



Farm Focus Day

Wednesday, 27 November 2019

PROVIDING KNOWLEDGE

Reflections on Spring

Production, managing surplus and mating results to date.

People Priority Part 2

Study of time and tasks throughout mating.

Crop Care

Best practice care of crops through their early days.

Future Strategies

Preparing the business for investment in an emissions reduction framework.



OWL FARM STRATEGY



St Peter's School/Lincoln University
Demonstration Dairy Farm

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)

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

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

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



NOTES





CONTENTS

<i>Owl Farm Strategy.....</i>	<i>2</i>
<i>Contents</i>	<i>3</i>
<i>Health and Safety</i>	<i>4</i>
<i>Owl Farm Multi-Year Snapshot</i>	<i>6</i>
<i>Owl Farm season Performance on our Scorecard</i>	<i>7</i>
<i>Season to Date.....</i>	<i>8</i>
<i>Current Year Financials – Budget Cashflow up to 22-10-19</i>	<i>10</i>
<i>Summary Data.....</i>	<i>11</i>
Season to date Information.....	11
Climate.....	12
Rainfall	13
Production	14
Pasture Cover and Growth Rates	15
<i>Animal Health.....</i>	<i>16</i>
<i>Body Condition Score</i>	<i>16</i>
<i>Lameness.....</i>	<i>17</i>
<i>Reproduction Plan</i>	<i>17</i>
<i>Mating Timeline</i>	<i>17</i>
<i>People priority 2 - Study of time and tasks on Farm</i>	<i>25</i>
<i>He Waka eke noa.....</i>	<i>26</i>

