



Farm Focus Day

Wednesday, 18 March 2020

PROVIDING KNOWLEDGE

All AI mating with sexed semen, Wagyu and short gestation

Pregnancy results, impacts for the farm system

Surviving summer and getting back on track

Review of crop yields and summer production
Plan for the autumn ahead

Safer Farms

General Manager Tony Watson leading a discussion on how we

- Acknowledge the problem
- Have significant conversations, and
- Problem solve together



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.
- Optimising profit through identifying the appropriate dairy production system for Owl Farm.
- Achieving a 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)

Established credibility by addressing current issues and performance, whilst setting up the farm for future development. During this stage, the farm operated 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.



NOTES



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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 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 YOU 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

- Jo Sheridan – Demonstration Manager 021 712 680
- Tom Buckley – Farm Manager 021 058 4916

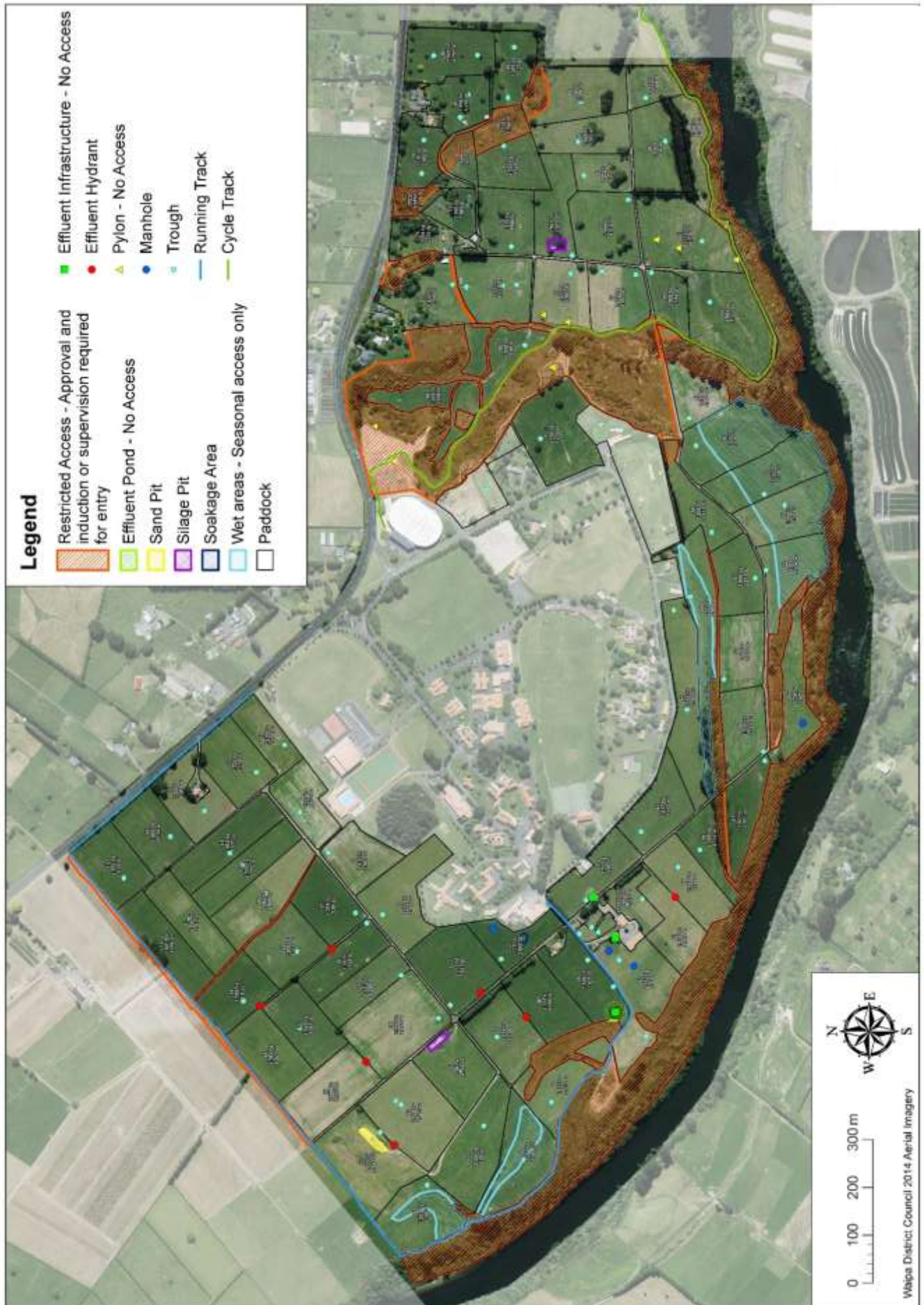
Safety Equipment Location

- 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



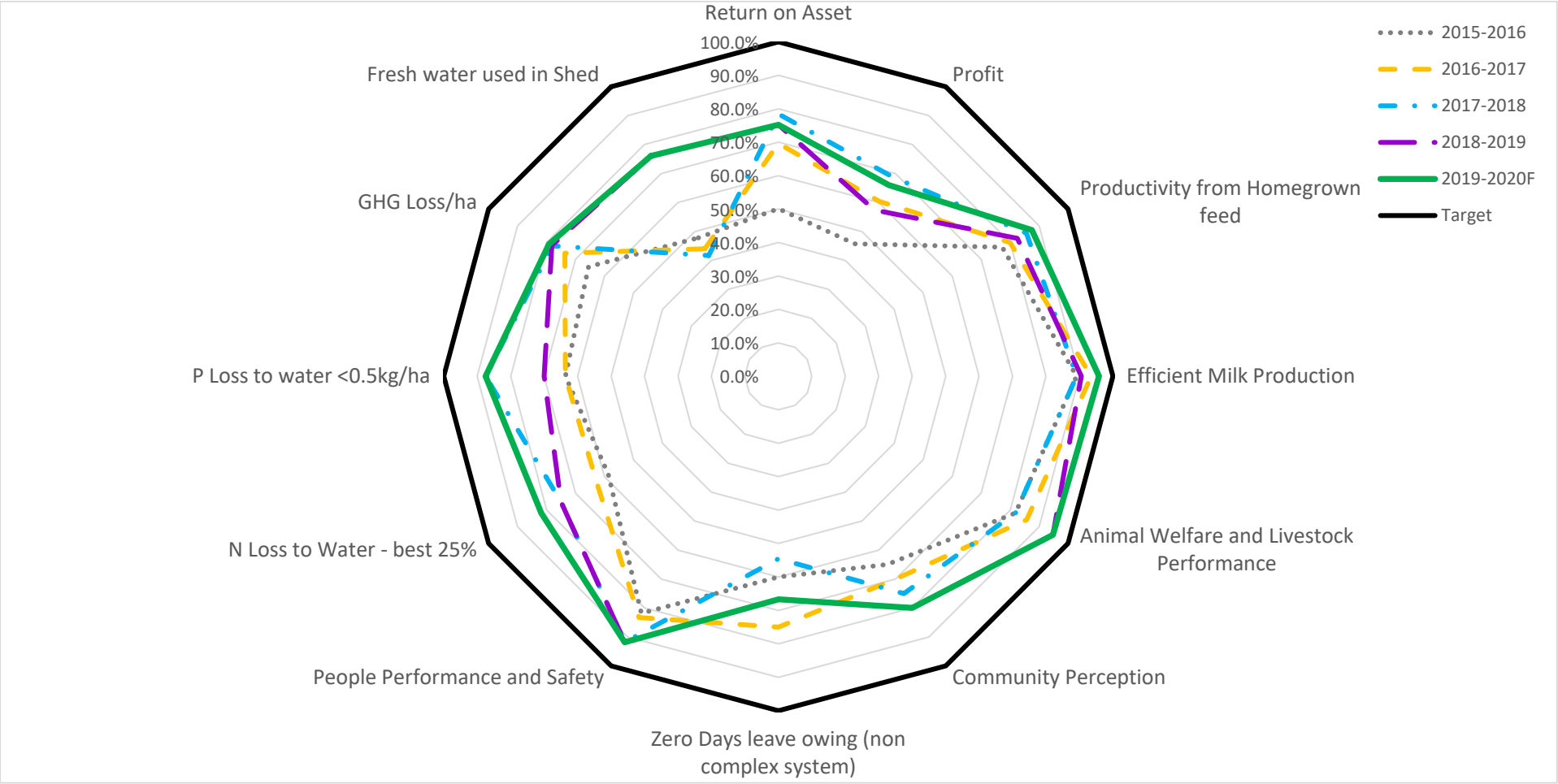


OWL FARM MULTI-YEAR SNAPSHOT

Year		2015-2016	2016-2017	2017-2018	2018-2019	2019-20 F
Physical Info	Total farm area	177	164	164	164	164
	Effective area (ha)	157	146	148	147.3	147.5
	Effective area leased (ha)	23	18	18	18	22
	Leased run off (ha)	3	7	5	3+12	5+5
	Cows wintered	470	453	441	419	421
	Peak cows (1 Nov)	445	423	418	406	412
	Peak stocking rate cows/ha	2.83	2.90	2.82	2.76	2.79
Production	Total kg MS	176,197	178,294	168,169	169,359	177,654
	MS/cow	396	421	402	417	431
	MS/ha	1,122	1,221	1,136	1,150	1,204
	MS/ha from homegrown feed	879	952	978	1,013	1,066
	MS as % liveweight	85.2%	90.6%	86.5%	89.7%	92.7%
	Average SCC	112,000	125,000	146,000	172,000	150,000
Feed and Inputs	Feed grown T DM/ha	15.9	15.1	17.5	15.7	15.9
	Feed harvested T DM/ha (actual kg)	11.7	12.6	13.6	14.1	12.5
	Feed harvested T DM/ha (@11MJME/kg DM)	12.4	12.8	13.7	13.2	13.6
	Supplements imported T DM/ha	4.3	3.6	2.3	2.1	2.1
	Supplements imported T DM	671	523	335	306	305.5
	% diet imported	21%	19%	11%	11.8%	11.5%
	% of farm cropped & harvested (silages)	21%	35%	33%	93%	57%
	Nitrogen applied/effective ha	149kg	163kg	150kg	150kg	150kg
Financials	Gross farm rev/kg MS (inc stock/dividend)	\$4.78	\$7.00	\$7.56	\$6.86	\$7.14
	Cash farmgate milk price /kg MS (Dairybase)	\$3.46	\$5.52	\$6.39	\$6.43	\$6.75
	Accrued farmgate milk price /kg MS	\$3.90	\$6.12	\$6.66		
	Stock sales /kg MS	\$0.48	\$0.43	\$0.54	\$0.43	\$0.39
	Dividend /kg MS	\$0.41	\$0.44	\$0.36	\$0.00	\$0.00
	FWE/kg MS	\$4.95	\$4.12	\$4.28	\$4.41	\$4.25
	OPEX/kg MS (inc dep ⁿ & feed inv)	\$5.03	\$4.81	\$4.59	\$4.72	\$4.65
	EFS/ha actual payouts (cash milk rev) Dairybase	-\$723	\$1,925	\$3,096	\$2,482	
	EFS/ha actual payouts (accrued milk rev)	\$126	\$2,742	\$3,446	\$2,395	\$2,871
	EFS/ha @ \$6.00 farmgate milk price (no div)	\$1,189	\$1,807	\$2,102	\$1,922	\$2,060
	Opening debt/kg MS held	\$20.00	\$23.02	\$21.23	\$23.02	\$21.61
Enviro	Estimated N loss kg/ha	40	42	35	35	33
	Estimated P loss kg/ha	1.2	1.1	0.8	0.9	1.0
	GHG loss/ha Overseer FM kgCO ₂ e/ha	11,700	12,600	11,900	11,700	11,900
	Biological GHG/ha (methane + nitrous oxide)	9,744	10,340	9,824	9,361	9,561
	N conversion efficiency	33%	39%	39%	39%	39%
Statistics	Cowshed	36 Rot	36 Rot	36 Rot	36 Rot	36 Rot
	Feed infrastructure	NIL	NIL	NIL	NIL	NIL
	Herd BW/PW	162/189	107/128	112/135	119/153	118/152
	Industry BW/PW	110/122	64/73	72/93	64/73	64/73
	Effluent storage	Clay lined pond			New lined pond	
	% farm effluent applied to	44 ha 29%	51 ha 35%	51 ha 34%	51 ha 34%	51 ha 34%
	Soils are a mix of clays and sands, on largely flat terraced contour					
	Operational re-grassing via crop and re-grassing ~ 15% per year					
	3 permanent staff members are employed - no relief staff required to cover time off or calf rearing duties.					

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 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 important. Each item creates tension on the others on the wheel to keep our performance improvements balanced.



SEASON TO DATE

	Season to date 29/02/2020	2016-2017	2017-2018	2018-2019	2019-2020	Notes
Stock	Milking Platform	146	148	147	147	
	Cows on farm	378	410	395	383	1
	Peak cows	423	418	405	405	
	Cows calved	425	423	409	411	
	Cows in vat today	378	410	395	383	
	Peak stocking rate	2.90	2.82	2.75	2.75	
Production	Total kgMS Season to date to factory	148,697	144,911	152,674	151,348	2
	MS/cow/day - last 10 days	1.46	1.13	1.31	1.15	3
	MS/ha/day - last 10 days	3.85	3.06	3.42	2.87	
	MS/cow Season to date	352	347	377	374	4
	MS/ha Season to date	1,018	976	1,036	1,026	5
	MS/ha from homegrown feed to date	863	869	942	939	6
Feed and Inputs	Average Pasture Cover 1 June	2,951	2,256	2,430	2,516	
	Pasture growth rates total TDM/ha	12.3	14.2	13.2	11.2	7
	Actual pasture grown to graze and harvest as silage excl area sprayed out in crop	11.1	12.8	12.2	10.6	
	Reduction in APC TDM/ha 16-17 only (mined cover from 2900 to 1900 pre-balance date)	1.0	0.0	0.0	0.0	
	Total pasture supply TDM/ha	12.1	12.8	12.2	10.6	8
	Yield of Crop grown per total farm /ha	0.9	0.8	0.8	0.5	
	Winter homemade silage on hand fed	0.2	0.2	0.8	0.5	
	Imported Supplements fed/ha	2.2	1.6	1.2	1.1	9
	Total Feed supply TDM/ha	15.4	15.4	15.1	12.7	10
	Homegrown grass eaten TDM/ha (grown this year)	9.0	9.2	8.5	8.2	
	Homegrown silage grown and eaten this year	0.0	0.0	0.3	0.5	
	Crop eaten per total farm/ha	0.7	0.7	0.7	0.5	11
	Homegrown feed EatenTDM/ha (grown this year)	9.7	9.9	9.5	9.2	
	Silage harvested TDM/ha Season to date	0.6	1.1	1.6	1.0	
	Total Homegrown feed Harvested TDM/ha	10.3	11.0	11.1	10.2	12
	Winter homemade silage on hand eaten	0.1	0.2	0.6	0.4	
	Imported Supplements Eaten TDM/ha	1.8	1.2	1.0	0.9	
	Total Feed eaten this year (includes only silage fed) TDM/ha	11.6	11.3	11.1	10.5	13
	% Feed eaten grown on farm	85%	89%	91%	92%	
	Feed conversion Eff (kgDM/kgMS eaten)	11.4	11.6	10.7	10.2	14
	Nitrogen Applied/effective ha	122	122	93	102	

OWL FARM NUMBERS – SEASONAL UPDATE

Stock

1. As per the summer management plan we have destocked where possible over the past six weeks to reduce feed demand. Getting culls away has been difficult due to the works being full even though animals were booked in prior. We still have 15 culls to send; these will leave by the end of March.

