



St Peter's School/Lincoln University
Demonstration Dairy Farm

Farm Focus Day

Wednesday, 24 June 2020

PROVIDING KNOWLEDGE

2019-20: The season in review

Planning for 2020-21

The Cooperative Difference – Michael Hide



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



CONTENTS

Owl Farm Strategy	2
Contents	3
Health and Safety	4
Owl Farm season Performance on our Scorecard	6
Owl Farm Multi-Year Snapshot	7
Climate	8
Rainfall	9
Productivity	10
Growth Rates and Pasture Cover	10
Production	11
MS/ha from HOME-GROWN FEED	12
Feed supply and demand graph	12
Stock numbers strategy	13
Milking frequency strategy	13
Crop review	13
Imported Supplements	14
Annual Fertiliser	14
Regrassing Strategy	14
Paddock Yield (kg DM/ha)	15
New Grass Plan 2020	15
Animal Welfare and Livestock performance	16
Body Condition Score	16
SCC (SOMATIC CELL COUNT)	18
FEI	19
Reproduction	20
Lameness	24
Livestock growth	24
Mitigating Heat stress	25
People	26
Hours worked throughout the year	26
System usability	26
Community perception	27
Environmental performance	28
Business performance	29
Farm Operating Expenses	29
Operating Profit	29
ROA	29
Farm Working Expenditure Comparison – To end May	30

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

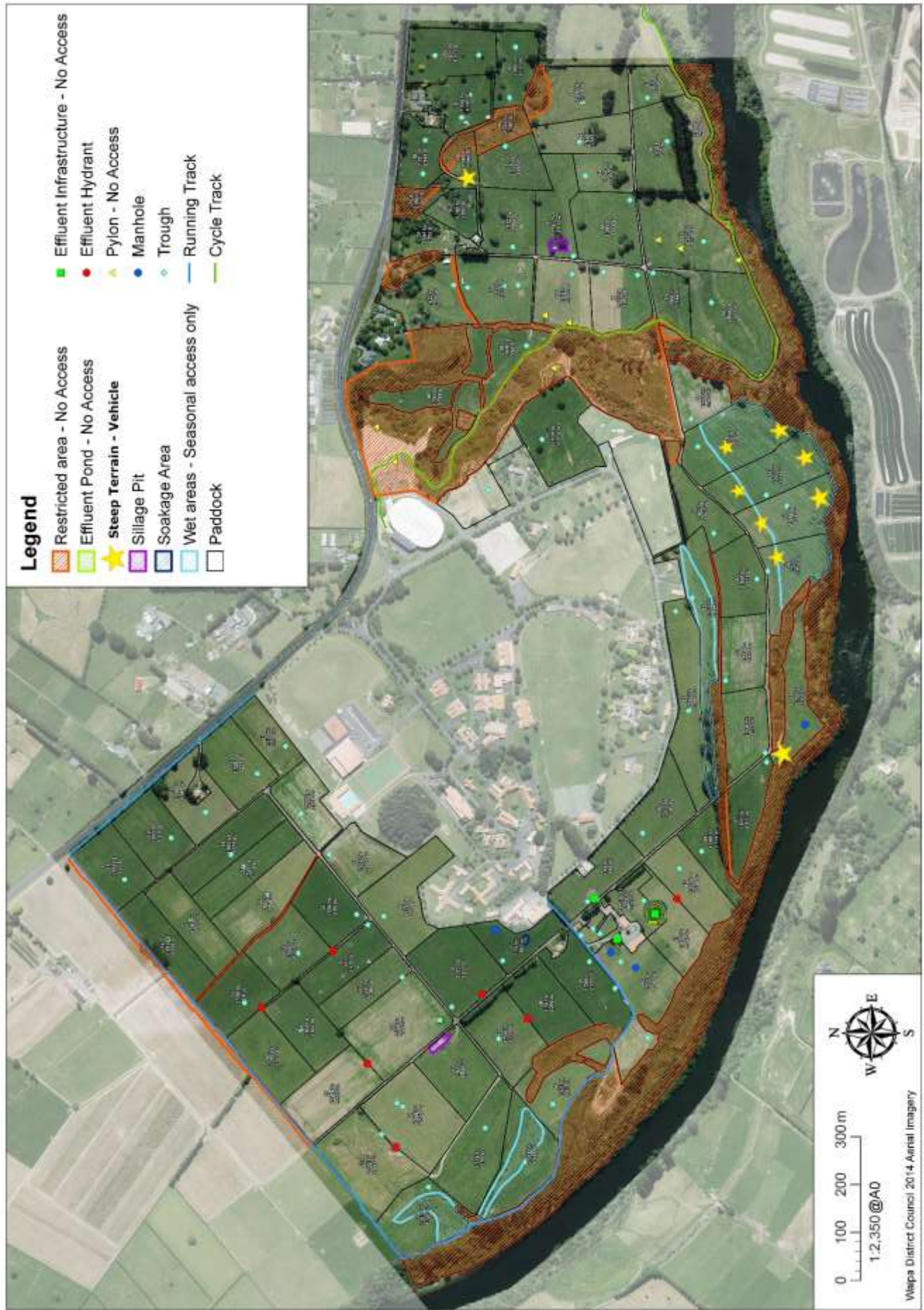
- Jo Sheridan – Demonstration Manager 021 712 680
- Tom Buckley – Farm Manager 021 058 4916

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

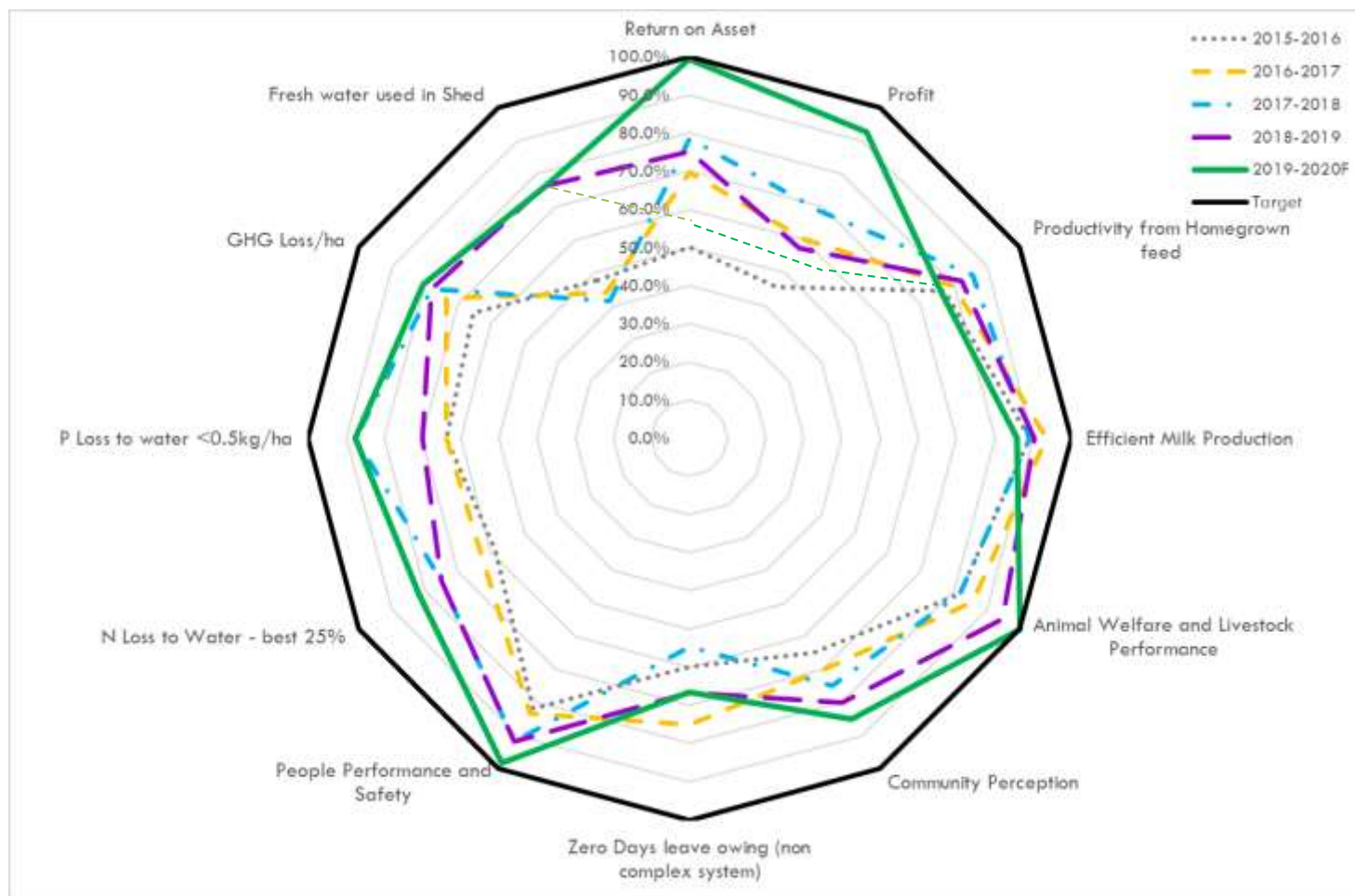
By entering Owl Farm and signing in at registration, you are acknowledging your understanding of any potential hazards and agree to take personal responsibility and act in such a manner as to protect yourselves and others also on-farm.

NOTES



OWL FARM 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. This year shows that at a high payout year we maintained profitability compared with a \$6 payout. Once adjustment figures come through we expect a dent in relative financial performance compared to previous years as a result of the dry summer and less productivity from home grown feed (as per the dotted green line).