HEALTH AND SAFETY



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

St Peter's School / Owl Farm Hazard Notifications

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

ARE YOU TRAINED FOR WHAT 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

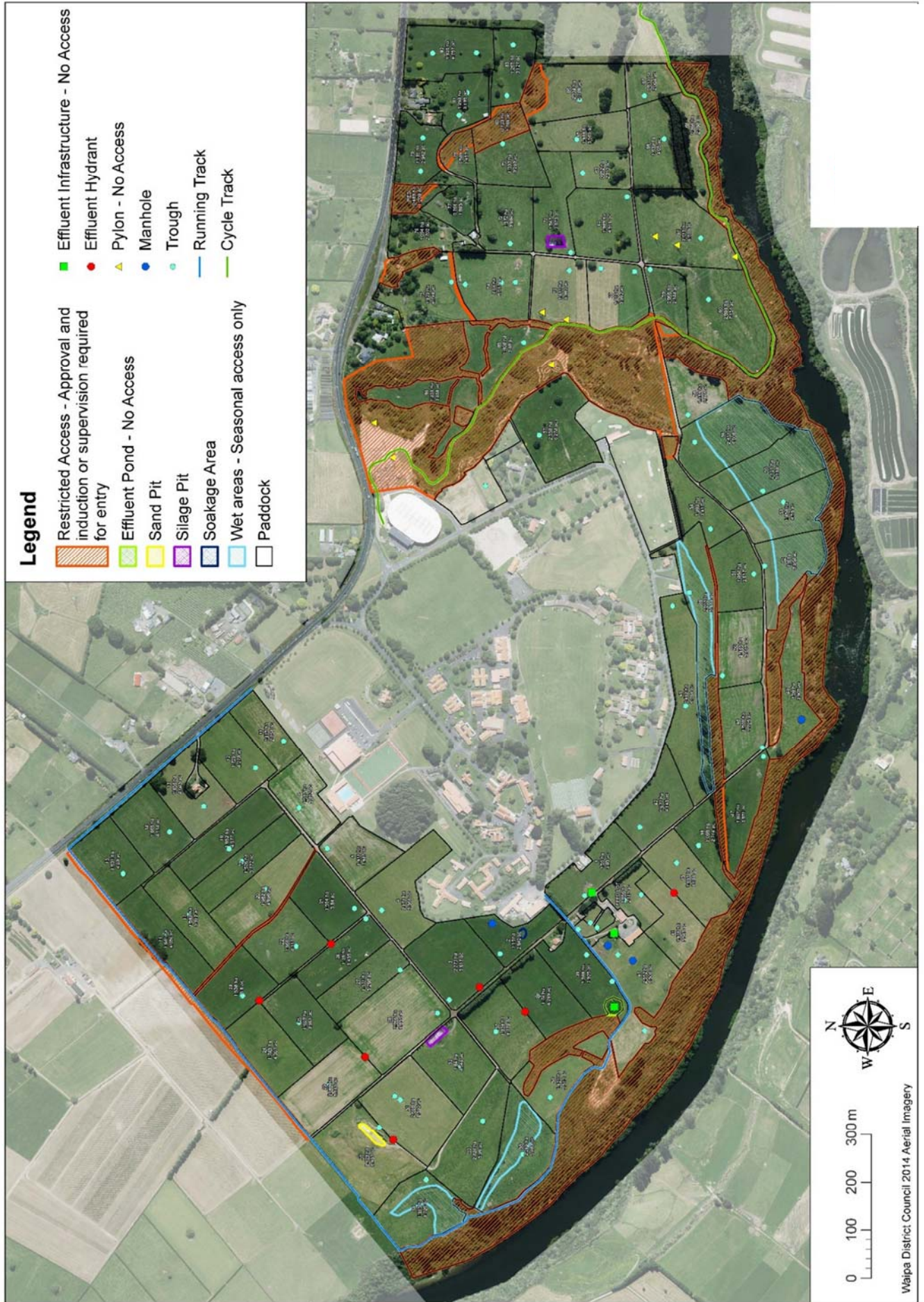
Safety Equipment Location

- 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



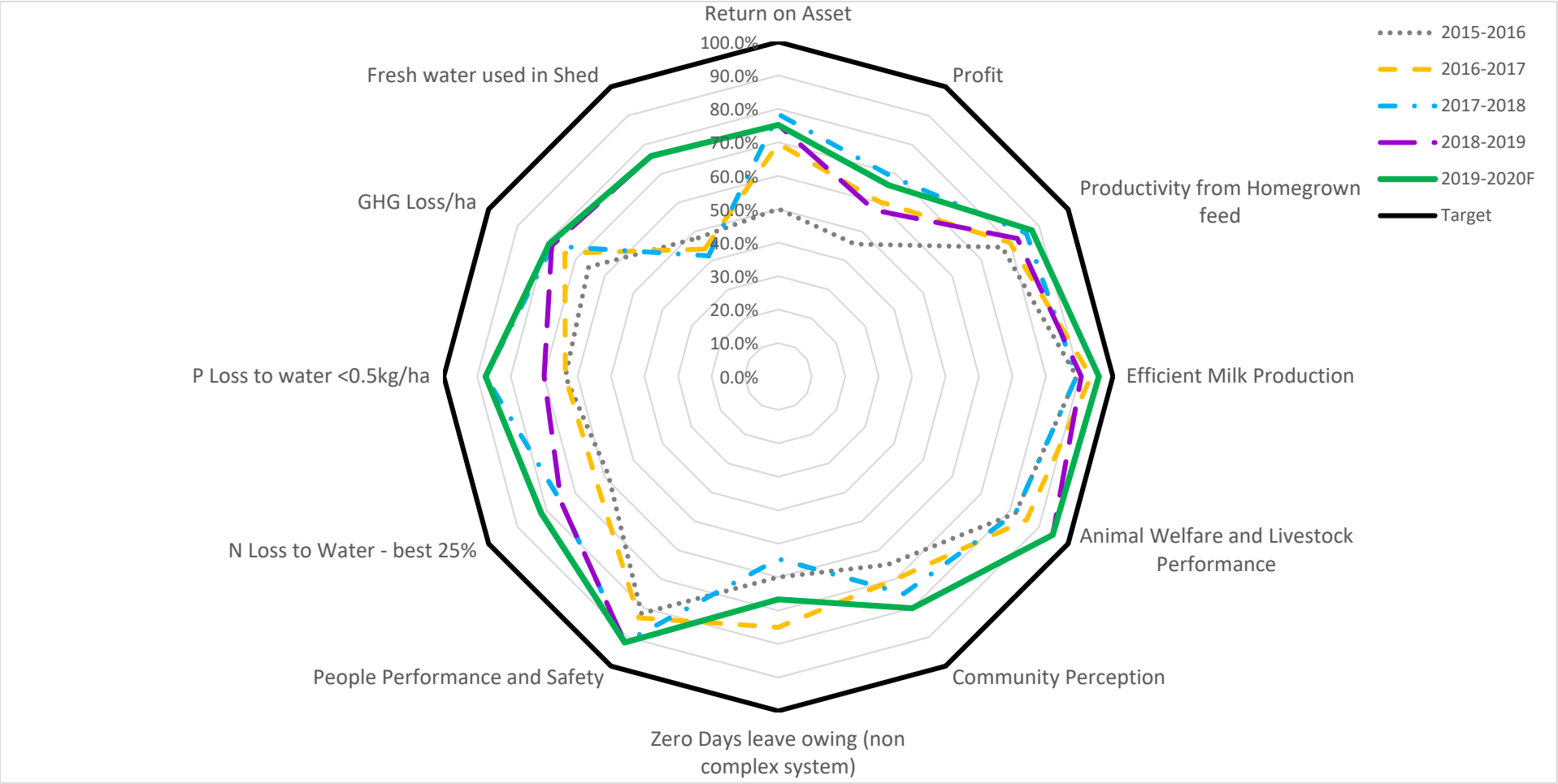


OWL FARM MULTI-YEAR SNAPSHOT

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 TDM/ha	15.9	15.1	17.5	15.7	15.9
	Feed harvested TDM/Ha (actual kg)	11.7	12.6	13.6	14.1	12.5
	Feed harvested TDM/ha (@11MJME/kg DM)	12.4	12.8	13.7	13.2	13.6
	Supplements imported TDM/Ha	4.3	3.6	2.3	2.1	2.1
	Supplements imported TDM	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 15/11/2019	2016-2017	2017-2018	2018-2019	2019-2020	Notes
Stock	Milking Platform	146	148	147	147	
	Cows on farm	424	418	406	421	
	Peak cows	423	418	405	405	
	Cows calved	425	423	409	411	
	Cows in vat today	416	416	395	404	
	Peak stocking rate	2.90	2.82	2.75	2.75	
Production	Total kgMS Season to date to factory	81,107	86,513	88,178	89,000	1
	MS/cow/day - last 10 days	1.70	1.76	1.86	1.85	
	MS/ha/day - last 10 days	4.80	4.91	4.99	5.06	
	MS/cow Season to date	192	207	218	220	
	MS/ha Season to date	556	583	599	603	2
	MS/ha from homegrown feed to date	468	489	539	576	3
Feed and Inputs	Average Pasture Cover 1 June	2,951	2,256	2,430	2,516	
	Pasture growth rates total TDM/ha	7.0	7.7	7.1	7.7	
	Actual pasture grown to graze and harvest as silage excl area sprayed out in crop	6.7	7.0	7.0	7.6	4
	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	7.7	7.0	7.0	7.6	
	Yield of Crop grown per total farm /ha	0.0	0.0	0.0	0.0	
	Winter homemade silage on hand fed	0.2	0.2	0.8	0.0	
	Imported Supplements fed/ha	1.3	1.3	0.8	0.3	5
	Total Feed supply TDM/ha	9.1	8.5	8.6	7.9	6
	Homegrown grass eaten TDM/Ha (grown this year)	5.3	5.2	5.0	5.6	
	Homegrown silage grown and eaten this year	0.0	0.0	0.0	0.0	
	Crop eaten per total farm/ha	0.0	0.0	0.0	0.0	
	Homegrown feed EatenTDM/ha (grown this year)	5.3	5.2	5.0	5.6	
	Silage harvested TDM/ha Season to date	0.6	0.4	0.8	0.7	
	Total Homegrown feed Harvested TDM/ha	5.9	5.5	5.8	6.3	7
	Winter homemade silage on hand eaten	0.1	0.2	0.6	0.0	
	Imported Supplements Eaten TDM/ha	1.0	1.0	0.6	0.3	
	Total Feed eaten this year (includes only silage fed) TDM/ha	6.5	6.4	6.2	5.9	8
	% Feed eaten grown on farm	84%	84%	90%	95%	
	Feed conversion Eff (kgDM/kgMS eaten)	11.6	11.0	10.4	9.8	9
	Nitrogen Applied/effective ha	88	95	84	76	10
Inventory feed TDM	Homegrown silage/hay	66	89	130	177	
	Crops available (estimate yield remaining)	0	0	0	0	
	PKE in budget for rest of year	129	124	121	156	
	Bought silage hay	0	0	0	0	
	Maize silage	227	0	0	0	
	Total supplements on hand	422	213	251	333	11

OWL FARM NUMBERS – SEASONAL UPDATE

Milk production

1. Total milk solids YTD is still slightly ahead of previous years. This is attributed to the earlier and condensed calving pattern.
2. Daily production per cow and per hectare is similar to last season, buoyed by the recent rain that has surged growth, restored covers and ensured high intakes on good quality pasture again. As at the 15th November we have produced 50% of our season's target milk production.
3. With such a good grass-growing season we have managed to produce 95% of this from homegrown feed to date.

Feed used

4. We have had 0.6 t DM extra pasture available to use this season to date compared with last year.
5. Imported supplements fed have been limited to small amounts of PKE fed to lame or ill cows, and short periods 3-5 days of feeding to cover a small deficit with the milking mobs, allowing us to maintain a 20+ day rotation with crop area out. Total PKE use for the spring has been 32 t. This has saved time and expense on running tractors and trailers and the associated R&M on them.
6. Total feed supply so far for the year is 0.7 t DM/ha less than last season to produce similar milk solids. Despite lower surplus feed being ensiled to date we have extra grass silage carried over from the previous season and therefore still have more feed available going into the summer.
7. Total homegrown feed harvested via grazing and silage is 82% of the feed estimated to have grown on farm, based on farmwalk growth rate data. This reflects some of the challenges we had early on in the season managing high covers while waiting for demand to increase. This represents death and decay in the sward and potential growth not captured.
8. Total feed eaten (including dry cow silage, PKE and pasture) is 40 t DM lower than last season. We believe this is due to higher quality feed, better utilisation of that feed and mobilisation of higher BCS at calving.
9. This has increased our feed conversion efficiency to 9.8 kg DM eaten/kg MS. The conversion of this high quality spring feed into milk so far has exceeded all previous years to date.
10. Less N fertiliser has been used to date to achieve this.

Summary of the pantry this year

11. We are entering into summer with lots of feed on hand. We have 70 t DM of last season's silage and 100 t DM so far of this season's silage for milking on, and some poor quality sorghum silage for dry cows left over from last season. We also have 156 t PKE remaining in the budget and over 11 ha of healthy summer and autumn crops available.

CURRENT YEAR FINANCIALS – BUDGET CASHFLOW UP TO 22-10-19

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	-	-	-	-	-	-	-	78,100	79,186	(1,086)	177,654
Milk	-	31,731	98,002	164,149	122,334	-	-	-	-	-	-	-	416,217	352,017	64,200	1,192,317
Dividends	-	-	6,781	-	-	-	-	-	-	-	-	-	6,781	6,720	61	6,720
Cattle	(9,126)	1,448	13,278	2,577	77	-	-	-	-	-	-	-	8,253	15,073	(6,820)	68,575
Other Income	-	6,827	-	-	-	-	-	-	-	-	-	-	6,827	-	6,827	-
Total Income	(9,126)	40,006	118,061	166,726	122,411	-	-	-	-	-	-	-	438,078	373,810	64,268	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	-	-	-	-	-	-	-	74,623	76,687	(2,064)	180,292
Animal Health	6,255	2,501	9,873	3,496	10,219	-	-	-	-	-	-	-	32,344	23,310	9,034	56,317
Breeding	204	(3,703)	146	248	8,291	-	-	-	-	-	-	-	5,186	14,704	(9,518)	38,403
Dairy Shed and Electricity	1,117	490	2,066	2,044	2,282	-	-	-	-	-	-	-	7,999	10,263	(2,263)	22,977
Purchased Feed	14,050	757	6,744	10,008	1,056	-	-	-	-	-	-	-	32,615	51,536	(18,922)	109,514
Grazing - Replacement Heifers & Calves	3,586	7,407	3,723	16,189	3,703	-	-	-	-	-	-	-	34,610	19,832	14,778	64,500
Fertiliser	9,671	-	6,610	2,447	9,197	-	-	-	-	-	-	-	27,925	42,844	(14,919)	90,276
Gibberellic Acid	-	-	-	-	-	-	-	-	-	-	-	-	-	508	-	1,208
Fertiliser Spreading	(1,101)	-	-	1,014	-	-	-	-	-	-	-	-	(87)	5,600	(5,687)	5,984
Freight	-	1,455	160	64	-	-	-	-	-	-	-	-	1,679	155	1,524	3,619
Cartage	-	-	880	811	570	-	-	-	-	-	-	-	2,261	5,679	(3,418)	8,855
Weeds and Pests	1,961	-	-	-	-	-	-	-	-	-	-	-	1,961	1,444	517	2,500
Consultancy	-	-	417	-	-	-	-	-	-	-	-	-	417	417	0	652
Silage	-	817	270	-	13,136	-	-	-	-	-	-	-	14,223	19,800	(5,577)	36,349
Cropping	-	-	-	3,531	8,029	-	-	-	-	-	-	-	11,561	8,197	3,364	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	-	-	-	-	-	-	-	36,586	15,405	21,182	52,844
Vehicle Expenses	2,060	2,139	1,885	1,415	3,529	-	-	-	-	-	-	-	11,029	15,579	(4,551)	19,694
General	565	2,888	1,700	2,751	3,502	-	-	-	-	-	-	-	11,407	7,616	3,791	16,998
Overheads	1,719	1,719	3,757	7,433	4,539	-	-	-	-	-	-	-	19,167	15,550	3,617	41,890
Total Farm Working Expenses	57,182	35,923	58,945	71,025	105,461	-	-	-	-	-	-	-	328,536	337,963	(9,427)	787,368
Net Surplus before Financial Charges	(66,308)	4,083	59,116	95,701	16,950	-	-	-	-	-	-	-	109,542	35,847	73,695	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	0	0	0	0	0	0	0	70,530	77,467	(6,937)	178,143
Lease Land	3,103	3,103	3,103	3,103	3,084	0	0	0	0	0	0	0	15,497	14,800	697	35,520
Depreciation	8,799	9,093	8,205	0	0	0	0	0	0	0	0	0	26,097	42,500	(16,403)	52,979
Total Financial Charges	26,009	26,302	25,415	17,209	17,190	-	-	-	-	-	-	-	112,125	134,767	(22,642)	266,642
Surplus (Deficit) after Financial Charges	(92,317)	(22,219)	33,701	78,491	(239)	-	-	-	-	-	-	-	(2,583)	(98,920)	96,337	213,602

NOTES



SUMMARY DATA

SEASON TO DATE INFORMATION

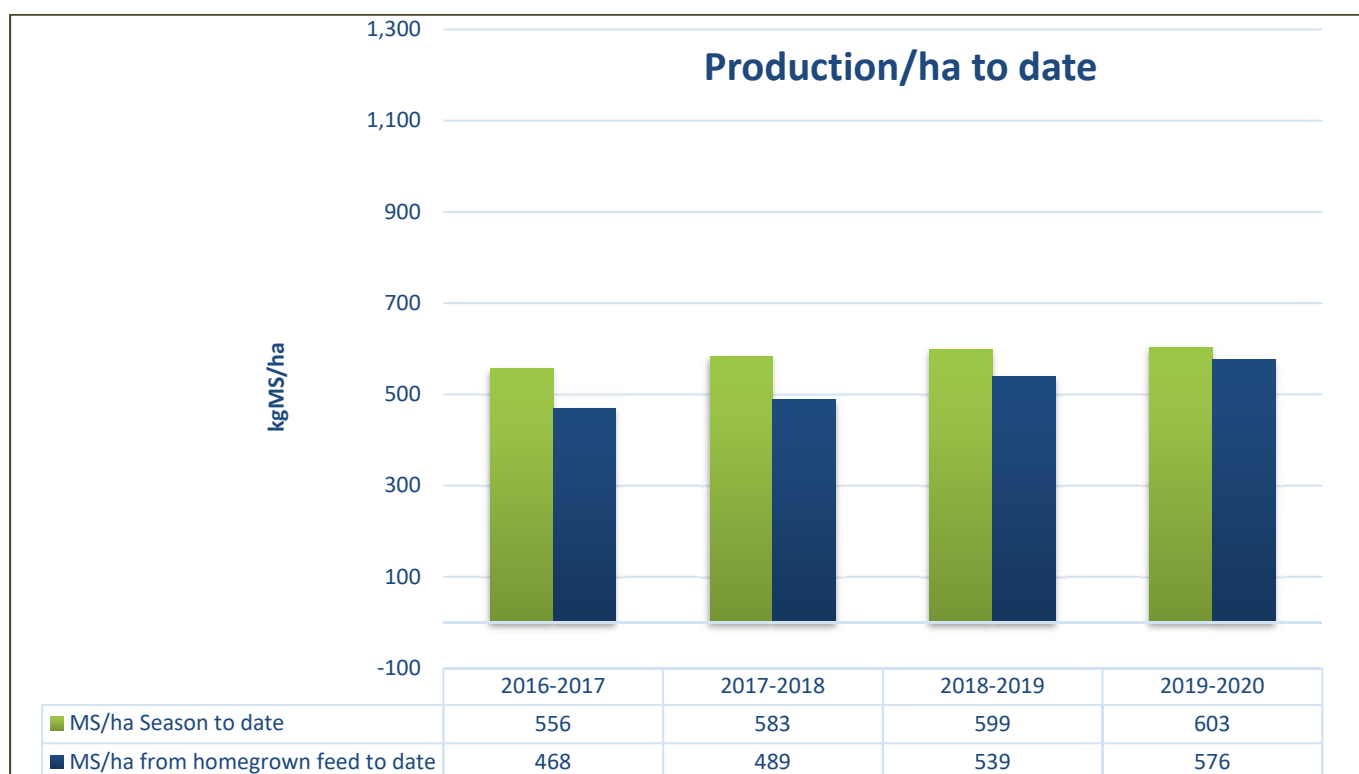
Production is holding well this season, slightly ahead of last season to date. We have made the most of the extra feed grown on farm. As at the 15th November we had produced 603 kg MS/ha, with 95% produced from homegrown feed. The season has been stop-start in regards to pasture growth, which has been difficult to manage. Twice we have had silage shut up and then grazed within a week. Feed wedges and predictive tools have been crucial to making decisions that ensure cows still have enough quality feed in front of them. We have only taken two cuts of silage, with another cut due by the end of the month.