Milk production

2. Up until the end of February, milksolids production was only 1% behind last season's. Total milk solids YTD is now falling behind last year on a daily basis through March. This is attributed to the earlier drying-off of part of the herd, early culling of stock and also the long dry spell we are still experiencing.
3. Daily production per cow and per hectare was lower than last season, even with the recent rain that has turned the farm back to a green colour. We are still awaiting follow-up rain to potentially cause a surge in growth, which would reduce our reliance on purchased feed (12-13 kg DM/day) and increase the pasture component of the diet.
4. Milksolids per cow have just dropped behind last year after a pretty good start to the season. Even with our struggles we have managed to hold the steady decline since peak unlike previous years.
5. We achieved 1,000 kg MS/ha by the 20th February
6. Unfortunately, milksolids from homegrown feed is not as good as it was back in November due to the lack of pasture growth over the past three months (over 200 t DM). We have used feed not needed in winter/spring to produce in summer.

Feed used

7. Growth rates until the end of February indicate 2 t DM/ha less pasture grown this season to date compared with last year.
8. Actual pasture supply, taking into account the reduced farm area for crops, shows 1.6 t DM less pasture supplied this season.
9. Imported supplements was still less than the 2018-19 season as we had deferred winter/spring PK feed to use in the summer. This will change through March until the end of the season.
10. Total feed supply is 2.4/ha t DM less than the previous season. This is explained by the change in APC for the farm (1600 kg DM/ha vs 1900 kg DM/ha last season), focus on spring pasture management to improve utilisation and feed quality, lower-yielding crops but with excellent feed utilisation.
11. The cows have eaten 0.2 t DM/ha less crop due to lower than budgeted yields caused by the dry December, we have managed to feed what crop we did grow over a similar time frame but just at reduced rates. This has had a positive effect on milk production by having a consistent feed supply, albeit less than planned. Not all kale was finished by the end of February.
12. Despite our attempts to have the right plant growing for the various soil types to maximise production from home grown feed, we have struggled to harvest as much as last season to date.
13. Our total feed eaten is 0.6 t DM/ha less than last season to produce similar milksolids.
14. We have achieved greater feed conversion efficiency to date of 10.2 kg DM/kg MS. We believe that this is a reflection of the team's management of pasture allocation, focusing on residuals and subsequent feed quality, and supplement utilisation.

Summary of the pantry as at 16th March 2020

We are entering autumn with not much feed on hand: we have 23 t of homegrown silage, 219 bales of grass silage, 32 bales of hay and 30 t PKE. Cover at the beginning of March is sitting at 1685 kg DM/ha, a long way from the 2400 target on 1st June. We are budgeting on an average growth of 28 kg DM/ha for the next 10 weeks to reach this target.

CURRENT YEAR FINANCIALS – BUDGET CASHFLOW UP TO 31-01-20

Owl Farm - For Year Ended: May 2020



St Peter's School/Lincoln University
Demonstration Dairy Farm

INCOME	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Total	Budget YTD	Variance YTD	Budget Full Year
Milk Solids KG	-	7,184	22,507	24,485	23,924	21,544	19,879	17,675	-	-	-	-	137,198	138,518	(1,320)	177,654
Milk	-	31,731	98,002	164,149	122,334	114,809	116,350	134,225	-	-	-	-	781,601	709,649	71,952	1,192,317
Dividends	-	-	6,781	-	-	-	-	-	-	-	-	-	6,781	6,720	61	6,720
Cattle	(9,126)	1,448	13,278	2,577	77	(537)	524	2,201	-	-	-	-	10,442	21,984	(11,542)	68,575
Other Income	-	6,827	-	-	-	-	-	-	-	-	-	-	6,827	-	6,827	-
Total Income	(9,126)	40,006	118,061	166,726	122,411	114,272	116,874	136,426	-	-	-	-	805,650	738,353	67,297	1,267,612
EXPENSES	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Total	Budget YTD	Variance YTD	Budget Full Year
Wages	13,337	13,213	13,645	14,215	20,213	13,114	21,280	13,298	-	-	-	-	122,315	118,220	4,095	180,292
Animal Health	6,255	2,501	9,873	3,496	6,979	868	3,736	1,722	-	-	-	-	35,430	29,703	5,727	56,317
Breeding	204	(3,703)	146	8,952	11,531	17,131	3,805	1,530	-	-	-	-	39,596	33,807	5,789	38,403
Dairy Shed and Electricity	1,117	490	2,066	2,044	2,282	1,299	2,749	1,616	-	-	-	-	13,663	14,966	(1,303)	22,977
Purchased Feed	14,050	757	6,744	10,008	1,056	1,196	21,718	8,327	-	-	-	-	63,855	78,614	(14,758)	109,514
Grazing - Replacement Heifers & Calves	3,586	7,407	3,723	7,486	3,703	3,586	7,258	14,956	-	-	-	-	51,706	38,553	13,153	64,500
Fertiliser	9,671	-	6,610	2,447	9,197	5,451	-	-	-	-	-	-	33,376	66,383	(33,007)	90,276
Gibberellic Acid	-	-	-	-	-	-	-	-	-	-	-	-	-	808	-	1,208
Fertiliser Spreading	(1,101)	-	-	1,014	-	-	-	-	-	-	-	-	(87)	5,984	(6,071)	5,984
Freight	-	1,455	160	64	-	-	40	394	-	-	-	-	2,113	825	1,288	3,619
Cartage	-	-	880	811	570	568	-	-	-	-	-	-	2,829	7,689	(4,860)	8,855
Weeds and Pests	1,961	-	-	-	-	473	-	-	-	-	-	-	2,434	1,650	783	2,500
Consultancy	-	-	417	-	-	-	417	-	-	-	-	-	835	417	418	652
Silage	-	817	270	-	13,136	-	6,293	1,134	-	-	-	-	21,650	36,349	(14,699)	36,349
Cropping	-	-	-	3,531	8,029	4,405	-	171	-	-	-	-	16,136	10,697	5,439	13,947
Regrassing	-	-	850	2,180	-	-	-	-	-	-	-	-	3,030	2,837	193	20,549
R&M	3,757	6,240	6,219	3,178	17,192	9,495	2,639	8,196	-	-	-	-	56,915	24,099	32,817	52,844
Vehicle Expenses	2,060	2,139	1,885	1,415	4,471	1,516	2,285	1,442	-	-	-	-	17,214	23,351	(6,138)	19,694
General	565	2,888	1,700	2,751	3,502	6,150	3,958	3,924	-	-	-	-	25,439	12,201	13,238	16,998
Overheads	1,719	1,719	3,757	7,433	4,539	7,433	3,757	3,757	-	-	-	-	34,113	27,663	6,450	41,890
Total Farm Working Expenses	57,182	35,923	58,945	71,025	106,403	72,684	79,936	60,465	-	-	-	-	542,563	534,816	7,747	787,368
Net Surplus before Financial Charges	(66,308)	4,083	59,116	95,701	16,008	41,588	36,938	75,961	-	-	-	-	263,087	203,537	59,549	480,245
Financial Charges	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Total	Budget YTD	Variance YTD	Budget Full Year
Interest Cost	14,106	14,106	14,106	14,106	14,106	14,106	14,106	14,106	0	0	0	0	112,848	124,558	(11,710)	178,143
Lease Land	3,103	3,103	3,103	3,103	3,084	3,084	3,084	3,084	0	0	0	0	24,748	23,680	1,068	35,520
Depreciation	8,799	9,093	8,205	7,919	8,036	7,776	8,036	8,036	0	0	0	0	65,900	68,000	(2,100)	52,979
Total Financial Charges	26,009	26,302	25,415	25,128	25,225	24,966	25,225	25,226	-	-	-	-	203,496	216,238	(12,742)	266,642
Surplus (Deficit) after Financial Charges	(92,317)	(22,219)	33,701	70,573	(9,217)	16,622	11,713	50,735	-	-	-	-	59,591	(12,701)	72,291	213,602

NOTES



SUMMARY DATA

SEASON TO DATE INFORMATION

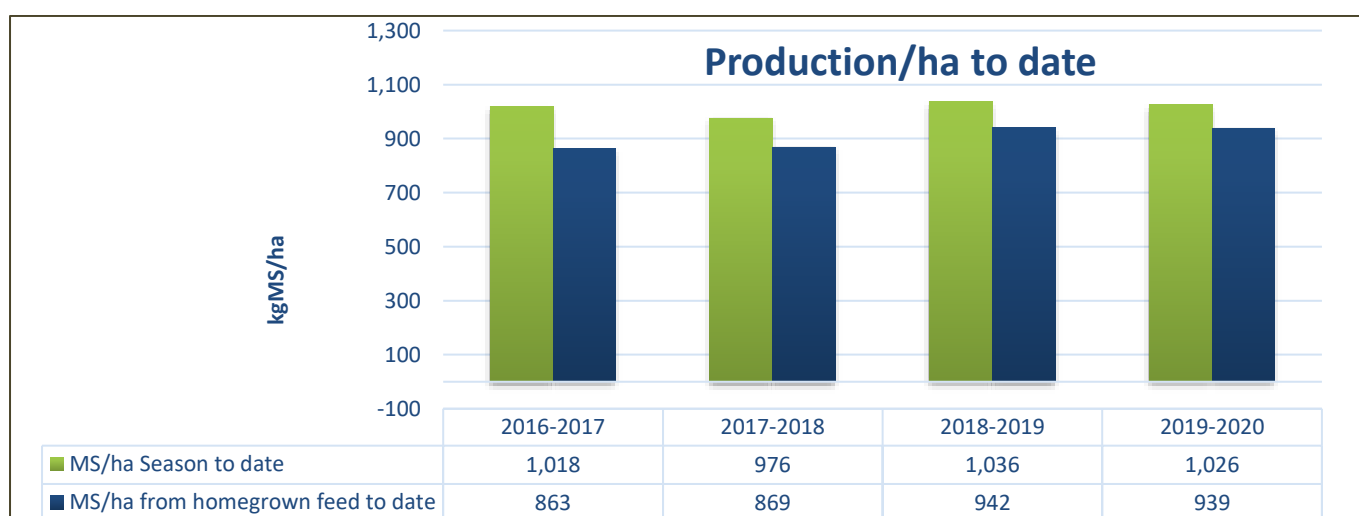
Despite the struggles over the past few months, milk production has held up surprisingly well, slightly behind last season to date. The cows have eaten most of the surplus feed that was made into silage during spring, and all of the silage carried over from last season. As at the 14th March we had produced 155,664 kg MS which is 92% of last year's total milk production. While we won't achieve the 2019-20 target of 178,000 kg MS, we have some perspective of how much money we spend on the last 8% without compromising BCS and APC for next season's production. In late December we purchased 40 t DM silage to fill the bunkers with feed that we weren't able to harvest from the farm due to less growth. We have since purchased 120 bales (22 t DM) for summer production, 12 t of tapioca to dilute our contracted PK through February, and potentially will need to buy another 60 t DM of PK (over our contracted 150 t) to complete the season to achieve BCS and APC targets.

The summer season has been long, hot and dry, with only 38mm of rain falling between 23rd December and 12th March. This has proven challenging for pasture and crop growth. We have managed by spreading feed usage at lower rates across a variety of sources which has kept the diet very stable for the past few months, resulting in a steady milk decline post peak. We have also used different milking regimes to manage BCS, with 3-in-2 being used in January and early February and then swapping to full OAD. This has led to a more stable BCS across the herd.

By using key principles throughout summer, we have been able to keep things going and the cows have been surprisingly content considering the conditions. Taking stock of the feed inventory each week has meant we have been able to tweak the weekly plan where needed but without big changes. We have culled cows where possible, dried off low BCS and early calvers and now we are planning on drying off the next mob of low BCS mid calvers; not all of these need drying off but it will help to reduce the feed requirement while leaving a core mob of around 200 cows to milk on hopefully into May; however, if necessary these will be dried off sooner if we cannot increasingly replace silage with pasture over the coming 2-3 weeks.

We have made good progress on SCC throughout the season and have had a lot less summer mastitis while grazing crops. Some more consistently high SCC cows will be culled in the last mob to leave this month. The cows are looking great with average condition of the milking herd sitting at 4.3 in early March. Those dried off are between 3 and 4.5 depending on age group and calving date!

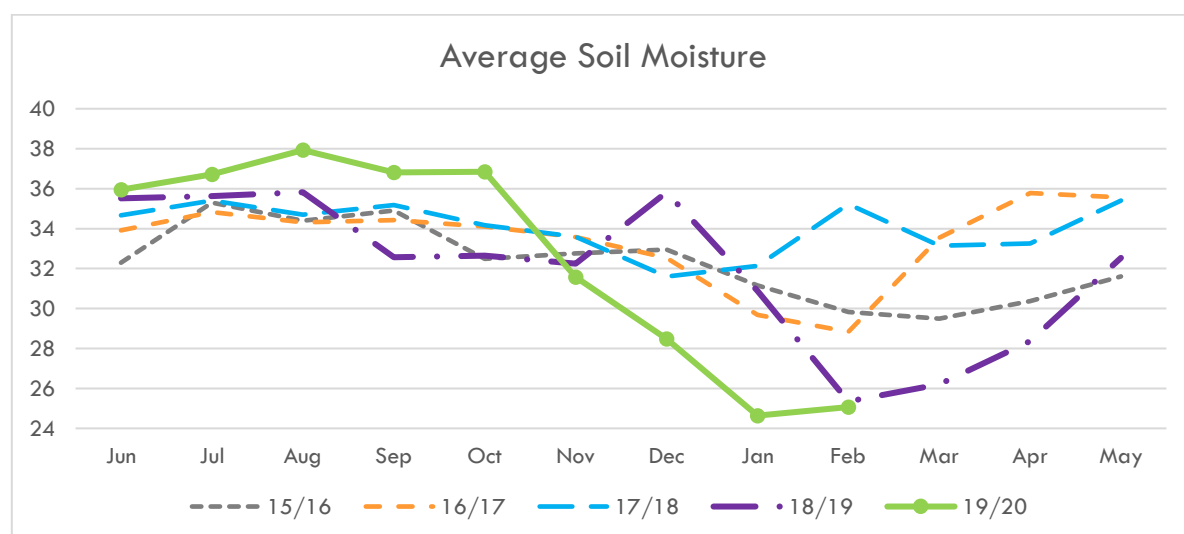
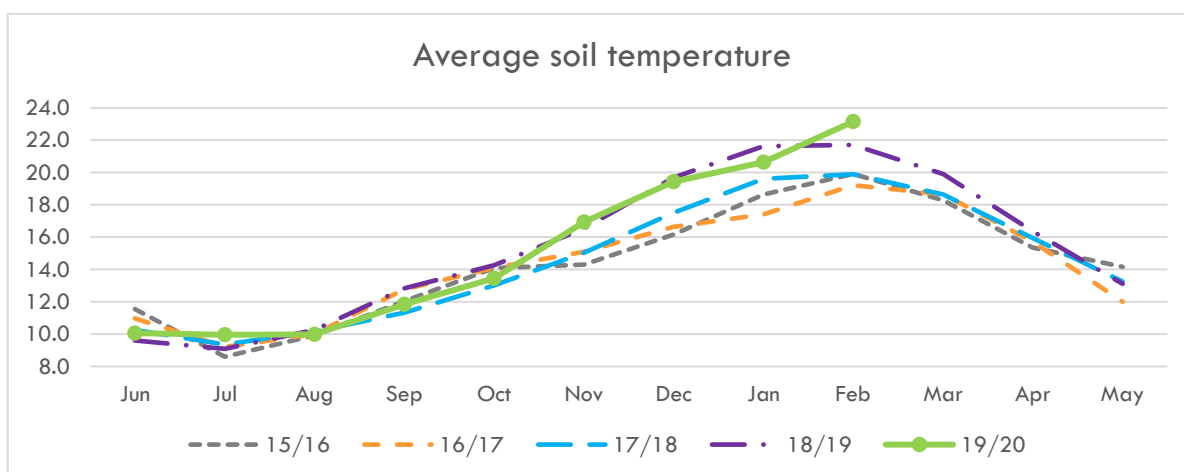
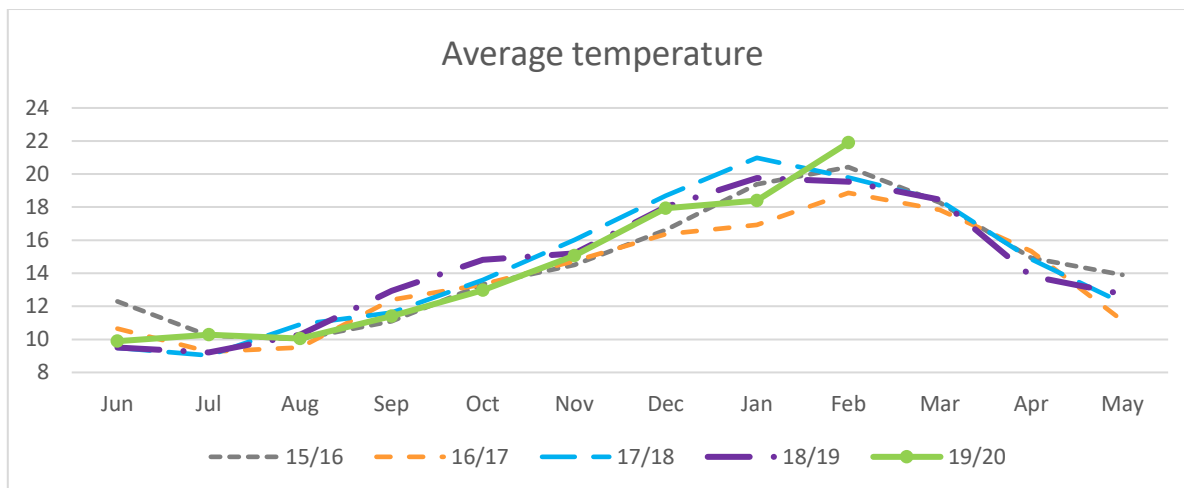
We have used slightly more N to produce similar milk from less feed. We were able to keep APC closer to the target range of 2050-2150 kg DM pre-Christmas; however, this is now at the lowest levels in years. Since the 30mm of rain at the end of February, we have pushed out to a 65-70 day round. This will give paddocks the best chance to recover when follow-up rain arrives. Monitoring growth rates, round speed and target intakes have been the focus over the past few months.



