

1. FARM PERFORMANCE



Contents

Farm Performance	2
Climate	3
Rainfall	4
Growth Rates	5
Paddock performance	6
Pasture renewal	6
Crop yields	7
Supplements used	8
Milk Production	10
MS/ha from homegrown feed	11
Feed conversion efficiency	12
Breeding Worth comparison	12
Milk quality	13
Somatic Cell Count (SCC)	13
Fat Evaluation Index (FEI)	14

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.

FARM PERFORMANCE



	PRIMARY KPI	OWL FARM TARGET	2020/21	2019/20	2018/19	2017/18	2016/17
①	P&C harvested/ha	15t DM/ha - measured via Farmax	11.7/13.7	11.4/13.1	13.7/13.1	13.8/13.8	12.5/12.8
②	MS/ha to 31st Dec	850 kgMS/ha	810	816	819	794	778

Summary points - Primary KPIs:

- Pasture & Crop harvested was slightly higher than the 2019/20 season but still well below our target of 15 t DM/ha.
- Low annual rainfall of 837mm (vs 1080 mm 5-year average) once again impacted on total pasture yield of 12 t DM primarily through low Nov/Dec growth and reduced grass silage harvested on farm (118 t DM vs 139 t DM).
- Crop yields were better than last season, especially the later grazed kale which received 123mm of rain in March.
- Purchased supplements were higher than budgeted due to less grass silage being harvested off the milking platform.
- Slower calving rate as a result of delayed start to mating reduced early season milk production. We didn't meet our target of 850 kg MS/ha by the 31st Dec. This was achieved on the 10th January.
- Timing of rainfall during a green drought allowed us to maintain cows in milk in late lactation and produce 178,125 kg MS exceeding our 175,000 kg MS target.

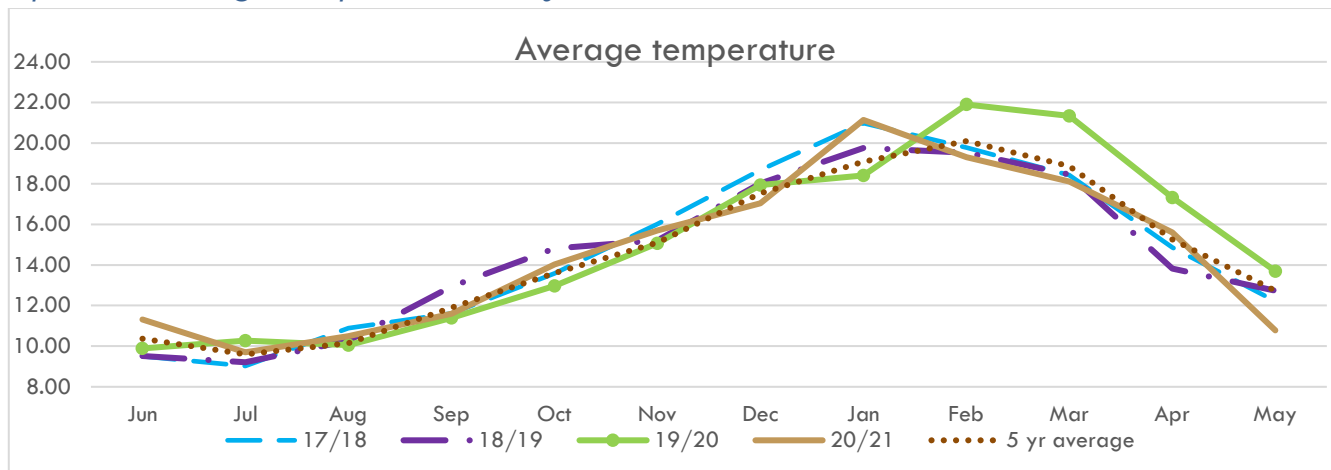
Summary points - Secondary KPIs:

- Average production was 440 kg MS/cow or 92% of the herd average liveweight.
- Feed conversion continues to improve at 10.7 kg DM eaten/kg MS produced with excellent feed utilisation and grazing management producing high quality feed. This exceeds our target of 13 kg DM/kg MS
- BW was in the top 6% nationally, slightly below our target of top 5%.
- Highest quality milk standards were achieved for 3 months of the season.

