Owl Farm

Providing knowledge

St Peter's School/Lincoln University
Demonstration Dairy Farm

St Peter's · Cambridge
New Zealand

Lincoln University
Te Whare Wānaka o Aoraki
AOTEAROA · NEW ZEALAND
New Zealand's specialist land-based university

Farm Focus Day

Wednesday, 27 March 2019

PROVIDING KNOWLEDGE

Greenhouse Gases: What do the numbers look like for Owl Farm?

Wider view of Greenhouse Gas: What is manageable on all farms?

Season Update Owl Farm: season so far and challenging autumn weather

LIC PGG Wrightson Seeds DairyNZ Ballance agri-nutrients NEW ZEALAND FARM SOURCE

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CONTENTS

OWL FARM MULTI-YEAR SNAPSHOT

	Year	2015-2016	2016-2017	2017-18	2018-19 F/cast
Physical Info	Total Farm Area	177	164	164	164
	Effective Area (ha)	157	146	148	147.3
	Effective area Leased (ha)	23	18	18	18
	Leased Run off (ha)	3	7	5	3 full year + 14 Nov-May
	Cows Wintered	470	453	441	419
	Peak Cows (1 Nov)	445	423	418	406
	Peak Stocking Rate Cows/ha	2.83	2.90	2.82	2.76
Production	Total kgMS	176,197	178,294	168,169	167,000
	MS/cow	396	421	402	411
	MS/ha	1,122	1,221	1,136	1,134
	MS/ha from homegrown feed	879	952	978	1041
	MS AS % lwt	85.2%	90.6%	86.5%	88.5%
	Ave SCC	112,000	125,000	146,000	158,000
Feed and Inputs	Feed Grown TDM/ha	15.9	15.1	17.5	16.1
	Feed Harvested TDM/Ha (actual kgs)	11.9	12.5	13.1	12.8
	Feed harv TDM/ha (@11.0MJME/kgDM)	12.4	12.8	13.7	13.4
	Supplements Imported TDM/Ha	4.3	3.6	2.3	2.3
	Supplements Imported TDM	671	523	335	330
	% diet imported	21%	19%	11%	13%
	% of farm cropped & harvested (silages)	21%	35%	33%	33%
	Nitrogen Applied/effective ha	149kg	163kg	150kg	150kg
Financials	Gross Farm Rev/kgMS (inc stock/dividend)	$4.78	$7.00	$7.56	$6.98
	Cash Farmgate milk price /kgMS (dairybase)	$3.46	$5.52	$6.39	$6.56
	Accrued Farmgate milk price /kgMS	$3.90	$6.12	$6.66	$6.45
	Stock Sales /kgMS	$0.48	$0.43	$0.54	$0.44
	Dividend /kgMS	$0.41	$0.44	$0.36	$0.11
	FWE/kgMS	$4.95	$4.12	$4.28	$4.63
	OPEX/kgMS(inc depn & feed inv)	$5.03	$4.81	$4.59	$4.98
	EFS/ha actual payouts (cash milk rev) Dairybase	$-723	$1,925	$3,096	TBC
	EFS/ha actual payouts (accrued milk rev)	$126	$2,742	$3,446	$2,260
	EFS/ha @ $6.00 farmgate milk price (no div)	$1,189	$1,807	$2,102	$1,804
	Opening Debt/kgMS held	$20.00	$23.02	$21.23	$21.00
Enviro	est Nitrogen loss kg/ha	40	41	35	33
	est P loss kg/ha	1.2	1.1	0.8	0.8
	GHG Loss ton CO_2/ha	12.7	13.6	12.5	12.3
	N conversion Efficiency	26%	27%	25%	28%
Statistics	Cowshed	36 Rot	36 Rot	36 Rot	36 Rot
	Feed infrastructure	NIL	NIL	NIL	NIL
	Herd Figures	BW 162/189 PW	BW 107/128 PW	BW 112/135 PW	BW 114/153 PW
	Industry BW/PW	BW 110/122 PW	BW 64/73 PW	BW 72/93 PW	BW 72/93 PW
	Effluent Storage	Clay lined pond	Clay lined pond	New lined pond	New lined pond
	% farm effluent applied to	44Ha 29%	51Ha 35 %	51Ha 34%	51Ha 34%
	Soils are a mix of Clays and Sands, on largely flat terraced contour				
	Operational regrassing via crop and regrassing ~ 15% per year				
	3 permanent staff members are employed - with no relief staff required to cover time off or calf rearing duties.				

HEALTH AND SAFETY

Welcome to Owl Farm. We are a fully operational, commercial dairy farm with a number of potential hazards to both visitors and staff. Many of these potential hazards cannot be eliminated while also providing access to visitors therefore all staff and visitors MUST watch for potential hazards and act with caution.

St Peter's School / Owl Farm Hazard Notifications

- Children are the responsibility of their parent or guardian
- Normal hazards associated with a dairy farm
- Other vehicle traffic on farm roads and races
- Races may be slippery

ARE YOU TRAINED FOR WHAT YOUR ARE ABOUT TO DO? If not, STOP.

Emergency Contact Information

In the event of an emergency, ensure the scene is safe and raise the alarm to get Owl Farm staff and emergency services to assist.

Emergency Services

- **Fire, Police and Ambulance** **111**
  1716 Cambridge Road, Follow Hanlin Road through the school to the farm

Farm Staff

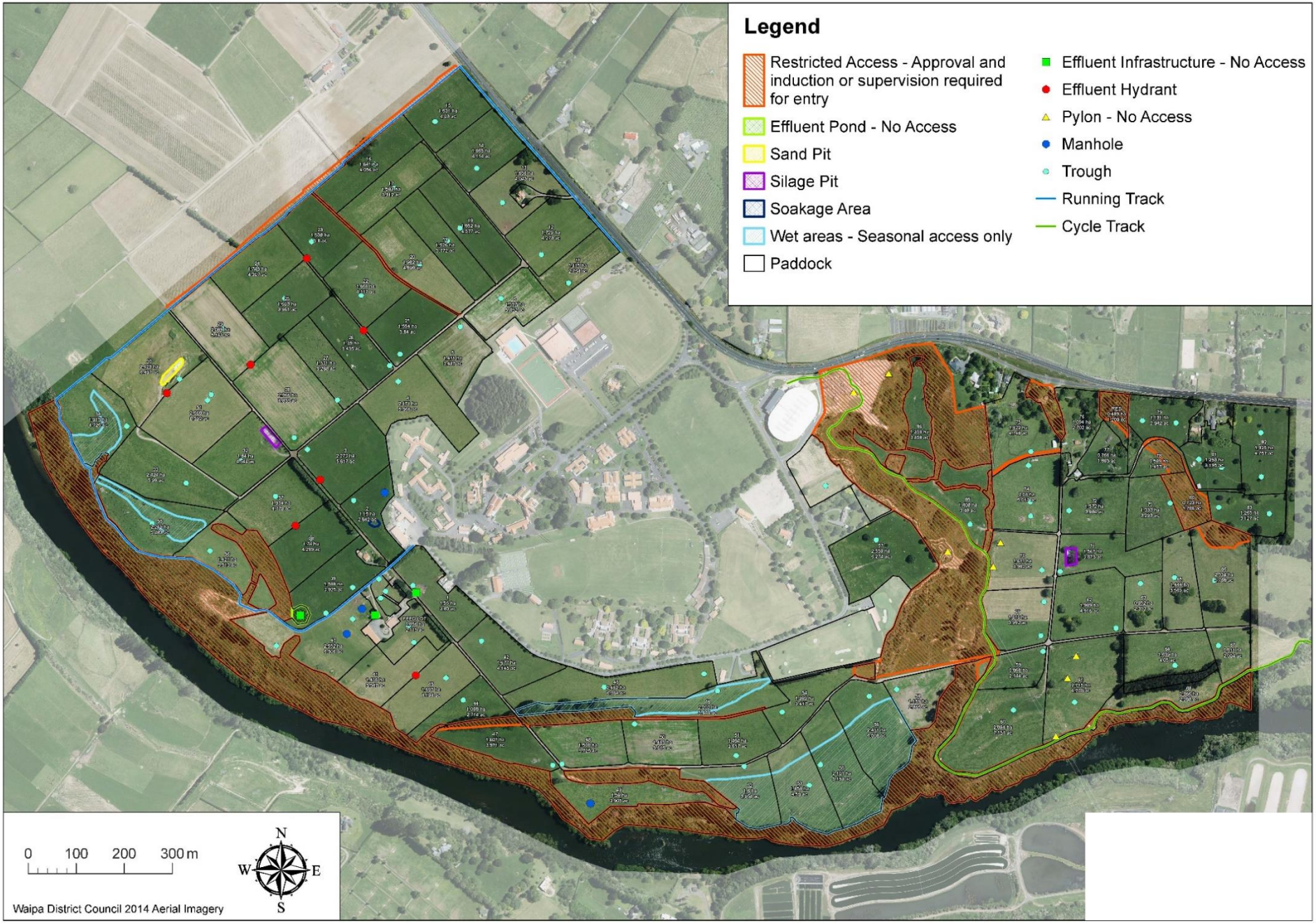
- Louise Cook – Demonstration Manager 027 808 5777
- Tom Buckley – Farm Manager 021 058 4916

Safety Equipment Location

- First Aid Kits Dairy Shed and Vehicles
- Fire Extinguishers Dairy Shed and Tractor
- Defibrillator Main Office and St Peter's Medical Centre

By entering Owl Farm and signing in at registration, you are acknowledging your understanding of any potential hazards and agree to take personal responsibility and act in such a manner as to protect yourselves and others also on-farm.

NOTES


Legend
Restricted Access - Approval and induction or supervision required for entry
Effluent Pond - No Access
Sand Pit
Silage Pit
Soakage Area
Wet areas - Seasonal access only
Paddock
Effluent Infrastructure - No Access
Effluent Hydrant
Pylon - No Access
Manhole
Trough
Running Track
Cycle Track
0 100 200 300 m
N
W
E
S
Waipa District Council 2014 Aerial Imagery

Owl Farm

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OWL FARM STRATEGY

1. Vision

a. Dairy Farm

- To apply proven research, utilising good on farm practice and scientific monitoring for the farm to become an exemplar in dairy production, financial, environmental and people performance, while maintaining the highest standards of health and safety.

b. Students

- To encourage more young people into the dairy industry.

2. Strategic Objectives

a. Dairy Farm

- Providing leadership to dairy farmers and the wider community by demonstrating progressive practices that can be achieved on farm.
- Optimise profit through identifying the appropriate dairy production system for Owl Farm.
- Achieving a farm sustainable environmental footprint based on industry good management practice.
- To attract, train and retain quality employees.

b. Students

- To provide educational opportunities and exposure to the dairy industry which demonstrates career opportunities to students.

3. Farm Development Stages

a. Stage 1 Objective (2015/16 – 2017/18)

Establish credibility by addressing current issues and performance, whilst setting up the farm for future development. During this stage, the farm will operate a pasture based system, with tactical supplementation strategies, based largely on existing infrastructure, to optimise profit while developing a resilient farm system.

b. Stage 2 Objective (2018/19 – onwards)

Testing and investigating in conjunction with partners, innovative strategies to lead sustainable profit. The farm system will be developed over years 1-3 and reflect demonstration requirements of industry that are relevant and appropriate at that time point.

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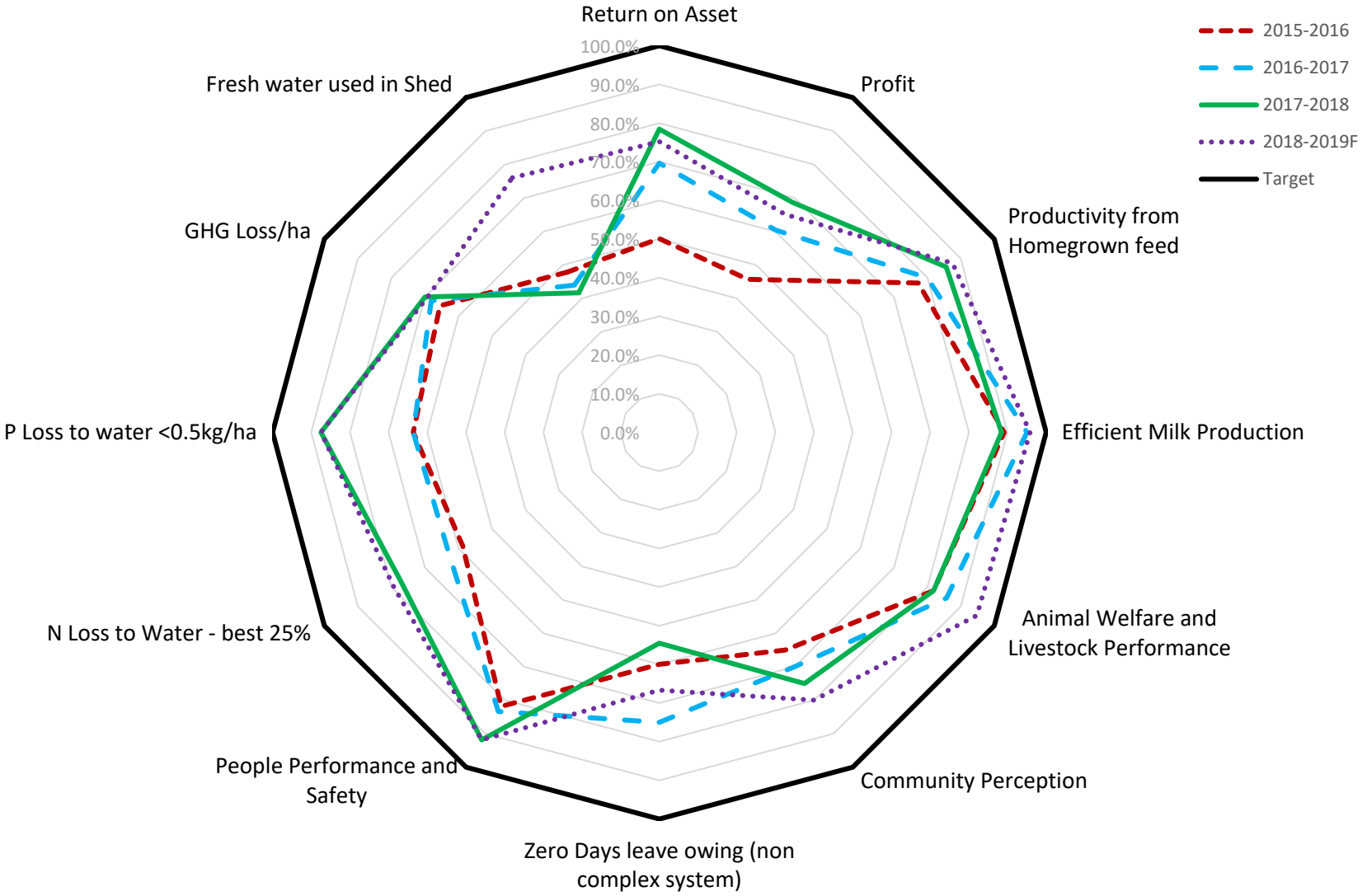
OWL FARM SEASON PERFORMANCE ON OUR SCORECARD