We have made good progress on SCC throughout the season but have been plagued by animal health issues, including down cows, lameness, theileria and a virus. Despite this cows have milked well and are in good condition at a current herd average BCS of 4.4. The lighter girls that have been on OAD since October are looking good and are producing at or above the herd average at the last herd test.

We have used slightly less N to produce more milk from more feed, and put this down to pro-active grazing management and early identification of surplus. We have been able to keep APC closer to our target range of 2050-2150 kgDM by monitoring growth rates, round speed and target intakes and removing genuine surpluses within 2 weeks of identification. The spike of cover on the 21st October was due to less than favourable silage making conditions.

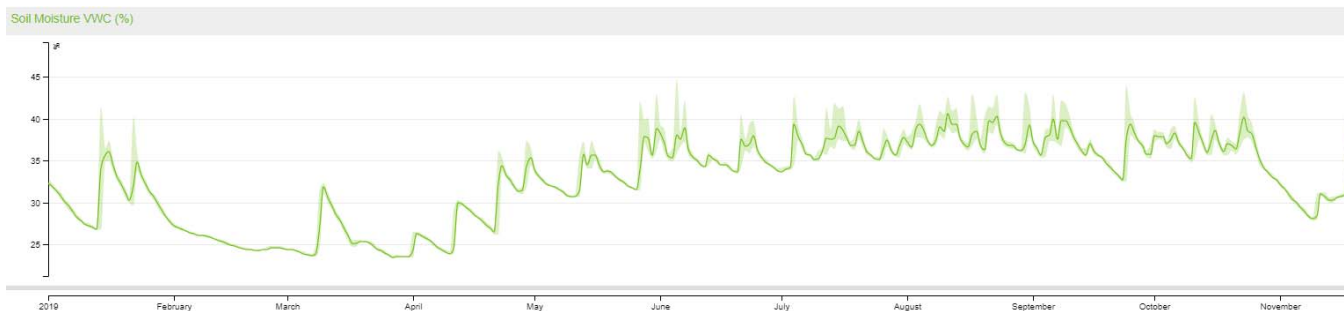
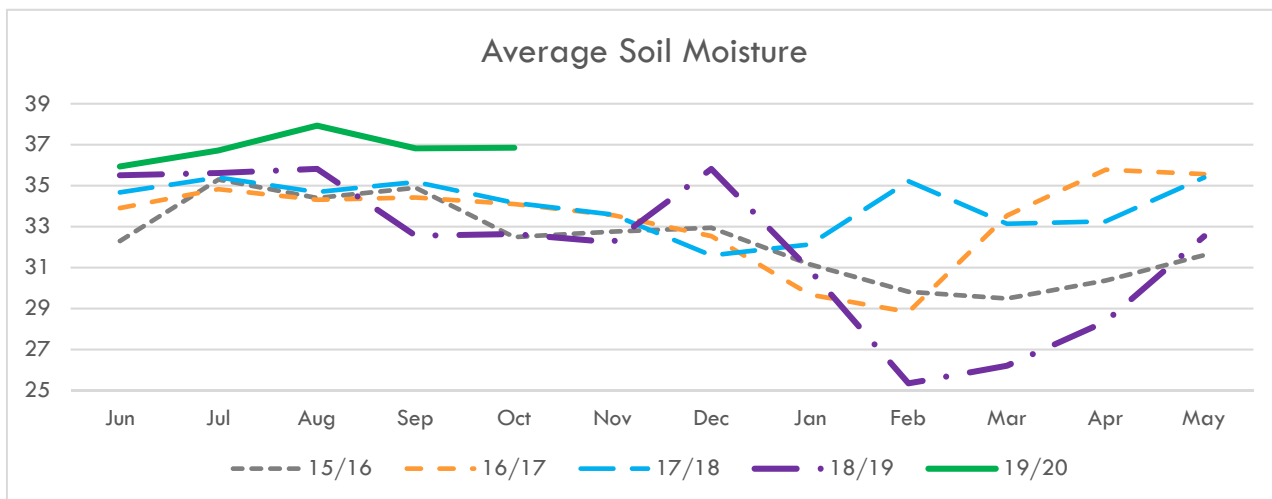
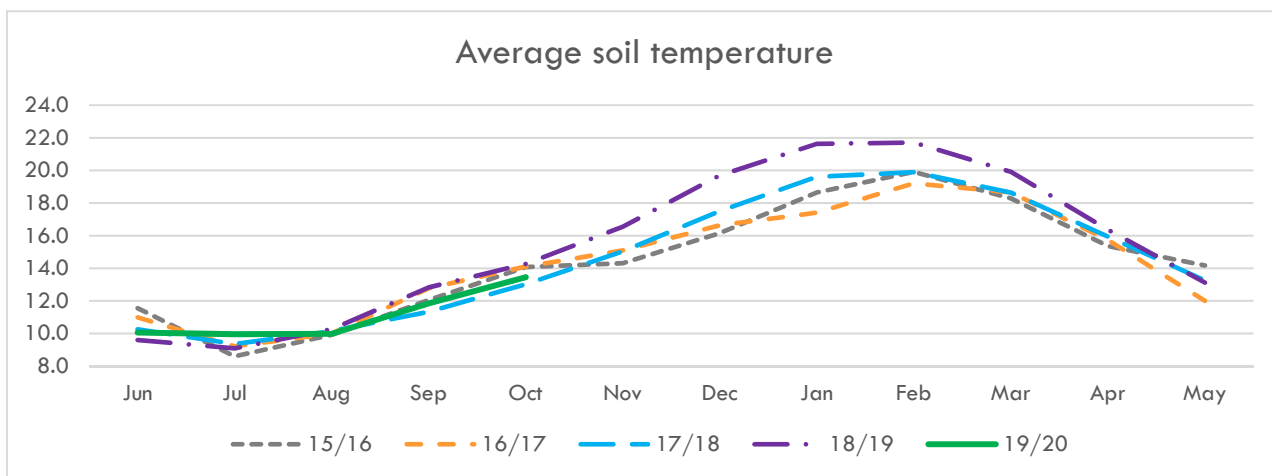
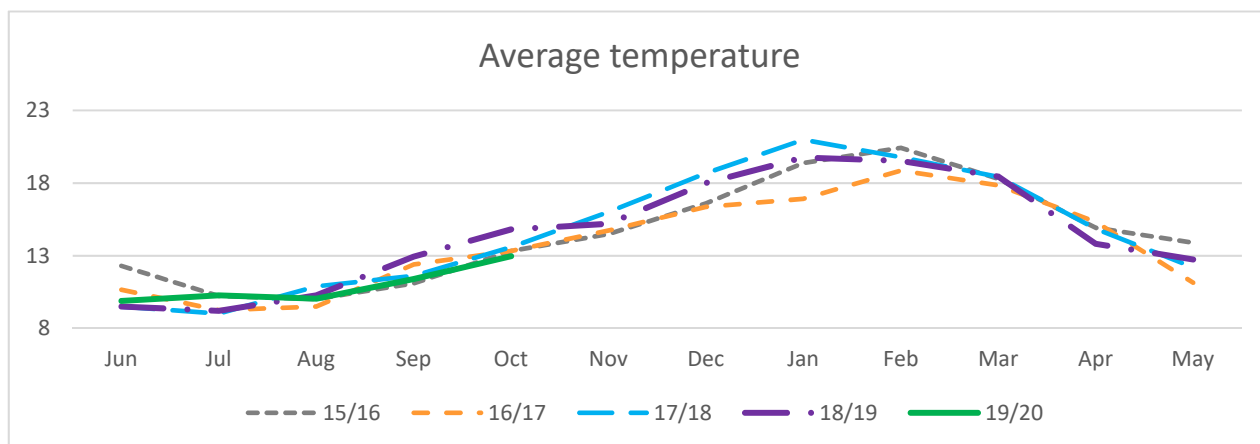
One round of pre-graze mowing and silage was used in late October/early November and this has set the farm up with good quality feed for grazing now. The pantry is looking strong with 333 t DM feed available as PKE and silage, along with over 11 ha of summer/autumn brassicas.

Big expenses for us over the last few months included silage-making, crop establishment, and race work. Even with the extra \$15k spent on races, we are tracking below budget on expenses.