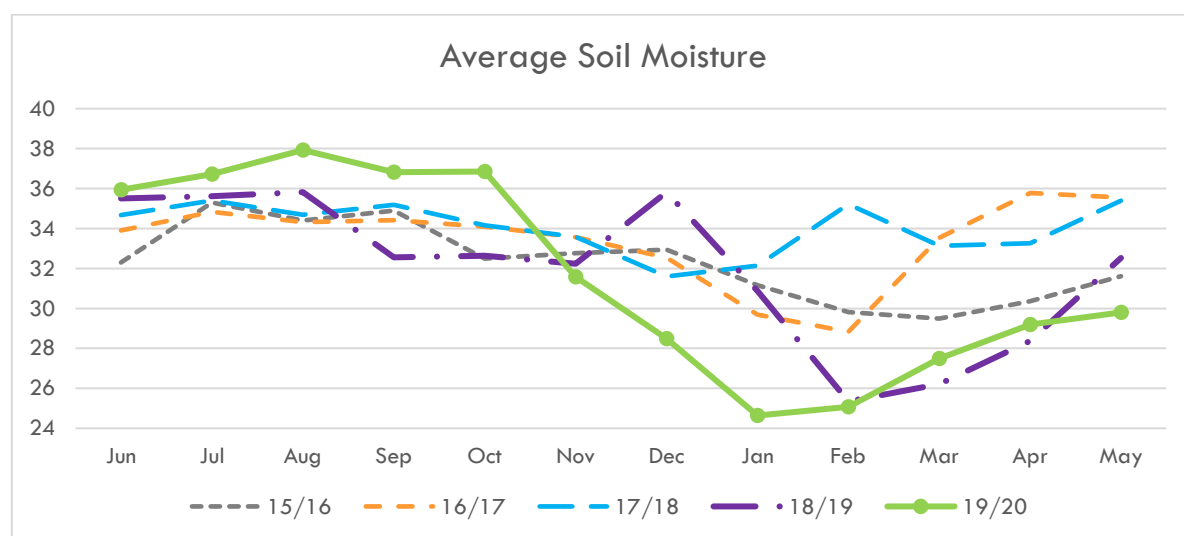
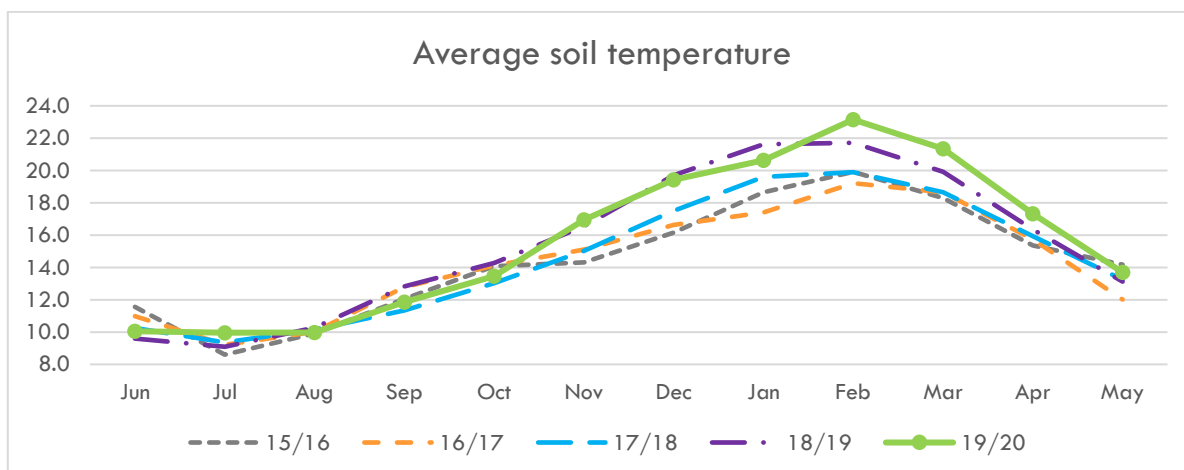
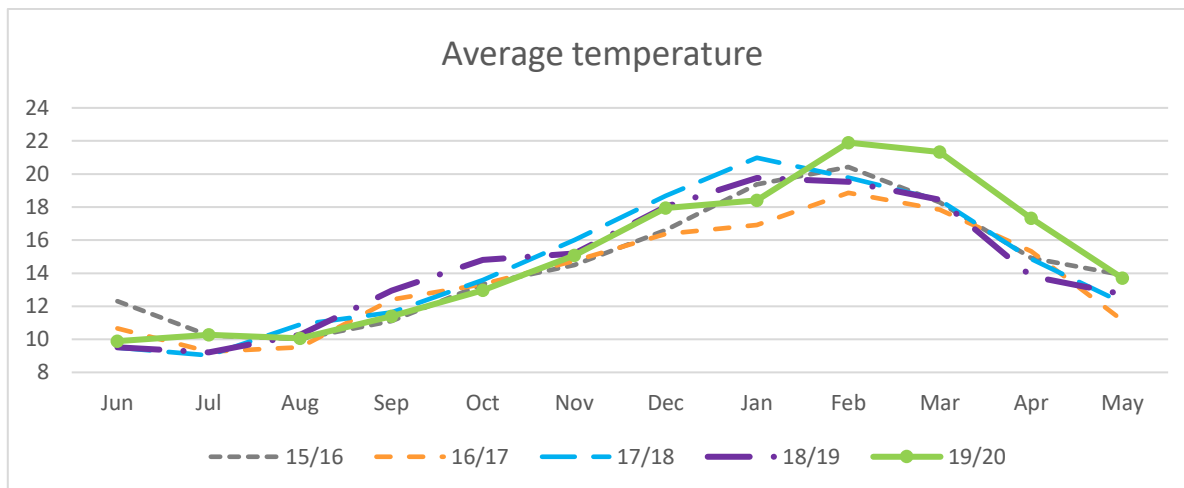


OWL FARM MULTI-YEAR SNAPSHOT

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	405
	Peak stocking rate cows/ha	2.83	2.90	2.82	2.76	2.75
Production	Total kg MS	176,197	178,294	168,169	169,359	167,185
	MS/cow	396	421	402	417	413
	MS/ha	1,122	1,221	1,136	1,150	1,133
	MS/ha from homegrown feed	879	952	978	1,013	931
	MS as % liveweight	85.2%	90.6%	86.5%	89.7%	86%
	Average SCC	112,000	125,000	146,000	172,000	162,000
Feed and Inputs	Feed grown T DM/ha	15.9	15.1	17.5	15.7	13.9
	Feed harvested T DM/ha (actual kg)	11.7	12.6	13.6	14.1	12.2
	Feed harvested T DM/ha (@11MJME/kg DM)	12.4	12.8	13.7	13.2	
	Supplements imported T DM/ha	4.3	3.6	2.3	2.1	3.0
	Supplements imported T DM	671	523	335	306	440
	% diet imported	21%	19%	11%	11.8%	25%
	% of farm cropped & harvested (silages)	21%	35%	33%	93%	45%
	Nitrogen applied/effective ha	149kg	163kg	150kg	150kg	139kg
Financials	Gross farm rev/kg MS (inc stock/dividend)	\$4.78	\$7.00	\$7.56	\$6.86	\$7.87
	Cash farmgate milk price /kg MS (Dairybase)	\$3.46	\$5.52	\$6.39	\$6.43	\$7.51
	Accrued farmgate milk price /kg MS	\$3.90	\$6.12	\$6.66		
	Stock sales /kg MS	\$0.48	\$0.43	\$0.54	\$0.43	\$0.36
	Dividend /kg MS	\$0.41	\$0.44	\$0.36	\$0.00	\$0.00
	FWE/kg MS	\$4.95	\$4.12	\$4.28	\$4.41	\$4.80
	OPEX/kg MS (inc dep ⁿ & feed inv)	\$5.03	\$4.81	\$4.59	\$4.72	\$5.32
	EFS/ha actual payouts (cash milk rev) Dairybase	-\$723	\$1,925	\$3,096	\$2,482	\$2,891
	EFS/ha actual payouts (accrued milk rev)	\$126	\$2,742	\$3,446	\$2,395	
	EFS/ha @ \$6.00 farmgate milk price (no div)	\$1,189	\$1,807	\$2,102	\$1,922	
	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	0.8
	GHG loss/ha Overseer FM kgCO ₂ e/ha	11,700	12,600	11,900	11,740	11,264
	Biological GHG/ha (methane + nitrous oxide)	9,744	10,340	9,824	9,361	9,030
	N conversion efficiency	33%	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	159/186
	Industry BW/PW	110/122	64/73	72/93	64/73	93/117
	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.					

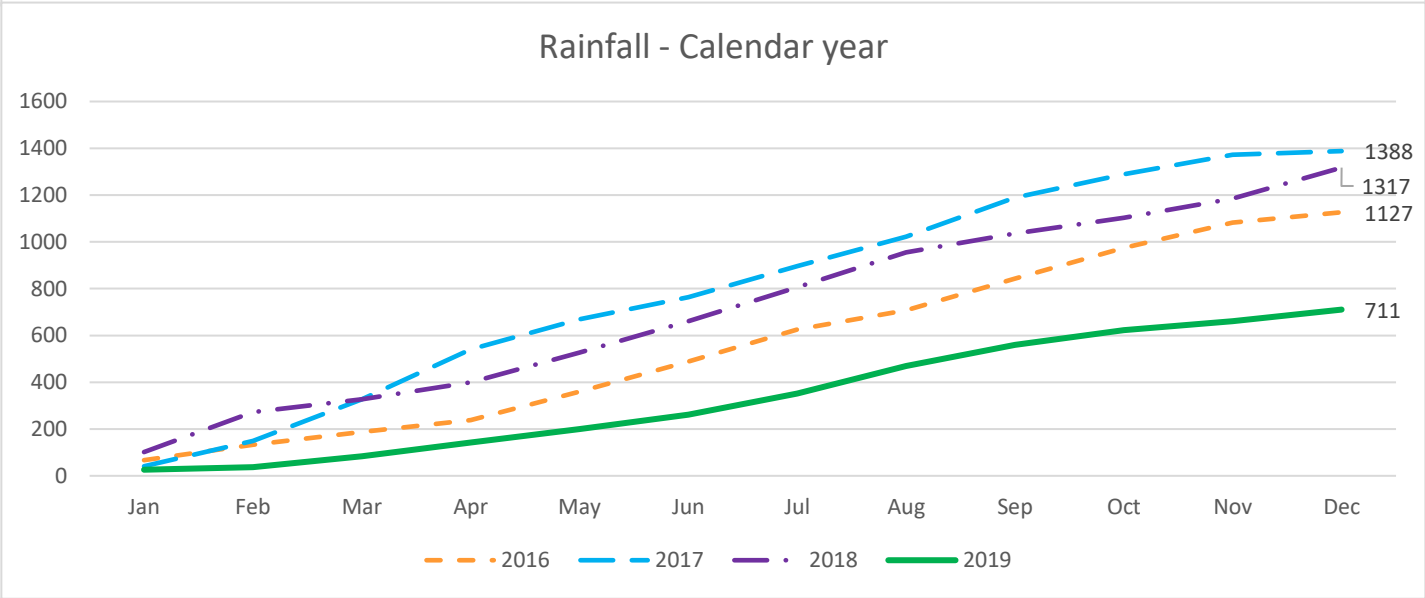
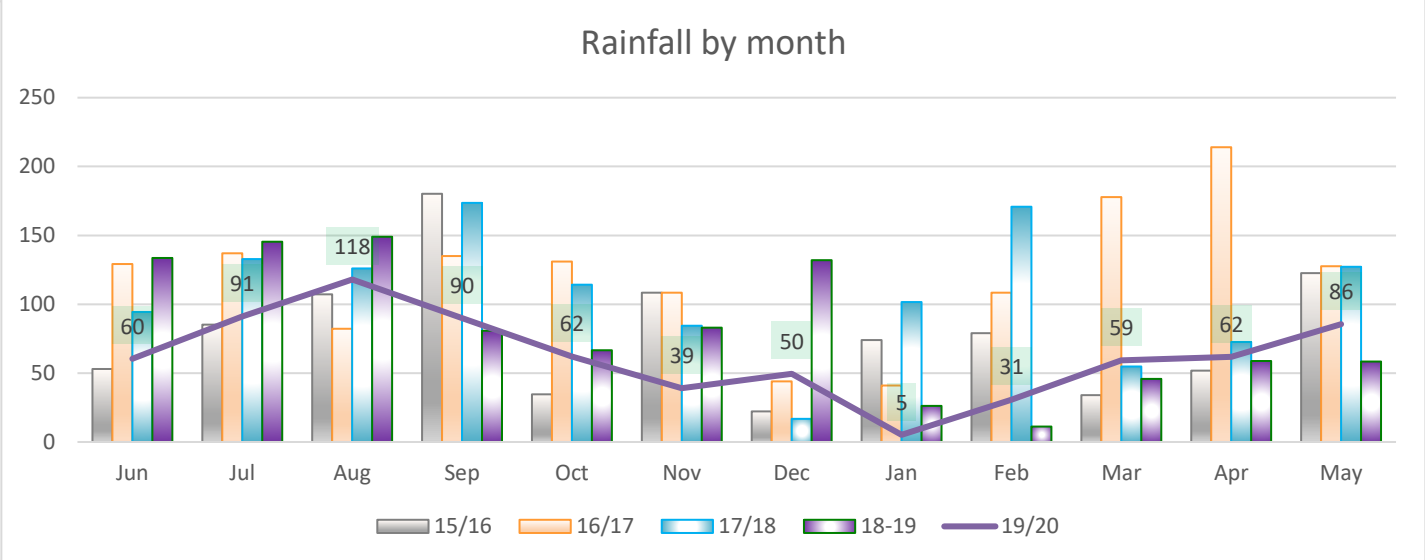
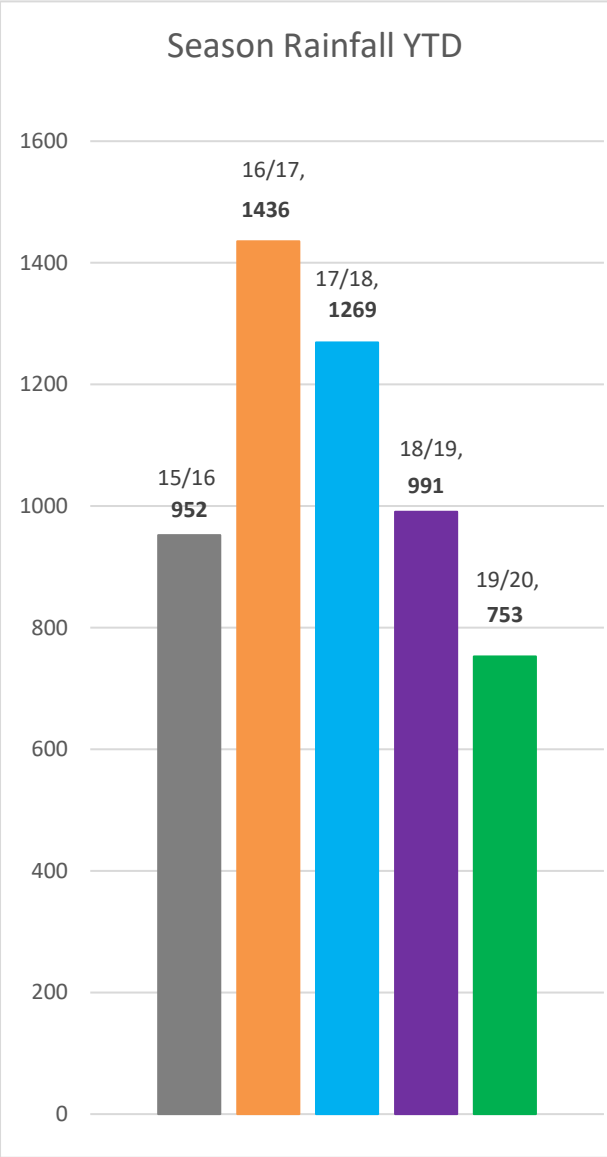
CLIMATE