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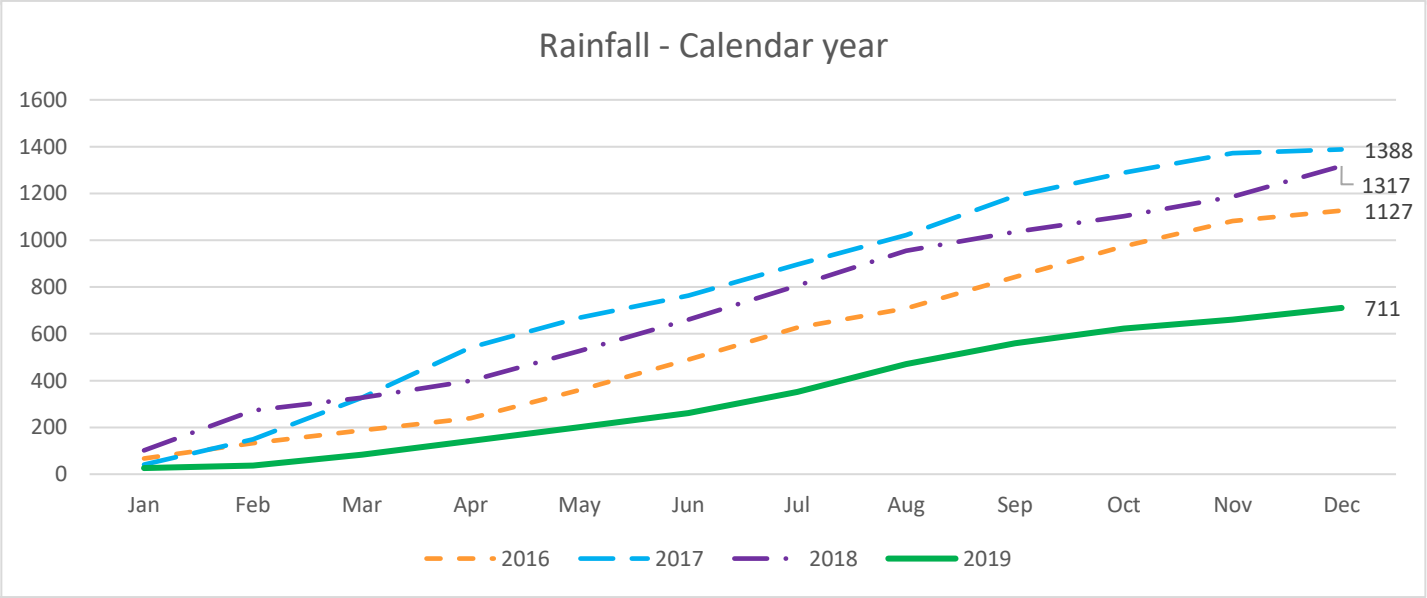
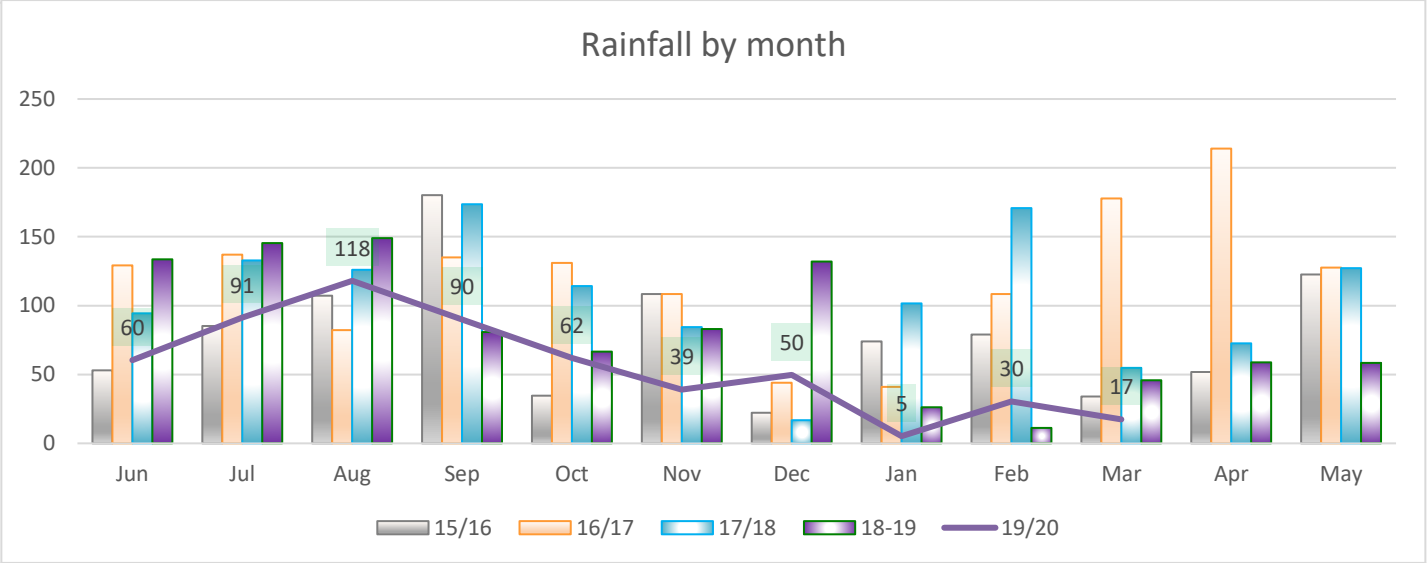
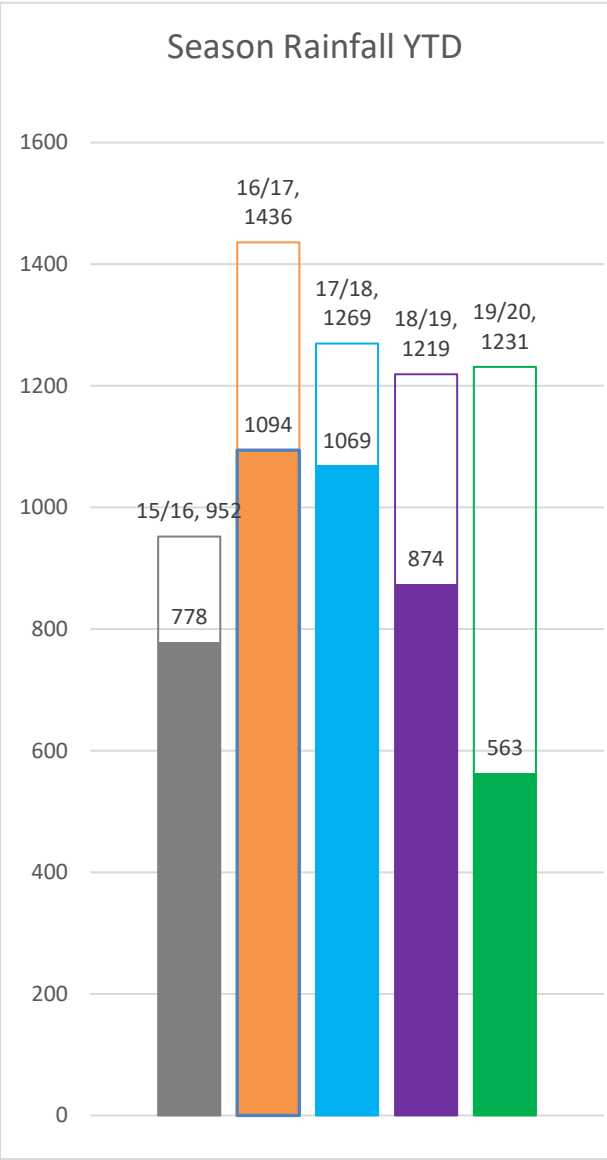
CLIMATE

Early in the new year we upgraded our climate monitoring station as we were concerned about the accuracy of some of the readings. We have incomplete readings since October. We have put in a 600mm soil moisture and temperature probe which takes readings every 100mm and will give us Permanent Wilting Point and Field Capacity readings once it is fully functioning. Unfortunately it requires repeated rain events inducing drainage and actively growing pasture to complete set up. We have had neither of these since December!!! We have also installed a humidity station to enable Temperature Humidity Index (THI) to be calculated for the farm in future.



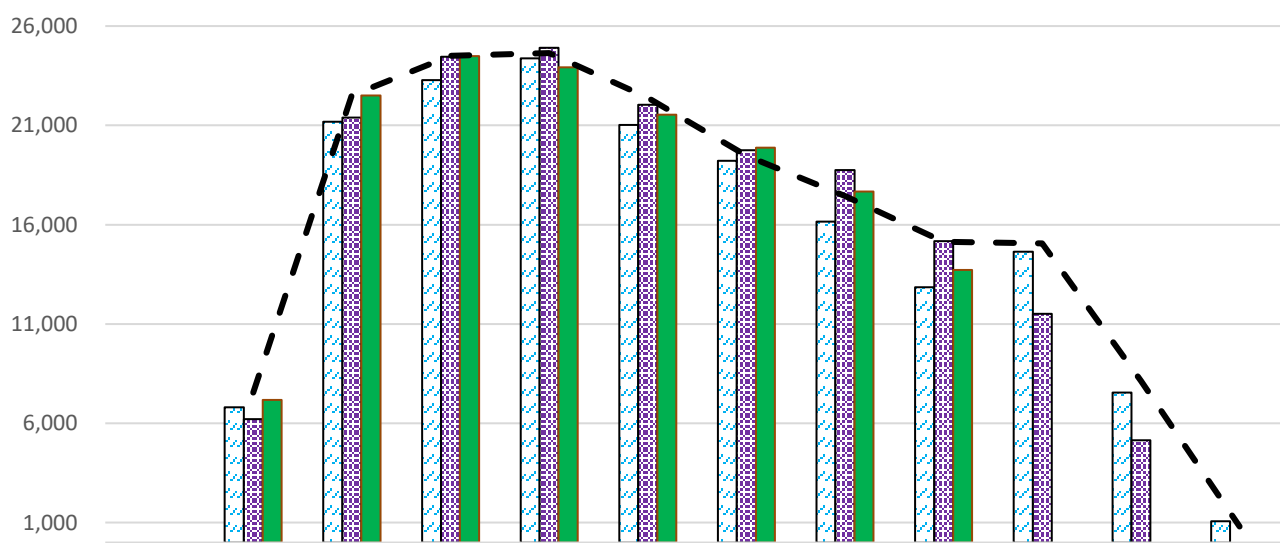
NOTES

RAINFALL



PRODUCTION

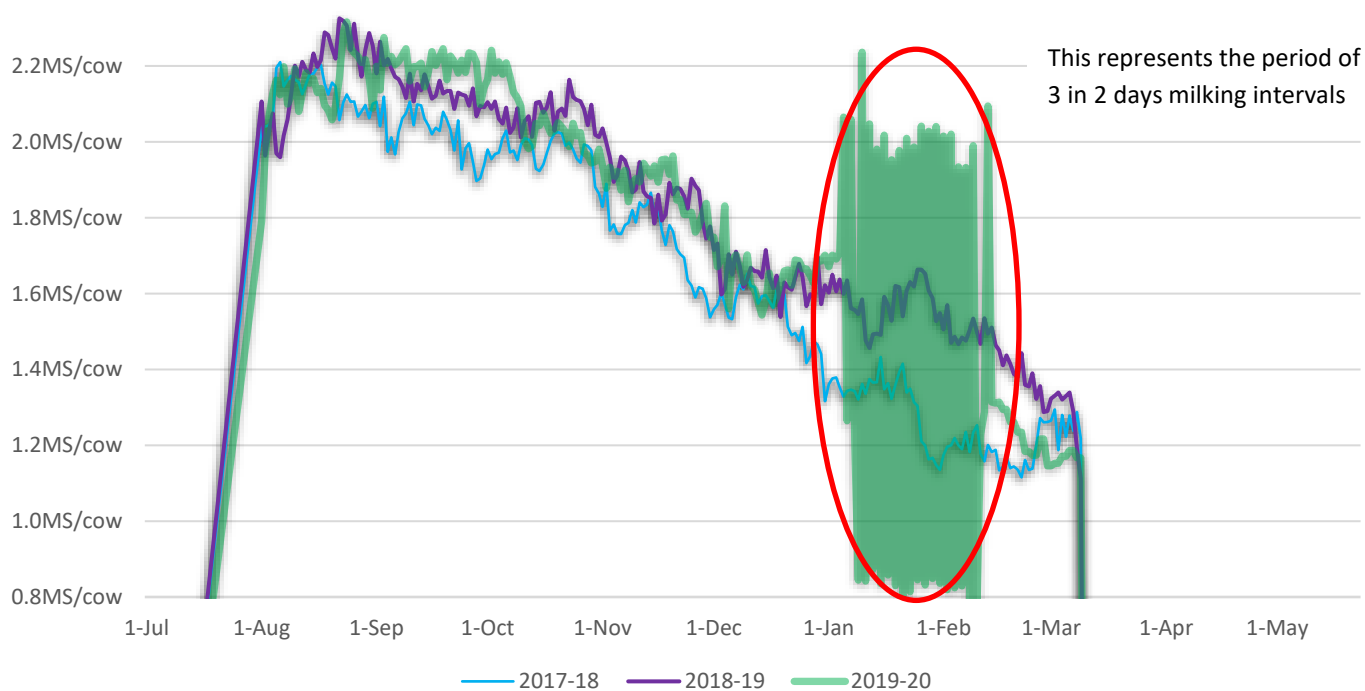
Production: Monthly Performance



	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
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	15,165	11,509	5,148	
19/20 Production		7,184	22,507	24,485	23,924	21,544	19,879	17,675	13,724			
Budgeted 19/20		7,545	22,500	24,500	24,641	22,400	19,478	17,452	15,135	15,065	8,131	807