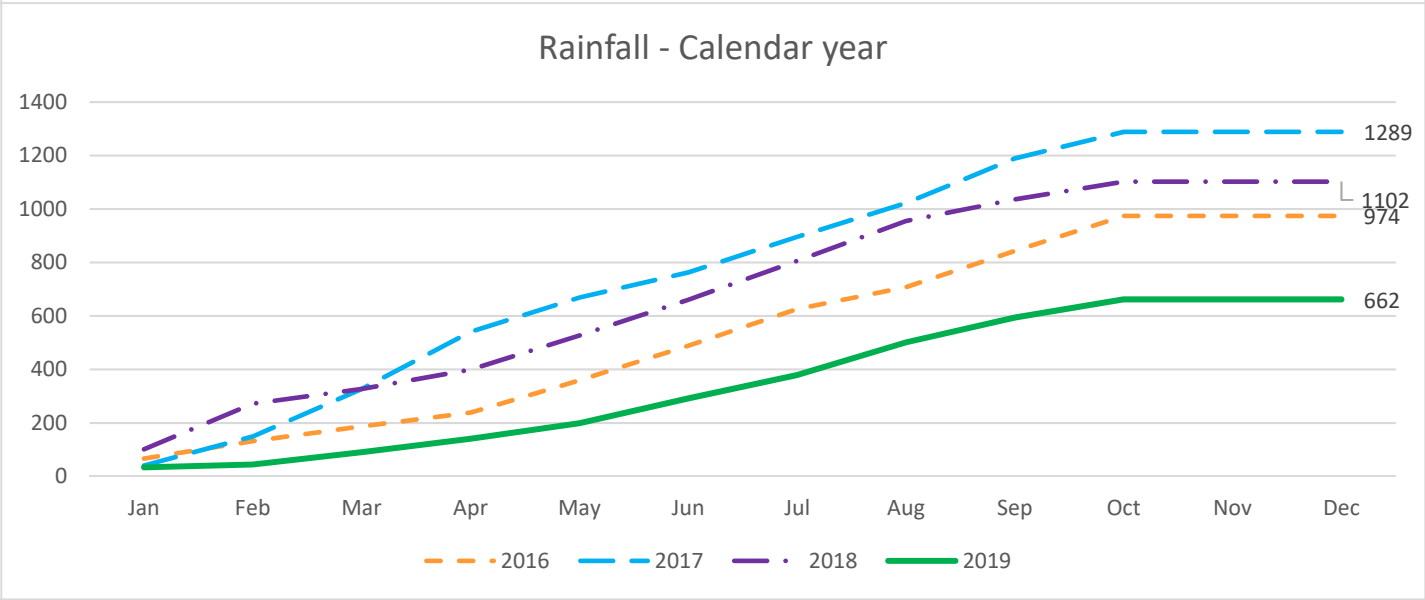
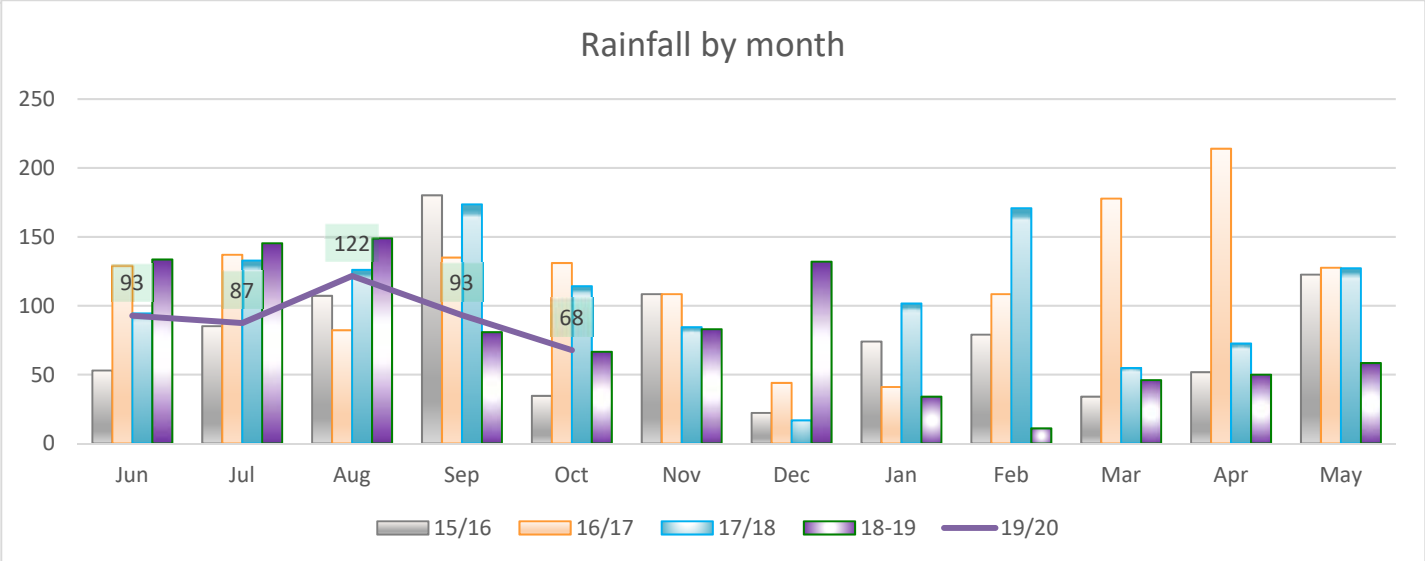
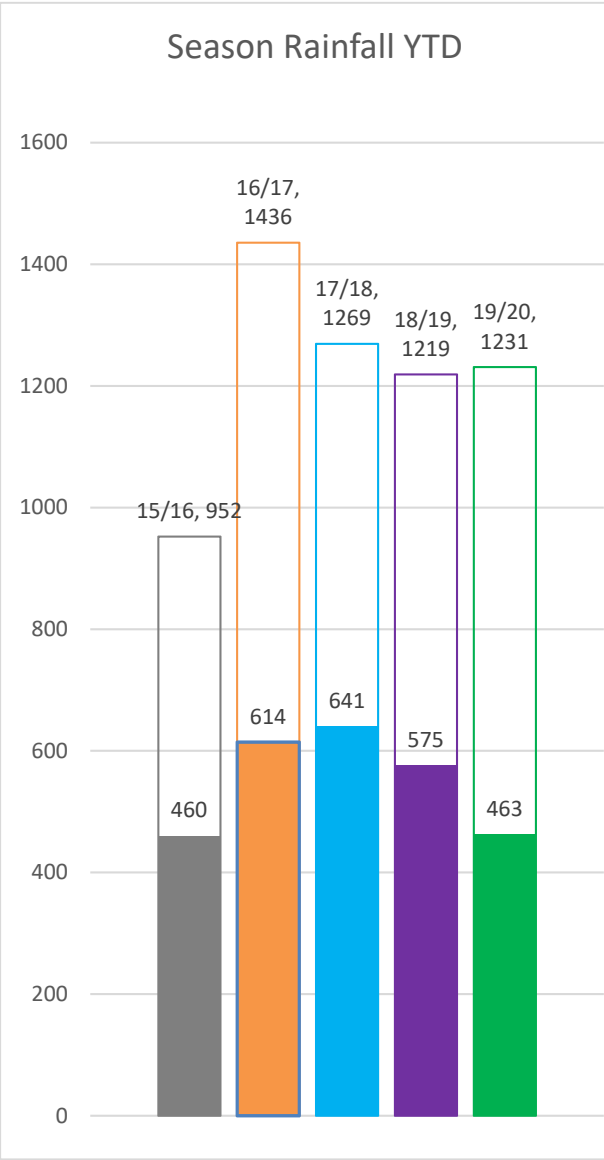
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CLIMATE



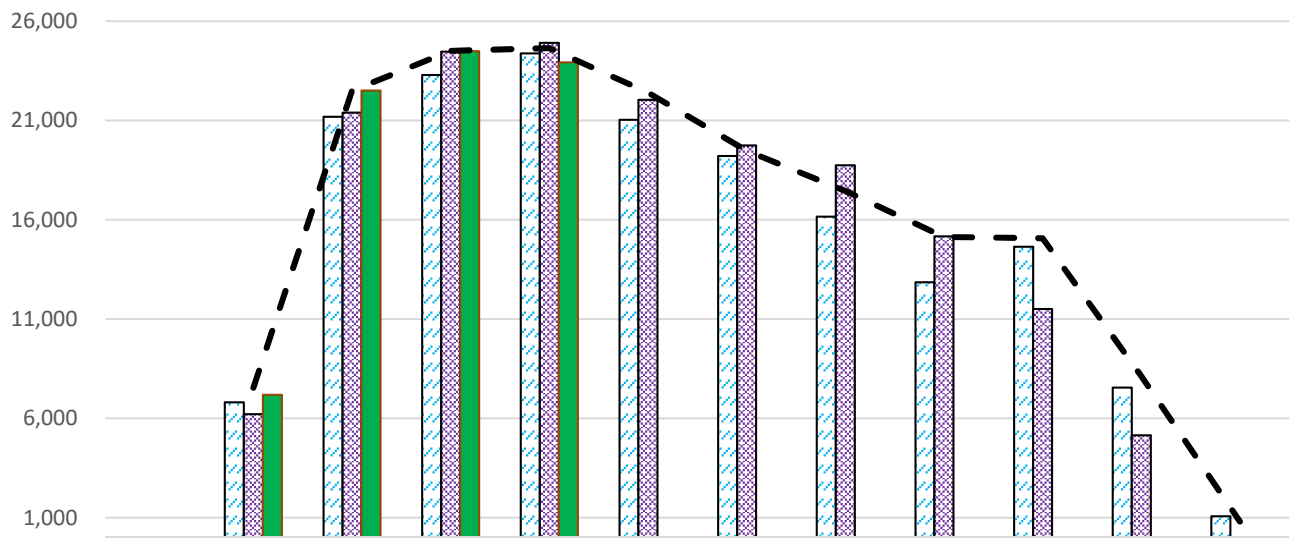
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RAINFALL