The season was warm and dry in winter and early spring which continued through summer. We received only 753 mm of rain for the season. While early spring meant less supplements were needed and a great start to crops, by summer crop yields had diminished and PGR dropped significantly. Average rainfall in March and April along with a warm dry weather pattern allowed great pasture utilisation which has aided recovery of the farm to start the 2020 season. The lack of soil moisture is a real worry going into the summer again. Either we will get a very wet spring or we will be pushing summer crops through with low soil moisture levels again.



NOTES

RAINFALL



NOTES



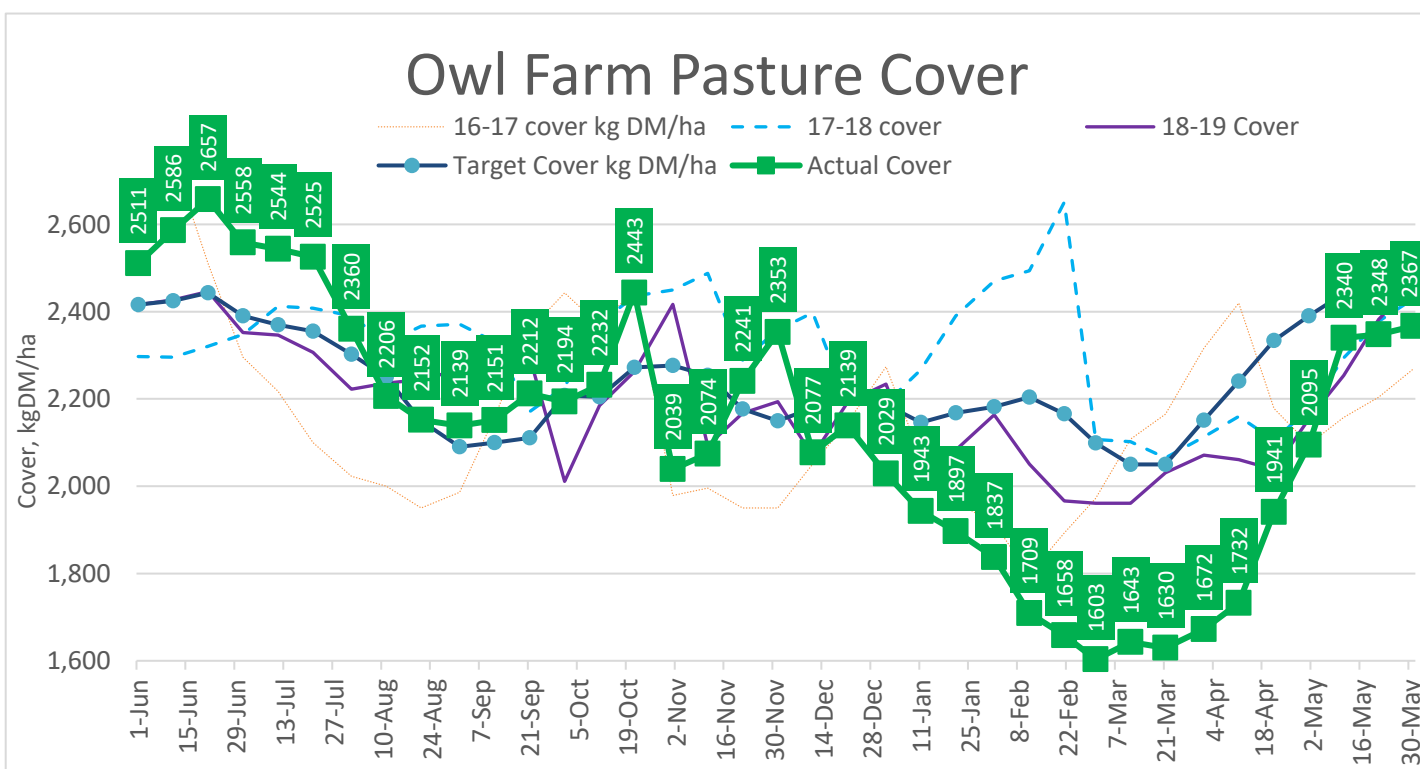
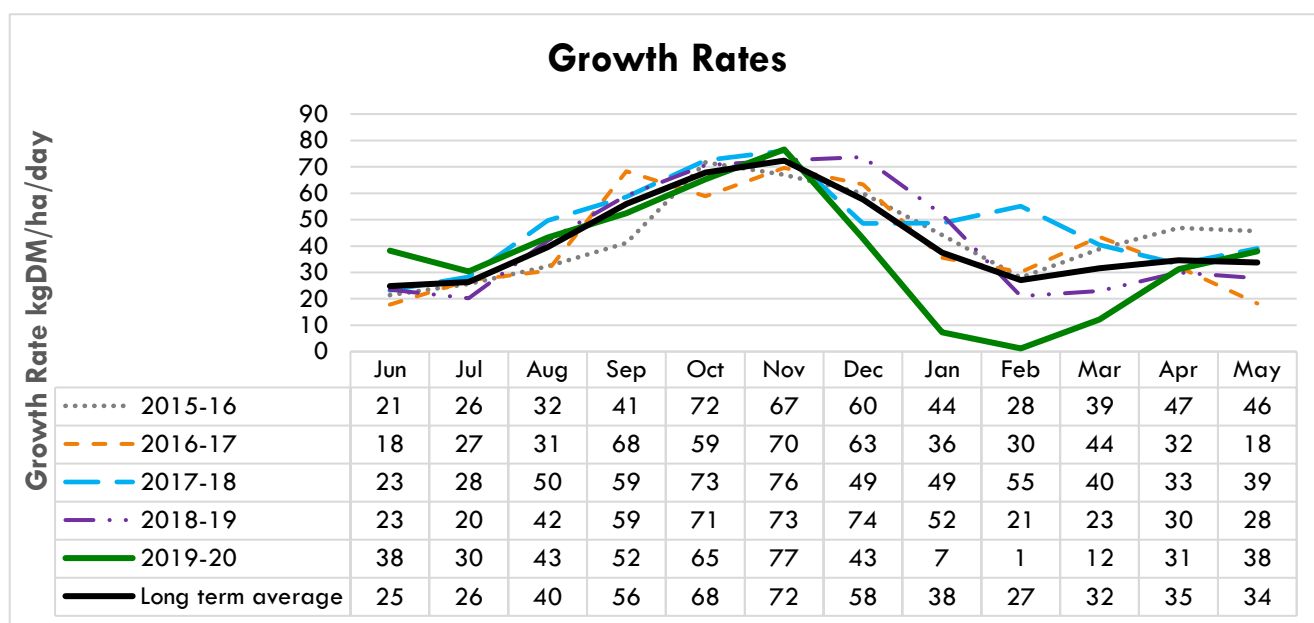
PRODUCTIVITY

We have a lofty goal of harvesting 16t DM/ha and producing 1391kg MS/ha from home grown feed. As expected, milksolids from homegrown feed was lower this year. Although we produced only 1.2% less milk, we needed to buy in 70t DM of extra silage and used 100t from our feed inventory that wasn't replaced. This was to cover a 300t DM shortfall in pasture grown. The result was less milk from home grown feed. This milk was more expensive to produce during Feb-April but allowed to us to milk 1/3 herd on all grass again in May and bring home youngstock early.

Cows averaged 413kg MS/cow and produced 86% of their liveweight.