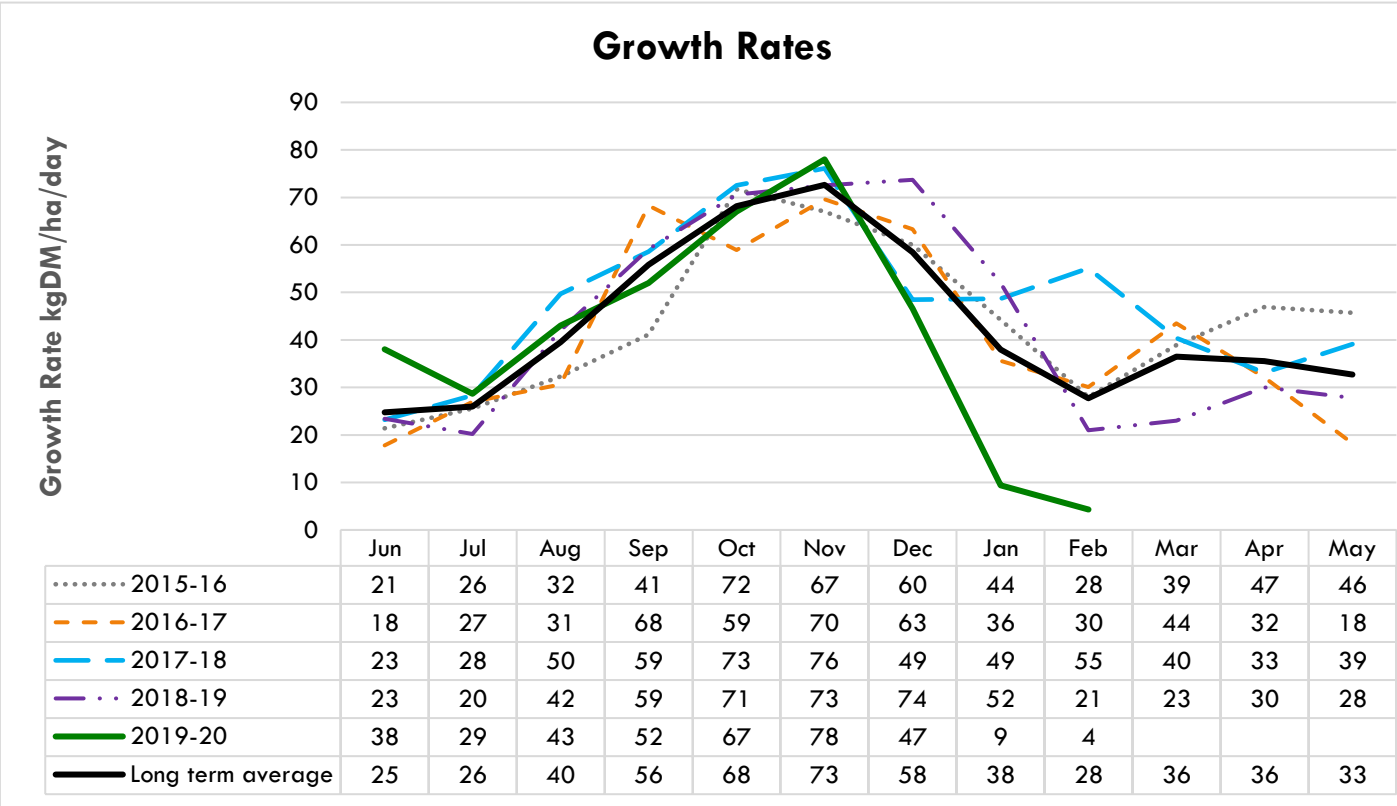
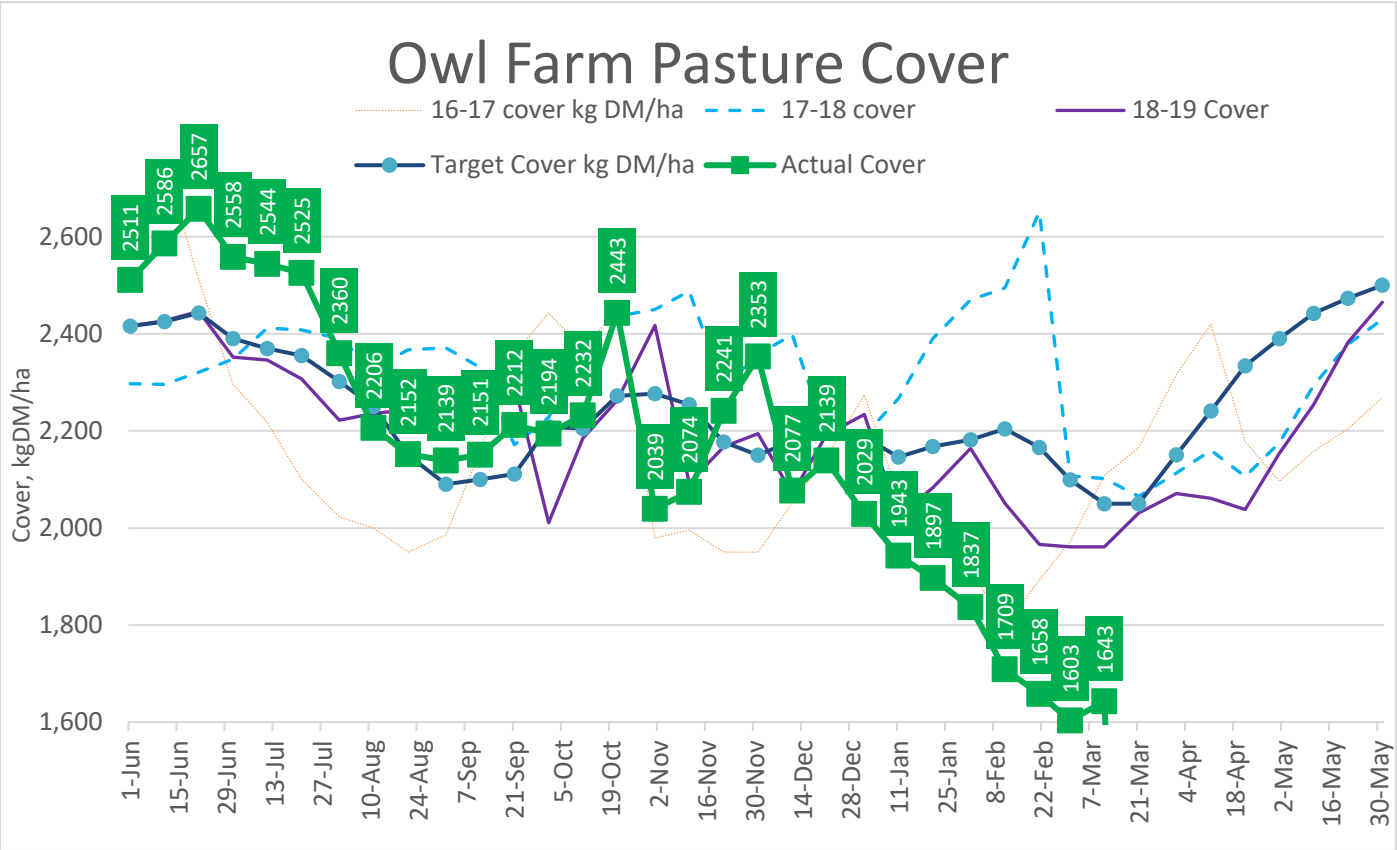
▨ 17/18 production
 ▨ 18/19 Production
 ■ 19/20 Production
 - - - Budgeted 19/20

Milksolids/cow/day



NOTES

PASTURE COVER AND GROWTH RATES



NOTES

PEOPLE

Owl Farm is committed to sustainable work hours, targeting an average of 45 hours/person/week over the year. As at 10th March the team has averaged 49 hrs/person/week for the season to date.

On the 9th February we said farewell to Malou, our valued Farm Assistant. We have used relief milkers to support time off to maintain our 12:2 roster and also ensure we continue off-farm training opportunities. We are currently recruiting for a replacement to start before the end of the season.

On April 1st the minimum wage goes up to \$18.90/hr. We will have to carefully plan the workload to ensure that our new FA maintains less than 100hr/fortnight during peak spring periods. Reallocating the work to the rest of the team is not an option to achieve sustainable work hours. We will use the job analysis information from earlier this year to plan an approach.

The monthly breakdown is as follows:

Month	Hours worked/ person/week
June	29 hours
July	57 hours
August	64 hours
September	63 hours
October	62 hours
November	55 hours
December	49 hours
January	43 hours
February	44 hours

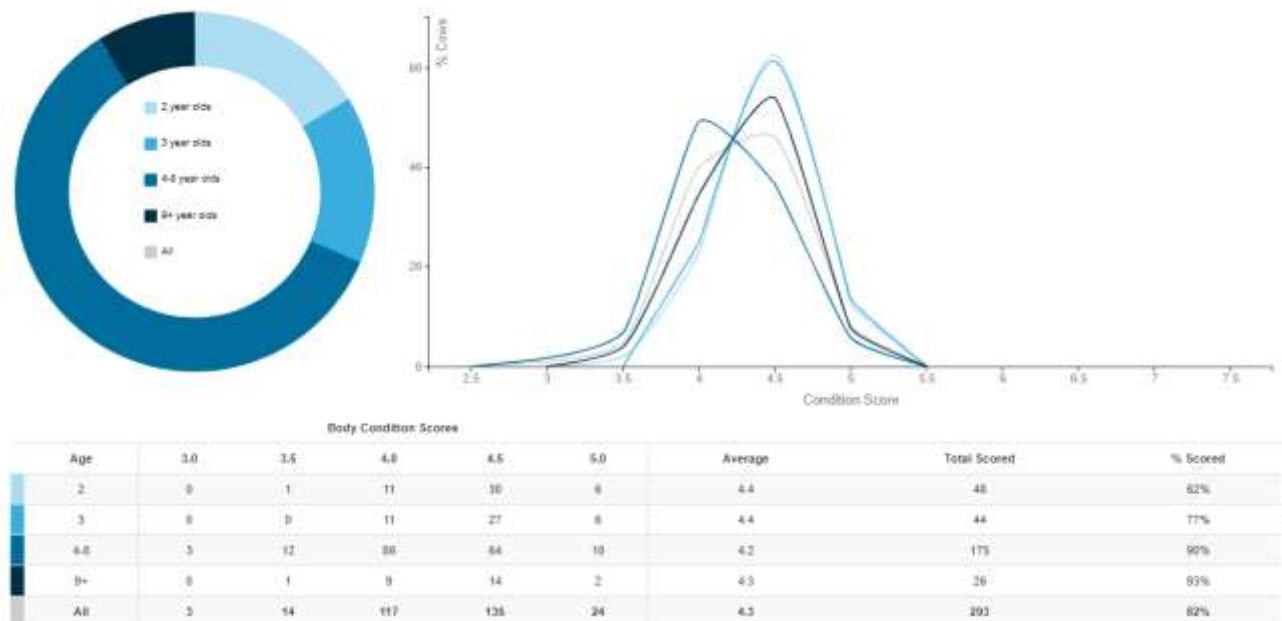


ANIMAL HEALTH

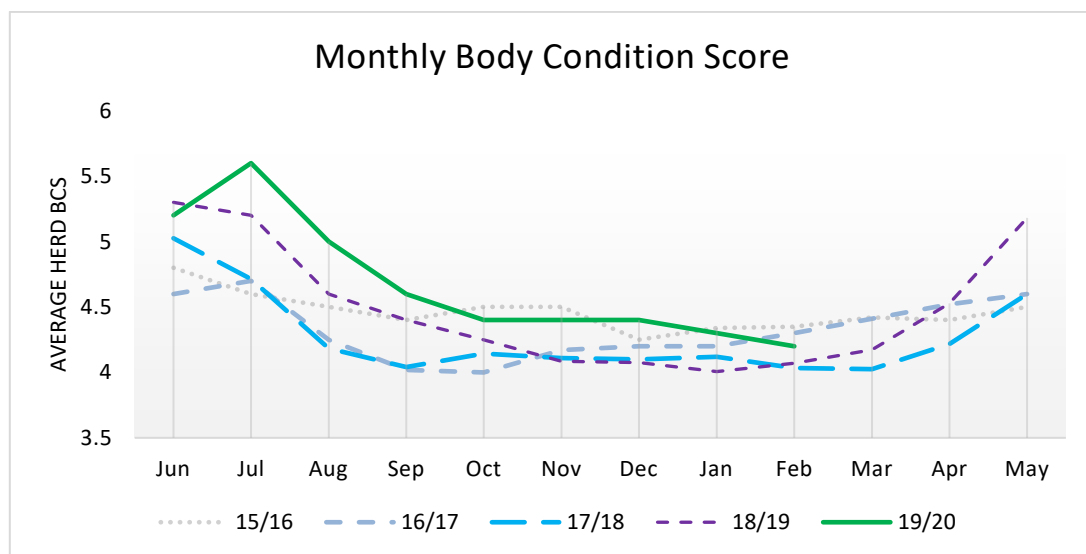
BODY CONDITION SCORE

Given the season we have experienced, cow condition has held up remarkably well. We have continued to have individual cow BCS done, with early February and March data identifying cows that are below the BCS threshold to continue milking in our system with early July calving and moderate weight gain during the dry period (target 0.5 BCS gain/month). Latest BCS for the milking herd showed that remaining 2 and 3 year olds are above average, which indicates our milking frequency and dry-off triggers are working.

BCS by Age for 10 March 2020
293 of 356 cows scored on this date

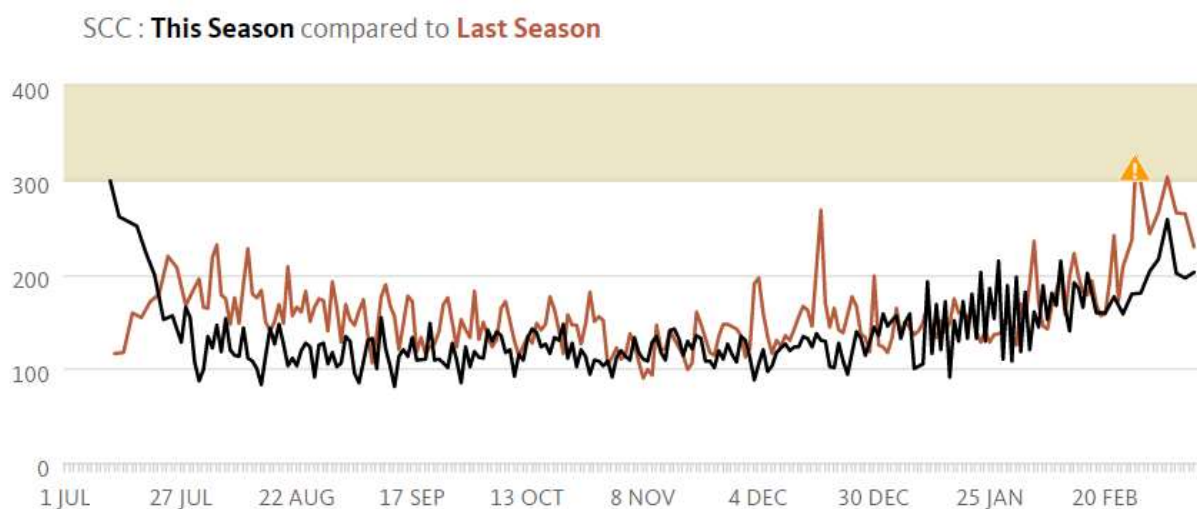


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SCC

Focused efforts on identifying high SCC and mastitis cows have resulted in lower SCC compared with last season. This has been important for us as we transitioned through 3-in-2 and OAD milking and gives us options for late lactation herd management.