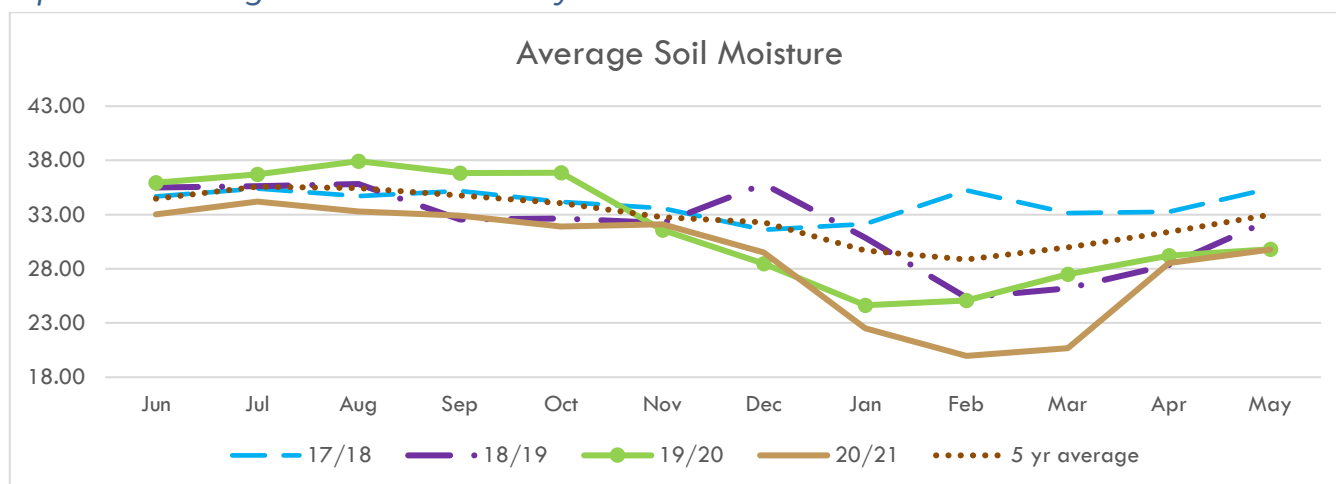
Climate

Climate data is recorded from one weather station collecting rainfall, air temperature, humidity and wind. We also have a 600mm soil probe that measures soil moisture and temperature at 100mm depths. Graphs show readings at 100mm depth over time. Noticeable lower summer soil moisture levels in 2021, along with warmer soils due to two years of low rainfall impacted on pasture growth rates, particularly in October and November when we would normally generate surplus pasture for silage. Critical rainfall in January and March allowed pasture to keep growing better through summer and enabled us to exceed production targets in autumn.

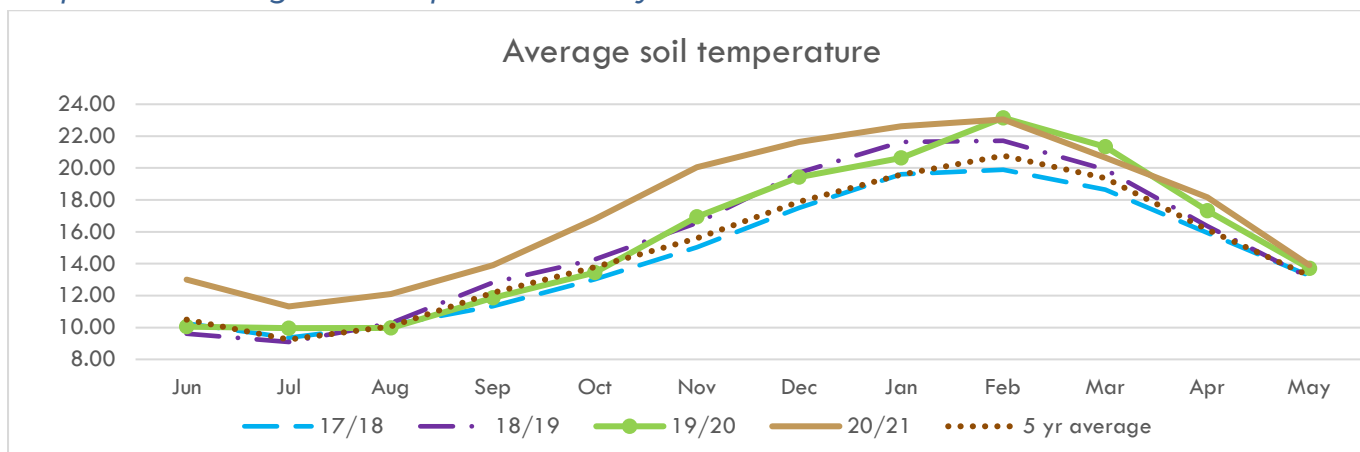
Graphic 1.1: Average temperature over years