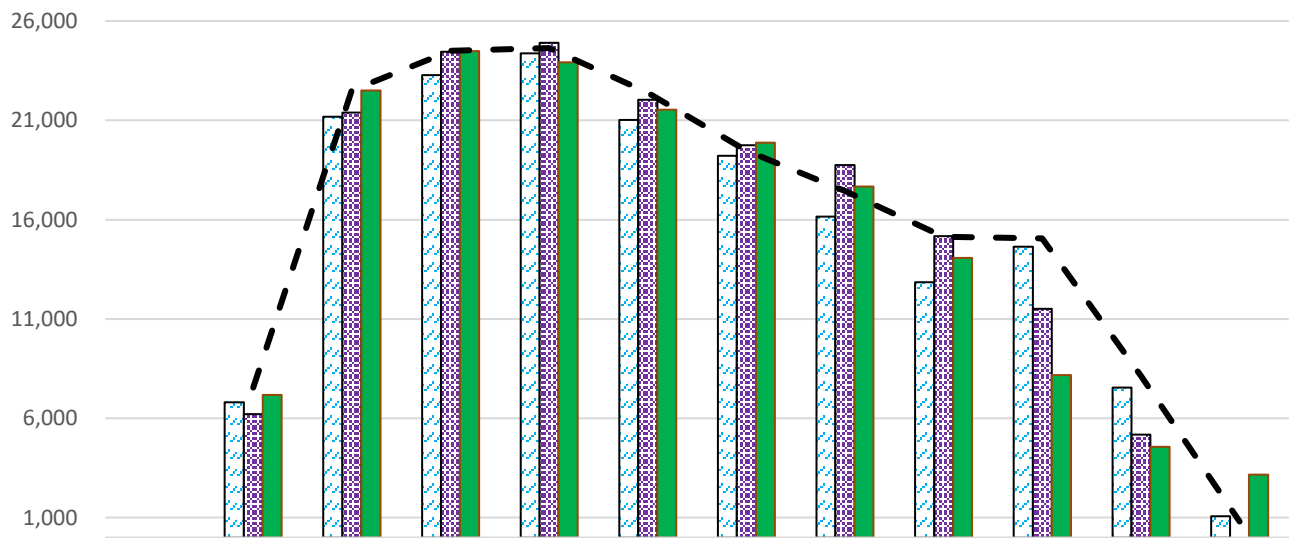


GROWTH RATES AND PASTURE COVER



PRODUCTION

Production: Monthly Performance



-4,000

	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	5,181	
19/20 Production		7,184	22,507	24,485	23,924	21,544	19,879	17,675	14,070	8,179	4,564	3,173
Budgeted 19/20		7,545	22,500	24,500	24,641	22,400	19,478	17,452	15,135	15,065	8,131	807

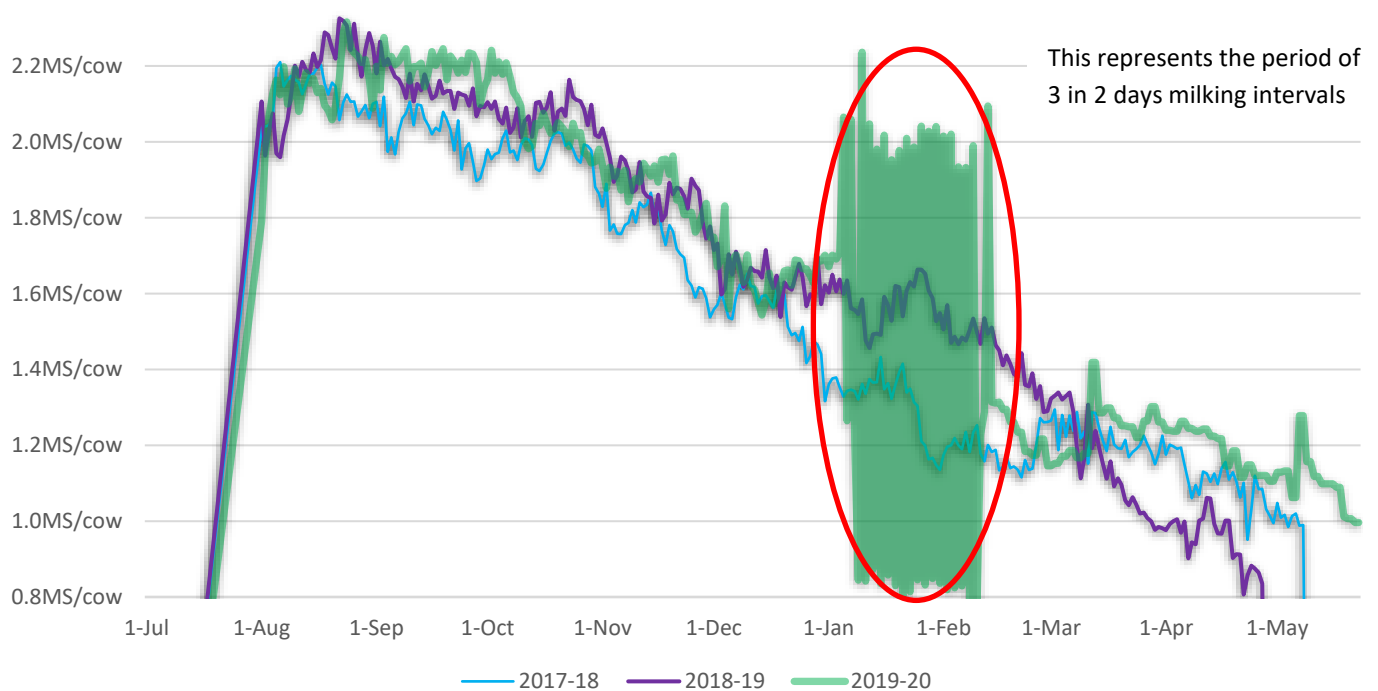
17/18 production

18/19 Production

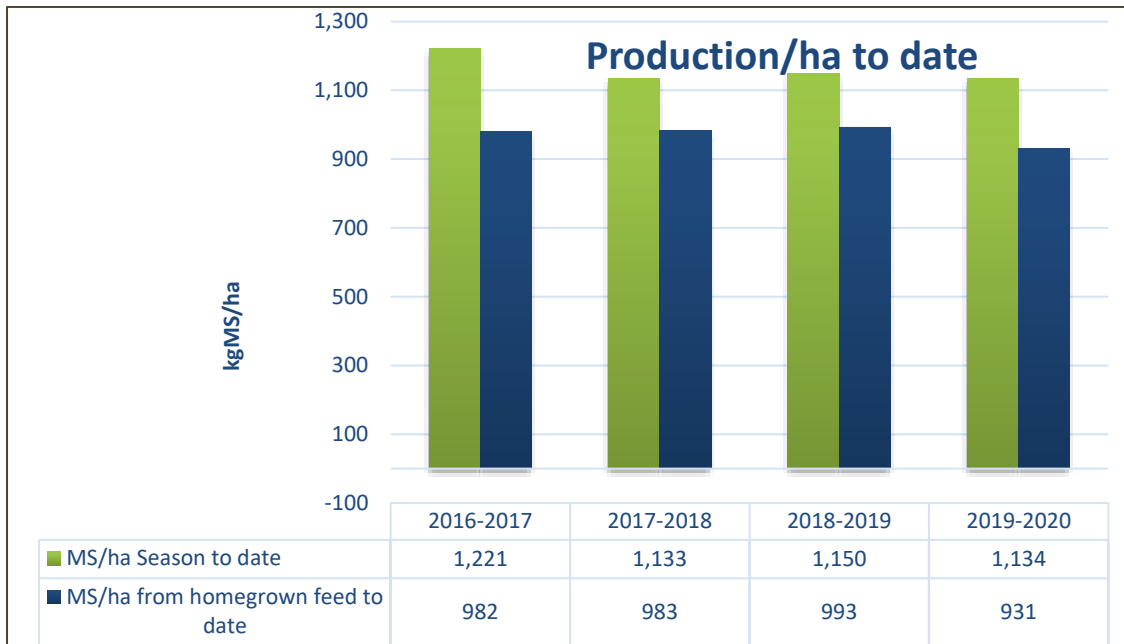
19/20 Production

Budgeted 19/20

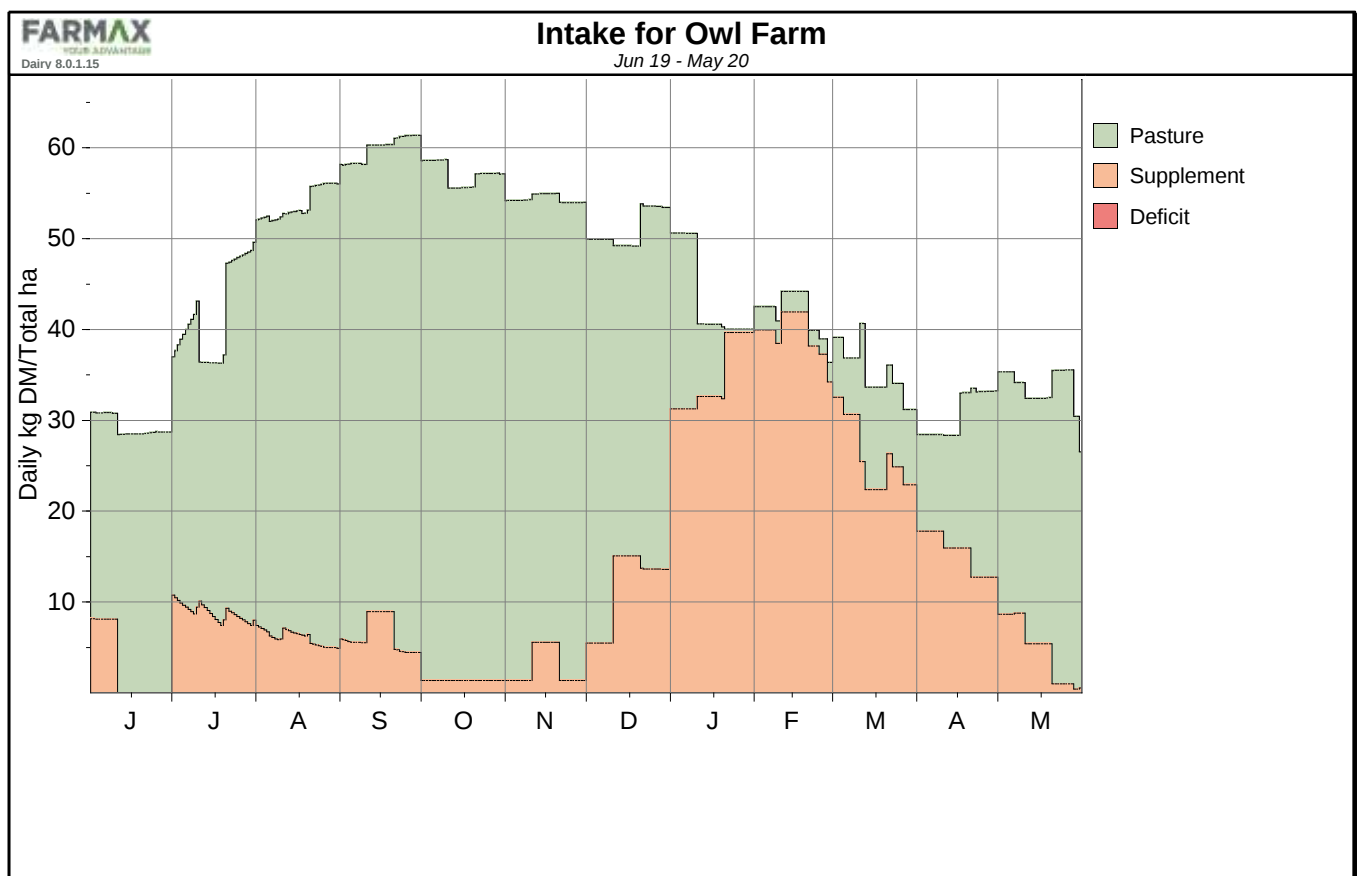
Milksolids/cow/day



MS/HA FROM HOME-GROWN FEED



FEED SUPPLY AND DEMAND GRAPH



STOCK NUMBERS STRATEGY

Farm policy is to identify culls early via pregnancy tests in late December and early February and remove them from the farm ASAP. Five culls were identified and removed before the final PD. Empty cows were booked to leave the farm in early February; 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 dried off on 28th February, leaving 316 milking
- 20 culls to works 5th March, leaving 296 milking
- 104 light cows dried off 13th March, leaving 192 milking
- 15 in-calf culls to works mid/end of March, leaving 177 milking
- 39 cows dried off 27th March on BCS criteria
- 17th April 78 in-calf heifers returned home
- 10 cows dried off 23rd April on low litres, high SCC
- 24 cows dried off 7th May on low litres, high SCC or days to calving
- 11th May 100 calves returned home
- 103 cows milked to 28th May
- 416 cows to calve 1st June 2020

MILKING FREQUENCY STRATEGY

Once-a-Day milking (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.