FEI

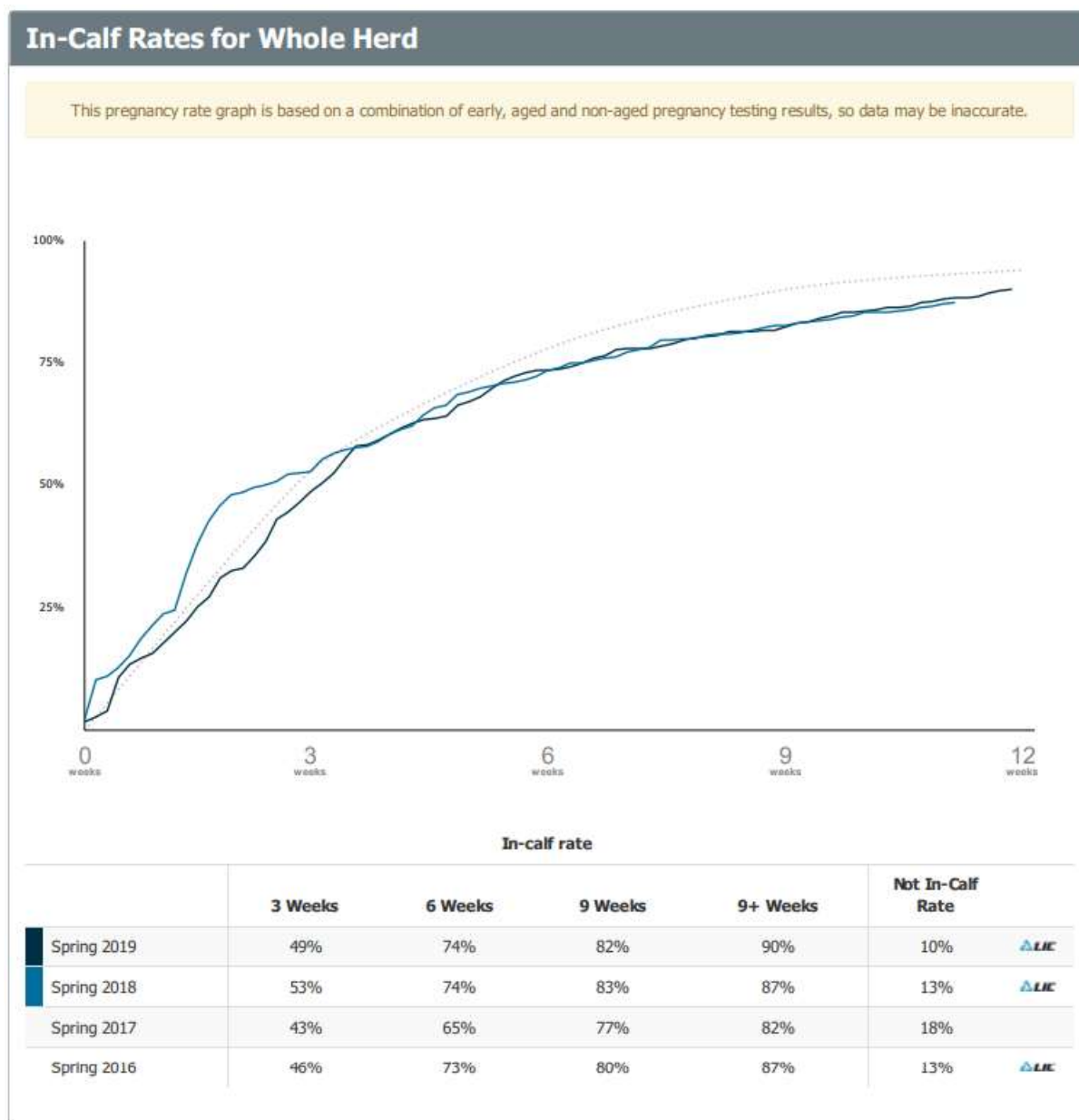
We have been feeding PK since December and it has been a challenging season to manage quantities and maintain quality milk for processing. While feeding turnip and kale crops we were restricted to 2.5 kg DM PK/cow/day. We have used 20% tapioca blend during February to maintain intakes around 3 kg DM. We are now prioritising straight PK to dry cows to aid in weight gain and reduce demand on our reserves of pasture and pasture silage for milking cows. Milkers are receiving 2.5–3 kg DM PK/cow/day.



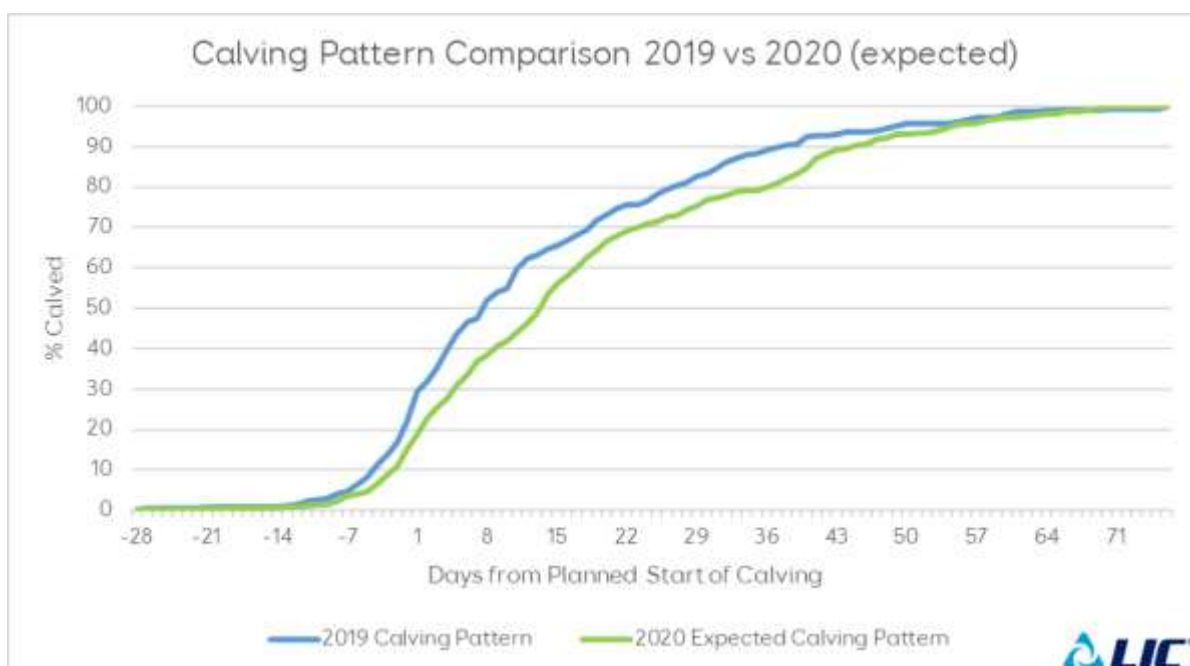
REPRODUCTION PERFORMANCE REVIEW

We reviewed the success Owl Farm achieved using sexed semen and Wagyu semen as part of the mating programme this year and whether the objectives we set were met:

- Maintaining or improving farm reproduction performance compared to last year – This was achieved with the same 6-week in-calf rate: 74%, and a decrease in not in-calf rate from 13 to 10% with only 4 extra days of mating done compared to 2019.



- We achieved that while decreasing the use of hormonal intervention to help cows cycle. Although CIDR levels remained similar, we did not make use of Why-Wait programs. This has potentially cost us around 1000 days in milk (2.4 days/cow) compared to last year from a later start to calving and a greater spread. But it also means we have less reliance on intervention to achieve sustainable performance. The difference between the calving pattern in 2019 and the expected calving pattern for 2020 is illustrated below:



- Target heifer replacement rate achieved in fewer days and from the top 75% of the herd to accelerate genetic gain. Of the cows pregnant to replacement AB we have 85 pregnant to liquid sexed semen and 126 to conventional semen, which leaves us with a potential of 136 replacement heifers before loss (assuming 90% heifers from liquid sexed and 48% from conventional semen pregnant cows).
- Value added through Wagyu and SGL Hereford programme, 150 saleable animals resulting in 50% reduction in bobby calves – Breakdown of the difference in cost of mating programmes is shown below:

Products	2019		2018	
	Quantity	Costs	Quantity	Costs
A2A2 Premier Sires	252	\$ 5,846.40	-	-
Nominated Tech Service	354	\$ 2,391.00	90	\$ 612.00
PS Forward Pack Tech	-	-	476	\$ 11,043.20
Sexed Semen Straw	172	\$ 9,632.00	-	-
PS Kiwicross SGL	112	\$ 2,296.00	170	\$ 3,485.00
Wagyu	161	\$ 2,392.73	-	-
SGL Hereford Pak	20	\$ 224.10	50	\$ 560.25
SGL Kiwicross Pak	-	-	10	\$ 146.25
Classic Pak 3	-	-	30	\$ 734.40
TOTALS	717	\$ 22,782.23	736	\$ 16,581.10

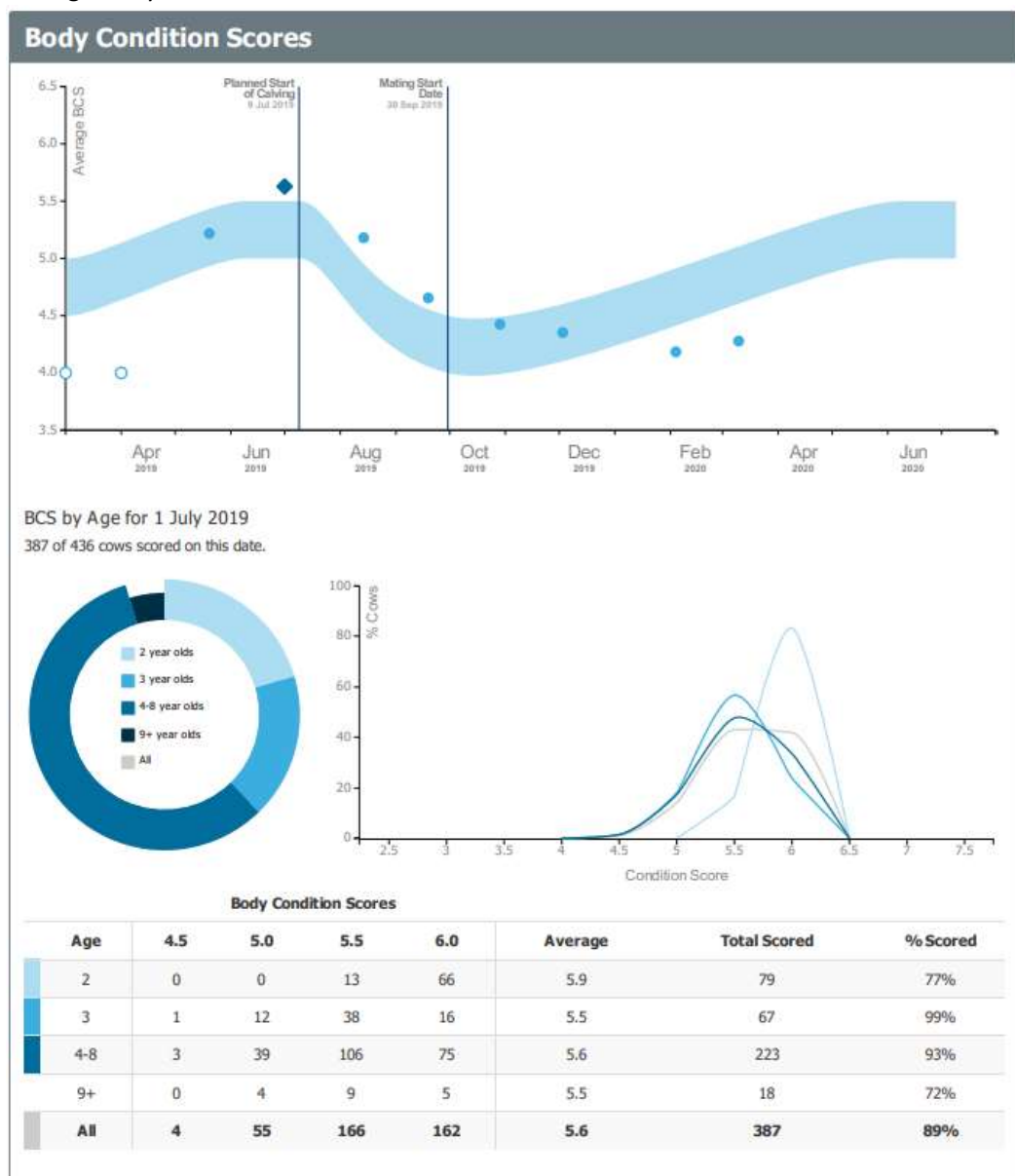
- Maximised the performance of the liquid sexed semen, from a conception rate point of view, by targeting the cows on which it was used. The conception rate by product is reported below:

Product	Number of straws	Cows conceived	Conception Rate
Conventional Semen	252	126	50%
Liquid Sexed Semen	172	88	51%
SGL Dairy	112	48	43%
Wagyu/SGL Hereford	182	96	53%
TOTAL	718	358	50%



Please note that SGL Dairy was used in the latter part of the mating period and national data shows that conception rates decline as the weeks of mating pass.

- For the next season, a few of the target areas identified as further improvement opportunities are:
 - Achieve a “tighter” Body Condition Score (BCS) distribution for 3-year olds (no more than 15% of the animals should be above or below Calving BCS target)
 - Manage mixed cows so they do not gain too much BCS – target is 5 and we had them at 5.5 average last year with a few at BCS 6



- Try and minimise animals that are affected by mastitis, as they were identified as having a poorer reproductive performance when compared to animals that did not have it.

In-Calf Rate - Diagnosis

Diagnosis	Count		In-calf rate				Not in-calf rate
			3 weeks	5 weeks	8 weeks	9+ weeks	
Anoestrus	64	16%	44%	73%	86%	89%	11%
Mastitis	31	8%	48%	68%	77%	87%	13%
Lameness	12	3%	42%	75%	92%	92%	8%
Reproductive Tract Disorders	23	6%	61%	87%	91%	96%	4%
Metabolics	1	0%	0%	100%	100%	100%	0%
Reproductive Hormone Treatments	0	0%	0%	0%	0%	0%	0%
Not Affected	377	92%	49%	74%	83%	90%	10%

When we look at the influence of genetics and production-related indices in reproductive performance, divided in quartiles, at Owl Farm we see:

- Breeding Worth (BW) – animals in the top quartile BW (within this herd) have better reproductive performance.