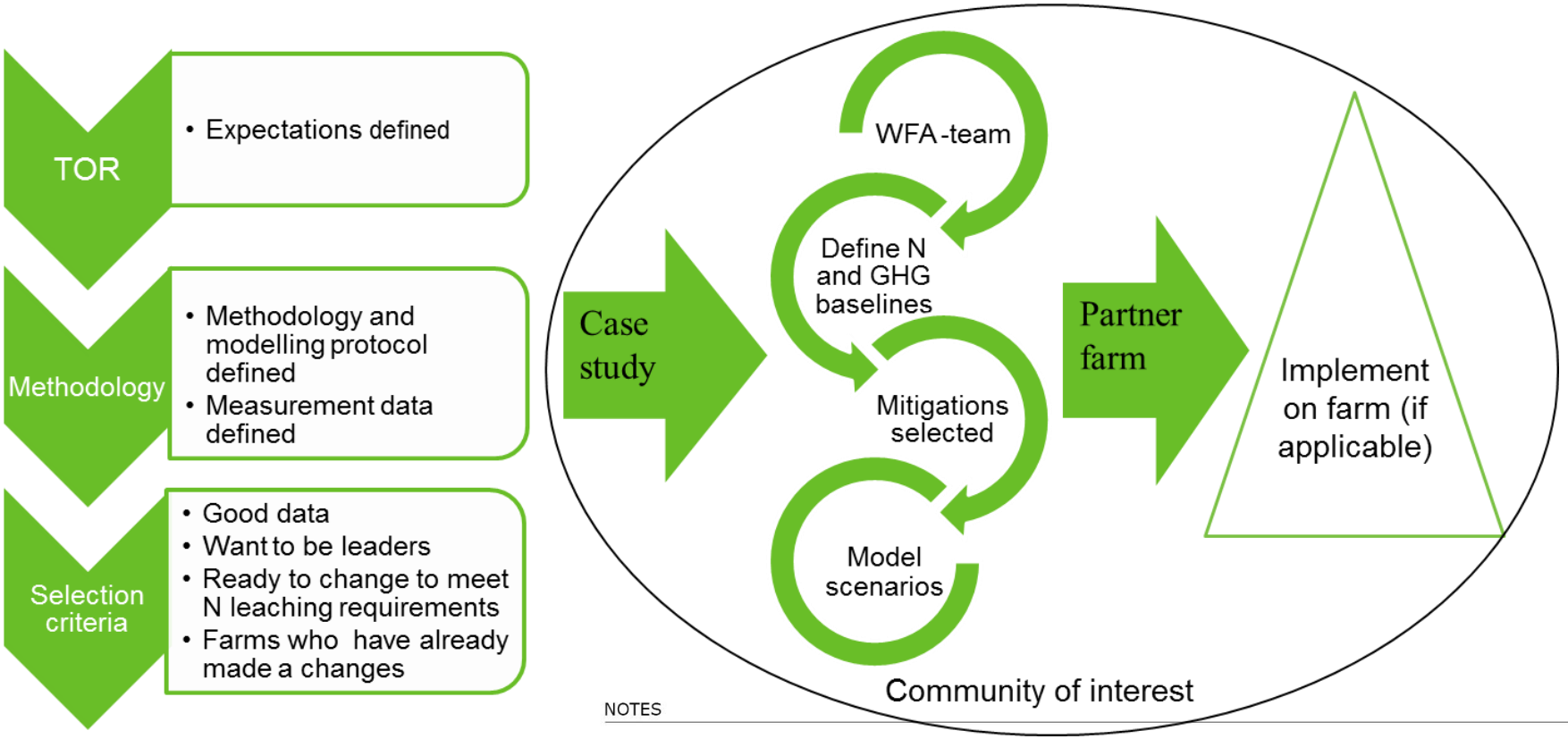
Our wagon wheel works best when we have a round wheel. This year we have taken out some of the angles and made real progress in some areas. But we know there is more to work on. The closer to the black line we get, the closer we are to our goals. This tool allows us to evaluate performance in all the areas that are importance to us. With each item creating tension on the others on the wheel to keep our performance improvements balanced.



GREENHOUSE GAS PARTNERSHIP FARM OBJECTIVES

'This project will partner with farmers, scientists, rural professionals, and government to demonstrate the feasibility and practicality of implementing mitigation strategies to address greenhouse gas emissions and nitrate leaching from farm systems.'

- Set up ten GHG partnership farms across the country on a range of different farm systems
- To demonstrate the potential biological emissions reduction on dairy farms through farm system changes and to quantify the effect on production and productivity
- To ground-truth the farm system changes with dairy farmers
- To educate dairy farmers, rural professionals, and the wider sector of farm systems changes which may be possible and the implications of these changes.



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DairyNZ

Owl Farm

OWL FARM GREENHOUSE GAS CASE STUDY - EXECUTIVE SUMMARY,

The overall objective of this project is to partner with farmers, industry, scientists, rural professionals, and government to demonstrate the feasibility and practicality of reducing GHG emissions and N-loss to water from real dairy farms, while maintaining the farm profitability and meeting other environmental obligations.

Owl Farm is committed to taking a position of leadership on Sustainable dairying. This means that the opportunity to work with the Partner Farm Project as part of the Dairy Action for Climate Change was a great place to start.

As a Demonstration farm, Owl Farm has significant levels of detail regarding its farming operations over the last 4 years. The data and trend of performance has been measured and large gains have been made in improving profit and reducing nutrient loss to waterways. Owl Farm has been future-focussed from the outset and has evaluated a large number of potential farm systems for the long-term operation of the farm. From 11 valid options at the outset, only two systems fit with Owl Farm's overall objectives and reach targets through the range of important KPIs that the farm intends to deliver on. The availability of this information made inspection and assessment of GHG emissions from the farm a straightforward process.

In the last 4 years the farm has had a 3% reduction in total Greenhouse gas emissions, alongside a 50% lift in Farm EFS/ha, and 24% and 31% reduction in nitrogen and phosphorous loss to waterways respectively. The two viable farm pathways that remained for the farm moving forward saw further improvements in all of these areas should either of the two systems be implemented

Future options for the farm show that additional reductions in greenhouse gas can be achieved on the farm, out of the two systems modelled. In addition other options for the farm were considered, including bringing all young stock home adjusting stocking rates within the current system and a whole-farm OAD strategy which also yielded GHG benefits, but had undesirable impacts on farm profitability to varying degrees.

The farm would either invest in infrastructure to ensure high utilisation of current homegrown silage, imported concentrates and future homegrown Maize silage, along with stand-off infrastructure for soil and pasture protection. This system lifted both productivity and, profitability while further reducing nutrient loss to waterways, it also offered some mechanisms for better animal shelter. However the system required significant capital investment to be successful.

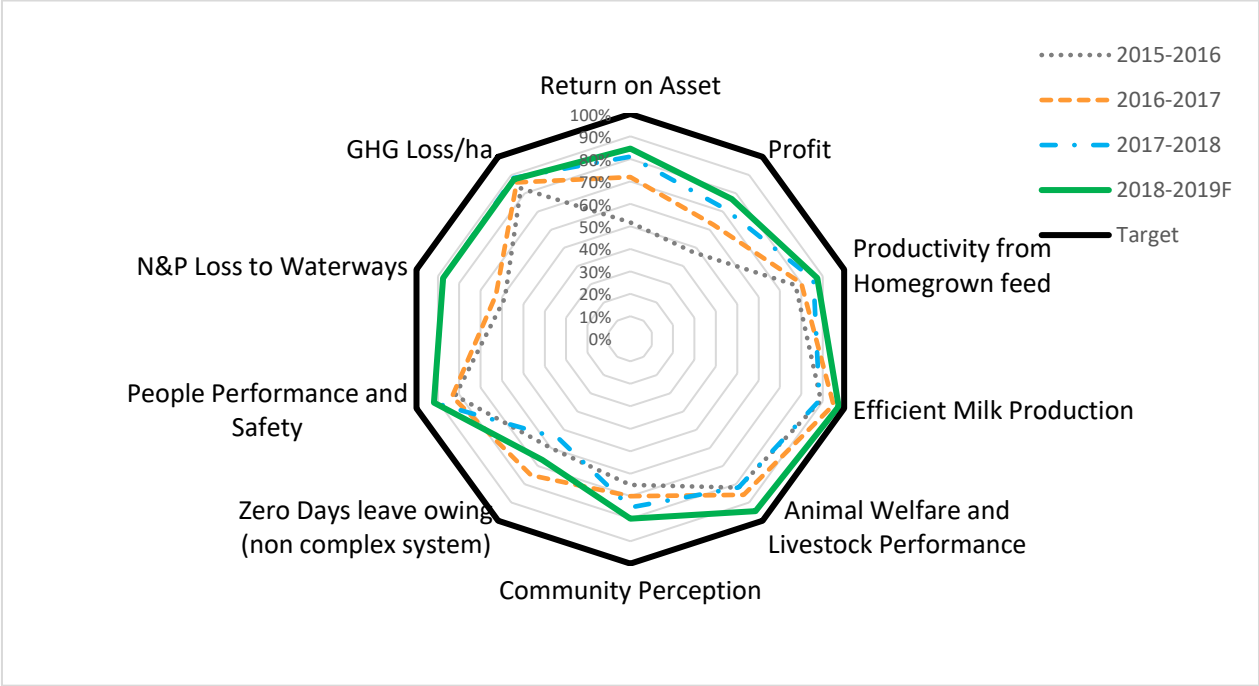
Alternatively a further de-intensification of the system with no imported feed saw profitability increase even with a total production decrease. It also reduced nutrient loss to waterways and without the capital investment required. It did have a large reduction in farm operating expenditure to protect on-farm profits, which is no longer making it into the local economy.

FARM OVERVIEW,

Owl Farm is 147 effective hectares, milking between 405-415 cows at peak. Annual rainfall of 1200mm and summer dry, they are spring calving on July 3rd. Now System 2, with 11% imported feed of PKE (250T) and silage from local farmland (80T). Homegrown feed is predominantly grass (rye/clover/cocksfoot/plantain), and summer turnips

NOTES

Owl Farm has developed a simple Matrix that they use to evaluate how well the farm is delivering on farm goals. The targets are summarised into performance areas and each turned into a "spoke" on a radar graph. With target on the outside and the degree to which the target is achieved as a percentage score. This graph resembles a wagon wheel, and Owl Farm say they are trying to have a round wagon wheel as a round wheel makes a smooth journey.



KPI'S,

The change between the first and most recently completed season of the Demonstration farm represent a good example of the change in farm system that has already occurred and the benefits this has yielded. There is between 3 and 7ha of run-off land that is used as a forage source of bought in feed and costed into the profit figures, varying between years as more or less of a neighbouring property is able to be used.

Key Performance Indicators	**2014/15**	**2015/16**	**2016/17**	**2017/18**
Size of Milking platform (eff ha)	164	157	148	148
Size of Support blocks (eff ha)	3	3	7	5
Cows and stocking rate (total and cows/ha)	470 (2.76)	445 (2.83)	423 (2.9)	418 (2.82)
Homegrown feed harvested (tDM/cow)	4.3	4.4	4.4	4.9
Supplement imported (tDM/cow)	1.5	1.5	1.2	0.8
Production (kgMS/ha / kgMS/cow)	1,229 / 445	1,122 / 396	1,221 / 421	1,136 / 402
Operating expense ($/kgMS)	$5.21	$4.98	$4.81	$4.53
Operating profit ($/ha at $6 payout)	$1,456	$1,189	$1,807	$2,102
N-loss (kgN/ha)	41	40	41	35
GHG (tCO2e/ha)	14.3	12.7	13.6	12.5
Efficiency (CO2e/kgMS)	11.0	11.7	12.2	11.8

NOTES

DETAIL PHYSICAL PERFORMANCE,

Driving towards lifting homegrown feed and rationalising and removing the purchased in maize silage that was fed in paddock has led to similar production/ha from less bought in feed (from 21% imported to 11% imported).

Key Performance Indicators	**2014/15**		**2015/16**		**2016/17**		**2017/18**	
	Per ha	Per cow	Per ha	Per cow	Per ha	Per cow	Per ha	Per cow
Cows and stocking rate	2.76		2.83		2.9		2.82	
Production (kgMS)	1229	445	1122	396	1221	421	1136	402
Pasture and Crop harvested (tDM)	12	4.3	12.4	4.4	12.8	4.4	13.7	4.9
Supplement imported (tDM)	4.2	1.5	4.3	1.5	3.6	1.2	2.3	0.8
Crops grown	Chicory 12.5% of farm						Turnips 8% of farm	
Total feed eaten and imported (tDM)	16.6		16.7		16.4		16.0	
Feed conversion efficiency (kg DM/kg MS)	13.2		14.8		13.4		14.0	
Average herd BW (industry at time)	150 (106)		162 (110)		107 (64)		112 (72)	
Average herd PW (industry at time)	179 (119)		189 (122)		128 (73)		135 (92)	
6-week in-calf rate	74%		73%		72%		67%	
Empty rate	13%		13%		15%		17%	
Nitrogen fertiliser applied	154		149		163		150	
Effluent applied to block	40ha		44ha		51ha		51ha	

DETAILED FINANCIAL PERFORMANCE,

The total operating profit of the farm over this time, when all years are compared at a standard $6 payout, is an increase of 115,000 or 51% lift. This is in large part due to the decrease in money spent on imported feed ($75,000 less on feed costs), the balance of profit change comes from reducing R&M costs, more efficient labour and better livestock revenue.

KPI's	**2014/15**		**2015/16**		2016/17		**2017/18**	
	Per ha	Per kgMS	Per ha	Per kgMS	Per ha	Per kgMS	Per ha	Per kgMS
Total Income ($)	6,170	5.02	4,892	4.36	7,790	6.38	8,134	7.16
Operating expense ($)	6,403	5.21	6,048	5.39	5,873	4.81	5,044	4.44
Operating profit ($)	-233.51	-0.19	-1155.66	-1.03	1,929	1.58	3,090	2.72
Operating Profit at standard $6 milk price ($)	1,456	1.18	1,189	1.06	1,807	1.48	2,102	1.85

NOTES

ENVIRONMENTAL PERFORMANCE,

A reduction in N loss overtime along with reducing Phosphate loss/ha, has been an intentional outcome of the farm systems changes that have also brought about an improved farm operating profit. Owl Farm is looking at Greenhouse gas changes and seeing small changes in per/ha and per/kgMS changes as a continued focus. Though it's critical note that the farm reduced in size in these years. So total greenhouse gas emissions reduced along with emissions per ha reducing, however both the total operating profit and per hectare profit saw greater than a 50% lift in this time.

KPI's	2014/15	2015/16	2016/17	2017/18	2018/19 Forecast
N fertiliser	+134	+149	+163	+150	+145
N in Supplements	+83	+67	+45	+39	+40
N Surplus (kg N/ha)	204	187	193	189	185
N leached per hectare (kg N/ha/yr)	41	40	41	35	33
Total N Leached (kgN/yr)	7,531	7,414	7,434	6,314	5,911
N Conversion efficiency	28%	26%	27%	25%	28%
Total GHG (tCO2e)	2,216	2,061	2,175	1,984	1,965
GHG (tCO2e/ha)	14.3	12.7	13.6	12.5	12.2
Efficiency (CO2e/kgMS)	11.0	11.7	12.2	11.8	11.7

WHAT DRIVES N-LOSS/GHG EMISSIONS FROM THE FARM,

A relatively large effluent area on the farm means a small more widespread loading around the farm from effluent. All cows winter on the milking platform and all feed is fed out in paddock throughout the year. Avoiding pugging on heavy soils is supported by careful planning to ensure there is feed staggered around the farm on differing soil types.