PRODUCTION

Production: Monthly Performance

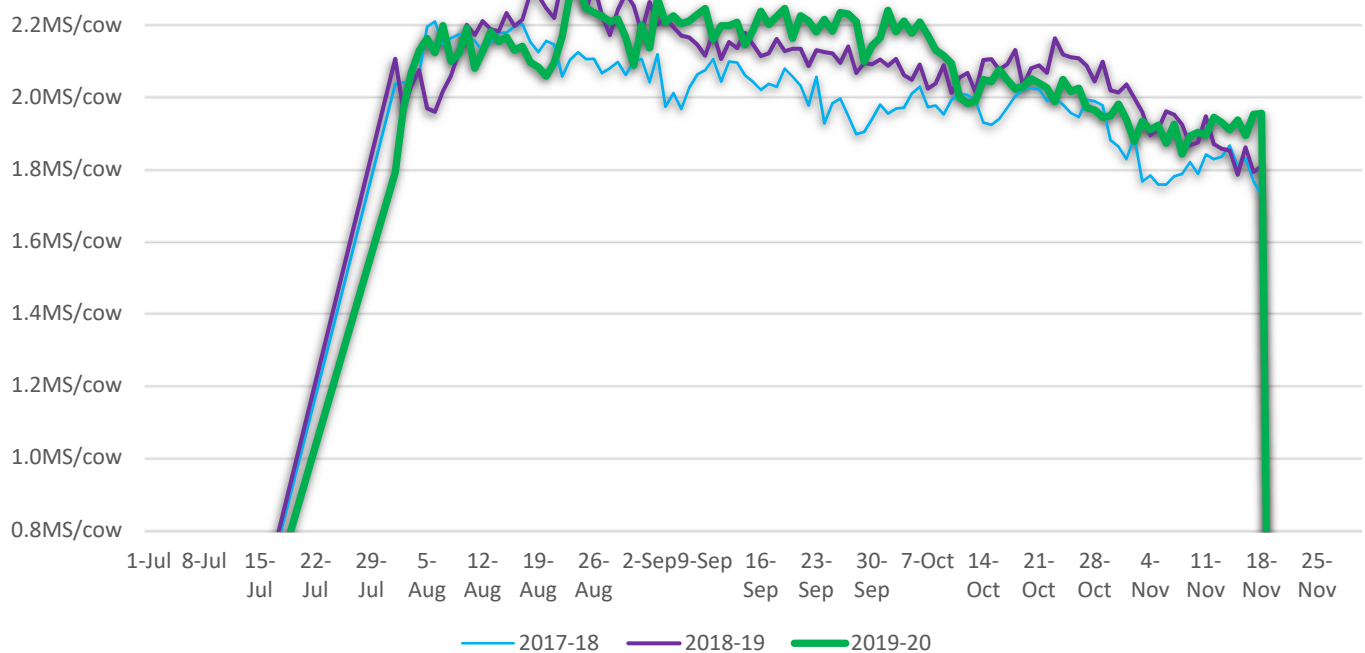


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	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
17/18 production		6,807	21,183	23,287	24,376	21,030	19,213	16,158	12,856	14,641	7,549	1,070
18/19 Production		6,216	21,391	24,460	24,906	22,042	19,744	18,745	15,165	11,509	5,148	
19/20 Production		7,184	22,507	24,485	23,924							
Budgeted 19/20		7,545	22,500	24,500	24,641	22,400	19,478	17,452	15,135	15,065	8,131	807

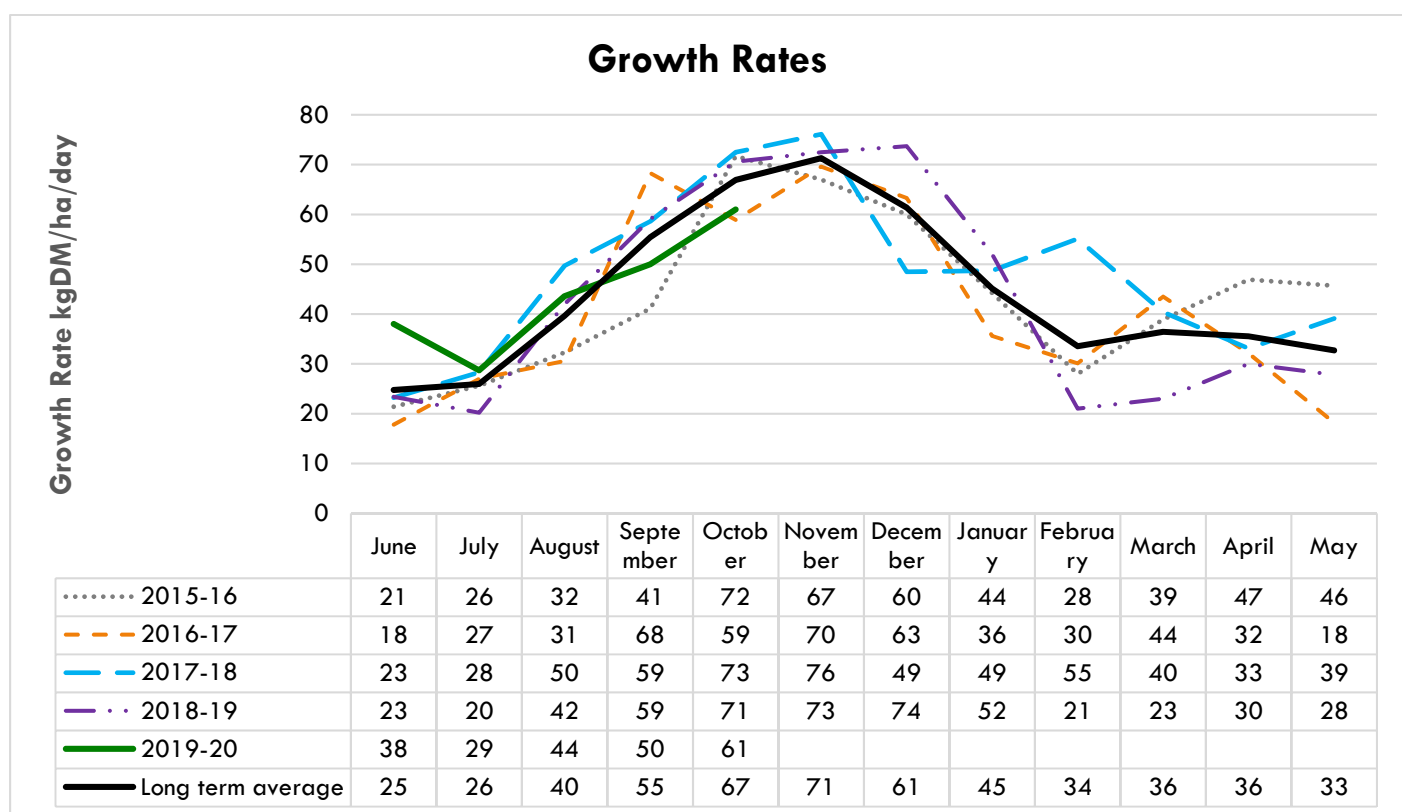
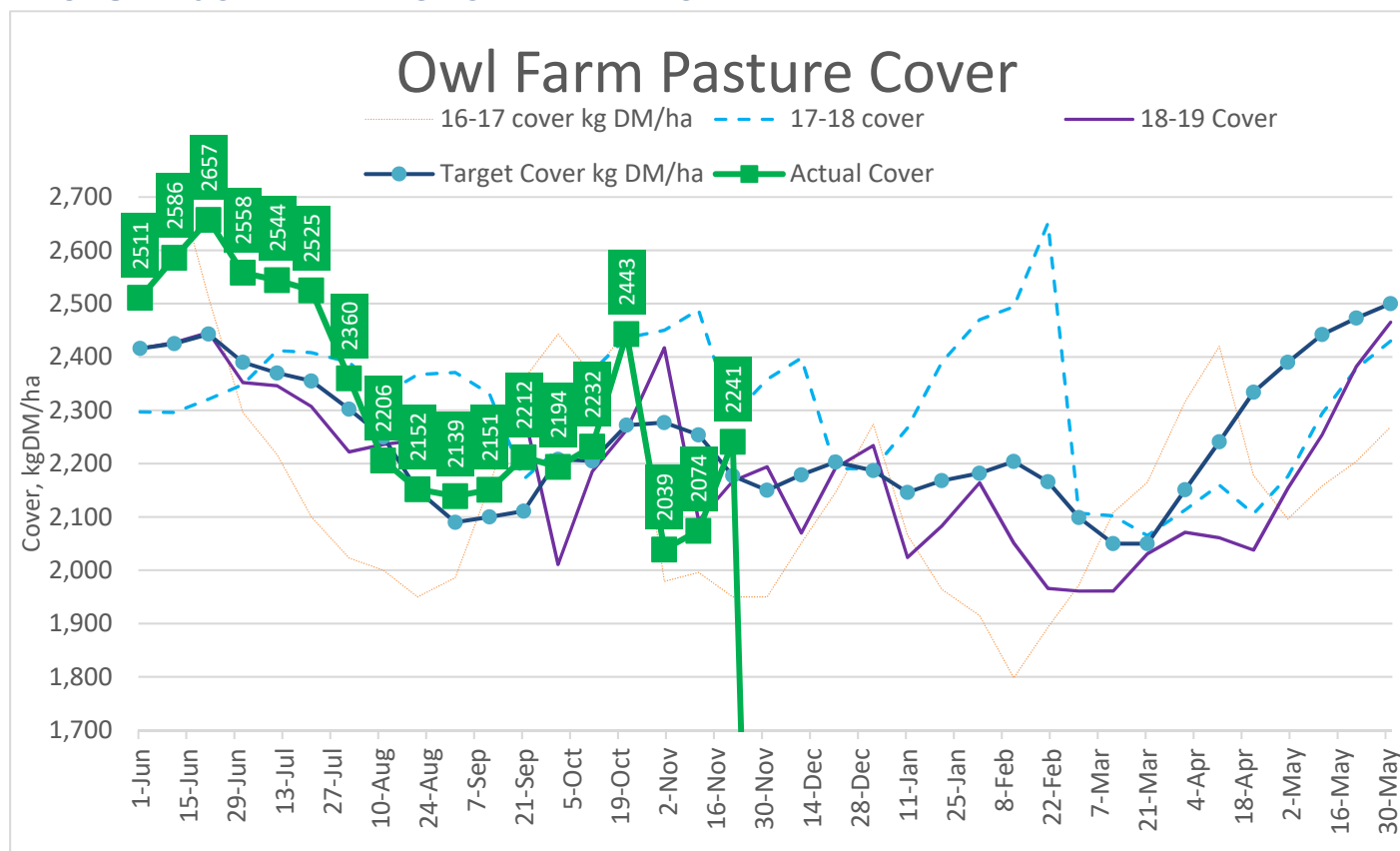
17/18 production 18/19 Production 19/20 Production Budgeted 19/20