Graphic 1.2: Average soil moisture over years

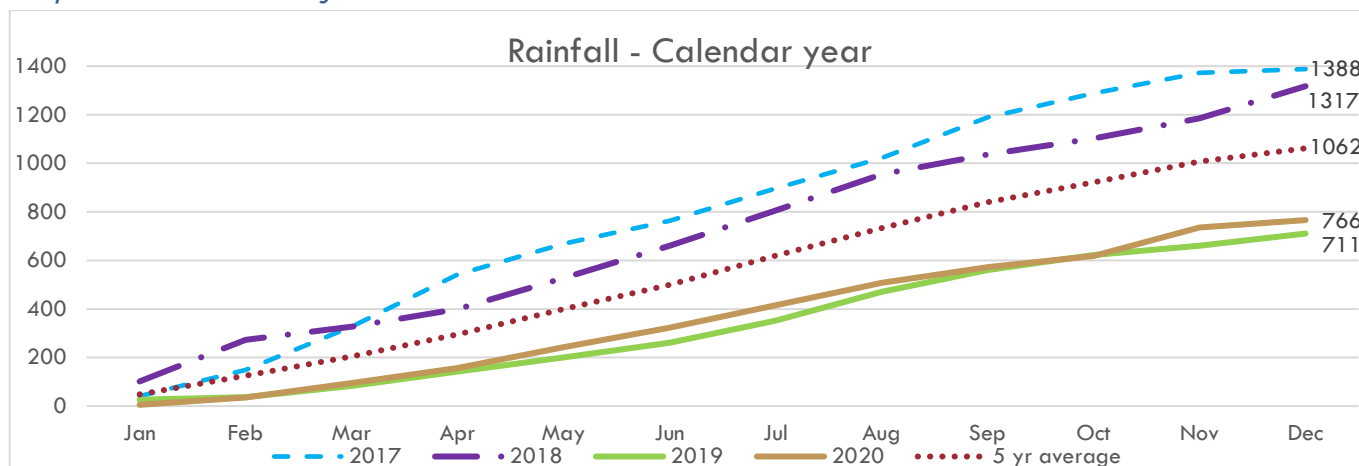


Graphic 1.3: Average soil temperature over years