Variation between years N Loss has come from several key areas:

1. The reduction in imported feed by 50% from the 2014-2017 years versus the 2017-2018 year has been the biggest driver in reducing total N Loss to waterways.
2. Changing timing and types of fertiliser, with no applications in May and June, always using companion nutrients such as sulphate when necessary to ensure maximum nitrogen utilisation, and only using urease-inhibitor-coated nitrogen e.g. Sustain products.
   Ensuring satisfactory soil phosphate levels (Olsen P) or soil moisture to ensure high efficiency of applied Nitrogen, and the plant is able to grow when the N is available reduces wastage of Nitrogen.

Variation between years GHG emissions has come from several key areas:

1. Reduction in total feed eaten has reduced methane emissions over the last 4 years.
2. Reduced N Surplus on farm from reasons mentioned above, has also reduced Nitrous oxide losses and losses of Nitrate to waterways.
3. Reduced imported feed has reduced the total actual CO_2 of the farm by reducing emissions liability for imported feed that has significant transportation and other costs.

NOTES

MITIGATION STRATEGIES,

De-intensification

The first Mitigation option included looking at the de-intensification option. With a reduction of 330TDM in total feed imported onto the farm, further reductions in methane were achieved. The reduced Nitrogen imported in supplements and resulting lower stocking rates also saw a further reduction in the N surplus and N loss to waterways and as nitrous oxide emissions. Farm profit was improved by reducing expenditure in line with lowering production – however there is a decided reduction in revenue and investment in the rural sector by the farm

Add infrastructure

Option B or adding infrastructure (feed pad plus stand-off facilities) allowed for efficient utilisation of all supplements currently in the system meaning more fed eaten from the same feed offered. IN addition, growing maize silage on-farm also lifted the total feed eaten, thus increasing total methane production on the farm. However the large lift in production meant the efficiency of GHG emissions/kgMS actually became fewer GHGs/kgMS. The infrastructure, nutrient capture and dispersal via the farm effluent system all acted to reduce N loss to waterways in similar amounts to the de-intensification option.

Mitigation 3

Use of Once-A-Day milking for the whole dairy season was also considered and offered small decreases in greenhouse gas emissions, along with some changes in production and profit. However the limited nature of our industry tools to accurately model OAD milking scenarios means that the results weren't pursued further at this stage. The farm already routinely uses OAD milking throughout lactation to manage BCS, with whole herd OAD in the last months of lactation anyway.

Mitigation 4

Changes to the current system which modelled more/less cows for the same feed supply or the same number of cows with less feed supply could all affect profit in small ways. However they sought to drive more pasture harvest at home which was achieved, and ultimately lead to much smaller net changes in GHG emissions, as the total amount of feed eaten remained relatively constant, but less N in bought in supps reduced N loss to water and Nitrous Oxide emissions.

IMPACT ON PROFITABILITY AND PRODUCTION,

Profitability	*Current*	*De-intensification*	*Add Infrastructure*	*Mitigation 4*
Operating profit ($/ha)	2144	2595	3022	2,200-2,400
Operating profit/kgN leached ($)	61	87	92	64-66
Operating profit/T CO2e ($)	172	239	237	188-201
N leaching (%)		-14%	-7%	9%
GHG losses (%)		-13%	2%	3-4%
Profitability (%)		21%	41%	4-6%

NOTES

LINKS TO SCIENCE, LESSONS FROM OWL FARM'S PROFITABLE REDUCTION IN GHG EMISSIONS

In the last 2 years (from June 2016 to June 2018) Owl farm has:

- reduced total Greenhouse gas emissions by 8% (-1.1 tonnes GHG CO_2/ha, from 13.6 to 12.5 t GHG CO_2 eq/ha)
- lifted Operating profit /ha by 14%,
- reduced nitrogen loss to waterways by 14%.

Opportunities are currently available on many farms to improve both profit and reduce emissions through good management practices.
Two principles used to achieve this result at Owl farm are applicable across many farms:

1) **Reduce whole farm N surplus. N surplus = N input (fert N & imported feed N) minus N output (milk N)**
2) **Reduce total feed eaten/ha.**

Reduce Whole farm N surplus:

Owl farm's N surplus has decreased since 2016 by 20 kg N/ha from 190 to 170 kg N/ha

- Fertiliser N use has decreased (-13 kg N/ha),
- N in imported supplement has reduced by 8 kg N/ha.
- N in milk has been similar.
- In addition the N surplus captured in the effluent system is now better spread over the farm effluent area.

Dairy NZ data, using Overseer from 400 Waikato farms, shows that a reduction of N surplus by 100 kg N/ha is expected to decrease total GHG emissions by 4.26 t/ha.
The DairyNZ data predicts that reducing N surplus by 20 kg on Owl farm would be expected to reduce GHG emissions by **0.85 t GHG CO_2 eq/ha.** (20% of 4.26).
Reasons for this are less N used and less imported feed, N output in product has been retained, with increased efficiency of use of N.

Reduction in total feed eaten/ha, (with home grown feed increasing/ha).

Owl farm has reduced total feed use per ha by 0.4 t DM/ha, from 16.4 to 16 t DM/ha

- **Imported feed has reduced from 3.6 t DM/ha to 2.3 t DM/ha**
- **Home grown feed use has increased from 12.8 t DM/ha to 13.7 t DM/ha. This cancels out some of the gain from reducing imported feed.**

DairyNZ data from 400 farms shows that a 1 tonne reduction in total feed eaten/ha is expected to reduce GHG emissions by 0.73 Tonnes GHG CO_2 equivalent.
This suggests that Owl farms feed use change has reduced its GHG emissions by **0.292 t CO_2 eq/ha** (0.4 t DM/ha x 0.73).

Key Learnings:

- **Efficiency gains from good management practices in feed use and N use can be profitable and will also reduce emissions**
- **Do the numbers for your farm.**
- **Keep good records of feed use and N use**
- **As the farm becomes more efficient it becomes more difficult to reduce emissions profitably.**

Chris Glassey, Farm Systems Specialist, DairyNZ - March 21st 2019

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FINANCIAL PERFORMANCE

CURRENT YEAR FINANCIALS – BUDGET CASHFLOW

Owl Farm - For Year Ended: May 2019

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INCOME	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Total	Budget YTD	Variance YTD	Budget Full Year	2017-2018 Full Year	Variance Full Year
Milk Solids KG	-	6,216	21,391	24,460	24,906	22,042	19,744	18,745	14,730	-	-	-	152,233	147,291	4,942	174,570	168,169	6,401
																		-
Milk	-	29,043	98,998	106,355	102,412	90,719	64,256	108,331	116,604	-	-	-	**716,717**	743,854	(27,137)	1,171,127	1,140,532	30,596
Dividends	-	5,364	-	-	-	-	-	-	-	-	-	-	**5,364**	9,300	(3,936)	46,500	54,932	(8,432)
Cattle	-	12,959	4,193	1,377	3,471	861	602	(26)	3,863	-	-	-	**27,300**	40,077	(12,777)	69,335	91,601	(22,266)
Other Income	-	-	-	-	-	-	-	-	-	-	-	-	**-**	-	-	-	5,070	(5,070)
Total Income	**-**	**47,366**	**103,191**	**107,732**	**105,883**	**91,580**	**64,858**	**108,305**	**120,467**	**-**	**-**	**-**	**749,381**	**793,231**	(43,850)	**1,286,962**	1,292,135	(5,172)
																		-
EXPENSES	**Jun-18**	**Jul-18**	**Aug-18**	**Sep-18**	**Oct-18**	**Nov-18**	**Dec-18**	**Jan-19**	**Feb-19**	**Mar-19**	**Apr-19**	**May-19**	**Total**	**Budget YTD**	**Variance YTD**	**Budget Full Year**	**2017-2018 Full Year**	**Variance Full Year**
																		-
Wages	12,856	13,070	13,187	21,439	13,167	14,572	914	13,523	13,794	-	-	-	**116,522**	120,270	(3,748)	159,002	148,858	10,144
Animal Health	3,079	12,092	3,988	4,251	2,709	1,890	3,052	3,672	3,227	-	-	-	**37,959**	30,840	7,119	55,199	49,604	5,595
Breeding	554	742	196	5,193	8,401	11,820	4,899	3,174	2,705	-	-	-	**37,686**	34,146	3,540	39,265	38,692	573
Dairy Shed and Electricity	215	2,169	2,925	2,377	1,637	1,489	1,329	3,024	1,129	-	-	-	**16,294**	20,091	(3,797)	24,805	21,896	2,909
Purchased Feed	16,794	697	8,294	7,653	8,454	6,893	5,263	14,649	532	-	-	-	**69,229**	86,200	(16,971)	108,543	89,836	18,707
Grazing - Replacement Heifers & Calves	3,805	3,766	4,056	3,933	3,872	4,101	6,113	6,663	6,016	-	-	-	**42,325**	45,481	(3,156)	63,792	62,768	1,024
Fertiliser	-	9,605	7,450	3,266	22,524	20,769	6,544	-	-	-	-	-	**70,157**	64,544	5,613	87,304	70,143	17,161
Gibberellic Acid	-	-	-	-	-	-	-	-	-	-	-	-	**-**	-	-	-	-	-
Fertiliser Spreading	-	-	-	3,376	3,709	(1,101)	-	-	-	-	-	-	**5,984**	6,112	(128)	6,112	3,834	2,278
Freight	-	-	155	-	-	60	610	-	-	-	-	-	**825**	2,076	(1,251)	4,424	3,910	514
Cartage	-	555	350	2,095	2,679	760	360	575	200	-	-	-	**7,574**	8,108	(534)	9,274	7,848	1,426
Weeds and Pests	-	-	20	-	122	-	-	-	-	-	-	-	**142**	3,806	(3,664)	5,056	956	4,100
Consultancy	-	-	-	417	-	-	-	600	-	-	-	-	**1,017**	235	782	470	608	(138)
Silage	-	85	-	9,648	11,573	3,272	8,183	9,554	2,184	-	-	-	**44,499**	18,000	26,499	18,000	30,650	(12,650)
Cropping	-	-	-	1,252	7,639	1,856	380	-	-	-	-	-	**11,127**	20,034	(8,907)	29,705	17,137	12,568
Regrassing	-	-	-	800	1,316	721	-	-	261	-	-	-	**3,098**	6,818	(3,721)	21,899	31,541	(9,642)
R&M	3,511	7,200	2,028	804	1,452	3,130	3,753	5,009	5,182	-	-	-	**32,070**	40,279	(8,210)	47,649	47,210	439
Vehicle Expenses	1,166	1,284	1,156	2,217	2,756	988	1,594	466	400	-	-	-	**12,027**	14,465	(2,438)	18,469	12,704	5,765
General	1,332	1,801	1,864	2,160	1,867	1,602	1,431	(5,449)	1,071	-	-	-	**7,679**	16,754	(9,075)	20,521	22,475	(1,954)
Overheads	1,719	1,719	1,719	6,628	3,168	6,844	3,168	3,168	3,168	-	-	-	**31,301**	33,058	(1,758)	41,890	43,055	(1,165)
Total Farm Working Expenses	**45,030**	**54,784**	**47,388**	**77,508**	**97,045**	**79,666**	**47,594**	**58,629**	**39,869**	**-**	**-**	**-**	**547,514**	571,317	(23,803)	761,379	703,725	57,654
																		-
Net Surplus before Financial Charges	(45,030)	(7,418)	55,803	30,224	8,838	11,914	17,264	49,676	80,598	-	-	-	201,867	221,914	(20,047)	525,583	567,893	(62,826)
																		-
Financial Charges	**Jun-18**	**Jul-18**	**Aug-18**	**Sep-18**	**Oct-18**	**Nov-18**	**Dec-18**	**Jan-19**	**Feb-19**	**Mar-19**	**Apr-19**	**May-19**	**Total**	**Budget YTD**	**Variance YTD**	**Budget Full Year**	**2017-2018 Full Year**	**Variance Full Year**
Interest Cost	14,106	14,106	14,106	14,106	14,106	14,106	14,106	14,106	14,106	0	-	-	**126,954**	140,533	(13,579)	186,162	183,378	2,784
Lease Land	2,882	2,911	2,911	2,911	4,619	4,619	4,619	4,619	4,619	0	-	-	**34,709**	26,343	8,366	35,124	34,964	160
Total Financial Charges	16,988	17,017	17,017	17,017	18,725	18,725	18,725	18,725	18,725	-	-	-	**161,663**	166,876	-5,213	221,286	218,342	2,944
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Surplus (Deficit) after Financial Charges	(62,019)	(24,435)	38,786	13,207	(9,887)	(6,811)	(1,461)	30,951	61,874	-	-	-	40,205	55,038	(14,834)	304,297	349,551	(45,254)

Compare your figures to ours in the table below. This shows our current season cost /ha /cow and /kgMS plus our three prior years /kgMS for reference as assessed to the end of February.