Milksolids/cow/day



NOTES

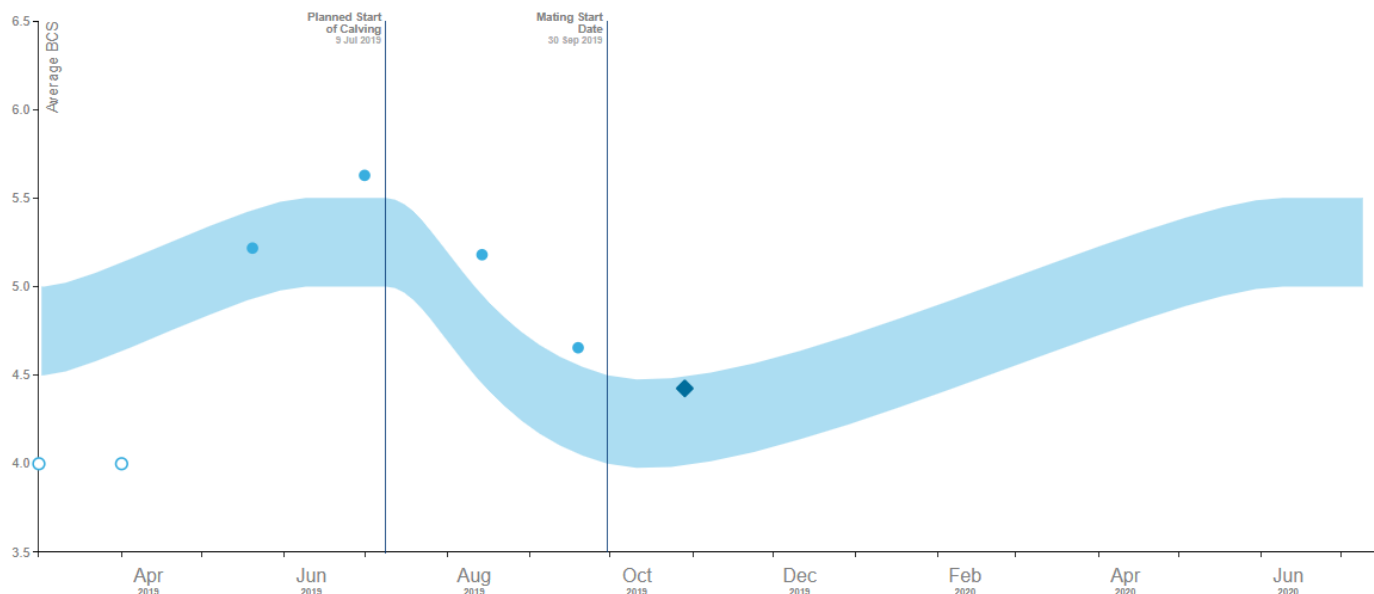
PASTURE COVER AND GROWTH RATES



ANIMAL HEALTH

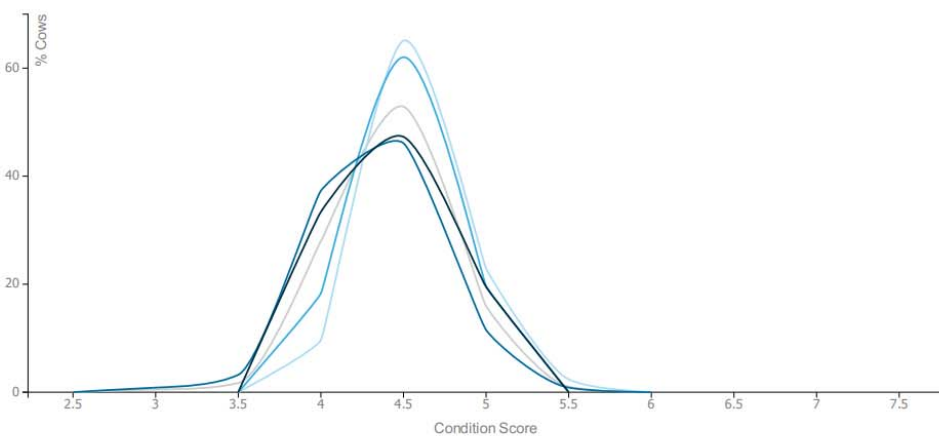
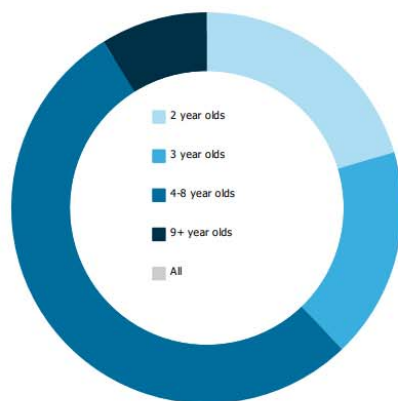
BODY CONDITION SCORE

Body Condition Scores



BCS by Age for 29 October 2019

407 of 409 cows scored on this date.



Body Condition Scores

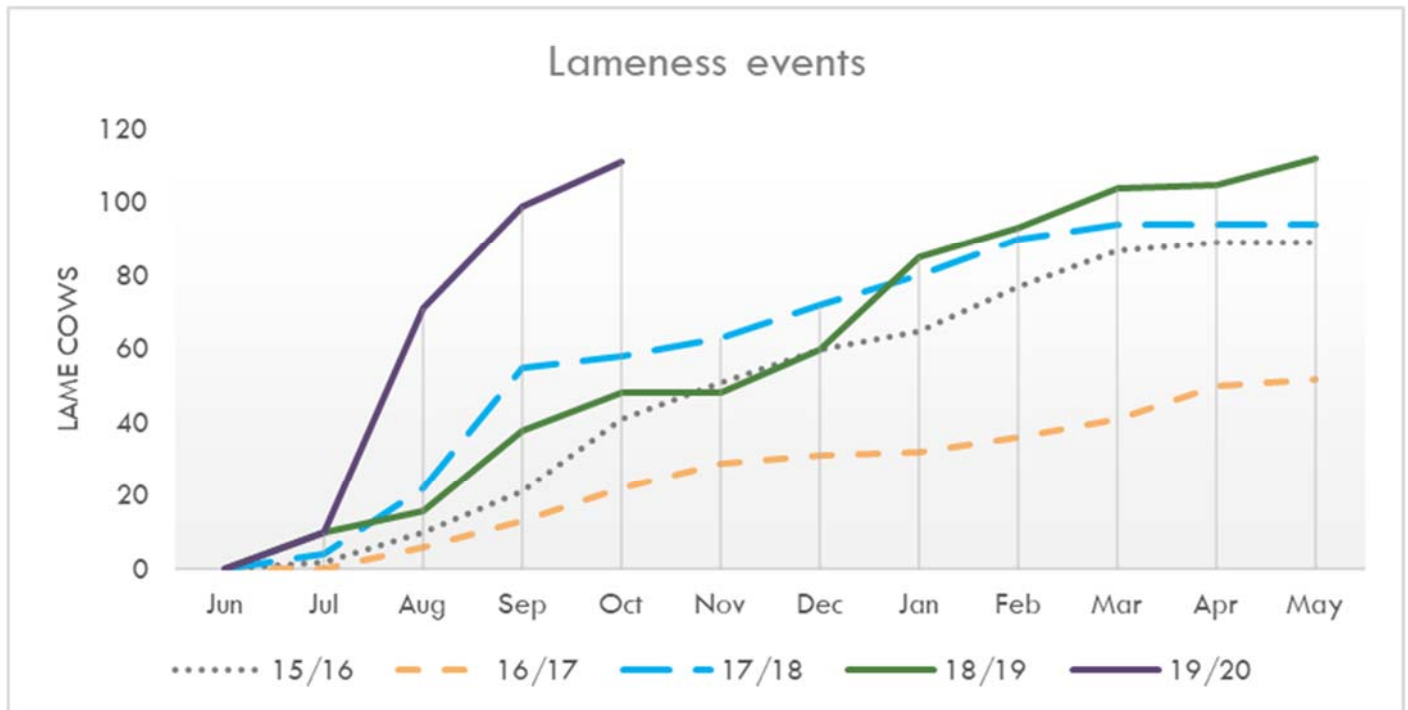
Age	3.0	3.5	4.0	4.5	5.0	5.5	Average	Total Scored	% Scored
2	0	0	8	54	19	2	4.6	83	99%
3	0	0	13	44	14	0	4.5	71	100%
4-8	2	7	81	100	25	2	4.3	217	100%
9+	0	0	12	17	7	0	4.4	36	100%
All	2	7	114	215	65	4	4.4	407	100%



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LAMENESS



REPRODUCTION PLAN

Owl Farm is using sexed semen and Wagyu semen as part of our mating programme this year; the objectives are:

- Maintaining or improving farm reproduction performance, currently 74% 6-week in-calf rate, 13% not-in-calf rate. 84-day mating duration with a 70-day calving period.
- Target heifer replacement rate, maintained at the same number (25%) but achieved in fewer days (4 weeks vs 6 weeks).
- Accelerated genetic gain through taking replacements from the top 75% of the herd.
- Value added through the Wagyu programme, 150 saleable animals resulting in a 50% reduction in bobby calves.
- A shift to A2/A2 semen.

MATING TIMELINE

Plan 1-T-1-Cows-300	Alpha 30 Sep - 17 Nov (49 days)																
Plan 2-T-1-Cows-120	A2 Kiwi Cross 30 Sep - 03 Nov (35 days)																
Plan 3-T-3-Cows-56	A2 Kiwi Cross 29 Sep - 04 Oct (6 days)																
Plan 4-T-3-Cows-120	A2 Kiwi Cross 04 Oct - 08 Nov (36 days)																
Plan 5-T-1-Cows-120							SGL Dairy Kiwi Cross 12 Nov - 23 Dec (42 days)										
Plan 6-T-1-Cows-140				Sexed Semen Kiwi Cross 05 Oct - 18 Oct (14 days)													
Plan 7-T-1-Cows-35					Sexed Semen Kiwi Cross 19 Oct - 25 Oct (7 days)												
Sep 29 Oct 6 Oct 13 Oct 20 Oct 27 Nov 3 Nov 10 Nov 17 Nov 24 Dec 1 Dec 8 Dec 22																	

BEST PRACTICE CROPPING

Summer Brassica and Chicory produce high yielding summer forage for lactating dairy cows supplying energy (13MJ/kg DM) to boost summer milk production at a cost of less than 15c/kg DM. Like any crop, sound planning and attention to detail is the key to successful cropping.

PLANNING: Turnips will be ready for grazing 60-90 days after planting and chicory (56 - 80 days after planting). Ensure this is appropriate for the planned planting date and when the summer forage is required. For later options, consider Cleancrop Bulb Turnip, (80-110 days) or Goliath forage rape (90-110 days).

PREPARATION: Ideally starts in autumn with a spray-out of run out pasture and sowing of Winter Star II annual ryegrass. Soil testing at this point allows time to correct deficiencies that may be present. The optimum pH is in the range 5.8-6.2 and this can take six months to correct with lime.

SPRAY-OUT: Spray-out in spring with glyphosate and an insecticide at the correct label rates. Insecticide options include Sparta® and Dew 600® which both have a nil withholding period.

FERTILISER: Fertiliser requirements should be based on a soil test. High yielding brassica and Chicory crops have a large nutrient requirement. The application of Phosphorous (P) in a base dressing and down the spout at planting will provide good response particularly on low P soils. Growing brassicas and chicory on effluent ground may allow for a significant reduction in fertiliser inputs, but this should be on the basis of soil testing and knowledge of crop requirements.

SEEDBED: Small seed crops can be established after cultivation or established using no-tillage techniques when paddock conditions are suitable for germination and early growth. Direct drilling must be done well, particularly in situations where soils are cold and wet or where weeds and pests are prevalent. A double spray-out may be required, and always use insecticide at spray-out and slug bait at planting in no-till situations. Regardless of sowing method, achieve a fine, firm and weed free seed bed. Rolling following cultivation and again following planting may be necessary to achieve adequate consolidation. To determine if the paddock is adequately consolidated, walk the field; your boot prints should only leave a slight indent in the soil surface.