Within herd quartiles - BW	Number of cows	3 Week Submission Rate	6 Week In-Calf Rate	Not In-Calf Rate
179 and over	103	94	83	5
149 to 179	102	92	74	5
120 to 149	103	91	65	17
Below 120	101	86	64	22



- Fertility Breeding Value – animals in the top quartile of Fertility BV have the best performance of the groups. The difference between the other groups is so small that one can conclude that, in this herd, Fertility BV is not an important factor in affecting reproductive performance.

Within herd quartiles - Fertility BV	Number of cows	3 Week Submission Rate	6 Week In-Calf Rate	Not In-Calf Rate
2.1 and over	107	95	77	13
1 to 2.1	101	95	68	14
0 to 1	118	90	71	8
Below 0	83	82	70	13



- Production Worth (PW) – animals in the top half in PW (within this herd) have better reproductive performance.

Within herd quartiles - PW	Number of cows	3 Week Submission Rate	6 Week In-Calf Rate	Not In-Calf Rate
256 and over	99	92	79	7
174 to 256	106	94	74	10
86 to 174	100	90	63	18
Below 86	104	88	71	12



- Lactation Worth (LW) – animals in the bottom quartile LW (within this herd) have lower reproductive performance.

Within herd quartiles - LW	Number of cows	3 Week Submission Rate	6 Week In-Calf Rate	Not In-Calf Rate
268 and over	101	96	75	12
168 to 268	103	93	76	7
79 to 168	103	90	70	12
Below 79	102	84	66	18



Fertility Focus 2019: Seasonal

Owl Farm
Tom Buckley

Report date: 12/03/20

PTPT: HPTT

Herd Code: 2/1884

No of cows included: 408

These cows calved between: 23/05/19 and 28/11/19

Mating start & end date:
(based on AB or pregnancy test data) 30/09/19 - 21/12/19

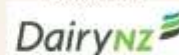
Next planned start of calving: 08/07/20

Duration of mating: 83 days

Duration of AB period: 83 days



Version 3.01



1 Overall herd reproductive performance

6-week in-calf rate

Percentage of cows pregnant in the first 6 weeks of mating

Your herd 74%

☆☆☆☆

Aim above 78%

Not-in-calf rate

Percentage of cows not pregnant after 83 days of mating

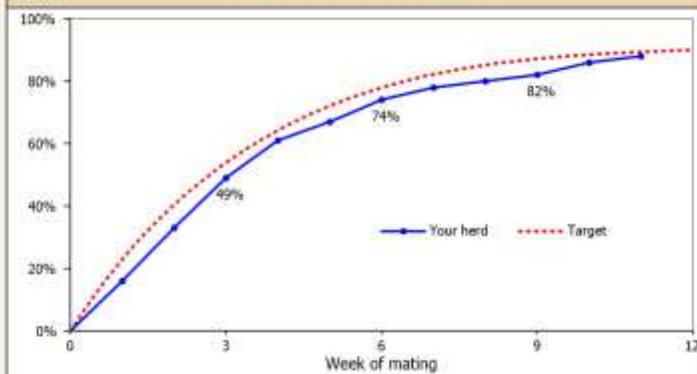
Your herd 10% (8-10%)

☆☆☆☆

Aim for 10%

% of herd in calf

Cumulative by week of mating



2 Drivers of the 6-week in-calf rate

3-week submission rate

% of cows that were inseminated in the first 3 weeks of mating

Your herd 91%

☆☆☆☆

Aim above 90%

Non-return rate

% of inseminations that were not followed by a return to heat

Your herd

Aim above

Conception rate

% of inseminations that resulted in a confirmed pregnancy

Your herd 50%

☆

Aim above 60%

3 Key indicators to areas for improvement

Calving pattern of first calvers

Well managed heifers get in calf quickly and calve early.

Calved by Week 3 Week 6

Your herd 89% 98%

Aim above 80% 95%

☆☆☆☆ ☆☆☆

Calving pattern of whole herd

Did late calvers reduce in-calf rates?

Calved by Week 3 Week 6 Week 9

Your herd 75% 93% 99%

Aim above 67% 88% 98%

☆☆☆☆ ☆☆☆ ☆☆☆

Pre-mating heats

A high % of well managed cows will cycle before the start of mating.

Your herd 71%

☆☆

Aim above 85%

3-week submission rate of first calvers

Well managed heifers cycle early

Your herd 94%

☆☆☆☆

Aim above 90%

Heat detection

A high % of early-calved mature cows should be inseminated in the first 3 weeks of mating.

Your herd 91%

☆☆

Aim above 95%

Non-cycling cows

Treated non-cyclers get in calf earlier.

Treated By MSD Wks 1-3 Wks 4-6

Your herd 16% 0% 0%

Performance after week 6

Expected not-in-calf rate helps assess management affecting performance after week 6 (including bull management and herd nutrition).

Not-in-calf rate

Your herd 10%

OK

Expected 13%

Rating	What does it tell me?	What should I do?
☆☆☆☆	Top result	Ideal - keep up the good work!
☆☆☆	Above average	Getting there - focus on getting the details right.
☆☆	Below average	Plenty of room to improve - seek professional advice.
☆	No result	Not enough information provided - seek help with records.

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Behind Your Detailed Fertility Focus Report

Report period: Cows calved between 23/05/19 and 28/11/19.

This was the most recent period with sufficient herd records that enabled an analysis to be completed.

Calving system: Seasonal

Your herd has been classified as seasonal calving because most calvings occurred in a single batch lasting less than 21 weeks.

Level of analysis: Detailed.

Your good record keeping means a detailed analysis was possible for your herd.

Report date: 12/03/20

PTPT: HPTT

Herd Code: 2/1884

Calvings up to this date requested for analysis: 11/03/20

No of cows included: 408

These cows calved between: 23/05/19 and 28/11/19

Mating start & end date: 30/09/19 - 21/12/19
(based on AB or pregnancy test data)



Version 3.01



Part A) Herd records cross check

Check that the herd records in the table are complete and correct.

2019/20	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
No. of calvings		11	297	83	17								408
No. of AB matings					13	491	151	63					718
No. of preg tests								404		95			499
No. of non-aged/late aged positive preg tests										2			2
No. of cows culled or died							1	3	6	24	19		53

Part B) Notes on the calculations

Use the following notes to see how your results were calculated.

1 Overall herd reproductive performance

6-week in-calf rate

Your report has been based on the mating and pregnancy test results you supplied. The ACTUAL 6 week in-calf rate is shown for your herd.

Records available for not-in-calf rate

Recorded pregnant	367
Recorded empty	31
Doubtful/recheck*	6
Culled without pregnancy test	3
<u>No record of cull or pregnancy test</u>	<u>1</u>

Cows analysed 408

*Includes cows whose most recent empty diagnosis was less than 35 days after mating end date.

2 Drivers of the 6-week in-calf rate

3-week submission rate

408 cows had calving dates in the required range and were not culled before day 21 of mating and 91% of these were submitted during the first 21 days of mating.

Non-return rate

Non-return rate is not calculated when pregnancy test results provide an accurate estimate of conception rate.

Conception rate

The conception rate was calculated for 688 AB inseminations on and between 30.09.19 and 21.12.19.

3 Key indicators to areas for improvement

Calving pattern of first calvers

83 cows with eligible calving dates were recorded as calving at less than 34 months of age. The calving pattern of first calvers was calculated from their records.

Calving pattern of whole herd

408 cows had calving dates that were eligible for this report.

Pre-mating heats

408 cows had calving dates in the required range and were not culled before day 21 of mating and 290 of these had a pre-mating heat recorded.

3-week submission rate of first calvers

83 first calvers had calving dates in the required range and were not culled before day 21 of mating and 94% of these were submitted during the first 21 days of mating.

Heat detection

196 cows at least 4 years old at calving had calved at least 8 weeks before mating start date and were not culled before day 21 of mating and 91% of these were submitted during the first 21 days of mating.

Non-cycling cows

408 cows had calving dates in the required range and were not culled before day 21 of mating and 64 of these were identified as being treated for non-cycling.

Performance after week 6

Your herd's not-in-calf rate and 6-week in-calf rate were used to determine the success of your herd's mating program after the first six weeks. If bulls were used after week 6 of mating, this gives an assessment of how well they got cows in calf.

Induced cows

No cows were identified as having induced calvings. If cows were induced, ensure all inductions are recorded.

CROP REVIEW

If you're growing summer crops at your place, it's important to understand how your crop has performed and what the crop has cost you.

By knowing the costs involved to grow turnips, we can work out the value of turnips to Owl Farm.

Table 1.0. Cost analysis of Turnips and Kale at Owl Farm 2019/2020 – Actual costs

				Cost/ha		
	Product	Rate	Per Hectare	Kale	Turnips	YOURS
SPRAYOUT						
	Crucial	2.5	L/ha	\$56	\$56	
	Pulse Penetrant	100	ml/100Lwater	\$2	\$2	
	Dew 600	400	ml/ha	\$8	\$8	
	Spray application			\$42	\$42	
FERTILISER						
	Lime	1.5	T/ha	\$75	\$75	
	Lime cartage and spreading			\$96	\$96	
	Crop Zeal Boron boost (drilled with seed)	230	kg/ha	\$200	\$200	
PLANTING						
	Clean crop Kale seed	2	kg/ha	\$385		
	Clean crop Turnip Seed	2	kg/ha		\$225	
	Pre-emergence spray include in cost of seed					
	Slug Bait	15	kg/ha	\$129	\$129	
	Direct Drill includes base fertilizer and slot drilling			\$265	\$265	
POST-EMERGE						
	Spraying Oil	500	ml/100L	\$6	\$6	
	Weed spray – Sequence or Prestige	0.5	L/ha	\$46	\$46	
	Spray application			\$42	\$42	
	Insecticide x2 sprays	0.5	L/ha	\$92	\$92	
	Spray application x 2 sprays			\$84	\$84	
FERTILISER						
	Spreading Costs (done by Tom)			\$60	\$60	
	Sustain N x 1 application	250	kg/ha	\$167	\$167	
TOTAL COST				\$1755	\$1595	

- Cost are actuals unless highlighted in yellow which are estimates
- For an estimated average of 10,000 kg DM/ha, we can turn this into cents per kg DM of turnips (Table 2).
- Divide costs per ha (\$1595/ha) by the average DM yield/ha (10,000 kg DM/ha) = \$0.16 or around **15.9c/kg DM turnip grown.**

TABLE 2.0. Sensitivity analysis (c/kg DM of crop grown) excluding value of area of summer pasture foregone

Turnip Crop Yield (kgDM/ha)	c/kgDM	
	7,000	22.7
	8,000	19.9
	9,000	17.7
	10,000	15.9
	11,000	14.5
	12,000	13.2
	13,000	12.2
	14,000	11.4
	15,000	10.6
	16,000	9.9



LIMITATIONS OF VALUING TURNIP CROP BASED ON VARIABLE COSTS REQUIRED TO GROW THE CROP

- If Owl Farm had chosen not to grow a turnip crop, the underperforming paddocks would still have yielded some pasture between the months of October and April.
- When we crop a paddock, this pasture can no longer contribute to feed supply for the farm as it has been replaced by crop. There is an opportunity cost of pasture foregone.
- We need to value this pasture foregone, when calculating the value of turnips on a cents per kg DM basis.
- Table 3 shows the average monthly pasture production by all Owl Farm paddocks between October and April.
- The poorest-performing turnip paddocks produce, on average, **26% less dry matter** when ranked in Minda Land and Feed pasture. Owl Farm has placed a value on this pasture foregone and included it in the 'cost' or value of chicory produced in those paddocks.

TABLE 3.0 Estimated amount and value of pasture grown mid-October to late March on average across *all* paddocks, Owl Farm – Based on ACTUAL pasture growth rates 2015-2018 average pasture growth rates for Owl Farm. (2019-20 actual growth rates in brackets)

	Average farm pasture growth rates (kgDM/ha/day) ¹	Days out of pasture	Farm Pasture grown (kgDM/ha) ²	Economic Value (\$/kgDM) ³	Value of Pasture (\$/ha) ⁴
October	67	15	1,005	0.17	170.85
November	71	30	2,130	0.17	362.10
December	61 (43)	31	1,891 (1,333)	0.37	699.67 (493.21)
January	45 (18)	31	1,395 (558)	0.37	516.15 (206.46)
February	34 (7)	28	952 (196)	0.37	352.24 (72.52)
March	36 (15)	25	900 (375)	0.37	333.00 (138.75)
Total			8,273 kgDM/ha (5,597 kgDM/ha)		\$2,434/ha (\$1,443.89)

TABLE 4.0 Estimated amount and value of pasture grown for run-out *underperforming summer crop* paddocks from mid-October to late March – based on average Owl Farm average pasture growth rates for 2015-2018 and actuals for 2019-20 season

	Owl Farm Average	Poor performing Paddocks (-26%) ⁵	2019-20 season
Average Pasture Grown (kgDM/ha)	8,273	6,122	4141
Value of pasture (\$/ha)	\$2,434	\$1,801	\$1,068

TABLE 5.0 Sensitivity Analysis (c/kg DM of crop grown) including value of area of poorer performing summer pasture foregone to grow crop (\$1,801/ha)

		c/kgDM		
		Excluding value of pasture foregone	Including value of pasture foregone - average year	2019-20 season
Crop Yield (kgDM/ha)	7,000	22.7	48.5	38.0
	8,000	19.9	42.4	33.3
	9,000	17.7	37.7	29.5
	10,000	15.9	33.9	26.6
	11,000	14.5	30.8	24.2
	12,000	13.2	28.3	22.2
	13,000	12.2	26.1	20.4
	14,000	11.4	24.2	19.0
	15,000	10.6	22.6	17.7
	16,000	9.9	21.2	16.6



Kale crops cost 28.2c/kg DM based on establishment costs of \$1755, pasture foregone of \$1,068 and average yield of 10,000 kg DM/ha



ASSUMPTIONS:

¹ Actual pasture growth rates for Owl Farm, as assessed on weekly basis by Owl Farm team.

² Estimated total amount of pasture grown during the time crop area is sprayed out for turnips then returned to pasture (15th October to 25th March)

³ DairyNZ Economic Values for perennial ryegrass seasonal dry matter production traits used in the 2020 Forage Value Index <https://www.dairynz.co.nz/media/5792525/forage-value-index-handbook-2019-20.pdf> Handbook updated figures are Late spring \$0.17 and summer \$0.37

⁴ Value of feed (\$/ha) calculated by multiplying the EV x Pasture grown per hectare per month

⁵ According to the pasture assessment data from MINDA Land & Feed, the poorest performing paddocks at Owl Farm were 26% below average.

SUMMER DRY/AUTUMN RECOVERY PLAN - MARCH 2020

In a challenging extended summer, we've been grateful to have the volume of supplements and crops available as summer began. Despite this, significant and prolonged sub-budget growth has meant we are in a considerable feed deficit, against the original milking plan. Throughout the months December-March we will have grown approximately 260 t DM less feed than an average year, and we take stressed pastures into April while hoping for compensatory growth.

Poor pasture growth, along with reduced crop yield and earlier grazing of the crops, has precipitated a drastic reduction in milking season length. While we still have supplement available, the lack of grass on hand and the need to build winter cover means total feed supply is too low to continue milking as long as we would like.

We have used PKE since mid-December, to stretch out our silage reserves as far as possible. We cannot add more PKE to the milking diet right now currently at 3kgPK/cow

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. Re-grassing strategy has been a priority for March. We need the right plants in the ground to provide feed for next season.

Target APC 2400kgDM/ha

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.

Target BCS MA cows 5, 1st and 2nd calvers 5.5, less than 15% of the herd above or below target

3. Hold winter supplement reserves aside. This unfavourable autumn does not have to affect next season. We have already produced 92% of last season's total production. Ensuring we build pasture cover and pre-allocate appropriate levels of forages for winter and early spring ensures we start next year on the front foot to achieve spring targets.

