saving but also a reduction in bearings and related ewe deaths.

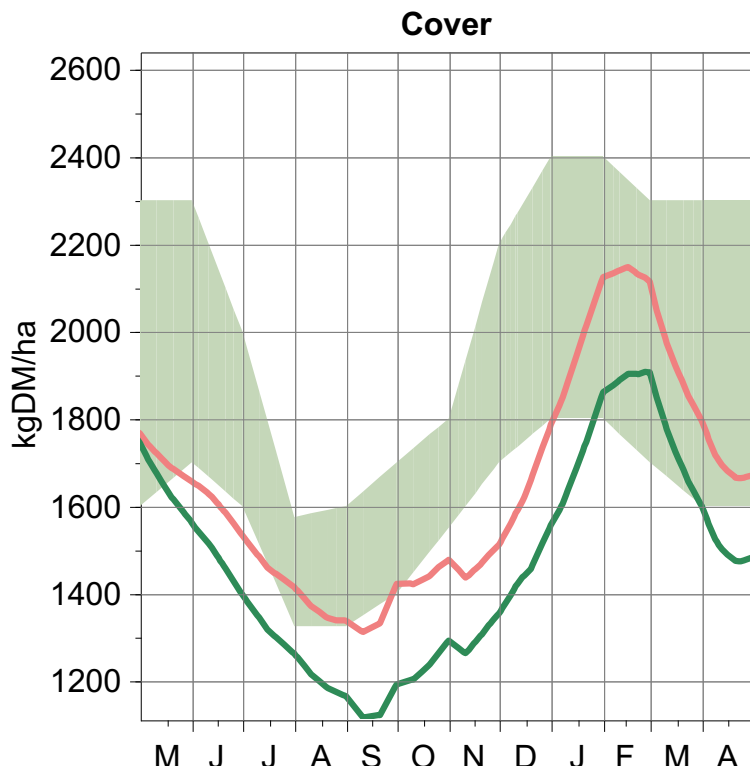
Practical Considerations:

We didn't eliminate the deficit predicted entirely but did manage to reduce it to 25t which we are comfortable with at this stage. However, as winter progresses, we will keep a close eye on the situation and will act to ensure feed covers in spring are sufficient. We are reliant on winter crops to make up a good portion of winter feed and crops do continue to grow into winter. Our strategy is to control what we can and to be aware of our situation as it changes. Monthly updating of the Farmax model will help us to be aware of impending issues and allow us the time to prepare.

Pasture cover projection with changes as outlined



Comparison of pasture covers before and after mitigations



Plan B options

We have discussed the option of selling annual draft ewes from the terminal sire mob. In order for this class to sell well we have kept the mating date as early as we dare for the location (April 4th). In doing so we improve the saleability as lambing date is not too late for summer dry country. If the ewes are carried into spring and lambed, we can also sell these ewes with lambs at foot if required. The earlier mating does increase the winter feed cost slightly but on balance the ability to market this class in spring is of more importance to us.

If lower pasture covers are taken into Spring, the ewes tend to compensate by taking weight off their backs. If we reduce ewe intake until the model becomes feasible, ewe weight is reduced by an additional 1Kg and lamb weaning weight is also reduced by 0.6Kg in response. We need to consider the condition of ewes as we enter spring and the importance of maintaining mob condition in a functional band. If we drive covers too low we reduce pasture growth potential and if we mine condition too much we affect survival.

What is most concerning is the loss of a condition buffer should we be dealt a very cold period over this time. Experience tells us that we need a condition buffer to weather these events and will continue to monitor and act to ensure that this is the case.

Our Spring actions will be to:

- Assess ewe condition at scanning
- Assess feed covers and progression of winter supplements
- Re forecast spring covers

If required, we will increase the area of Nitrogen in spring. After winter once all supplements are used, the October position is much more likely to track as predicted. If at scanning we find we have mined condition too far, we are prepared to utilise sheep nuts as required to support a lighter end.

With mating the hoggets and generating 150% lambing from ewes, we are able to keep next season's revenue optimal and still get to winter 2021 with sufficient feed covers. While we have a plan to see this happen, we are aware of the need to react if feed conditions don't allow.