St Peter's · Cambridge New Zealand

Lincoln University
Te Whare Wānaka o Aoraki
Aotearoa · New Zealand
New Zealand's specialist land-based university

St Peter's School/Lincoln University
Demonstration Dairy Farm

FARM WORKING EXPENDITURE COMPARISON – TO END FEB

Measure - To 28/02/2019	Total	/ha	/cow	$/kgMS 2019	$/kgMS 2018	$/kgMS 2017	$/kgMS 2016	Your figures
Total volume	**Total**	147	406	152,233	144,910	148,681	152,346	
Milksolids KG	**152,233**	1,036	375					
Total Labour Costs	**116,522**	793	287	0.77	0.73	0.79	1.04	
Animal Health	**34,823**	237	86	0.23	0.23	0.27	0.20	
Calf Rearing	**3,136**	21	8	0.02	0.02	0.00	0.02	
Breeding	**37,686**	256	93	0.25	0.25	0.26	0.18	
PKE	**44,750**	304	110	0.29	0.25	0.25	0.56	
Grass Silage Harvested	**44,499**	303	110	0.29	0.21	0.18	0.09	
Purchased silage	**16,952**	115	42	0.11	0.14	0.09	0.69	
Feed Inventory Adjustment	**0**	0	0	0.00	0.02	0.15	0.00	
Cropping	**11,127**	76	27	0.07	0.08	0.10	0.07	
Feed Sampling	**789**	5	2	0.01	0.01	0.00	0.00	
Calf Meal	**6,738**	46	17	0.04	0.04	0.04	0.03	
Fertiliser Spreading	**5,984**	41	15	0.04	0.03	0.02	0.04	
Fertiliser - Maintenance	**36,072**	245	89	0.24	0.16	0.14	0.17	
Fertiliser - Nitrogen	**34,085**	232	84	0.22	0.19	0.21	0.18	
Freight	**7,574**	52	19	0.05	0.05	0.06	0.01	
Re-grassing	**3,098**	21	8	0.02	0.11	0.00	0.03	
Heifer grazing costs	**43,150**	294	106	0.28	0.32	0.33	0.39	
Shed Expenses	**5,942**	40	15	0.04	0.05	0.08	0.06	
Electricity	**10,352**	70	25	0.07	0.08	0.08	0.06	
Water Charge	**6,711**	46	17	0.04	0.10	0.08	0.08	
R & M - Land & Buildings	**14,577**	99	36	0.10	0.14	0.13	0.13	
R & M - Plant & Equipment	**17,416**	118	43	0.11	0.08	0.08	0.07	
Vehicle Maintenance	**6,181**	42	15	0.04	0.05	0.05	0.03	
Petrol/Diesel	**5,923**	40	15	0.04	0.04	0.04	0.04	
Weed & Pest Control	**142**	1	0	0.00	0.01	0.00	0.01	
Other Expenses	**1,985**	14	5	0.01	0.04	0.08	0.09	
Rates/ACC/Insurance	**31,301**	213	77	0.21	0.24	0.22	0.26	
Total Farm Working Expenses	**547,514**	**3,725**	**1,349**	**3.60**	**3.78**	**3.62**	**4.25**	

NOTES

SEASON TO DATE

	Year to date 20/03/19	2015-2016	2016-2017	2017-2018	2018-2019	Notes
Stock	Milking Platform	160	146	148	147	
	Cows on farm	409	378	412	344	
	Peak cows	445	423	418	405	
	Cows in vat today	384	374	404	336	
	Peak stocking rate	2.78	2.90	2.82	2.75	1
Production	Total kgMS Season to date to factory	161,072	160,257	155,098	160,669	2
	MS/cow/day - last 10 days	1.03	1.45	1.19	1.15	
	MS/ha/day - last 10 days	2.65	3.80	3.24	2.55	
	MS/cow Season to date	362	379	371	397	
	MS/ha Season to date	1,007	1,098	1,045	1091	3
	MS/ha from homegrown feed to date	825	860	928	1009	4
Feed and Inputs	Pasture Cover at 20 March	2,116	2,165	2,065	1,991	
	Pasture growth rates total TDM/ha theoretical total grass on a hectare based on average growth rates	12.7	13.1	14.8	14.0	
	Pasture grown ave all ha TDM/ha accounts for areas in crop/during regrassing and not growing grass	11.1	11.5	13.4	13.3	
	Reduction in APC TDM/ha 16-17 only (mined cover from 2900 to 1900 pre-balance date)	0.0	1.0	0.0	0.0	
	Total pasture supply TDM/ha	11.1	12.5	13.4	13.3	
	Yield of Crop grown per total farm /ha	1.0	1.2	0.8	0.8	
	Home silage on hand fed winter /ha	0.1	0.2	0.3	1.2	
	Imported Supplements fed/ha	3.2	2.7	1.8	1.2	
	Total Feed supply TDM/ha	15.3	16.7	16.2	15.8	5
	Homegrown grass eaten TDM/Ha (grown this year)	9.2	8.6	9.7	9.0	6
	Harvested silage this year eaten /ha	0.0	0.0	0.1	0.9	
	Crop eaten per total farm/ha	0.9	1.0	0.7	0.7	
	Homegrown feed Eaten TDM/ha (grown this year)	10.0	9.7	10.5	10.6	
	Reduction in APC TDM/ha	0.0	0.8	0.0	0.0	
	Total Homegrown feed eaten TDM/ha	10.0	10.5	10.5	10.6	
	Silage harvested TDM/ha Season to date	0.0	0.6	1.1	1.8	
	Total Homegrown feed Harvested TDM/ha	10.1	11.0	11.5	11.6	7
	Home silage on hand eaten winter/ha	0.0	0.2	0.2	0.4	
	Imported Supplements Eaten TDM/ha	2.2	1.9	1.3	0.9	
	Total Feed eaten this year TDM/ha	12.3	12.6	12.1	11.9	
	% Feed eaten grown on farm	82%	85%	89%	92%	8
	Feed conversion Eff (kgDM/kgMS eaten)	12.2	11.5	11.5	10.9	9
	Nitrogen Applied/effective ha	99	121	122	92	
Inventory feed T DM	Homegrown silage/hay	40	81	183	103	
	Crops available (estimate yield remaining)	0	0	0	0	
	PKE in budget for rest of year	52	26	44	50	
	Bought silage hay	62	49	59	67	
	Maize silage	96	112	0	0	
	Total TDM supplements on hand (/cow)	250 (0.57T/cow)	268 (0.63T/cow)	285 (0.67T/cow)	220 (0.54T/cow)	10

NOTES

Owl Farm Numbers – Seasonal Update

"WINDING UP FAST"

Stocking Rate

1. We currently have 336 cows on farm, with culling completed 6 weeks earlier than last year due to dry weather.

Milk Matters

2. We are milking less cows this year and we were targeting more milk out the gate. By the end of March we had increased from 1,700kgMS to 8,000kgMS ahead of last year since November. We are now producing less than last year on a considerable basis and already drying off early for the end of the year.
3. Despite the short end our season will take, we're pleased to see the KPIs tracking MS/ha to date, at almost the highest level we've seen (especially when two years ago we had already fed out 150TDM of Maize silage in the summer and autumn).
4. With good stores of homegrown feed and a drive at efficiency our production per hectare from homegrown feed continues to increase, with a 9% increase year to date over last year, and already over 1,000kgMS/ha from homegrown feed to date.

Summary of the pantry this year

5. Total feed supply to date is lower than last year by 0.4TDM/ha (2.5% less feed). Principally this is due to less imported supplement required season to date, and in the same time total milk production is up 3.6% on last year (more milk from less available feed).
6. Until February we had grown almost the same amount of feed as last year, aggressively harvesting more as silage and therefore having **lower homegrown grass actually eaten** by the cows this year by 0.7TDM/ha (7% less).
7. As mentioned we have harvested considerably more silage at home this season than last year, an extra 0.6T/ha (62% more than last year's silage), meaning slightly **more total homegrown feed harvested** to date than last year despite slightly lower homegrown feed supply this year.
8. With the feed eaten this year that was grown at home(grass and some of this year's silage), plus our supplements on hand made on farm last year, our feed supply is 92% grown on the farm, compared to 89%, 85% and 82% of feed in the last three years.
9. This is a positive outcome, and shows for less feed grown, more feed harvested and more milk out the gate (8,000kgMS ahead to end February before dry kicked in) our efforts into increase feed utilisation efficiency has been paying off. Doubly good that more of the feed is homegrown to increase our profitability.
10. Total supplements available at this point in the season have varied a bit over the years. Between last year and this year versus the first two years, no Maize silage is the principal difference. In exchange, we have more grass silage – a positive for protein supply to the herd, but more difficult for body condition preservation and gain in the summer and late autumn.
    Compared to last year we have130kg/cow less available at the same point in the season. We have already reduced our demand to minimum levels. With another 15T of DM less pasture cover on farm, and a projection of poor growth rates for another 10 days we don't have the reserves to keep milking further without:
    - Losing more BCS from the cows, when we are running out of time and have limited resources to replace it; or
    - Buying in feed, PKE which we can't feed to milkers as we are at an approximate maximum without an FEI grade meaning moving silage to milkers and winter on PKE only; or
      Buying in Maize silage, which doesn't give us enough protein to milk very well with, is expensive and poorly utilised in our system if fed in winter instead; or
    - Compromising next season by removing necessary resources from next year's feed budget. Our biggest issue is ensuring pasture cover lifts by limiting the amount of grass eaten. In our system no supplement satisfactorily resolves this issue at a reasonable cost that is less than the lost milk.

NOTES

AUTUMN MANAGEMENT PLAN

Supplements

In a challenging extended summer, we've been grateful to have the large volume of supplements available that we had as summer began. Despite this, significant and prolonged sub-budget growth has meant we are in a considerable feed deficit, against our original milking plan. We have to date grown 70TDM less than anticipated in February and March, and we take stressed pastures into April while hoping for compensatory growth.

We have our feed budget planned through to the end of the year, including knowing how much feed we need kept aside for winter and next spring.

Note, we will use PKE in winter and next spring – we have an amount contracted already, but may need to add some spot purchases to those volumes in late May and June.

Silage Type	Mob to be fed	Feeding time	TDM required	Total TDM Req	TDM Available
Good quality pit silage	Milkers	Spring milk	38	38	40
Lower quality pit silage	Milkers	Autumn Milk	18	132	132
	Dries	Autumn	36		
	Dries	Winter	70		
Hay	Springers	Spring milk	9	9	9
Palm Kernel	Milkers	Summer Autumn	10	50	50+
	Dries	Autumn	40		
Total Feeds			220	220	220

Deploying feed Resources

The amount of feed on hand has gone from abundant, to restricted and will be rationed carefully alongside the even more important decisions made around drying off date and pasture rotation length.

Poor March pasture growth has precipitated a drastic reduction in milking season length. Between February and March we have grown 70T or 500kg/ha less grass than budgeted. While we still have large volumes of supplement available, the lack of grass on hand and the need to build winter cover means our total feed supply is too low to continue milking as long as we normally would like.

We have used PKE since mid-January, so that we could stretch out our silage reserves as far as possible. We cannot add more PKE to the milking diet right now. Poorer autumn pasture quality is also restricting weight gain in the milkers.

We have three key activities to achieve this autumn:

1. Build winter pasture cover reserves by 1 June. With low growth – we can only achieve this by restricting grass intake and slowing rotation. This limits available grass to eat in the autumn.
2. Build herd BCS, by focussing on individual condition score and calving date. With limited pasture available for milking, limited PKE that can be fed with FEI requirements and now limited total quantities of silage on hand, we must use dry off date to ensure weight gain occurs.
3. Hold winter supplement reserves aside. This unfavourable autumn doesn't have to affect next season. Ensuring we build pasture cover and pre-allocate appropriate levels of silages for winter and early spring ensures we start next year on the front foot to achieve spring targets.

We strongly recommend every farm have a feed budget all year, but particularly in times like this. Knowing where you are and where you want to be is always the first step to ensuring you make a plan to reach your goals.

See the following website for a range of simple, free, paper templates as a starting point:
https://www.dairynz.co.nz/feed/pasture-management/assessing-farm-performance/feed-budgets/

NOTES

NEW GRASS PLAN 2018-19

All permanent pastures will have Ecotain added in spring, to allow strong management post-emergence of broadleaf weeds in the autumn and winter e.g. hedge mustard. Broadcasting Ecotain at 4kg/ha into the swards will still see great establishment of the Plantain plants in the sward.

All permanent pastures will be sown with Quartz and Legacy white clover cultivars.

We continue to see advantageous use of Cocksfoot in many of our worst performing paddocks where soil compaction, free draining soil type, or historical cultivation has led to poorer soil structure and environment for ryegrass alone to persist. Where these issues aren't present we continue to preferentially use permanent ryegrass cultivars.

Autumn Regrassing	Area (ha)	Notes	Cultivars Rate/ha
Undersow Permanent Ryegrass	10.4	Stitch open permanent pastures, don't need crop	Platform Permanent Ryegrass *12kg/ha*
Undersow Italian Ryegrass	7.0	Stitch for short term yield before crop 2020	Lush Italian Ryegrass 18kg/ha
Permanent pasture after crop	3.2	3ha into permanent ryegrass dominant pasture	Rely + clover *21kg/ha* *4kg/ha*
Permanent pasture after crop	6.9	8ha into cocksfoot dominant pasture	Platform + Savvy Cocksfoot +Clover *12kg/ha* *8kg/ha* *4kg/ha*
Plantain paddock top up	1.5	Plantain paddocks into cocksfoot dominant	Platform + Savvy Cocksfoot +Clover *12kg/ha* *8kg/ha* *4kg/ha*
Plantain paddock top up	2.6	Plantain paddocks into Cocksfoot clover only	Savvy Cocksfoot + Clover *12kg/ha* *4kg/ha*
Autumn Sown Annuals	6.5	Drive winter yield ahead of crop in Annual ryegrass	Winter Star II *30kg/ha*
Total Area regrassed	**32.1**	**22% of Farm**	
Total Area drilled	**38.6**	**26% of farm** (including annuals ahead of crop)	

NOTES

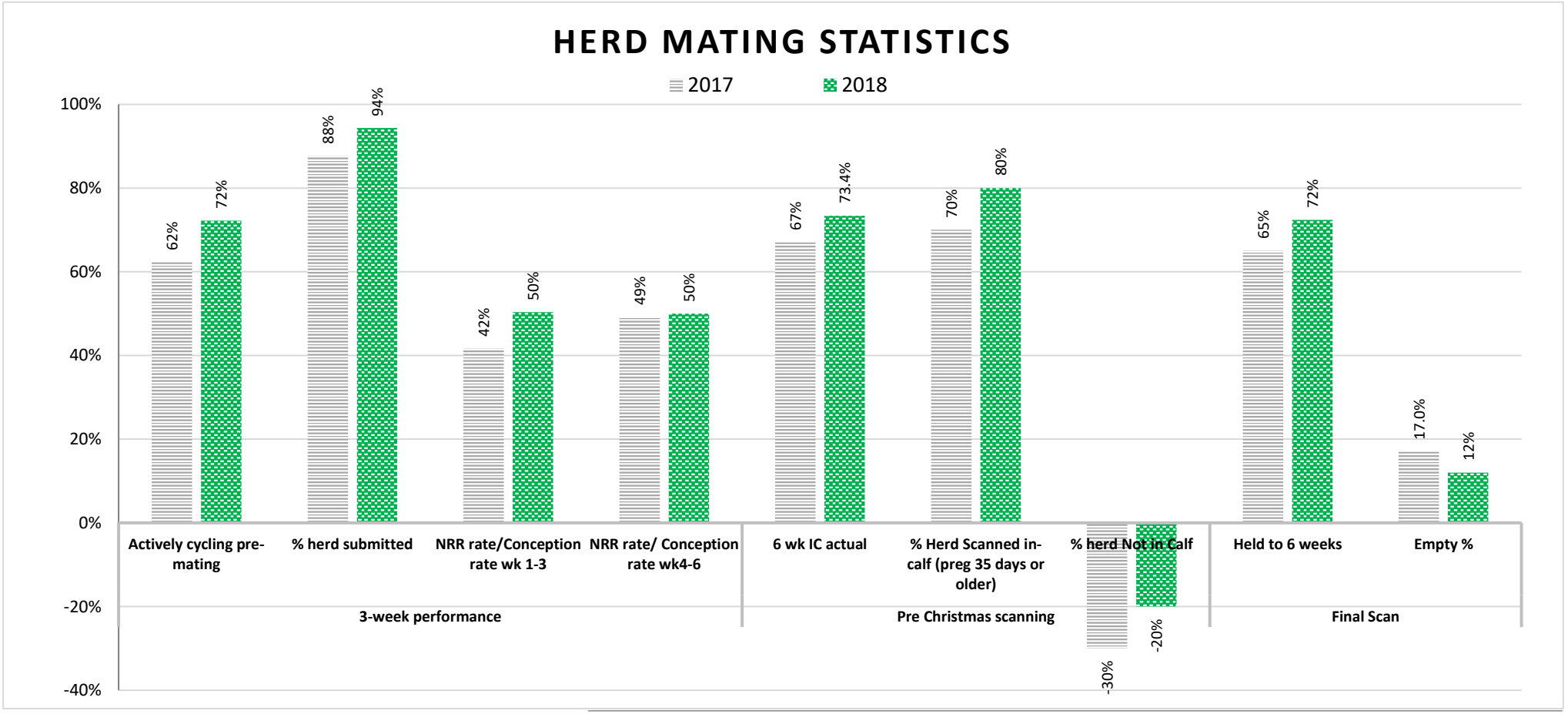
MATING UPDATE – CROSSED FINGERS OR LEGS

Pleasing results followed the initial progress during mating, with a final in-calf rate and 6-week in calf rate lifting rather nicely compared to last year.