CROP REVIEW

This season we grew 5.5 t DM from October-March in pasture. This was replaced by 11ha of crops yielding 7-10t DM/ha available from Jan to March. Taking into account the value of pasture foregone, this equates to kale costing 28c/kg DM and turnips 38c/kg DM. While this was more expensive than we had planned, compared to silage at 60c/kg DM and PK at 45c/kg DM it was a cheaper feed option, with the added value of being able to graze in-situ rather than transporting feed to the cows all day.



IMPORTED SUPPLEMENTS

We had budgeted on purchasing 180t of PK and off-farm dairy grazing and a small amount of imported silage for the season. We went into the season with 132t DM of silage in the pit which is now just 30tDM. We purchased 40t of pit silage when we knew we hadn't harvested enough surplus off the farm. We harvested 20t from the runoff blocks and purchased 30t DM as expensive bales (\$105-\$125) during March. We had planned to use another 60t of PK to achieve APC targets and to cover low feed inventory in the spring. We didn't need to after recovery in April but we've purchased 42 big bales of hay to help with forage in spring instead.

	Total t DM	Kg DM/cow	T DM/ha
PK and PK/tapioca	200	494	1.35
Imported silage and hay	190	469	1.28
Imported grazing	48	18	0.32
Total	438	1,081	2.98

ANNUAL 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.

24t lime was applied this year. SOA was not used in the spring due to warm dry growing conditions.

Pro-Gibb and liquid N were used over 43ha during April.

Soil tests and average nutrients applied over the farm



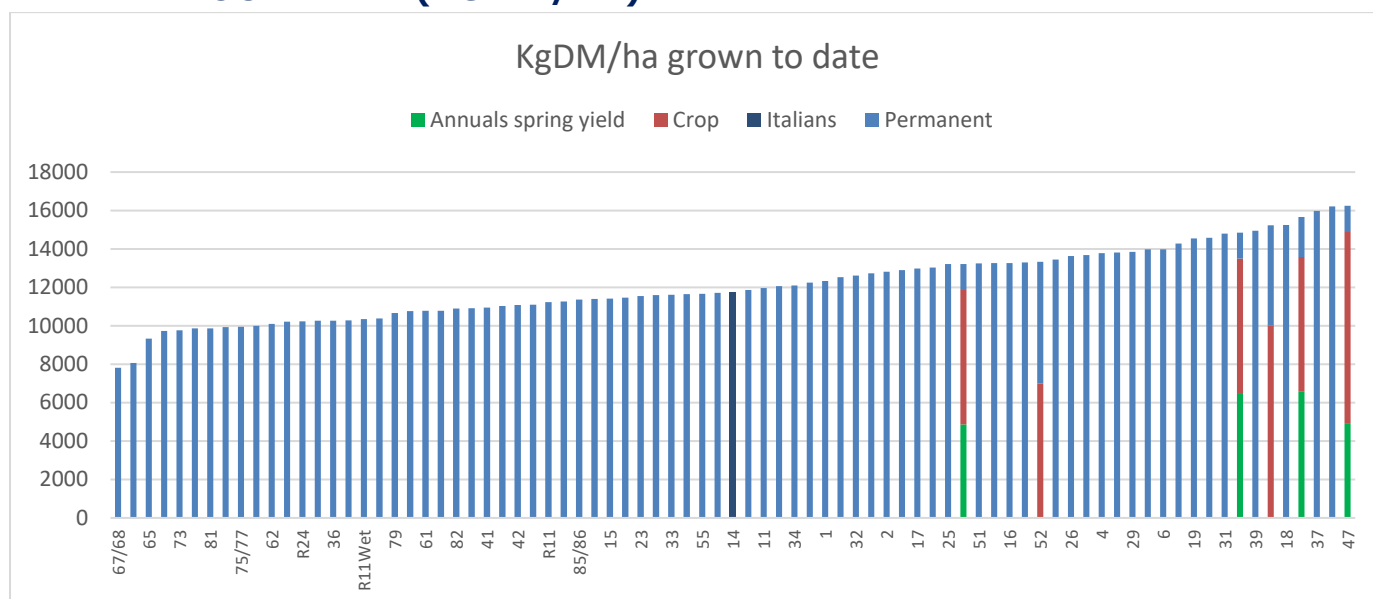
	2019-20	2018-19	2017-18
Olsen P	39	35	35
Quick test K	11	8	8
Sulphate -S	34	27	28
Quick test Mg	22	18	18
Soil pH	6.3	6.2	6.2
Nitrogen applied (kg/ha)	139	150	150
Phosphate applied (kg/ha)	37	41	39
Potassium applied (kg/ha)	26	21	26
Sulphate applied (kg/ha)	38	73	89
Magnesium applied (kg/ha)	6	0	0
Lime applied (kg/ha)	162	502	473

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 over 6 t DM for the year.

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.

Paddock Yield (kg DM/ha)



NEW GRASS PLAN 2020

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.

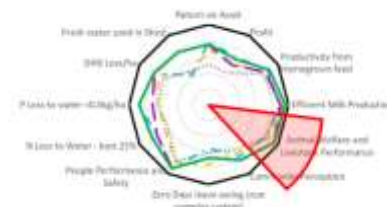
All permanent pastures will be sown with Quartz and Legacy white clover cultivars.

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/socksfoot 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)	PGG Wrightson Seeds

ANIMAL WELFARE AND LIVESTOCK PERFORMANCE

Our goal at Owl Farm is to reduce the number of involuntary culls throughout the season to reduce the amount of replacements being reared and allow for more selective culling. This season we had six deaths (1.4%) and 77 culls (of which 40 were empty) allowing 37 culls on health or performance grounds. We brought 18% heifers into the herd on 1st May.



Herds clockwise from top left:

Mixed Age cows

2018-born heifers

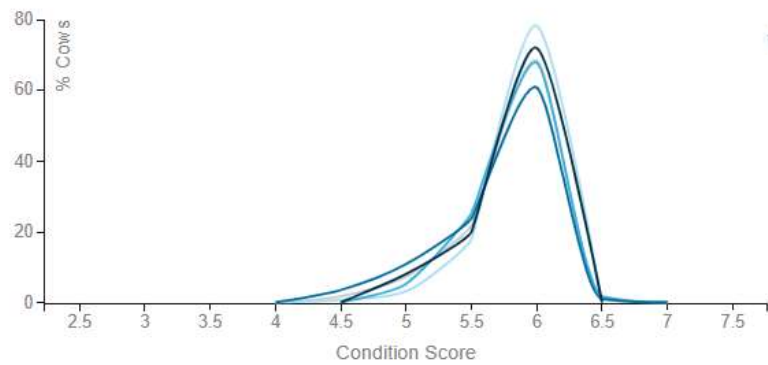
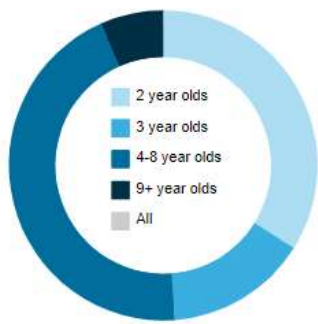
2019-born heifers

BODY CONDITION SCORE

Given the season we have experienced, cow condition has held up remarkably well. Although cows started calving with a higher BCS at 5.6, they milked well peaking at 2.2 kg MS/cow/day and continued to lose BCS through early lactation bottoming out at 4.4 at PSM (planned start of mating). They managed to hold condition well during the dry summer due to crop and supplement feeding and bottomed out at 4.2 in February. Changing to OAD milking and high levels of PK feeding to dry cows, they started putting weight on again in early autumn and continued to gain BCS on pasture-only diets through late autumn. Our 20th May BCS assessment gave an average of 5.8 which has come down a bit as we dried off cows and pushed them a bit harder to clean out paddocks during the dry winter. We will have another test carried out in early July to assess BCS at PSC (planned start of calving).

BCS by Age for 20 May 2020

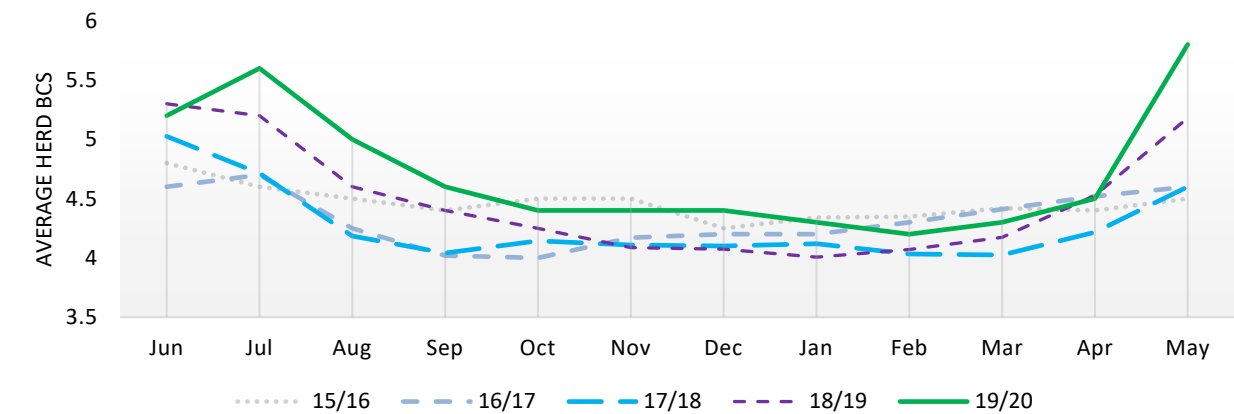
377 of 392 cows scored on this date.