Target 100kgDM/cow forage + PK

4. Make profitable milk production without undue effect on our balanced scorecard KPIs

We have our feed budget planned through to the end of the season, including knowing how much feed needs to be kept aside for winter and next spring. 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/>

FEED INVENTORY UPDATE 16-3-20

Feed type	Feed source	On hand now TDM	Growing/ordered TDM	Total supply	Total Available
Bottom pit	Homegrown + Te Awa block	2	0	2	2
	Earmarked for winter/spring	10	0	10	0
Pdk 32 pit	Run-off sorghum	11	0	11	0
Baleage	(23 bales) home grown	4.1	0	4.1	0
	(40 bales) Hautapu	7.2	0	7.2	7.2
	(109 bales) bought-in	19.6	0	19.6	19.6
Hay large bales	Homegrown (32 bales)	5	0	5	0
Kale	2 days left	1.9	0	1.9	1.9
Palm Kernel	As needed	10	90	100	100
Total TDM	Until Balance Date 2019	70.8	90	160.8	130.7

MONITORING THE SITUATION

Our summer decision rules are critical to the success of the farm:

1. Monitor average pasture cover and growth rates weekly.
2. Monitor crops for insect damage and spray as needed, note withholding periods.
3. Keep average pasture cover above 1,800 kg DM/ha on the area that is in grass.
4. Use on/off grazing to avoid grazing below 1450 kg DM/ha.
5. Target rotation length between 30-40 days;
 - a. If cover is below target we will slow the rotation to protect growth before growth slows.
 - b. If average cover and pre-grazing rise above target, we will speed up to 30 days max and reduce supplement use.
6. Monitor Eczema risk to cows, via pasture spore counts, faecal spore counts and faecal zinc samples.
7. Monitor cow BCS of the herd, and individuals. All cows at or below BCS 3.5 to be on OAD January onwards (excluding known empty or cull cows).
8. Begin dry-off in March for cows as required, based on calving date and individual BCS data.
9. Book space at the works quickly, based on feed budget when surplus cows on farm need to go, to relieve feed demand.

MILKING FREQUENCY STRATEGY

OAD is a tool to manage BCS on Owl Farm throughout the season. It is used when health events, bullying, feed challenges or climatic events have led to individual animals being at a BCS that puts current or future season performance at risk.

- By the end of December we had 65 cows on OAD across both herds
- On 4th January both herds transitioned to 3 milkings in 2 days
- On 11th February all cows went OAD.
- On 28th February 58 cows were dried off
- On 13th March 104 cows were dried off

CULLS STRATEGY

Farm policy is to identify culls early via a pregnancy test in late Dec and early Feb and remove them from the farm ASAP. 5 culls were identified and removed before the final PD. Empty cows were booked to leave the farm in early Feb unfortunately we were unable to get them to the works as planned.

- 15 MT cows to works 9th February, leaving 383 milking
- 9 MT high BW cows sold 25th February, leaving 374 milking
- 58 light cows to dry off on 28th February, leaving 316 milking
- 20 culls to works 5th March, leaving 296 milking
- 104 light cows to dry off 13th March, leaving 192 milking
- 15 in-calf culls to works mid/end of March, leaving 177 milking
- 177 milking through April depending on BCS and APC accumulation
- 78 heifers to return home 1st May
- Remaining cows dry off early May
- 417 cows to calve 1st June 2020

BCS STRATEGY

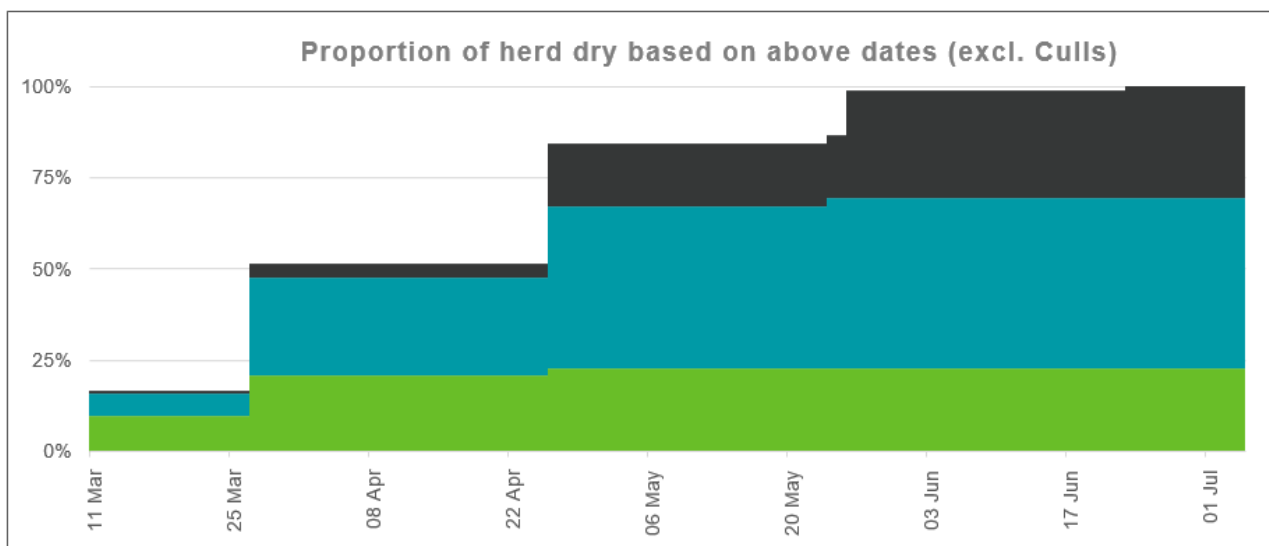
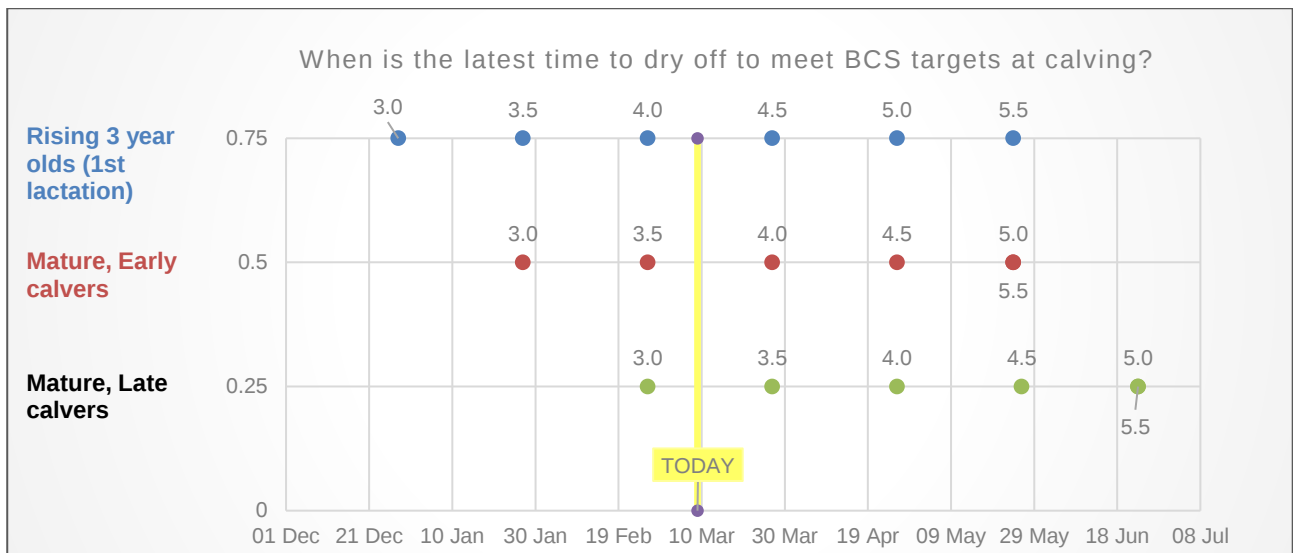
We have loaded up each cow with her age, calving date and BCS using information from InfoVet. This data has then been used in the DairyNZ BCS dry calculator to give us triggers for dry off and show portions of the herd in each group. Allowing for medium BCS gain of 0.5 BCS/month we have the following dry off targets:

This excludes cows that are designated culls.

Rising 3 year olds (1st lactation)		
BCS	when to dry off	no. cows in mob
3.0	DRY OFF NOW	1
3.5	DRY OFF NOW	1
4.0	DRY OFF NOW	33
4.5	27 Mar 20	41
5.0	26 Apr 20	6
5.5	24 May 20	
Total (Check)		82

Mature cows - Early calvers (within 4 weeks of PSC)		
BCS	when to dry off	no. cows in mob
3.0	DRY OFF NOW	6
3.5	DRY OFF NOW	16
4.0	27 Mar 20	74
4.5	26 Apr 20	65
5.0	24 May 20	9
5.5	24 May 20	
Total (Check)		170

Mature cows - Late calvers (more than 4 weeks after PSC)		
BCS	when to dry off	no. cows in mob
3.0	DRY OFF NOW	3
3.5	27 Mar 20	11
4.0	26 Apr 20	48
4.5	26 May 20	45
5.0	23 Jun 20	3
5.5	23 Jun 20	
Total (Check)		110
Grand total (Check)		362



What has happened this summer:

- Pasture growth rates 20 kg DM/ha/day, below long-term average for January and February and likely March. This is approx 177 tDM over the farm not grown in January and February alone.
- Reduced yields of crops (approx 20-30 tDM lower)
- This demand has been increased by the inability to get cull stock off the farm as planned.
- We have offset this deficit by feeding crops earlier, reducing milking frequency, milking BCS and drying cows off early, feeding winter/spring silage, purchasing tapioca to dilute PK
- 30ml of rain received 22-23 Feb, 17ml on 7th of March, with little or no more significant rain in the forecast for the next 10 days

What we did and why:

- At the end of January we developed our first dry summer plan which included our planned milking frequency, cull strategy, BCS data with dry off criteria and feed budget. We shared this with our team of experts represented by our partners. This was modified based on their feedback and we monitored against this weekly.
- At the end of February without significant rainfall we developed version 2 of the dry summer plan. We were faced with the decision to buy in feed or dry off the whole herd when the crops finished on the 11th March. We used Farmax modelling along with the analysis of other considerations to once again consult with our experts to put a plan in place for March.

Our assumptions included:

- Retaining 30 t DM of pit silage for winter/spring + the 33 bales (6 t DM) + the 42 bales of hay (7.5 t DM) = 43.5 t DM
- Crops finished on 11th March
- Feed pasture silage until 10th of March
- Feed PKE all season between 2-3 kg DM/cow (approx. 120 t DM and we have 68 t left on contract). Mixed with tapioca for milkers, straight PK for dry cows.
- 78 heifers home 1st May. 10 heifers to cull

Our proposal included:

- Purchase another 50 t DM maize silage or pasture silage to cover the lower than expected PGR through February and March. Start feeding this 10th March for 4 weeks.
- Approx cost \$20k
- Depending on further rain, attempt to keep remaining cows in milk until BCS triggers dry-off of 100-120 at the end of March.
- Remaining cows will stay on OAD until early May
- Revised production target 160-165,000 kg MS

What has happened so far in March:

- The cost of silage went up 20c/kg DM within the week
- No more rain arrived in March yet
- Continued delays removing cull cows
- Purchasing quality silage (above 10.5ME) has been difficult. We purchased 149 bales of silage (approx \$17k) from various sources.

- Decision was made to dry off 104 cows on 13th March. Only 16 of these meet BCS criteria. The remainder had to be dried off to reduce demand. We are aim to exceed a 60 day rotation while we wait for enough rain to break the drought and establish new pastures. This gives us enough pasture to allocate 5kgDM/day to milkers and 2kgDM/day to dry cows. We need to be able to increase this to 10kgDM/cow/day for milkers by April and 5kgDM/day for dry cows to meet our revised targets. This forms part of a total diet including pasture silage and PK.
- We are still planning to invest in another 60tDM of PK if needed to achieve BCS and APC targets (this is regardless of whether we dried off or milked on).
- Version 3 of the dry summer plan will be discussed at our next management meeting based on the rain or lack of through March!!

FARMAX MODELLING

We use Farmax modelling throughout the season to track against budget performance and profit. It can be used to compare options for tactical feed management decisions in conjunction with our performance indicators on the wagon wheel.

		Compare Physical Summary			
Dairy 7.1.2.31		Jun 19 - May 20			
Category	Description	Owl Early Dry Off	Owl Balage	Owl Maize Silage	Units
Farm	Effective Area	148	148	148	ha
	Stocking Rate	2.8	2.8	2.8	cows/ha
	Comparative Stocking Rate	82.9	79.8	79.4	kg Lwt/t DM offered
	Potential Pasture Growth	14.2	14.2	14.2	t DM/ha
	Nitrogen Use	107	107	107	kg N/ha
	Feed Conversion Efficiency (offered)	14.7	14.3	14.3	kg DM offered/kg MS
Herd	Cow Numbers (1st July)	419	419	419	cows
	Peak Cows Milked	407	407	407	cows
	Days in Milk	226	252	252	days
	Avg. BCS at calving	5.5	5.5	5.5	BCS
	Liveweight	1,267	1,267	1,267	kg/ha
Production (to Factory)	Milk Solids total	153,860	164,280	164,332	kg
	Milk Solids per ha	1,043	1,114	1,114	kg/ha
	Milk Solids per cow	378	404	404	kg/cow
	Peak Milk Solids production	2.15	2.15	2.15	kg/cow/day
	Milk Solids as % of live weight	82.3	87.9	87.9	%
Feeding	Pasture Offered per cow *	4.2	4.2	4.2	t DM/cow
	Supplements Offered per cow *	1.2	1.5	1.5	t DM/cow
	Off-farm Grazing Offered per cow *	0.1	0.1	0.1	t DM/cow
	Total Feed Offered per cow *	5.5	5.8	5.8	t DM/cow
Diagnostics	Pasture Offered per ha	11.9	11.8	11.9	t DM/ha
	Supplements Offered per ha	3.5	4.2	4.3	t DM/ha
	Off-farm Grazing Offered per ha	2.2	2.2	2.2	t DM/ha
	Total Feed Offered per ha	17.7	18.3	18.4	t DM/ha
	Supplements and Grazing / Feed Offered *	23.4	27.0	27.0	%
	Bought Feed / Feed Offered *	8.9	12.0	12.0	%
(*) feed offered to females > 20 months old / peak cows milked					