We recovered all of the ground we lost last year, with the principle difference between season being more BCS on the herd and all cows at target by calving. Between years there was no change in feed types or volumes in the early spring period.

From calving to mating spring 2017, cows had produced 121kgMS on average at the start of mating, and 246kgMS/cow by the end of mating season to date.
From calving to mating spring 2018, cows had produced 131kgMS on average at the start of mating, and 260kgMS/cow by the end of mating season to date.

This means that pre-mating cows had produced an extra 10kgMS over the prior year and during mating they produced an additional 4kgMS/cow again, a total of 14kgMS/cow above the previous year. We mention this as there was some conjecture that last year cows didn't get in-calf well due to milking too well. This year they milked even better and reproductive performance also improved.



BODY CONDITION SCORING ALL COWS

Individually scoring all cows since March has had some really important outcomes that we think are worth sharing. In March 2018 at our Focus day when we discussed the autumn plan we said "no cow left behind": we meant it. Summary: Individual BCS recording is something that we will now do every year. We think 3-4 critical times should be something all farms should do. As a Demonstration farm we will continue to do it monthly for another 6 months at least.

THE PROCESS

Peter Briston from Cambridge Vets is accredited in Body Condition Scoring and came out roughly monthly and scored all cows in the shed. Dries were run through the shed as well as milkers if possible. The first dry-off group were too close to dry off to come through the shed for the April reading. We weren't able to use the shed in June so there is no June score for individuals.

An important point to note is that cows are recorded at the last definitive score they passed. E.g. while we might go to the paddock and assess a cow as "more than 3.5 and less than 4.0", and we might decide she is closer to a 4 than a 3.5 – we would round her score up and record her as a 4.0. The vet would say (and rightly so), she is not yet a 4, therefore she is recorded as a 3.5. This was difficult for us as it dragged our average down, and possibly skews the true BCS of the herd but it is an accurate reflection of the cows and helps create a risk portfolio for the herd.

THE RESULTS – ABSOLUTELY WORTH IT

Our average BCS has had a much healthier start to the season this year, which has helpfully carried on so far this year leading to no cows below BCS 4 heading into mating, compared to 25% of the herd last year.

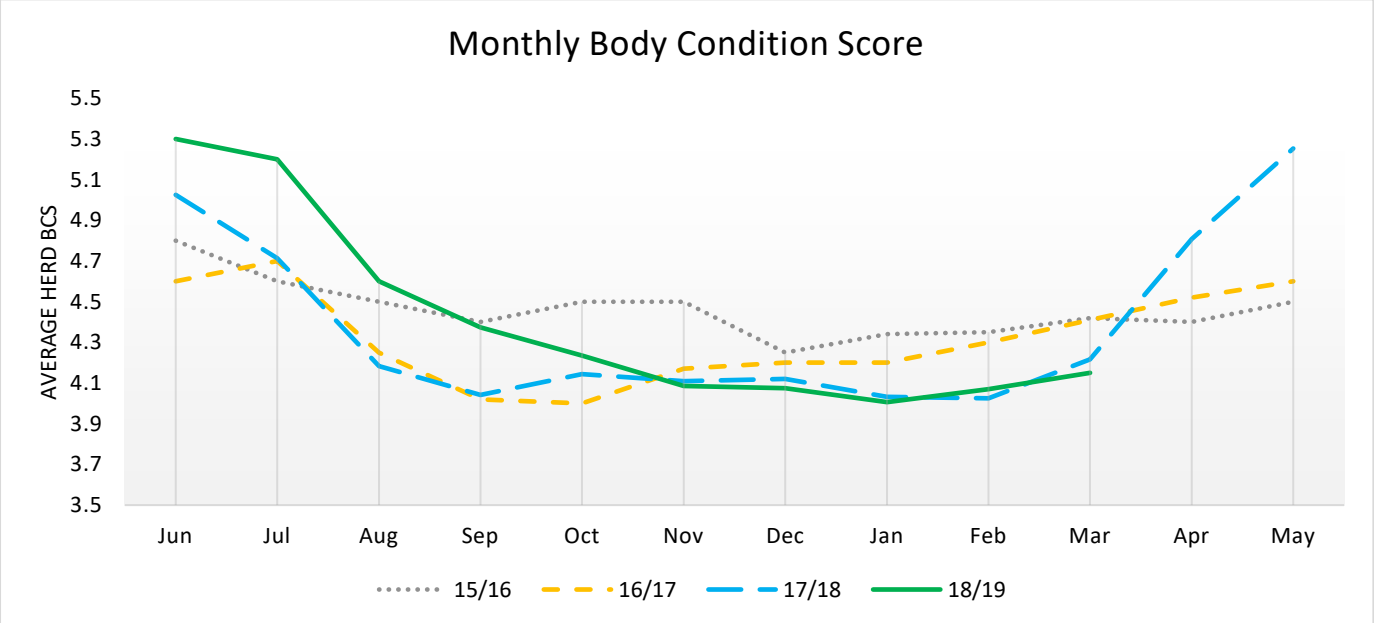
We're now looking at this as a capital investment in BCS that we intend to maintain year-on-year a little like feed Inventory. It's part of how our system works now and needs to be carefully maintained each year.

Individual BCS – benefits

Most importantly it gave us the independent list of individual cows in the herd most at risk – which removes any farmer bias when having to choose WHICH are the cows whose BCS at calving is most under threat.

- Reducing BCS range and the number of at risk cows.
- Historic data for any performance issues a cow has in the season (repro or low prod – we have a BCS reference).
- Ensure all animals are on a trajectory for their BCS target in line with their calving date.
- Impartial decision making about at-risk cows

Average Herd BCS last 4 years from paddock assessment.

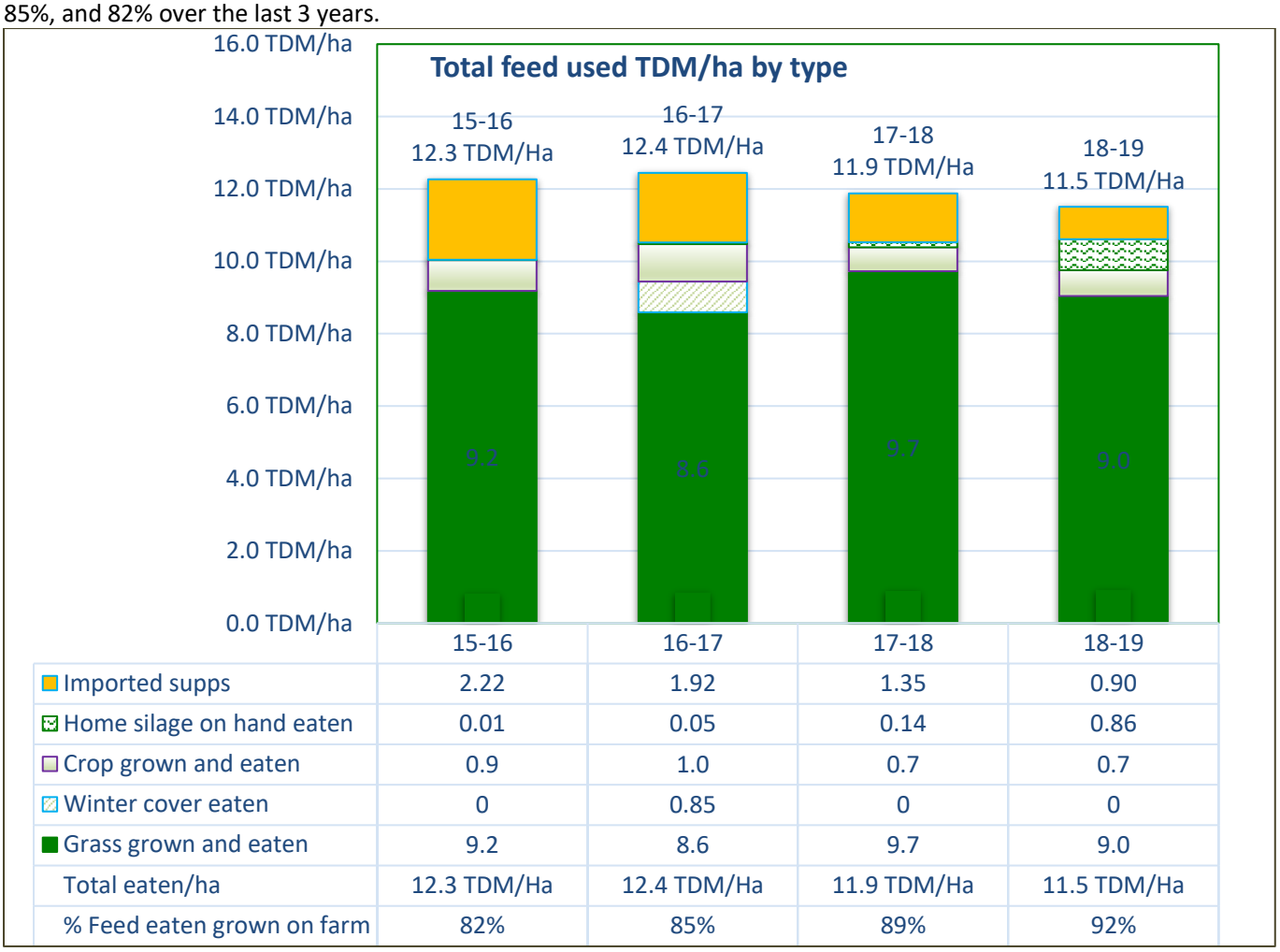


NOTES

SUMMARY DATA

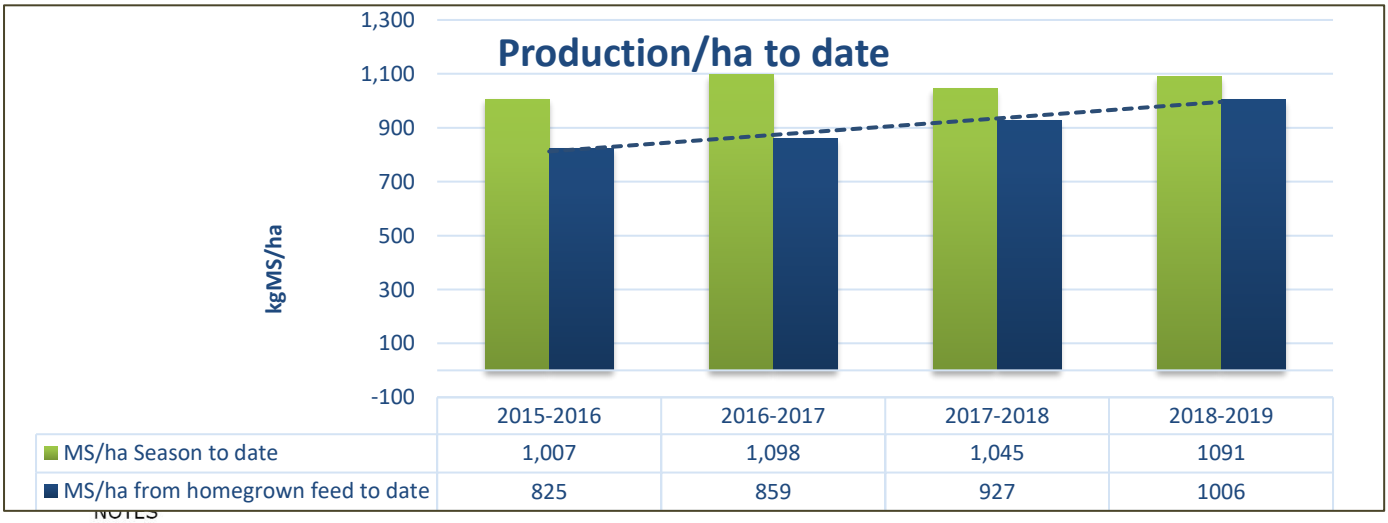
FEED INFORMATION

The dry intensity in late February that has continued into March has had intense, rapid and aggressive impacts on season performance. We are now 0.8tDM/ha behind last year from February and March growth rate changes.
With a strong emphasis on homegrown feed for 4 years, this season we rolled into 1 June with significant amounts of homegrown forage on hand meaning we are depending less on imported feeds to fill early season feed deficits. To date 92% of the feed used this season was produced on Owl Farm including silages harvested in prior years, compared to 89%, 85%, and 82% over the last 3 years.



	15-16	16-17	17-18	18-19
Imported supps	2.22	1.92	1.35	0.90
Home silage on hand eaten	0.01	0.05	0.14	0.86
Crop grown and eaten	0.9	1.0	0.7	0.7
Winter cover eaten	0	0.85	0	0
Grass grown and eaten	9.2	8.6	9.7	9.0
Total eaten/ha	12.3 TDM/Ha	12.4 TDM/Ha	11.9 TDM/Ha	11.5 TDM/Ha
% Feed eaten grown on farm	82%	85%	89%	92%

Despite lower feed used we have produced milk to date. The “more milk from less feed” scenario relates to both a more aggressive strategy on feed this year, but better cow condition at start of calving making its way into the vat.