Body Condition Scores

Age	4.5	5.0	5.5	6.0	6.5+	Average	Total Scored	% Scored
2	1	4	23	100	0	5.9	128	98%
3	0	3	14	38	1	5.8	56	98%
4-8	6	18	40	102	2	5.7	168	93%
9+	0	2	5	18	0	5.8	25	100%
All	7	27	82	258	3	5.8	377	96%

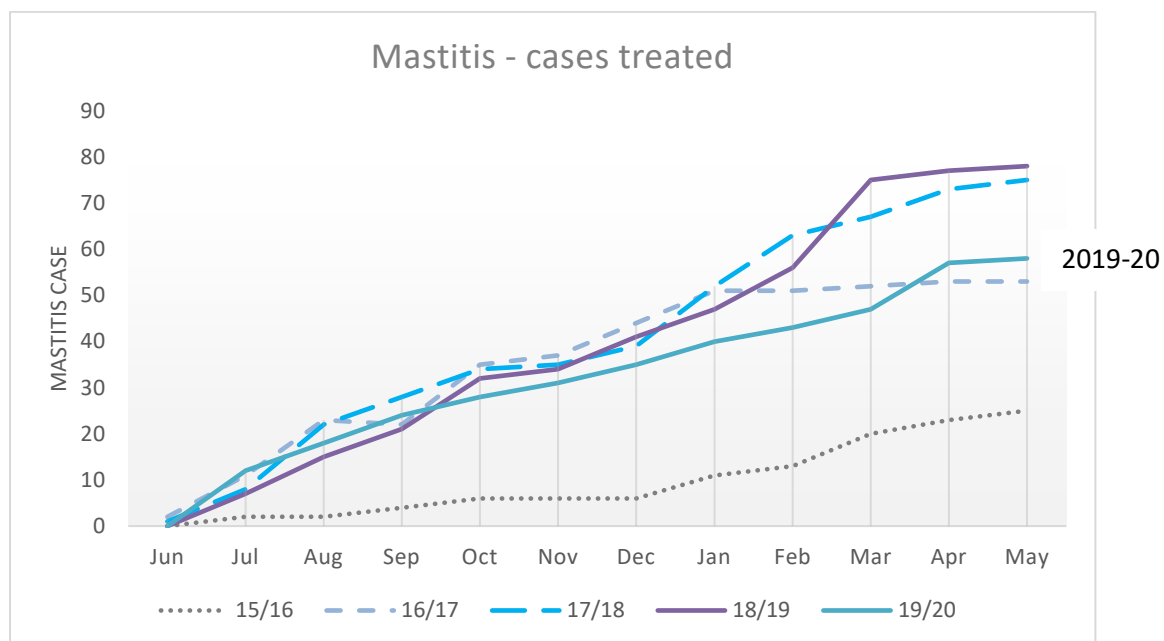
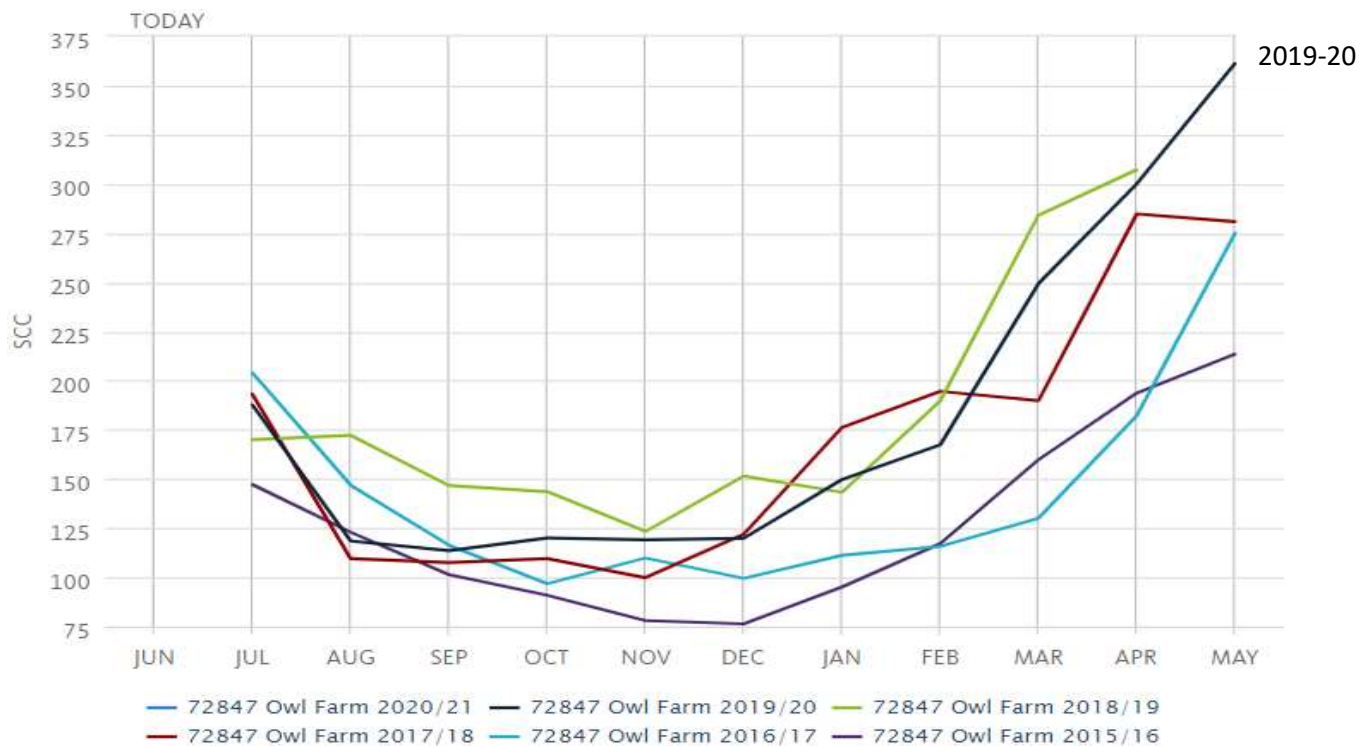
Monthly Body Condition Score



SCC (SOMATIC CELL COUNT)

Focused efforts on identifying high SCC and mastitis cows have resulted in lower average BSCC (162) compared with last season (172). We also treated less cows with mastitis than in the 2 previous seasons. This has been important as we transitioned through 3-in-2 and OAD milking and gave us options for late lactation herd management. As we milked on through May we were challenged with high SCC with only 1/3 of the cows still in milk, and had to dry off 10 cows with high SCC to continue milking to the end of May.

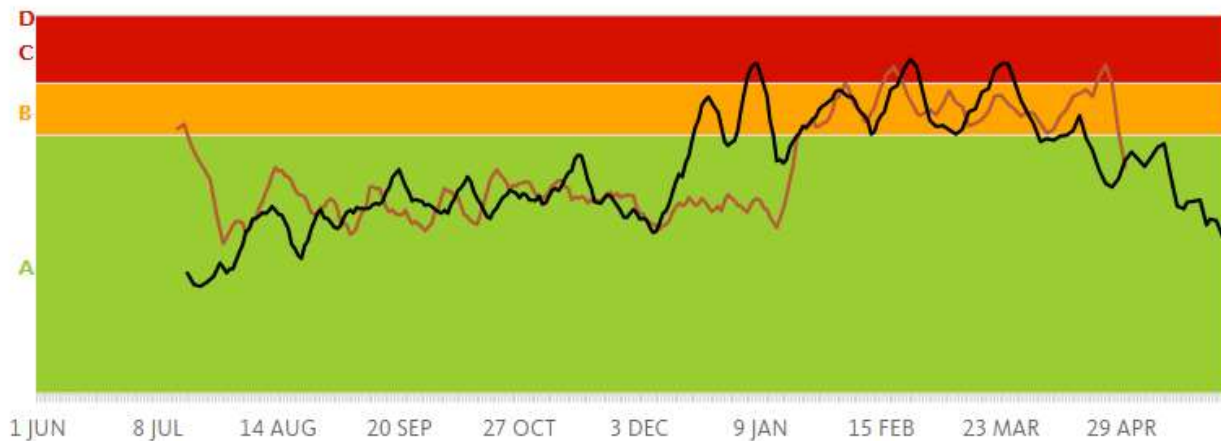
SCC : 1 June – 31 May



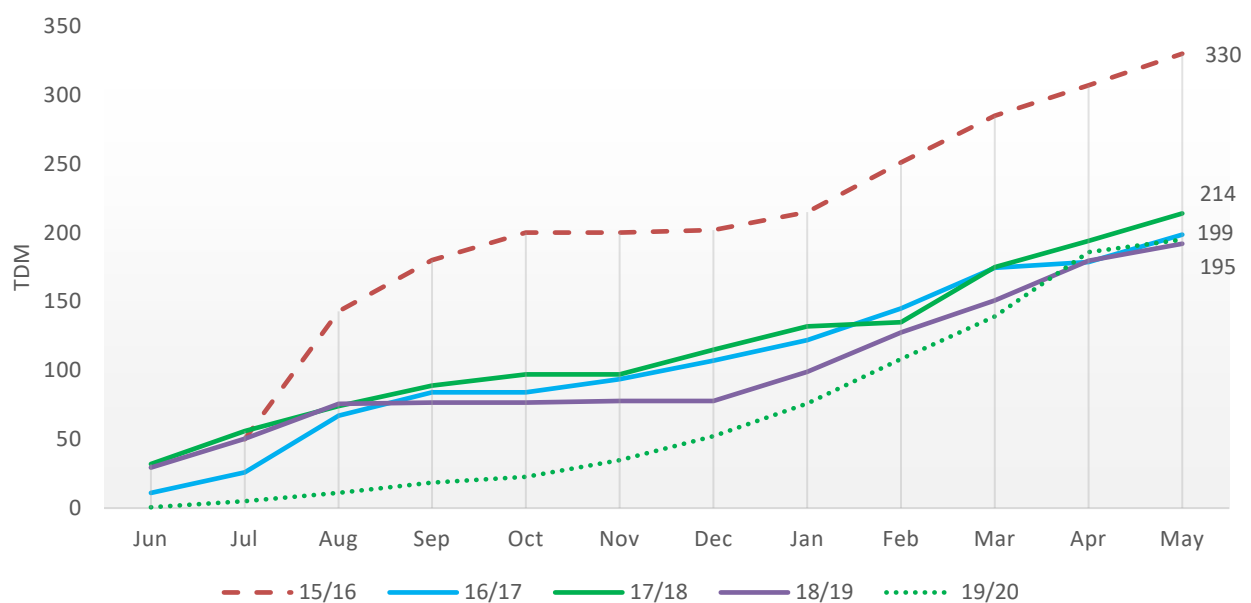
FEI

PK use was very low during the early part of the season due to good pasture growth. This increased during the summer dry period where we fed approximately 2.5 kg DM to milkers along with 3 kg DM crop, 6 kg DM silage and what we could offer in pasture. We used a 20% tapioca blend during February to maintain intakes around 3 kg DM as a way of getting more total energy into the diet. During the summer dry we fed up to 2/3 of the dry cow diet in PK to aid rapid weight gain and build pasture cover which was then reduced, so that during May only the last 10t was being fed to empty the bunker and no PK was needed in June. We finished the season using a similar total amount as in the previous three seasons.