OTHER CONSIDERATIONS

	Option 1 – Early dry off	Option 2 – Baleage	Option 3 – Maize silage
Feed characteristics	Totally dependent on rain. Risk of over grazing and negative affect on pasture recovery.	Preferred feed for milk production as we have allowed time for weight gain. 60c/kg DM low wastage. Can hire bale feeding during March for \$800. Provides options if a good autumn as we can store excess feed. Slow to feed herd (up to 13 bales/day!!) Supports pasture recovery and the implementation of autumn re-grassing strategy.	Preferred feed for weight gain. Low protein. 35c/kg DM higher wastage especially if March turns wet (based on previous experience using Maize silage on farm) Takes time to transition and once started need to complete feeding. Faster to feed out. Supports pasture recovery and the implementation of autumn re-grassing strategy.
Animals	Cows dried off on BCS. 60 cows dry end of Feb, likely to have 100 cows dry by 10 th March and the rest of the herd dry by end of March if no rain with the next 10 days.	60 cows dry end of Feb, dry off 100 cows end of March, keep the remaining on milk until early May.	60 cows dry end of Feb, dry off 100 cows end of March, keep the remaining on milk until early May.
People	Long dry period. Relief milker not required for two months.	Long period of feeding out supplements	Long period of feeding out supplements
Production	Estimate 153,000kg MS Risks of FEI grading due to dependency on PK as the sole form of supplement. No options to make money from good autumn growth.	Estimate 164,000 kg MS with rain in late March.	Estimate 164,000 kg MS with rain in late March.
Profit		Extra cost for milking longer approx. \$3,500 50 t DM @ 60c/kg DM = \$30,500 for extra feed 11,000 kg MS @\$7.30 = \$80,300 Approx \$30k profit predicted	Extra cost for milking longer approx. \$3,500 50 t DM @ 35c/kg DM = \$17,500 for extra feed Cost for extra minerals 11,000 kg MS @\$7.30 = \$80,300 Approx \$40k profit predicted
Other	No cows to demonstrate milking at the Open Day on 18 th April. Risks to animal welfare and public perception relying on pasture for BCS gain.	200 cows to milk on Open Day	200 cows to milk on Open Day

Compare Forecast Profit and Loss

Jun 19 - May 20

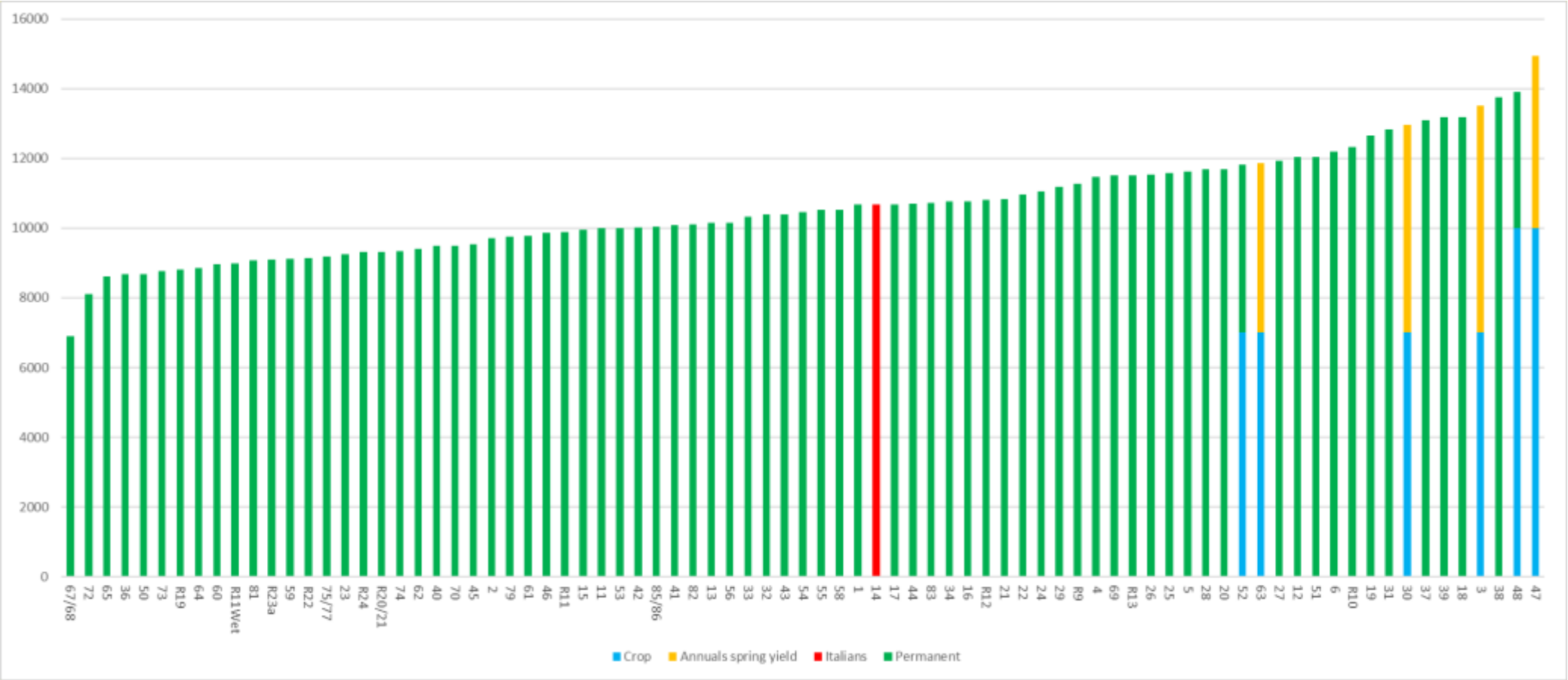
			Owl	Owl	Owl	
			Early Dry Off	Balage	Maize Silage	
Revenue	Stock	Net Milk Sales - this season	1,115,915	1,195,258	1,195,659	
		Net Milk Sales - last season	0	0	0	
		Net Milk Sales - dividend	0	0	0	
		Net Livestock Sales	90,739	91,276	91,387	
		Contract Grazing	0	0	0	
		Change in Livestock Value	13,933	13,933	13,933	
		Total	1,220,588	1,300,468	1,300,980	
	Crop & Feed	Capital Value Change	-14,452	-28,682	-29,042	
		Total	-14,452	-28,682	-29,042	
Total Revenue			1,206,136	1,271,785	1,271,938	
Expenses	Wages	Wages	180,292	180,292	180,292	
	Stock	Animal Health	56,317	56,317	56,317	
		Breeding	38,403	38,403	38,403	
		Farm Dairy	8,854	9,930	9,930	
		Electricity	12,400	12,400	12,400	
	Feed/Crop	Pasture Conserved	36,349	36,349	36,349	
		Feed Crop	13,947	13,947	13,947	
		Bought Feed	64,925	96,779	83,992	
		Calf Feed	10,663	10,663	10,663	
	Grazing	Grazing	64,500	64,500	64,500	
	Other Farm Working	Fertiliser (Excl. N)	62,239	62,239	62,239	
		Nitrogen	42,786	42,786	42,786	
		Regrassing	20,549	20,549	20,549	
		Weed & Pest Control	2,500	2,500	2,500	
		Vehicle Expenses	27,007	27,007	27,007	
		Fuel	9,487	9,487	9,487	
		R&M Land/Buildings	18,592	18,592	18,592	
		R&M Plant/Equipment	14,000	14,000	14,000	
		Freight & Cartage	3,619	3,619	3,619	
		Other Expenses	5,824	5,824	5,824	
	Overheads	Administration Expenses	3,222	3,222	3,222	
		Insurance	20,625	20,625	20,625	
		ACC Levies	6,561	6,561	6,561	
		Rates	29,132	29,132	29,132	
	Total Farm Working Expenses			752,793	785,722	772,935
	Depreciation			52,979	52,979	52,979
	Total Farm Expenses			805,772	838,701	825,914
Economic Farm Surplus (EFS)			400,364	433,084	446,023	
Other Expenses	Rent/Lease	59,257	59,257	59,257		
	Interest	178,143	178,143	178,143		
Farm Profit before Tax			162,964	195,684	208,623	
Farm Profit per ha before Tax			1,105	1,327	1,414	
EFS is a measure of farm business profitability independent of ownership or funding, used to compare performance between farms.						
EFS should include an adjustment for unpaid family labour and management. This can be added to the expense database as management wage.						

REGRASSING STRATEGY

On a paddock-by-paddock basis we see a strong variation in yield to date – with the best paddocks outgrowing the worst by nearly 5 tDM to date.

The top-performing permanent grass paddocks are our autumn-sown new grass cocksfoot paddocks (pdk 37,38,39). 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.

Paddock Yield to Date (kgDM/ha)



NEW GRASS PLAN 2019-20

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 4 kg/ha into the swards has seen limited establishment this season to date.

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 use permanent ryegrass cultivars.

Autumn Re-grassing	Area (ha)	Notes	Cultivars Rate/ha
Undersow permanent ryegrass	10	Stitch open permanent pastures, don't need crop	Platform Permanent Ryegrass 12kg/ha
Undersow Italian ryegrass	7	Stitch for short term yield before crop 2021	Lush Italian Ryegrass 15kg/ha
Undersow Italian ryegrass	7	Stitch for short term yield before crop 2021	Mohaka Italian Ryegrass 15kg/ha
Permanent pasture after crop	6	Establish permanent ryegrass/ cocksfoot mixed sward	Legion + Savvy + Quartz + Legacy 14kg/ha 4kg/ha 3kg/ha 2kg/ha
Permanent pasture after crop	4	Establish permanent ryegrass dominant pasture	Platform + Quartz + Legacy 20kg/ha 3kg/ha 2kg/ha
Italian Mix	8	Improve short term yield on dry soils	Supercruise + Relish + Quartz 12kg/ha 3kg/ha 2kg/ha
Autumn sown annuals	7	Drive winter yield ahead of crop in annual ryegrass	Winter Star II 30kg/ha
Total area re-grassed	42	28% of farm	
Total area drilled	49	33% of farm (including annuals ahead of crop)	



AUTUMN FERTILISER

This season delayed spring phosphate applications were made in March along with 11 units of N via Sustain N.

280kg/ha SurePhos on effluent areas (37ha) along with 20kg SustainN.

430kg/ha SurePhos over the rest of the farm (88ha) with 20kg SustainN.

The remaining part of the farm will receive 20 Units N as soon as possible.

Following a period of rain the whole farm will receive the final application of 30 Units N.



**Reducing phosphate loss
by up to 75%***

SurePhos is a game-changing new fertiliser that's been years in the making.
It's huge news for sustainable farming, and for everyone who shares a love of the land.
With the help of SurePhos, farmers can leave a long-lasting legacy for future generations.

*Relative to superphosphate products.

A new chapter in sustainable farming



Better for the environment

With the spotlight on phosphate loss and its impact on the environment, it's immensely rewarding for us to know we can help farmers reduce phosphate loss by up to 75% when compared to other water soluble phosphates.



Blends with other fertilisers

We love products that work well together. That's why we designed SurePhos to be compatible to blend with most other fertilisers, including SustaiN, so you can combine a range of nutrients into a single application.

A new chapter in sustainable farming



Greater weather flexibility

It rains a lot here in New Zealand. That's why we designed SurePhos to suit our conditions. You can apply SurePhos in a greater range of weather conditions, without the risk that rain will wash nutrients away. Most of the phosphorus in SurePhos is water insoluble, so it slowly releases over a period of months. This significantly reduces phosphate losses to the environment, and means you can use SurePhos confidently in a wide range of conditions.



Spreads evenly and accurately

SurePhos is a granular product, specially designed to flow freely and spread evenly and accurately over the New Zealand terrain, so you can apply phosphate exactly where you need it.

A new chapter in sustainable farming



Less water soluble

Our soils need phosphate. The trick is getting it to stay in the soil and not wash away. SurePhos is a stabilised, gradual release and low water soluble phosphate, so more stays on the land where it's needed.



Independently tested

SurePhos has been independently tested by AgResearch.



Protecting our waterways

SurePhos is a slow release phosphorus fertiliser that gradually releases into the soil. This results in more phosphorus retained in the soil and less lost to the environment. This can contribute to helping improve the quality of our waterways.

More than 70% of the phosphorus in SurePhos is citric acid soluble and can be utilised by pasture within a year. A maximum of 25% is water soluble and is able to be utilised by pasture on application. This reduces phosphorus loss from runoff and leaching by up to 75%, and means SurePhos is ideal for use in catchments with phosphorus limited waterways (inherently low phosphorus levels) and in other sensitive catchments. SurePhos was developed with the support of the Primary Growth Partnership. Patent is pending.

P: 7.8

S: 9.5



SurePhos is changing the game

SurePhos is ideal for broadcast application by ground spreading or by aerial topdressing.

You choose when

Normally, you'd risk phosphate loss if you applied it less than two weeks before irrigation or heavy rainfall (an average of 30 mm within 21 days). But the slow release nature of SurePhos gives you greater flexibility of application, with less risk of nutrients being washed away and lost via surface runoff.

You choose where

SurePhos granules are round, uniform and free flowing, so it's easy to spread evenly and accurately.

You choose what with

SurePhos can be blended with other fertilisers for maintenance or capital use. This helps minimise the number of applications and pasture damage.

It is not suitable for drilling. SurePhos is currently available in the North Island only.

Together, reducing phosphate loss by up to 75%

 **Ballance** agri-nutrients

 **SurePhos**

Paperwork never saved anyone

How to make safety part of everyday farm work!

Have a think about these statements...

- No-one sets out to get injured on farm
- All incidents are preventable
- Make a decision to be safe
- If something doesn't look/sound right – say something, or do something about it
- How do you feel if someone 'calls you out'?
- If you're not sure how to do the job safely – ask!
- A 'near miss' (or 'near hit') is a gift

Safety is not:

- Trying to take the fun out of farming
- Folders and paperwork that no-one looks at
- Something to get around to when you have an office day
- Big long lists of hazards
- Signs and instructions that people ignore
- Doing the job when you're really tired, grumpy or in a big rush

Safety is:

- Realising that most **things go right most of the time**
- **Understanding what could go wrong** and **putting steps in place** to prevent that happening (that means using safety gear like glasses, helmets and seatbelts)
- **Agreeing** on the '**best**' way to do things
- **Planning and thinking ahead** - what do we need?
 - The right tools?
 - Maintenance
 - Training/experience?
 - Thinking about what could go wrong?
 - Time to do the job? Be 'ON the job'
- **Communication**
 - Keeping people in the loop – talking, whiteboard, text, Apps
 - Toolbox meetings – a few minutes each day
- **Observation**
 - Something not quite right?
 - Something changed? Or new?
- **Capability**
 - Able to adjust in response to changes in the work environment
 - ✦ Livestock can be unpredictable
 - ✦ Weather and feed cover can change ground conditions
 - ✦ Operator state of mind (fatigue, pressure, multitasking)

Fatalities: in over 80% of farm fatalities there is a vehicle/machinery involved

Injuries: More than 'A Week Away From Work' in dairy the rate is 25-30/1000 employees – majority due to vehicle (motorbike/quad), livestock or tripping over things.

**Safety starts with a decision
Decisions determine attitude
Attitude affects behaviour
Behaviours repeated become culture**

**Culture is how we do things around here...
Ask yourself “How do you want things done around here?”**

How do you make safety ‘part of business’?

Know the few key risk areas/jobs on your farm – make sure everyone knows these and what to do/what not to do

Especially for tricky jobs where there could be serious consequence if things go wrong:

STOP – LOOK – ASSESS - MANAGE

Always ask: *What could go wrong?*

What am I doing about it? (And is that enough?)

Have a plan

- **Communicate** – let people know what is going on (ideally notes, records, photos). Employees, visitors, contractors.
- Maps with No Go areas
- Team rules/Farm rules

Have an emergency plan

- So people know what you want them to do
- Farm location easy to describe ○ First Aid kits – know how to use them
- Fire extinguishers too

Checklists – so we don’t miss something important

Standard Operating Procedures

- How we want things done (with photos)
- For training showing new people, consistency
- **Things in the right place** – safety equipment easy to find/use

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Safer Farms/ Agricultural Leaders’ Health & Safety Action Group Inc

A group that brings together farmers, CEOs and senior leaders from agribusiness, agricultural industry groups and government through a commitment to make farming safer by sharing information and practical solutions to health and safety issues on farm. Businesses across the supply chain are involved, recognising that the whole sector benefits from improved health and safety.



Next Farm Focus Day

Wednesday 20 May, 2020

Weekly Monitor Walk

Tuesdays, 11am



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facebook.com/OwlFarmNZ



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twitter.com/OwlFarmNZ