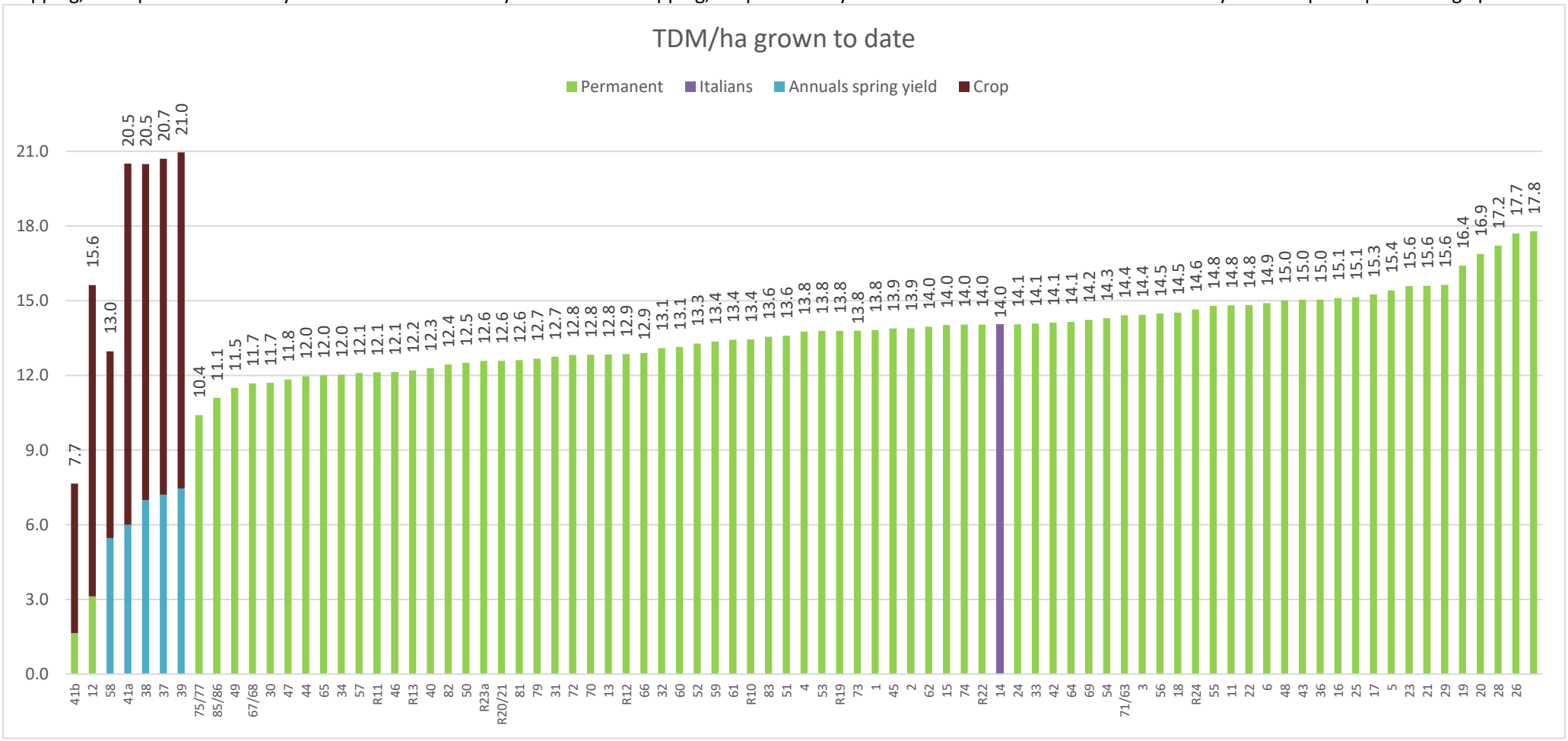
	2015-2016	2016-2017	2017-2018	2018-2019
MS/ha Season to date	1,007	1,098	1,045	1091
MS/ha from homegrown feed to date	825	859	927	1006

NOTES

Owl Farm

On a paddock by paddock basis we see a strong variation in yield to date – with the best paddocks outgrowing the worst by nearly 80%. The worst paddocks in order (excluding those used for crop); receive no fert or Nitrogen (75/77), are very dry river terrace paddocks (85/86, 49, 67/68) and are now sprayed out into annuals ahead of cropping next spring (30,47).

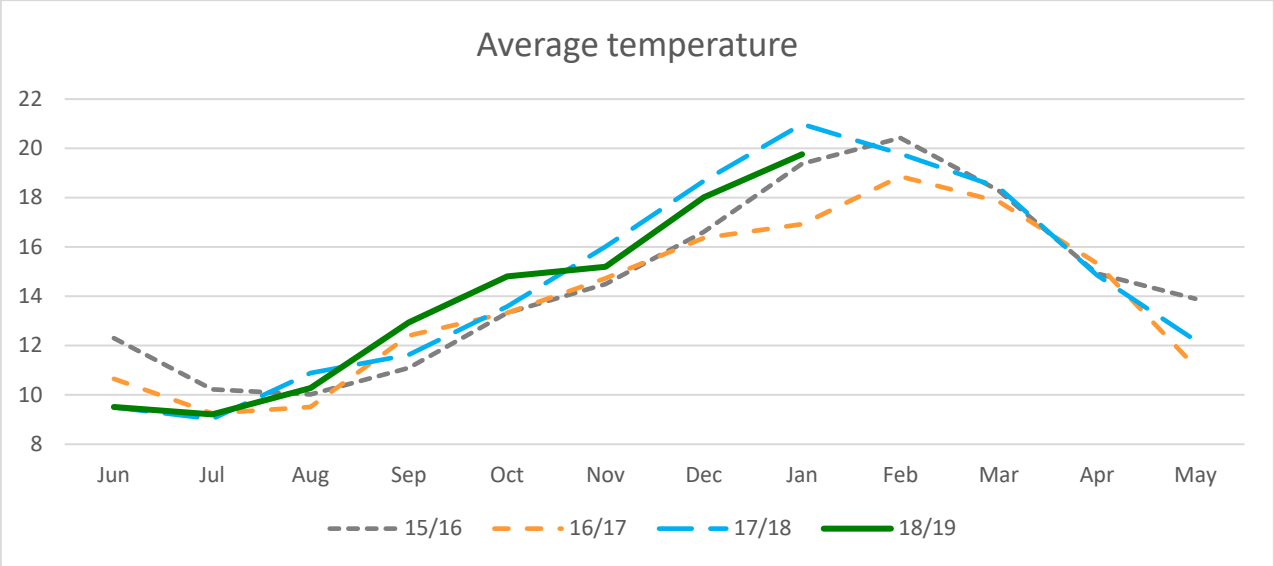
The top performing permanent grass paddocks are our autumn sown new grass cocksfoot paddocks. Of paddocks cropped, the relative permanent pasture yield this year before cropping, compared to the yield of annuals this year before cropping, explains why we use Annuals to bolster winter yield in poor performing paddocks.