PLANTING: Sow turnips with Superstrike/ Ultrastrike seed treatment at 2-3kg/ha and Chicory with Superstrike seed treatment at 8-10kg/ha at a depth of 1.0-1.5cm.

MONITOR: Monitor brassica crops every 2-3 days during establishment. Most crop failures occur during this time so early detection and control of weeds and pests is key to protecting the crop during this vulnerable stage.

CROP PROTECTION: A post emergence application of broadleaf and/or grass weed herbicide is generally required at 3-4 weeks. In most crops there will be pests such as leaf miner and springtails present at this stage, sometimes in large numbers, including an insecticide in this application is important. Where leaf miner and other insect pests are prevalent through the season, a second and sometimes third follow-up spray is required.

FERTILISER: A side-dressing of Nitrogen (N) is recommended at 4-6 weeks. The rate will depend on the soil supply and crop demand. Refer to fertiliser recommendations.



References: #de Ruiter et al. 2009. Management practices for forage brassicas. Forage Brassica Development Group.

BEST PRACTICE CROPPING CHECK LIST

PLANNING:

- ☐ 1. Have you put together a Feed budget?
- ☐ 2. Does your chosen crop fit your system?

PREPARATION:

- ☐ 3. Do you have a recent soil test?
- ☐ 4. Is your pH 5.8-6.2? *(If not apply lime to increase pH)*
- ☐ 5. Ensure the paddock has adequate drainage etc.

SPRAY-OUT:

- ☐ 6. Spray out with glyphosate and an insecticide at the correct label rates. Ensure pasture has had at least 14 days regrowth.

FERTILISER:

- ☐ 7. Apply recommended starter Fertiliser based on your soil test.
- ☐ 8. Apply a side-dressing of Nitrogen at 4-6 weeks (or close to canopy closure.) Rates will depend on the soil supply etc. refer to fertiliser recommendations.

PLANTING:

- ☐ 9. Sow turnips with Superstrike/ Ultrastrike seed treatment at 2-3kg/ha and Chicory with Superstrike seed treatment at 8-10kg/ha at a depth of 1.0-1.5cm.
- ☐ 10. Roll following cultivation and again following planting if necessary.

MONITOR:

- ☐ 11. Monitor brassica crops every 2-3 days during establishment.

CROP PROTECTION:

- ☐ 12. When using the Cleancrop brassica system apply Telar® within 48 hours after planting.
- ☐ 13. "If required" apply a post emergence application of broadleaf and/or grass weed herbicide at 3-4 weeks post emergence.
- ☐ 14. Where insect pressure is high add an insecticide to your weed control. *(Consult your Ag chem rep for rates and compatibility information.)*



PESTS



SPRINGTAIL

EFFECT: Damage to brassicas may occur as soon as the seed shell is shed and the cotyledons emerge, and as a result the stems supporting the cotyledons are often damaged or destroyed before they emerge above the soil. With mouthparts adapted for chewing, Springtail chew small holes or pits in leaf surfaces.

CONTROL: Ultrastrike Brassica or Superstrike Brassica seed treatments
Contact insecticide
Both seed treatment and a contact insecticide is recommended in no-tillage situations



LEAF MINER

EFFECT: Eat forage causing damage to leaves

CONTROL: Removal of alternative hosts (e.g. fathen, sowthistle etc.) to prevent build-up of numbers
Application of insecticide



SLUGS

EFFECT: Feeding takes place mainly at night, and will be shown as holes in the leaves, stems or roots. Slime is a good indication of slugs or snails.

CONTROL: Monitor slug numbers
Slug Bait application



WHITE BUTTERFLY

EFFECT: Eat forage leaves

CONTROL: Natural predators (e.g. harvestman and parasitic wasps)
Removal of old brassica crop, debris and weeds to prevent overwintering and localised build-up



DIAMONDBACK MOTH

EFFECT: Lay eggs in brassica plants and can cause damage to leaf and seeds.

CONTROL: Removal of old brassica plants which may act as carry-over hosts
Application of insecticide



GREASY CUTWORM

EFFECT: Eat forage leaves

CONTROL: Good seed bed cultivation and compaction
Application of insecticide



ARGENTINE STEM WEEVIL

EFFECT: Larvae appear from October onwards and feed on tillers causing them to yellow and then brown and ultimately die. Poor resulting of pasture is often mistakenly attributed to other factors such as drought. Adult weevils feed all year round on leaves leaving narrow rectangular holes in the leaves usually near the tips.

CONTROL: Use of Ultrastrike brassica or Superstrike Grass seed treatment to protect seedlings
Removal of host ryegrass plants
Recognise flight periods and control infestations early
Application of insecticide
Use tolerant species (cocksfoot, tall fescue)
Use of grasses with standard, AR1, Endo5, AR37 or MaxP endophytes



APHIDS

EFFECT: Eat forage. There are usually two flights per year with the first occurring from late spring/early summer and the second from late summer/early autumn. It is during the nymph stage that feeding damage occurs to plants. Brassica crop plantings from November to March are usually the most vulnerable to Aphid attack.

CONTROL: Ultrastrike seed treatment
Application of insecticide



BLACK BEETLE

EFFECT: A major pest in the northern North Island, Black Beetle larvae feed on the roots of grasses over summer causing the pasture to become loose and open and the damage appears similar to that of Grass Grub.

CONTROL: Use of Superstrike seed treatment to protect seedlings
Use of grasses with standard, Endo5, AR37 or MaxP endophytes
Use of a Summer forage crop (e.g. forage brassica)



GRASS GRUB

EFFECT: Plants wilt and may eventually die due to the roots being eaten away. Yellow patches of stunted growth appear in the pasture and plants may be readily pulled from the ground due to loss of roots. Period of maximum feeding by grubs is in autumn and early winter.

CONTROL: Heavy grazing (March-June) to reduce Grass Grubs' feed supply
Through cultivation in spring
Granular insecticide sown in the root zone
Heavy stocking or rolling to squash larvae
Use Superstrike Grass Seed

WHAT IS CLEANCROP™?

A SIMPLE WEED MANAGEMENT SYSTEM.



CLEANCROP™ BRASSICA SEED

Cultivars that have been BRED
to be tolerant to the sulfonyl urea
herbicide Telar®



FMC TELAR® HERBICIDE

A broad spectrum herbicide that provides
EXCELLENT control of broadleaf weeds
from the pre-emerge stage

WEED SPECTRUM

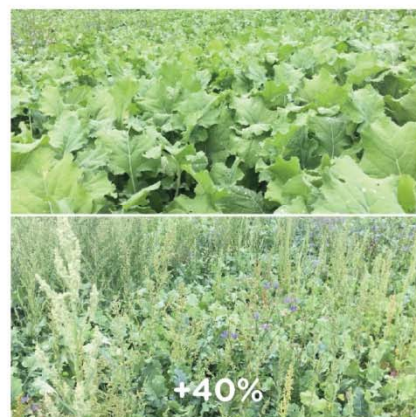
23 weeds controlled with Telar® as per the label:

- | | | |
|------------------------|---------------------|-----------------------|
| • Calandrinia | • Fathen | • Scentless Chamomile |
| • Californian Thistle* | • Hawksbeard | • Scotch Thistle |
| • Chickweed | • Nodding Thistle | • Shepherd's Purse |
| • Cornbind | • Rayless Chamomile | • Spurrey (Yarr) |
| • Dandelions | • Redroot | • Stinking Mayweed |
| • Docks | • Scarlet Pimpernel | • Twin Cress |
| | | • Vetch |
| | | • White Clover |
| | | • Wild Turnip* |
| | | • Willow Weed |
| | | • Yellow Gromwell |

*Apply Telar® post emerge when Cleancrop™ brassicas are at the fourth-true leaf stage at 20g/ha.
The Accredited Cleancrop Agent must fill out the 2nd spray book in order to activate the 2nd Telar® spray.

Apply Telar®
at the pre-
emerge stage
within 48 hours
of sowing

WHAT ARE THE WEEDS COSTING US?



HOW IT WORKS

The **Cleancrop™ Brassica System** (seed + herbicide) package enables control of weeds at the time of sowing. Spray within 48 hours of planting.



CLEANCROP™ BENEFITS



CONTROL WEEDS

within 48 hours of sowing



NO SOIL INCORPORATION REQUIRED

i.e. Treflan



ADAPTABLE TO METHOD OF SOWING



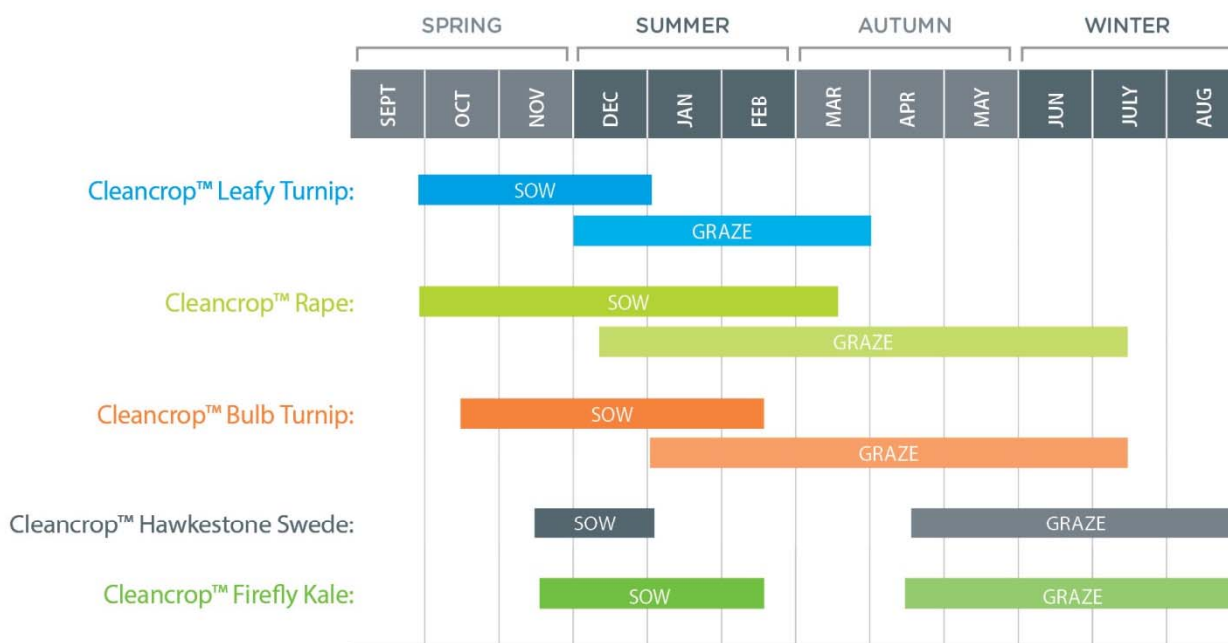
NO MOISTURE REQUIRED*

to activate Telar® herbicide

**Only a heavy dew is required to activate Telar*

EXCELLENT SPECIES SPECTRUM

The **Cleancrop™ Brassica System** has a cultivar range that caters for ALL your feed requirements.