FEI Average : 2019/20 compared to 2018/19



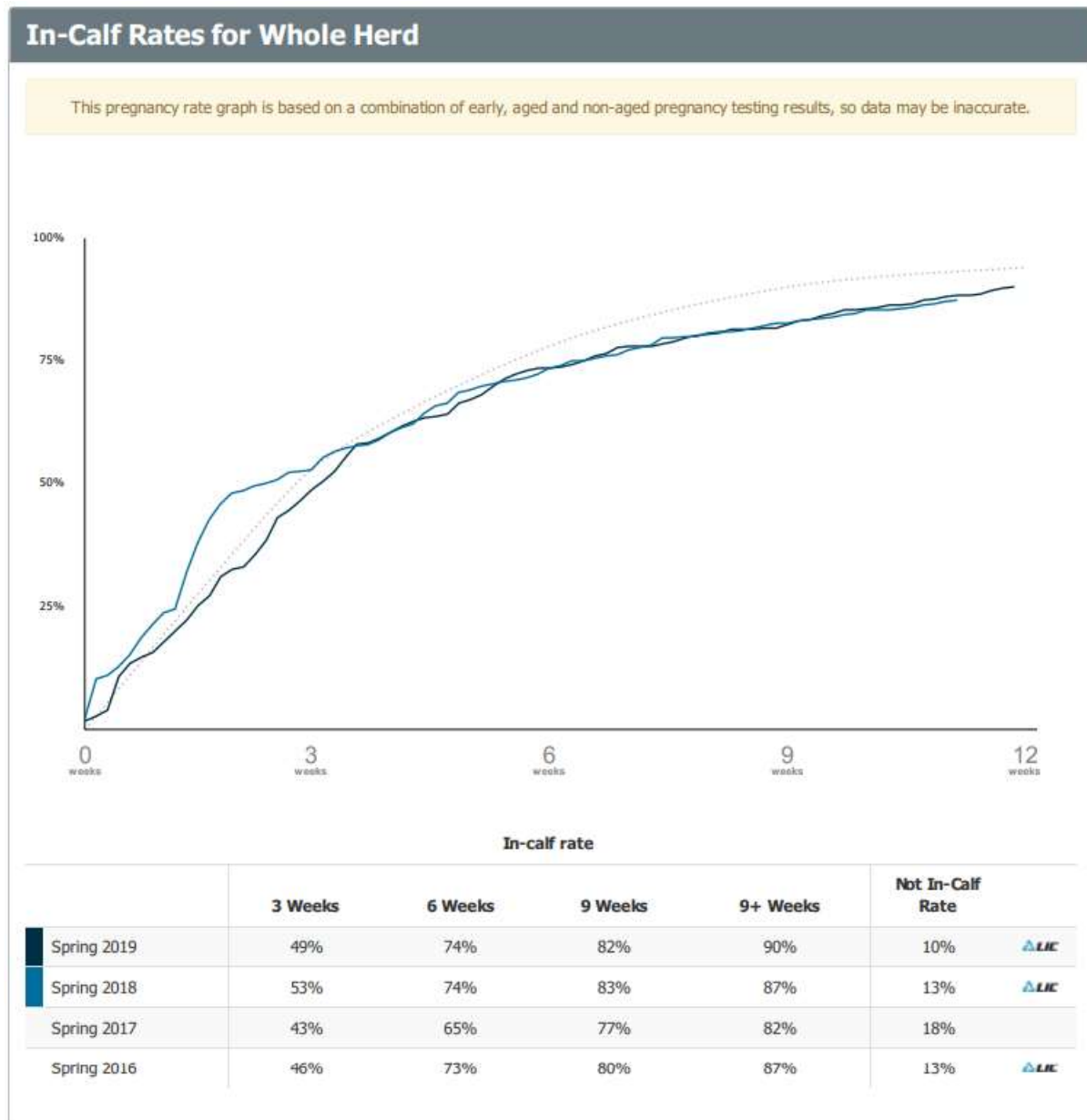
Total PKE and PK blend usage TDM



REPRODUCTION

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 four 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:

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

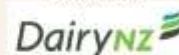
Next planned start of calving: 08/07/20

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

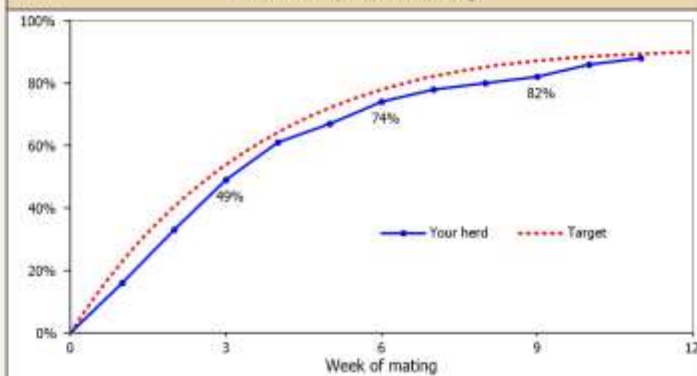
Your herd 10% (8-10%)

☆☆☆☆

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.

(C)Copyright DairyNZ Ltd May 2018. All rights reserved. (Incorporates components of (C)Copyright Dairy Australia 2005. All rights reserved.)

No warranty of accuracy or reliability of the information provided by InCalf Fertility Focus is given, and no responsibility for loss arising in any way from or in connection with its use is accepted by DairyNZ Ltd, or the provider of this report. Users should obtain professional advice for their specific circumstances.

Behind Your Detailed Fertility Focus Report



Version 3.01



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)

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.

(C)Copyright DairyNZ Ltd May 2018. All rights reserved.

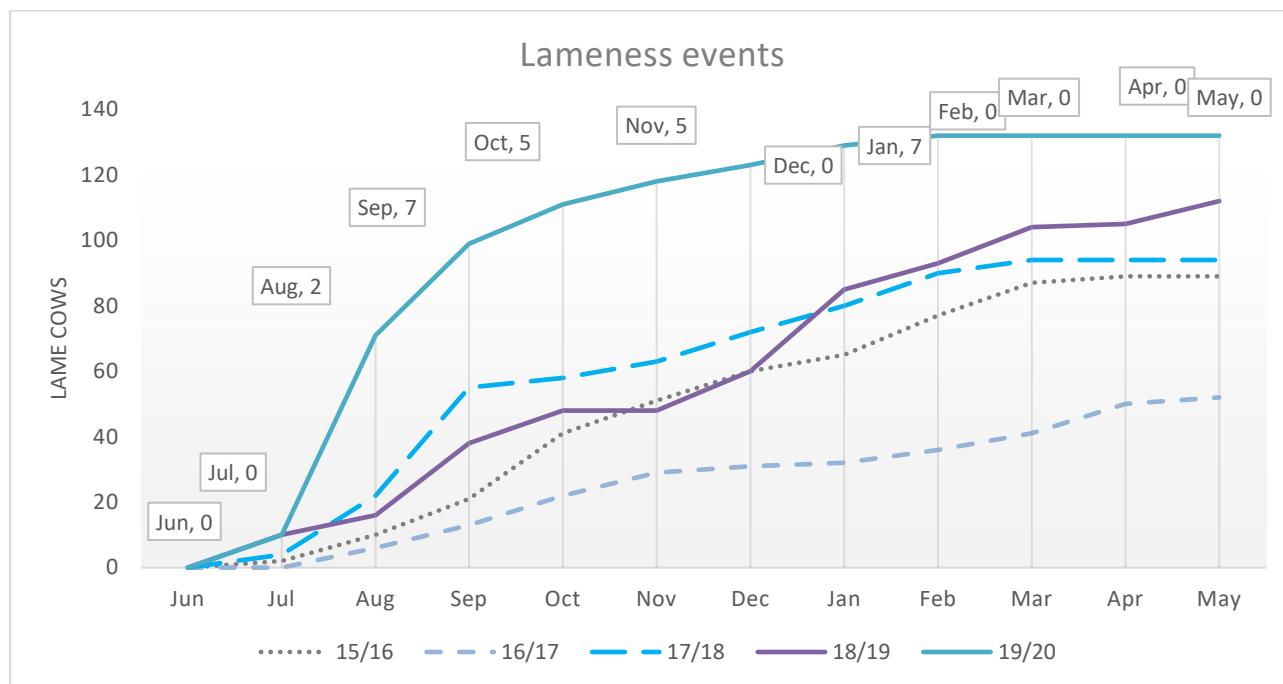
(Incorporates components of (C)Copyright Dairy Australia 2005. All rights reserved.)

No warranty of accuracy or reliability of the information provided by InCalf Fertility Focus is given, and no responsibility for loss arising in any way from or in connection with its use is accepted by DairyNZ Ltd or the provider of this report.

Users should obtain professional advice for their specific circumstances.

LAMENESS

More cows were identified as lame this year compared to previous years, due to our lower tolerance levels to draft out a cow and check feet or rest them. Number of cows treated with antibiotics for lameness was 26 or 6.5% (represented each month in the graph below).



This is a critical area for animal welfare and performance so we enlisted the help of our Healthy Hoof provider, Bill Hancock from Cambridge Vets, and recorded film footage of cow movement on the yard to contribute to our review.

Key actions for the 2020-21 season include:

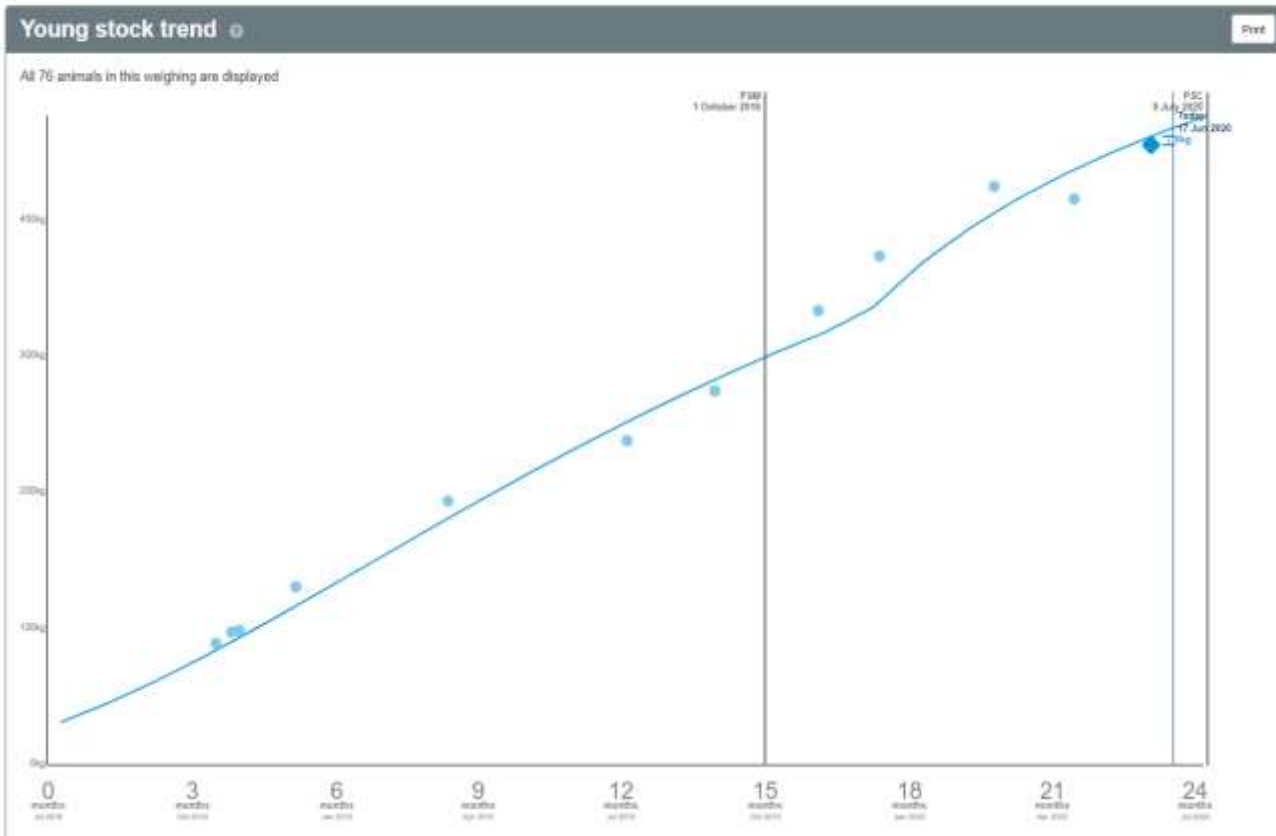
- Install mirror for backing gate operator
- Only use the backing gate to take the space behind half the herd that is already facing the entry to the platform. This allows the remaining cows to turn around (in their own time after entry to the yard) before the backing gate takes the space behind them.
- Update recording board at lameness treatment area to align with DairyNZ Healthy Hoof app, including which hoof and potential issues
- Trial Batt-latch time release gate openers to reduce pressure on movement to the shed.
- We also invested over \$30,000 on race work this autumn to remedy some sharp stony race surfaces

LIVESTOCK GROWTH

This season was challenging for graziers to achieve heifer replacement targets. We made the decision on 17th April to bring our 2018-born heifers home from grazing after they lost weight in March. They managed to put on 39kg and weighed average of 455kg on 3rd June. The calves also came home on 11th May as they transitioned to their new grazier. They were very useful for grazing our new pastures.