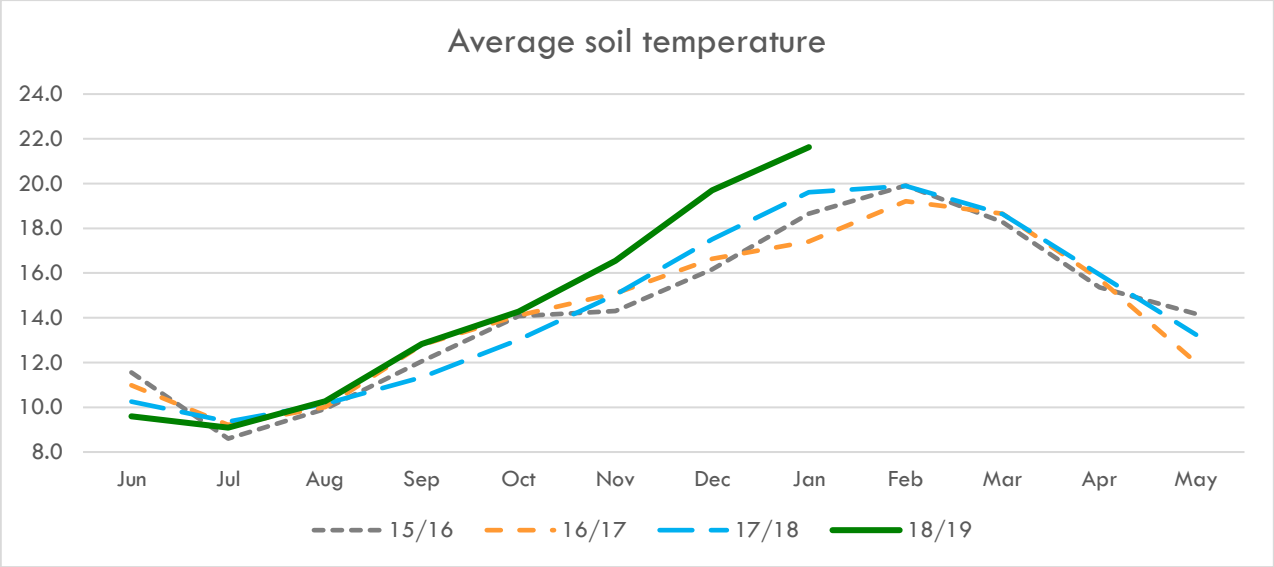


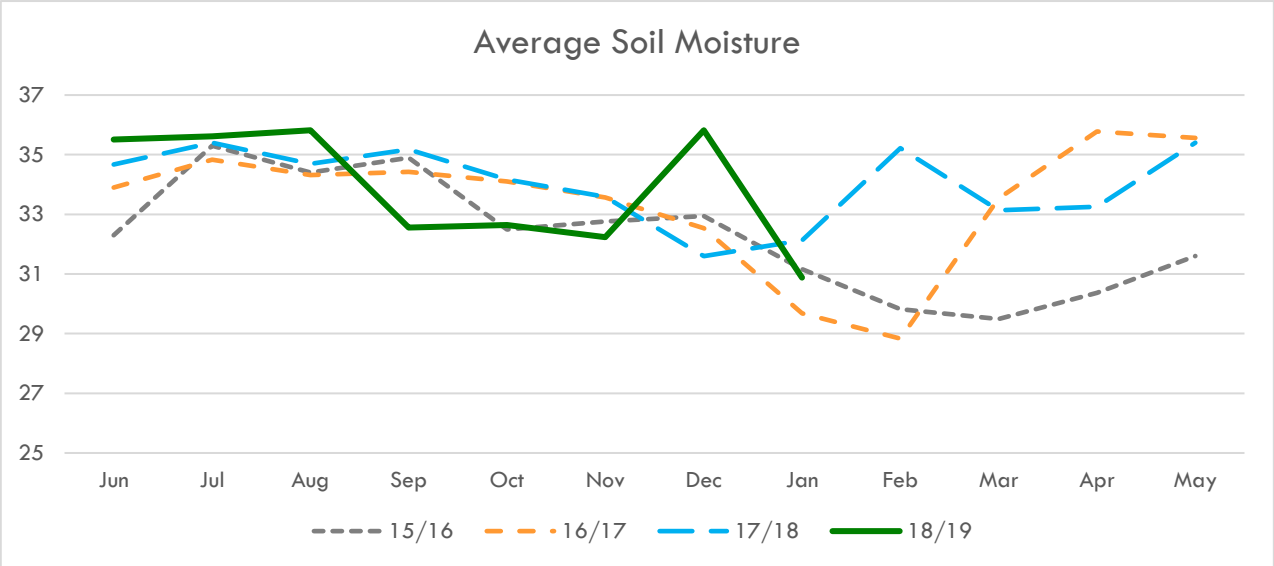
NOTES

Owl Farm

CLIMATE

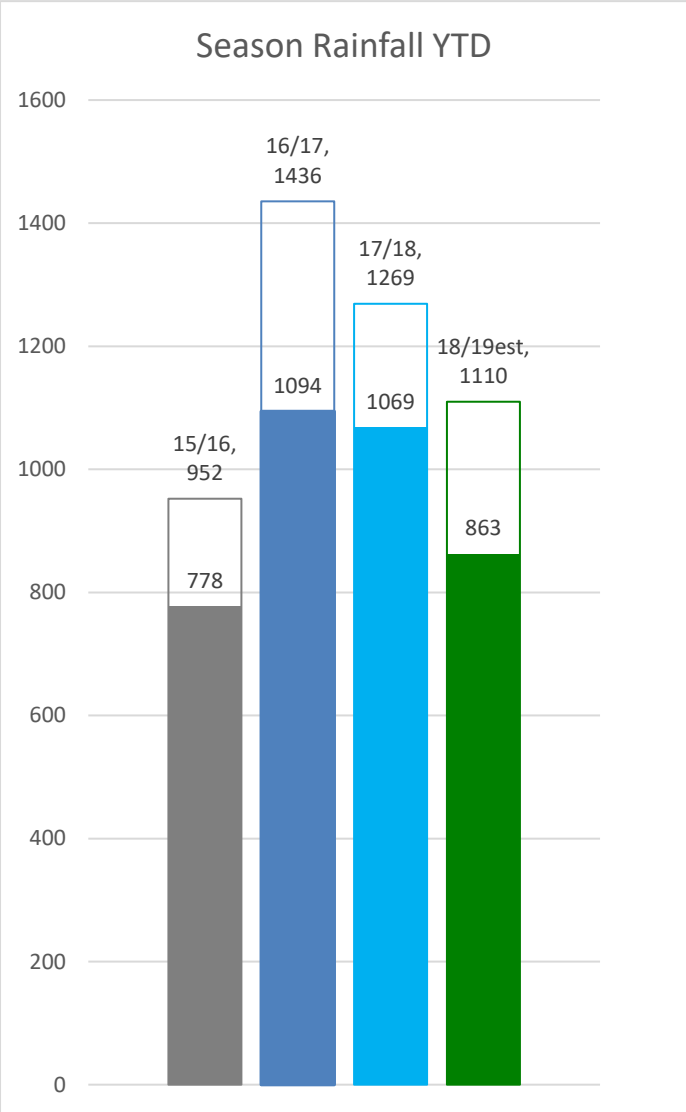


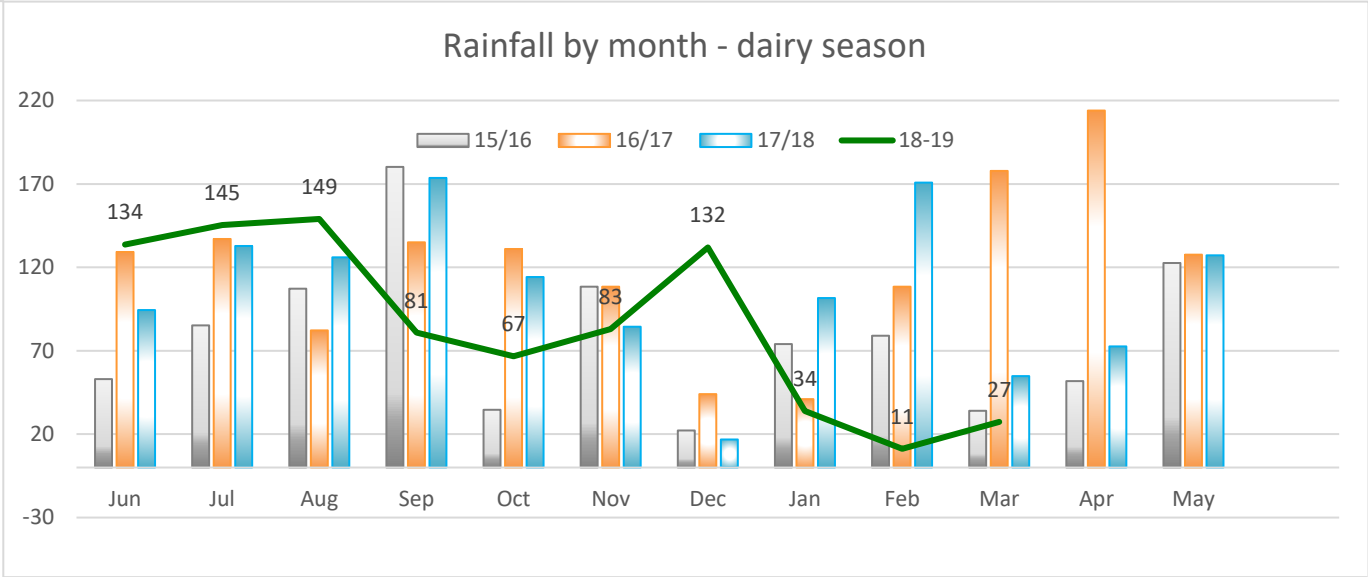


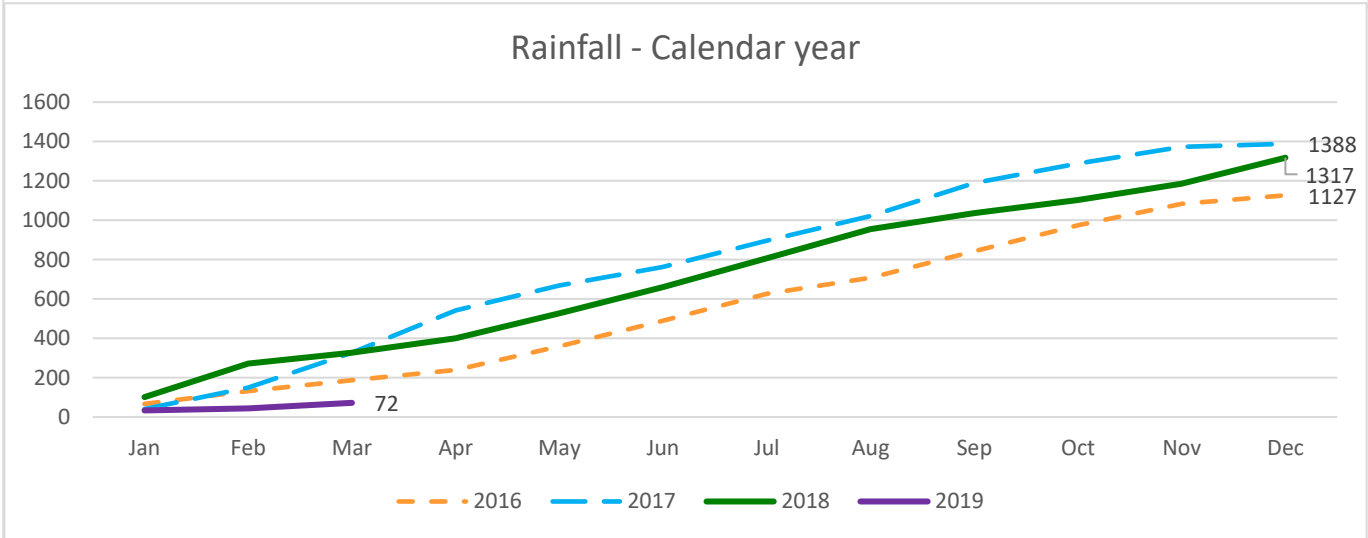


NOTES

RAINFALL



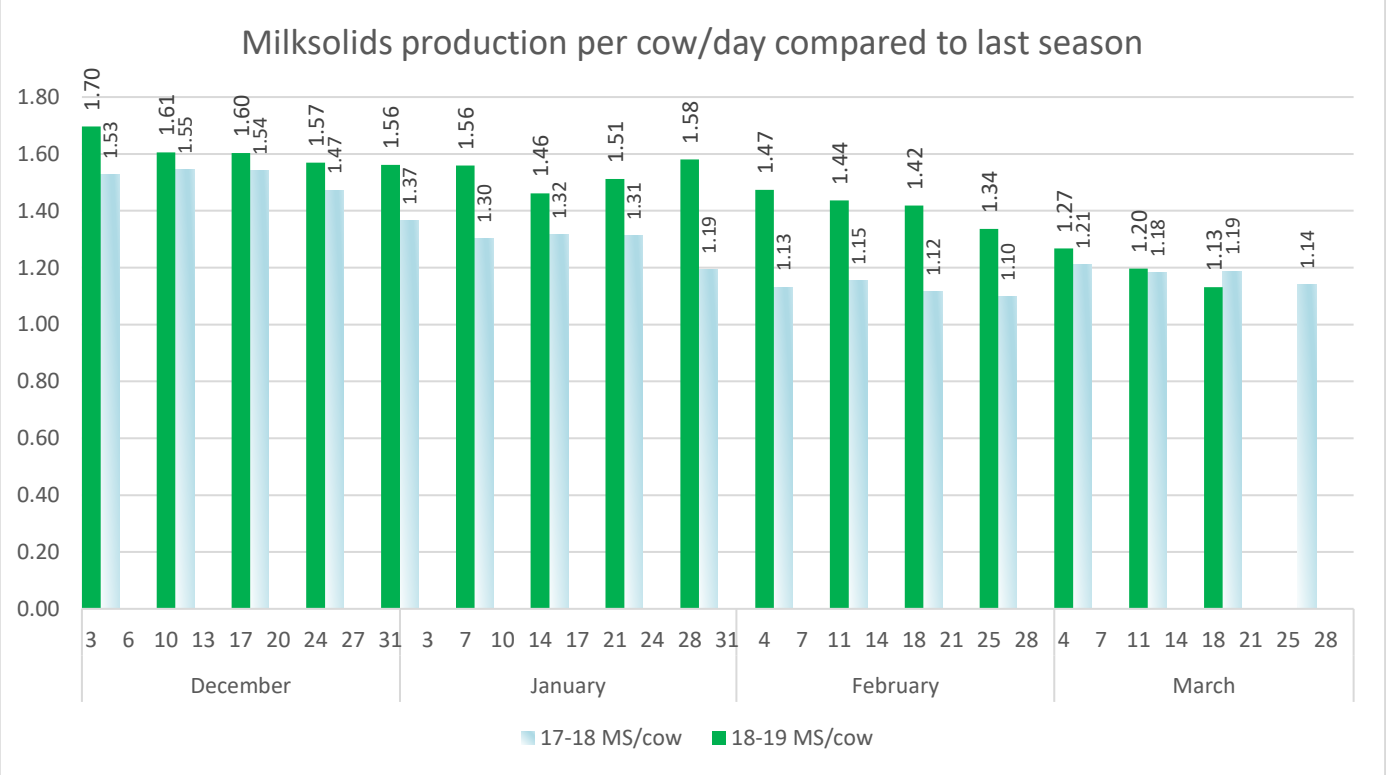


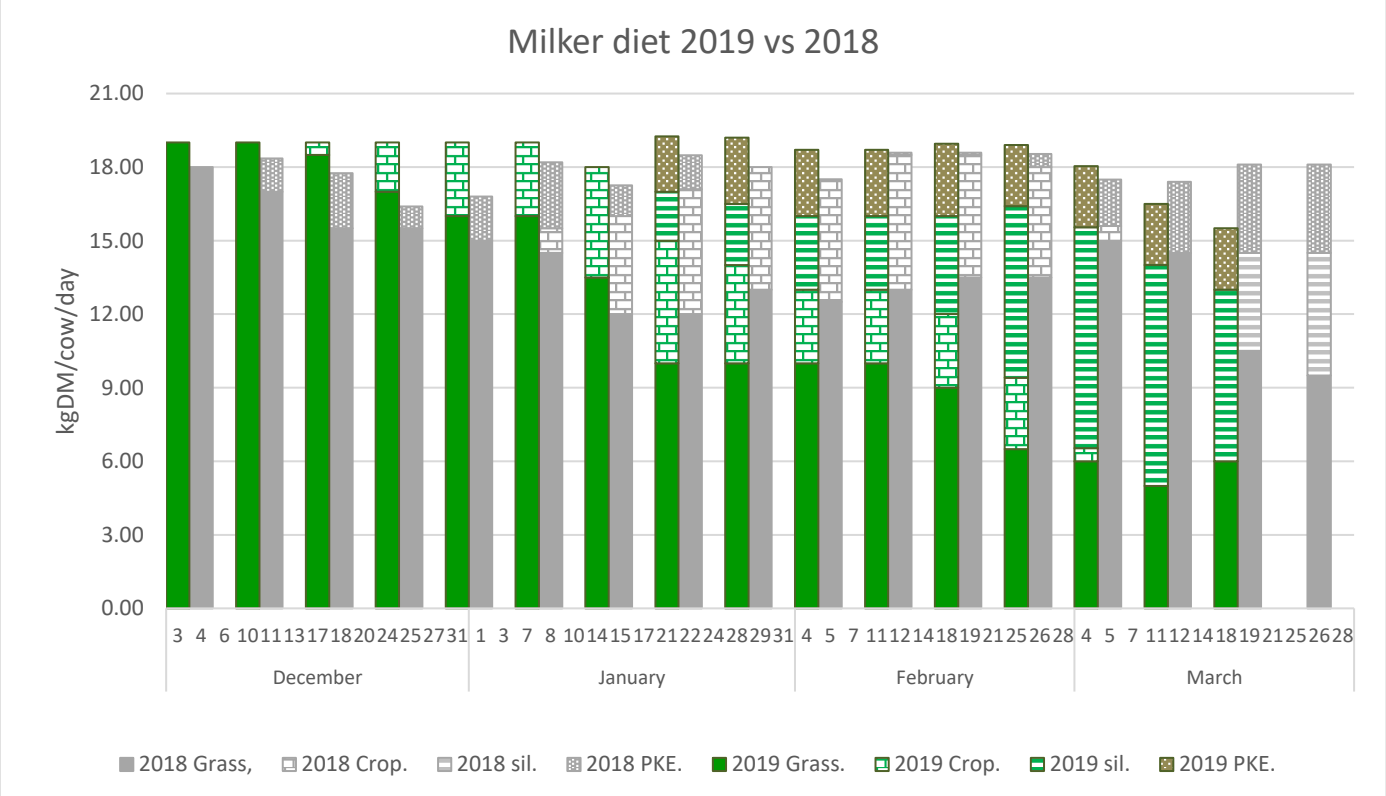


NOTES

Owl Farm

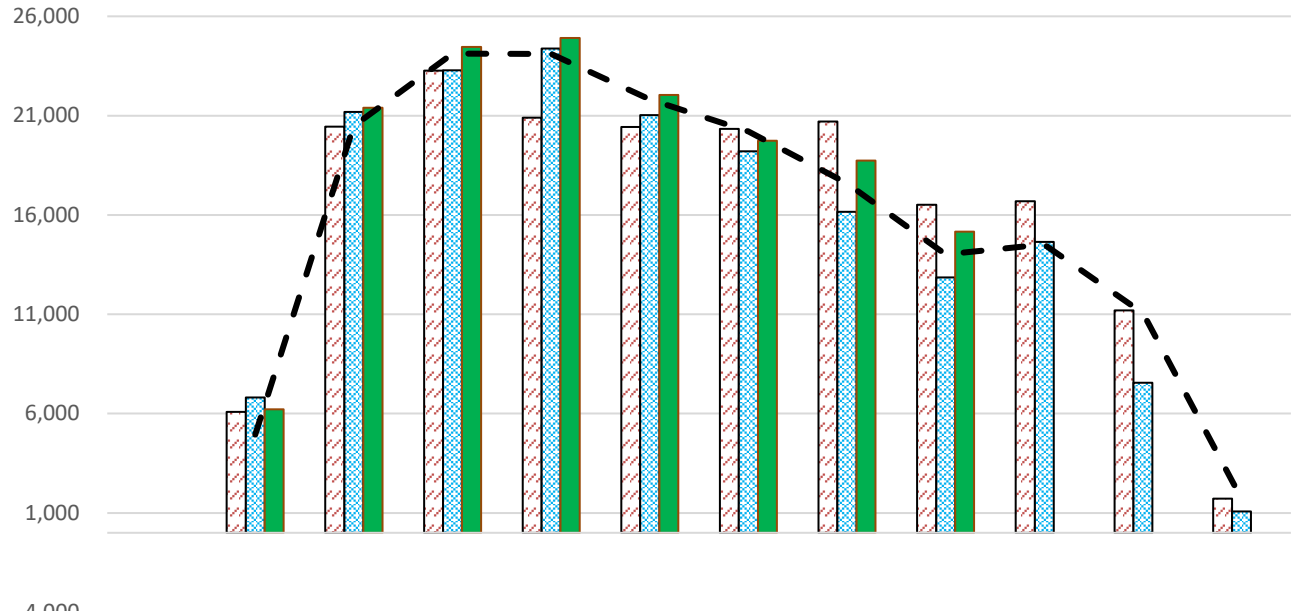
PRODUCTION





NOTES

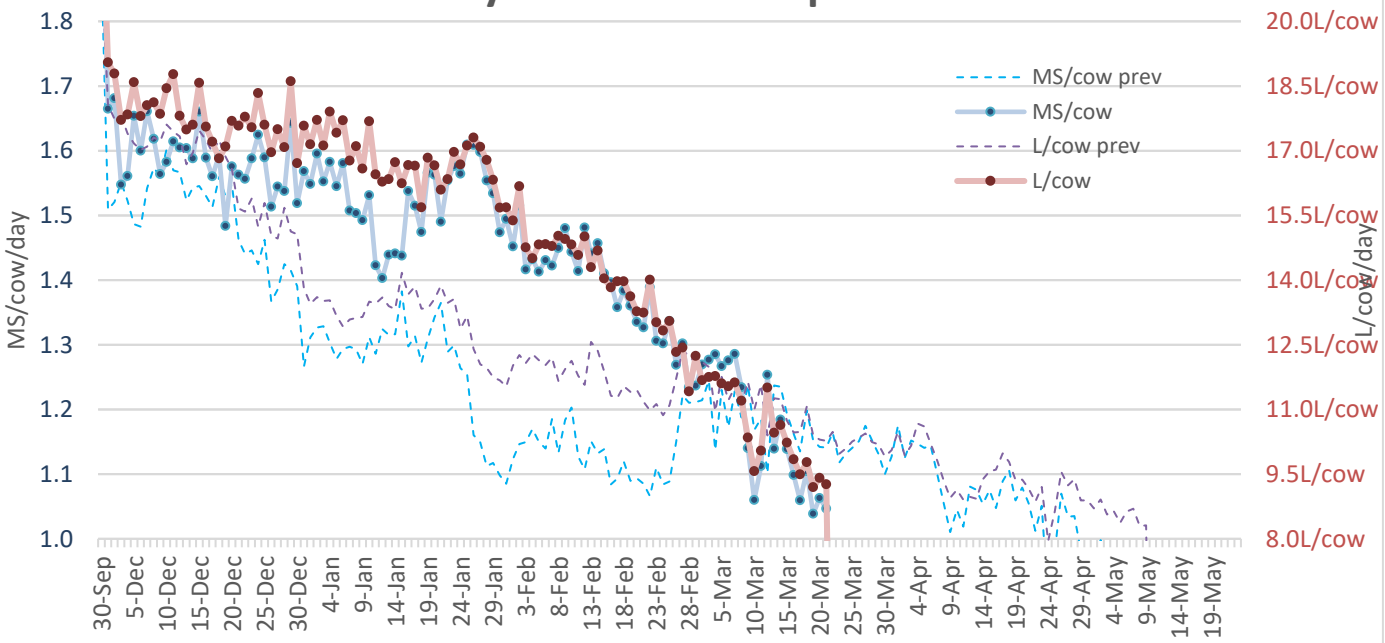
Production: Monthly Performance



	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
16/17 production		6,095	20,440	23,267	20,896	20,431	20,337	20,697	16,519	16,693	11,202	1,717
17/18 production		6,807	21,183	23,287	24,376	21,030	19,213	16,158	12,856	14,641	7,549	1,070
18/19 Production		6,216	21,391	24,460	24,906	22,042	19,744	18,745	15,154			
Budgeted 18/19		4,943	20,485	24,124	24,108	21,816	20,202	17,589	14,024	14,524	11,044	1,711