ADAPTIVE TO ALL SOWING METHODS



FMC TELAR® HERBICIDE

No matter how it is sown,
pre-emerge 20g/ha

CLEANCROP TOTO™

(COMMERCIAL 2020)



- Barkant equivalent 60-90 maturity
- Tancred bulb turnip
- Green in colour
- Excellent yield potential and disease tolerance (especially TMV)
- Good leaf percentage and utilisation



PEOPLE PRIORITY 2 - STUDY OF TIME AND TASKS ON FARM

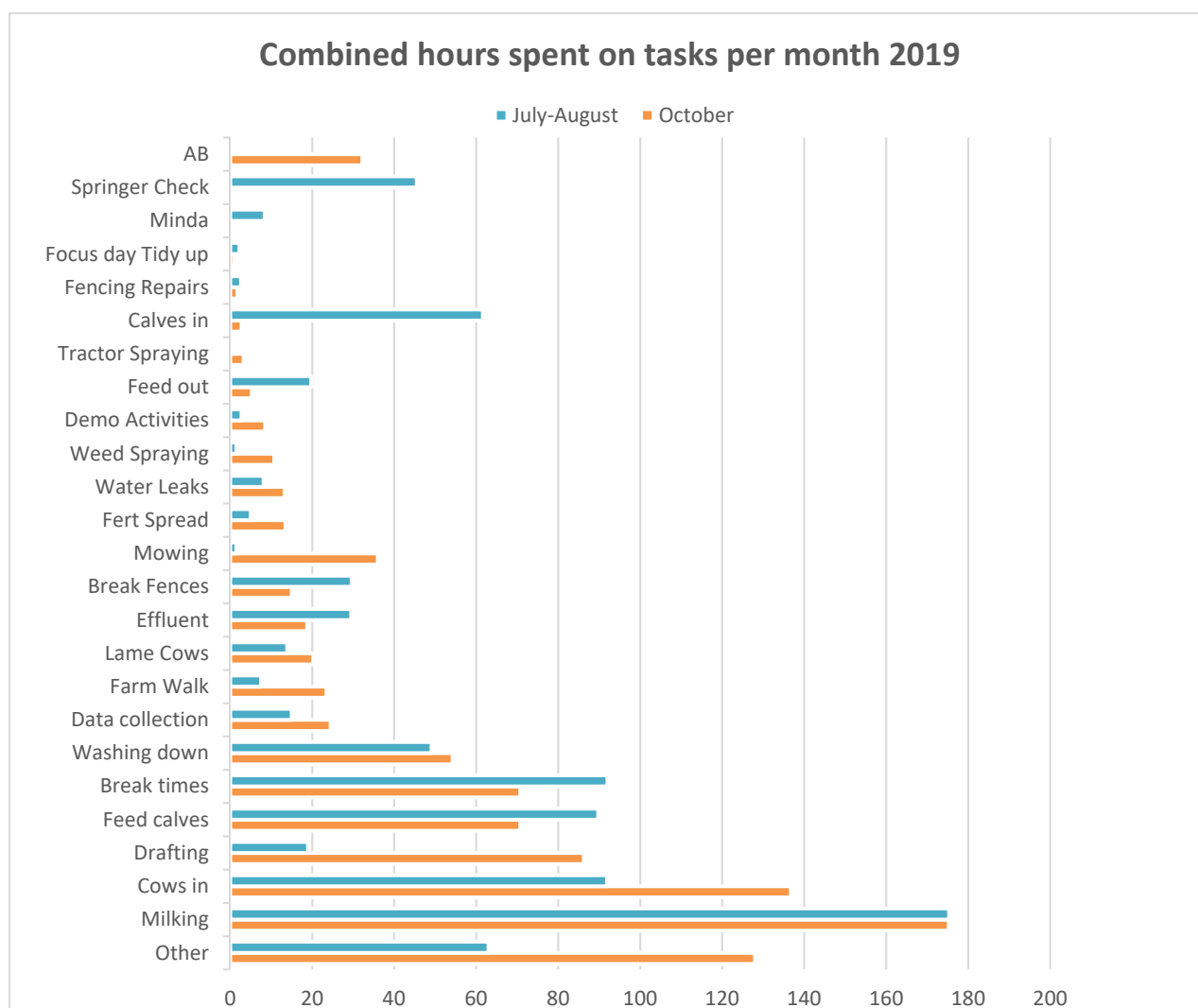
Owl Farm is committed to sustainable work hours targeting an average of 45 hours/person/week over the year. As at 18th November the team has averaged 52 hrs/person/week for the season to date. The monthly breakdown is as follows:

Month	Hours worked/ person/week
June	29 hours
July	57 hours
August	64 hours
September	63 hours
October	62 hours

This season, as well as monitoring work hours and regular weekends off (every second weekend even during calving) we have recorded what we are spending our time on while we are at work. The graph below shows the average monthly hours spent on activities during calving (July/August) and during mating (October).

We hope to use the information to see where future investments in technology, systems and processes will reduce time spent on some tasks within the farming operation.

How does this compare to your farm and the proportion of time spent on some of the bigger tasks?



HE WAKA EKE NOA

Background to the New Zealand Emissions Trading Scheme – Paul Melville DairyNZ

The New Zealand Emissions Trading scheme (ETS) places obligations on emitters of carbon dioxide, methane, nitrous oxide and other greenhouse gases. When someone imports petrol or burns coal, they face an obligation to buy and surrender New Zealand emissions units. This cost is then passed on to consumers in the form of higher electricity prices and hire petrol prices.

This additional cost creates an incentive for people to use less petrol and coal. It also means, as the electricity price rises, returns from investing in renewable electricity increase.

It is estimated the emissions trading scheme increases costs for the average dairy farm by around \$2,500 per year due to electricity and petrol use. Note however this cost is likely to vary significantly between irrigated and non-irrigated farms. This is due to the large amount of electricity used extracting and applying water.

In addition to this cost, the cost of processing the milk received from each farm has increased approximately \$5,000 per farm due to the ETS. This cost is passed on to farmers in the form of a reduced milk price (about 3c per kg MS, estimated).

New Zealand has had an emissions trading scheme since 2008. Since this time, there has been debate on if and when biological emissions from agriculture should enter the scheme. Agricultural emissions being the methane from rumen digestion, nitrous oxide from stock urine, nitrous oxide from fertiliser, and other farm GHG from biological processes rather than the burning of fossil fuels.

The Clark Labour Government originally legislated a 2013 entry date for agricultural emissions. The Key National Government first shifted this date to 2015 then removed entry of agriculture from the scheme all together.

Those that argue in favour of pricing agricultural emissions generally point out that agriculture contributes almost half of New Zealand's total greenhouse gas emissions and it is therefore not fair to exclude the sector. They may argue pricing agricultural emissions is the most efficient way to reduce emissions from the sector, that pricing emissions will be good for the sector, or that not charging the sector for its emissions equates to a subsidy.

Others will argue to the contrary that, until technologies are available to reduce agricultural emissions and our trade competitors also price agricultural emissions, such an approach to reducing emissions in New Zealand will only lead to reduced production here, which will be made up by other, less efficient, producers overseas. Overall, this may increase global emissions.

Further, sector organisations like DairyNZ have argued that, if agriculture is to enter the emissions trading scheme, emissions must be measured "at the farm gate" rather than charged as a levy, for a meaningful price signal to be created. Charging for emissions at the processor level only acts as a tax on production, as all farmers are charged the same, regardless of their individual farm actions.

Earlier this year the Government proposed introducing agriculture into the ETS, with emissions measured at the processor level. Alongside this the government proposed to develop a system to measure and price emissions at the farm gate that allowed the point of obligation to be shifted to the farm gate by 2025. The Government's proposal was to provide a 95% discount to agricultural emissions, meaning the cost per dairy farm would be about \$1,500 per year (in addition to the costs already faced for fuel, electricity and dairy processing).

He Waka Eke Noa

A group of primary sector organisations, including DairyNZ, Beef + Lamb NZ and Federated Farmers, established an alternative proposal titled *He Waka Eke Noa*.

This proposal establishes a five-year programme of work that is both focussed on a partnership approach to emissions reduction and also designing a farm level pricing mechanism that can be used if Government desires in the future.

He Waka Eke Noa commits to the following actions (amongst others):

- All farmers will use nutrient management information to estimate their farm emissions by 2021/2022. Understanding where your farm sits in relation to peers is a first step to understanding how you are managing your greenhouse gas emissions.
- Measures to reduce greenhouse gas emissions will be included in farm environment plans.
- The agricultural sector will accelerate investment in the development of new innovative methods of reducing emissions.
- Farmers will also be supported with information on the impacts of climate change and adaptation options.
- Develop a framework for pricing agricultural emissions by 2025.

In October, following consultation on the proposal to introduce agriculture into the emissions trading scheme from 2021, the Government accepted the *He Waka Eke Noa* proposal and will now not legislate a 2021 entry date.

Tim Mackle, DairyNZ CEO has commented,

“He waka eke noa is credible five-year work plan, developed in partnership with other sector groups, that includes clear and measurable actions, outcomes and timeframes that will facilitate and support action across a number of environmental improvements such as climate change, water quality and biodiversity.

“This includes rolling out Farm Environment Plans for all farms by 2025 to ensure every farmer knows their emissions footprint, where those emissions are coming from, and what they can do to manage them.

“Having reliable data is important so that a farmer can make decisions and trade-offs factoring in all the business decisions that need to be weighed up.

“While it is disappointing that the Government has reserved the right to bring agriculture into the ETS in 2025, or earlier if recommended by the Independent Climate Change Commission, this is not something that we have supported.

“We will be working constructively on behalf of dairy farmers to ensure a fair and effective farm-level pricing mechanism is designed through the Commission.

“Our pasture-based dairy sector is one of the most emissions efficient, high quality and sustainable in the world. We are also incredibly innovative and adaptive. He waka eke noa is about ensuring we remain world leaders in a competitive global market.

“Our future is now in our own hands as we work in partnership with the Government to deliver against our commitments” Dr Mackle concluded.



Next Farm Focus Day

Wednesday 18 March, 2019

Weekly Monitor Walk

Tuesdays, 11am



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facebook.com/OwlFarmNZ



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