2018 Spring Born

03/06/2020



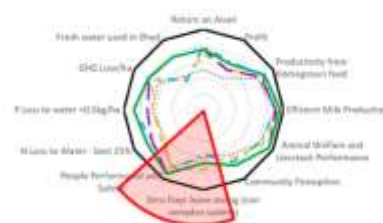
MITIGATING HEAT STRESS

We have installed a temperature and humidity reader in our weather station for the 2020-21 season. While we cannot control the environment, we do have strategies to mitigate its effects on stock. These have included:

- Installing extra troughs in the race for stock to access drinking water
- Change in milking frequency to 3 in 2 on 4th January to avoid milking in the heat of the day, and moving all cows to OAD on 11th February
- Using sprinklers on the yard to cool cows during milking
- Offering shade in crop paddocks and during day grazings as much as possible

PEOPLE

We aim to create a safe, enjoyable and sustainable work place for our team at Owl Farm. This requires a system that can achieve 45 hours/week/person and that provides flexibility for people to enjoy time off farm and reduced dependency on key personnel.



Month	Hours worked/ person/week
June	22 hours (3FTE)
July	52 hours (3FTE)
August	61 hours (3FTE)
September	55 hours (3FTE)
October	59 hours (3FTE)
November	53 hours (3FTE)
December	46 hours (3FTE)
January	41 hours (3FTE)
February	41 hours (3FTE)
March	44 hours (2 FTE)
April	35 hours (2 FTE)
May	39 hours (2 FTE)
Average	45.8 hours/person/week

HOURS WORKED THROUGHOUT THE YEAR

We started the season with 3 FTE - Farm Manager, 2IC and a Farm Assistant.

On 9th February we said farewell to Malou, our valued Farm Assistant. Due to the COVID-19 situation we did not recruit a replacement. We have used relief milkers to support time off to maintain our 12:2 roster and also ensure we continue off-farm training opportunities. Tom and LaArni covered each other's time off during autumn as we were milking OAD and had reduced the supplements being fed. This season we analysed time spent on tasks during July/August and again in October to see where we can look for efficiencies and technology to support our goals. The monthly breakdown, excluding demonstration activities, is provided in the table above.

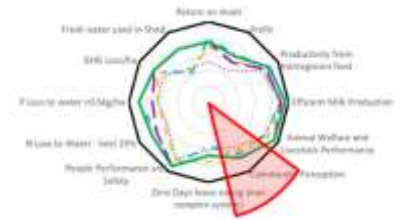
SYSTEM USABILITY

A key success factor for Owl Farm is to ensure that individuals are able to have time off farm and without risk to the system operational decisions being carried out. Covid-19 has meant that team members were unable to take leave as planned to travel back home or during school holidays to have an enjoyable summer break and reduce annual leave owing. We did have a system that was functional with two staff covering each other's alternate weekends off while feeding large amounts of supplements and milking through to the end of May. Work planning and early preparation for calving has allowed 10 days off each during June while the farm is run by one person.

COMMUNITY PERCEPTION

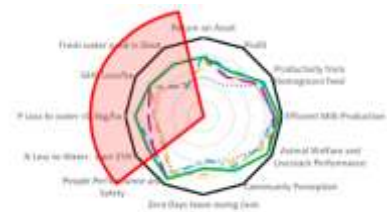
We have a wide community of stakeholders at Owl Farm including the students and staff (and their whanau) of St Peter's, the urban community of Cambridge and the wider Waikato farmer community. We endeavour to demonstrate farming practices every day that are taking care of people, animals and the environment. This year we hosted over 590 people on the farm (before lockdown), posted 52 weekly updates to over 4000 followers, produced ten publications, hosted the Minister of Agriculture, and had numerous classrooms on the farm.

Sadly, we were unable to host two of our Focus Days on farm and our popular Public Open day where we gauge shift in public perception, due to Covid-19 restrictions.



ENVIRONMENTAL PERFORMANCE

We are tracking in the right direction, with early analysis showing an improvement in environmental outcomes against our balanced scorecard targets. While there will always be work to do in this space it is good to reflect on farm business decisions and their impact on environmental outcomes.



Key mitigation strategies this season include:

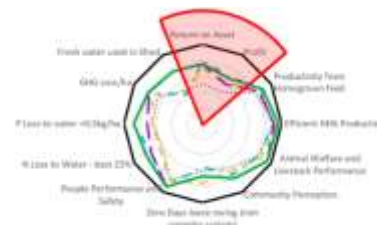
- Working through our FEP actions
- The use of SurePhos and Sustain
- Wetland area plants subdivided and biomass harvested
- Buffer zones in crop paddocks
- Management of total N loading on paddocks and the application rate and position (including effluent N)
- Timing of N application (avoiding May-July)
- Retirement and planting of at-risk areas

Preliminary OverseerFM model results

	BEFORE YEAR ENDING 2017	YEAR ENDING 2018	YEAR ENDING 2019	AFTER YEAR ENDING 2020	YEAR ENDING 2017 VS. YEAR ENDING 2020
MODEL RESULTS					
Total N loss (kg)	7,289	6,112	6,114	5,626	-1,663
N loss (kg/ha)	43	36	36	33	-10
Total P loss (kg)	180	139	161	142	-38
P loss (kg/ha)	1.1	0.8	1	0.8	-0.3
GHG (eCO ₂ /kg/ha/yr)	12,495	11,813	11,740	11,264	-1,231

BUSINESS PERFORMANCE

A sustainable business is built on a profitable farm system that is resilient to payout fluctuations and can support animal welfare, environmental health and attractive workplace goals.



FARM OPERATING EXPENSES

Compare your figures to ours in the table below. This shows our preliminary season cost /ha/cow and /kg MS plus our three prior years /kg MS for reference as assessed to the end of May. OPEX/kg MS was \$5.01; see detail in the table below.

Points to note:

- These figures are not finalised yet but are our most up to date information from invoices paid
- Includes start-up grazing cost for transitioning grazer for heifer calves of \$2800 for the 2020-21 season
- We invested in significant race work this year at a cost of \$32,400 (or \$0.19/kg MS)
- This is comparable to OPEX/kg MS
 - Costs include all labour to run the farm (i.e. no drawings to be paid)
 - Value of feed inventory used is included
 - Cost of leasing runoff land is included in feed cost

OPERATING PROFIT

All information will be analysed through DairyBase to calculate final figures; early estimates for the season are:

Gross Farm Revenue/ha	\$8930
Operating Expenses/ha	\$6039 (including depreciation, runoff lease and feed adjustment)
Operating Profit/ha	\$2891
Gross Farm Revenue/kg MS	\$7.87
Operating Expenses/kg MS	\$5.32
Operating Profit/kg MS	\$2.55
FWE/kg MS	\$4.80
Operating Profit Margin	32%

Table 1. Owl Farm in previous years compared with top 20% profit farms in the Waikato

PROFITABILITY Dairy	2018-19		2017-18		2016-17	
	Farm	Benchmark	Farm	Benchmark	Farm	Benchmark
Gross Farm Revenue/ha	7,859	10,646	8,139	11,799	7,795	10,110
Operating Expenses/ha	5,712	6,901	5,043	7,418	5,870	6,508
Operating Profit (EFS)/ha	2,147	3,745	3,096	4,381	1,925	3,602
Gross Farm Revenue/kg MS	6.84	7.58	7.16	7.64	6.38	6.67
Operating Expenses/kg MS	4.97	4.91	4.44	4.80	4.81	4.29
Operating Profit (EFS)/kg MS	1.87	2.67	2.72	2.84	1.58	2.38
FWE/kg MS	4.66	4.17	4.20	4.15	4.13	3.73
Operating Profit Margin %	27.3%	35.2%	38.0%	37.1%	24.7%	35.6%

ROA

An early estimate of the Return on Asset (ROA) for the farm valued at an asset value of \$65k/ha is 4.4%. Our current target is 4% at a standardised \$6 payout.

FARM WORKING EXPENDITURE COMPARISON – TO END MAY

Measure - To 31/05/2019	Total	/ha	/cow	\$/kgMS 2020	Your figures	\$/kgMS 2019	\$/kgMS 2018	\$/kgMS 2017
Total volume	Total	147	405					
Milksolids KG	167,185	1,133	413			169,327	168,169	178,294
Total Labour Costs	173,054	1,173	427	1.03		0.96	0.89	0.94
Animal Health	41,876	284	103	0.25		0.27	0.28	0.37
Calf Rearing	4,383	30	11	0.03		0.02	0.01	0.00
Breeding	45,747	310	113	0.27		0.25	0.23	0.25
PKE	71,949	488	178	0.43		0.46	0.35	0.25
Grass Silage Harvested	21,905	149	54	0.13		0.25	0.18	0.16
Purchased silage	41,825	283	103	0.25		0.15	0.14	0.15
Feed Inventory Adjustment	12,663	86	31	0.08		0.00	-0.06	0.40
Cropping	20,953	142	52	0.13		0.07	0.10	0.15
Feed Sampling	793	5	2	0.01		0.00	0.01	0.00
Calf Meal	7,449	51	18	0.04		0.06	0.03	0.03
Fertiliser Spreading	0	0	0			0.04	0.02	0.02
Fertiliser - Maintenance	51,641	350	128	0.31		0.30	0.17	0.19
Fertiliser – Nitrogen	18,084	123	45	0.11		0.26	0.24	0.26
Freight	6,471	44	16	0.04		0.05	0.05	0.06
Re-grassing	20,893	142	52	0.12		0.10	0.19	0.20
Heifer grazing costs	72,673	493	179	0.43		0.38	0.40	0.40
Shed Expenses	4,142	28	10	0.02		0.05	0.05	0.10
Electricity	14,571	99	36	0.09		0.08	0.08	0.08
Water Charge	30,918	210	76	0.18		0.08	0.09	0.08
R & M - Land & Buildings	62,119	421	153	0.37		0.12	0.17	0.13
R & M - Plant & Equipment	18,624	126	46	0.11		0.14	0.09	0.07
Vehicle Maintenance	9,250	63	23	0.06		0.05	0.05	0.05
Petrol/Diesel	4,621	31	11	0.03		0.05	0.05	0.05
Weed & Pest Control	2,434	17	6	0.01		0.01	0.01	0.00
Other Expenses	5,000	34	12	0.03		0.02	0.04	0.08
Rates/ACC/Insurance	53,822	365	133	0.32		0.25	0.26	0.23
Total Farm Working Expenses	838,951	5,688	1,974	5.01		4.49	4.20	4.42

Disclaimer:

While every effort has been made to ensure information provided in this handout was true and correct and the time of going to print, Owl Farm takes no responsibility for the use of data outside of the purpose to inform readers of the current situation at Owl Farm for the purpose of the Focus Day.



St Peter's School/Lincoln University
Demonstration Dairy Farm

Next Farm Focus Day
Wednesday 23 September, 2020

Weekly Farm Walk
Tuesdays, 10am



facebook.com/OwlFarmNZ



twitter.com/OwlFarmNZ



owlfarmnz

Subscribe to weekly updates by emailing enquiries@owlfarm.nz