16/17 production 17/18 production 18/19 Production Budgeted 18/19

Daily Performance - per cow



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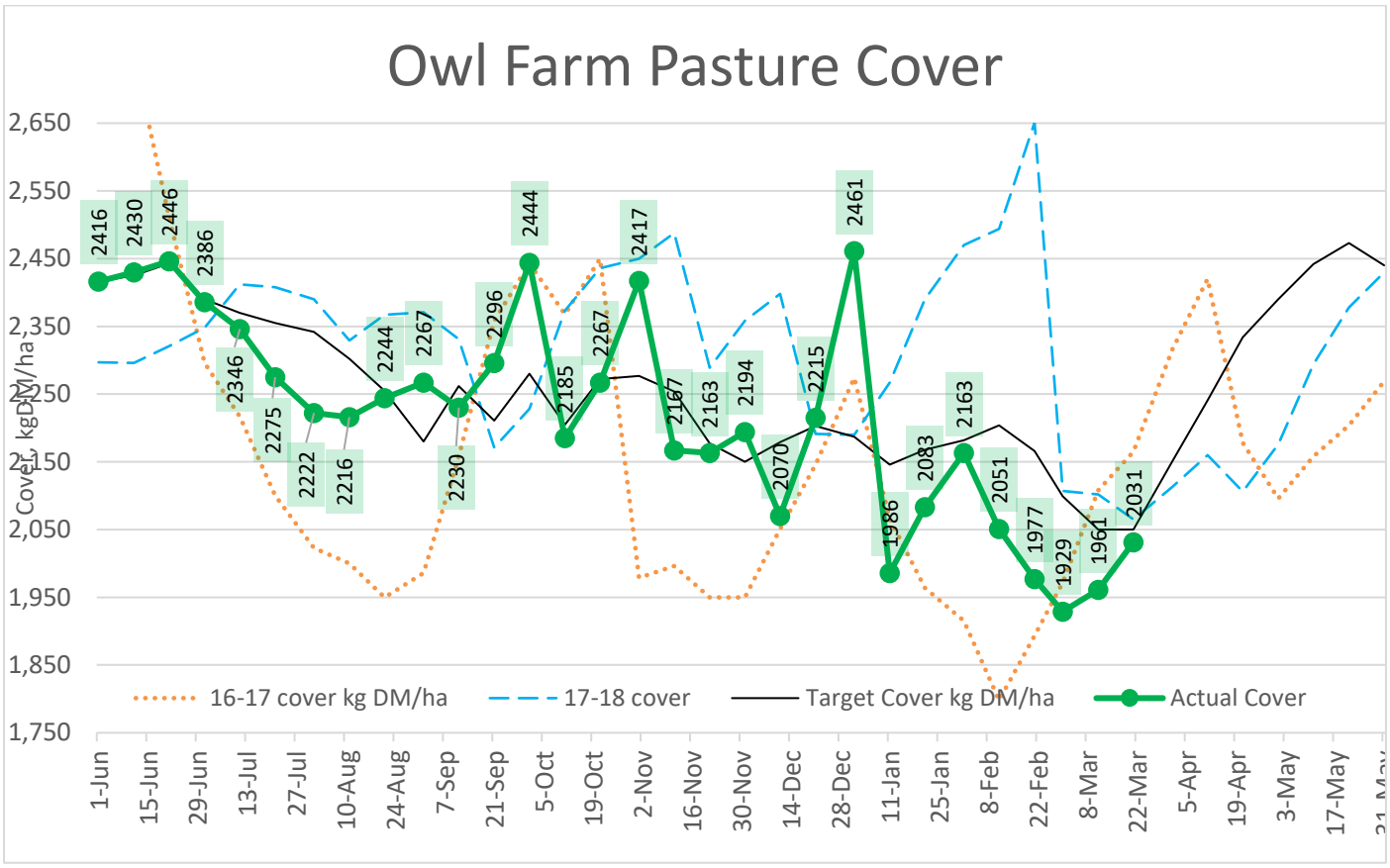
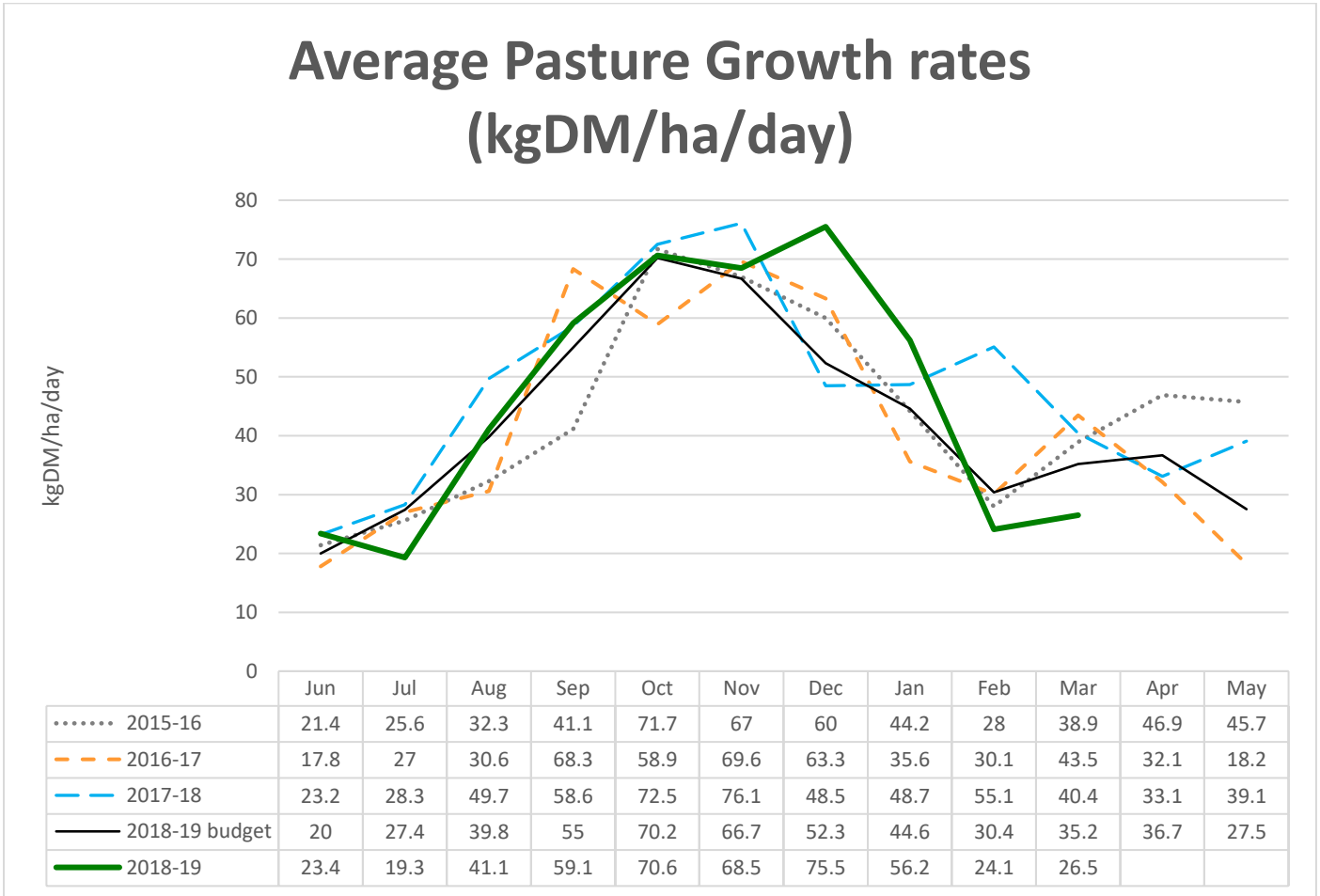
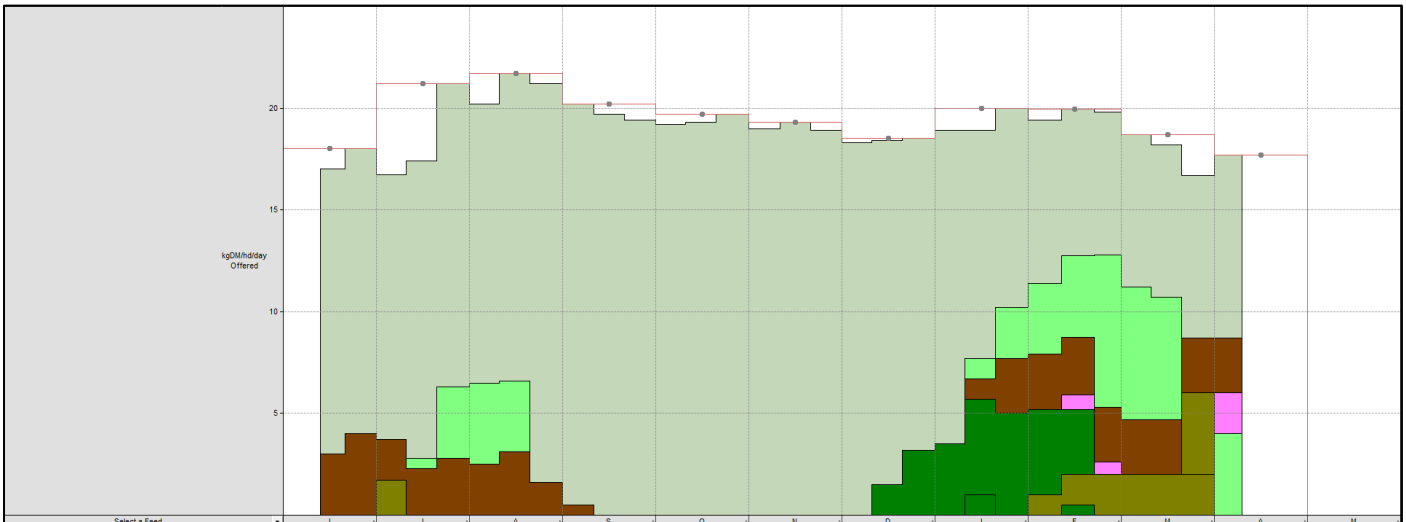




	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
2015-16	21.4	25.6	32.3	41.1	71.7	67	60	44.2	28	38.9	46.9	45.7
2016-17	17.8	27	30.6	68.3	58.9	69.6	63.3	35.6	30.1	43.5	32.1	18.2
2017-18	23.2	28.3	49.7	58.6	72.5	76.1	48.5	48.7	55.1	40.4	33.1	39.1
2018-19 budget	20	27.4	39.8	55	70.2	66.7	52.3	44.6	30.4	35.2	36.7	27.5
2018-19	23.4	19.3	41.1	59.1	70.6	68.5	75.5	56.2	24.1	26.5		

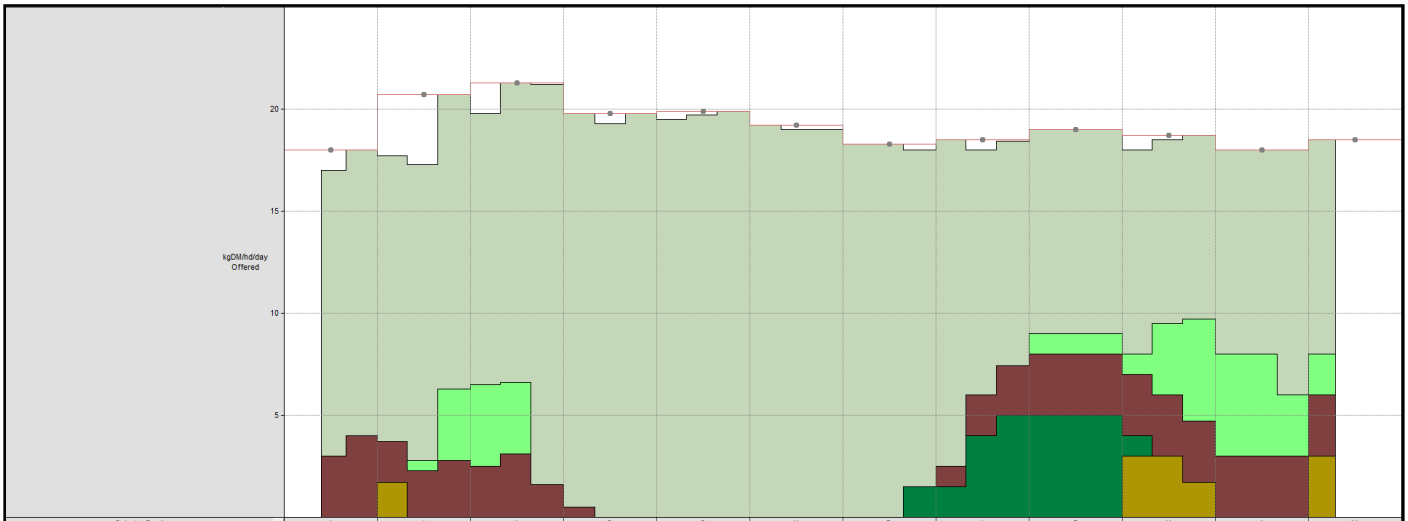
SEASONAL FEED BUDGET

Supplementary feed use throughout the 2018-2019 season – Actuals including dry off date change



Select a Feed	J	J	A	S	O	N	D	J	F	M	A	M
Pasture	12.8	14.2	16.1	19.6	19.4	19.1	16.8	12.1	7.4	7.7	9.0	
Pasture Silage		1.4	2.4					1.2	4.8	4.0		
Palm Kernel	3.5	2.4	2.4	0.2				1.3	2.8	2.7	2.7	
Bought Hay												
McGraths occasional grazing									0.4		2.0	
Bulb Turnip							1.6	4.4	2.6			
Rodmor baleage		0.6										
Sorghum and dry Silage										1.4		
Dry cow summer silage											4.0	
Hay big												
Rodmor silage									1.5	2.0		
Greenfeed cereal								0.3	0.2			
Total (Utilised)	13.2	13.8	15.8	15.8	15.7	15.4	14.9	15.8	16.6	15.5	11.9	

Supplementary feed use throughout the 2018-2019 season – Summer/Autumn forecast as at Nov 2018



Select a Feed	J	J	A	S	O	N	D	J	F	M	A	M
Pasture	12.8	14.3	15.9	19.5	19.7	19.1	17.7	13.0	10.0	9.3	10.7	10.5
Pasture Silage		1.4	2.4						1.0	3.2	4.3	2.0
Palm Kernel	3.5	2.4	2.4	0.2				1.8	3.0	3.0	3.0	3.0
Bought Hay												
McGraths occasional grazing												
Bulb Turnip							0.5	3.5	5.0	0.3		
Rodmor baleage		0.6										
Sorghum Silage												3.0
Dry cow summer silage												
Hay big												
Rodmor silage										2.5		
Total (Utilised)	13.2	13.9	15.6	16.1	16.2	15.6	15.1	15.4	16.1	15.4	14.6	14.9

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Next Farm Focus Day

Wednesday 22 May, 2019

Weekly Monitor Walk

Tuesdays, 11am

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