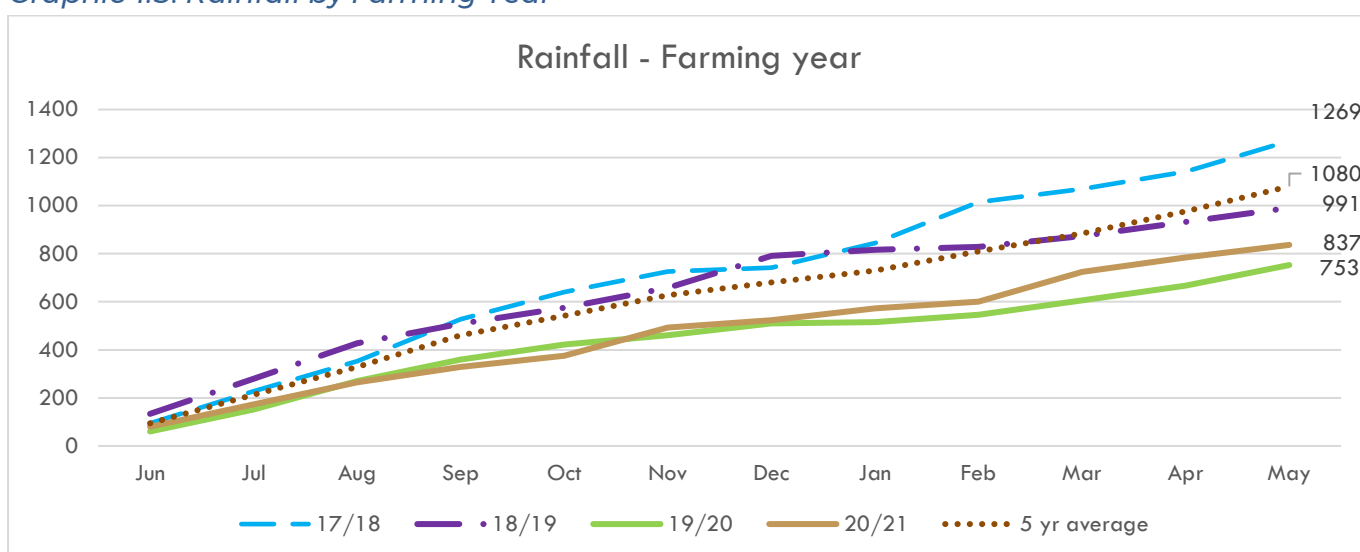


Rainfall

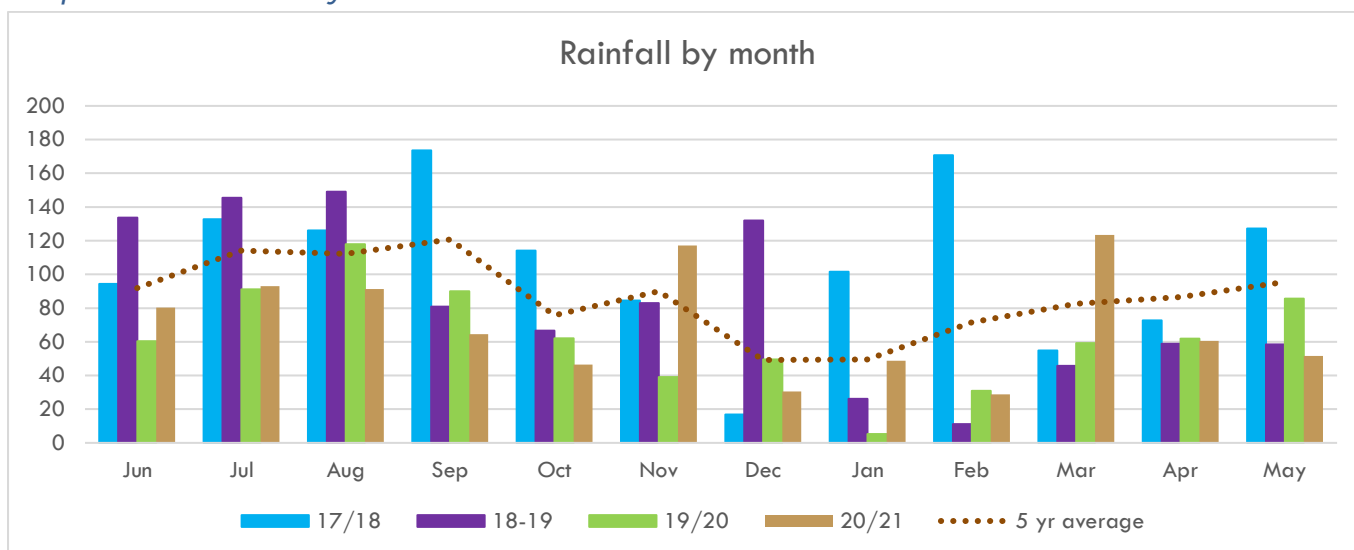
Graphic 1.4: Rainfall by Calendar Year



Graphic 1.5: Rainfall by Farming Year



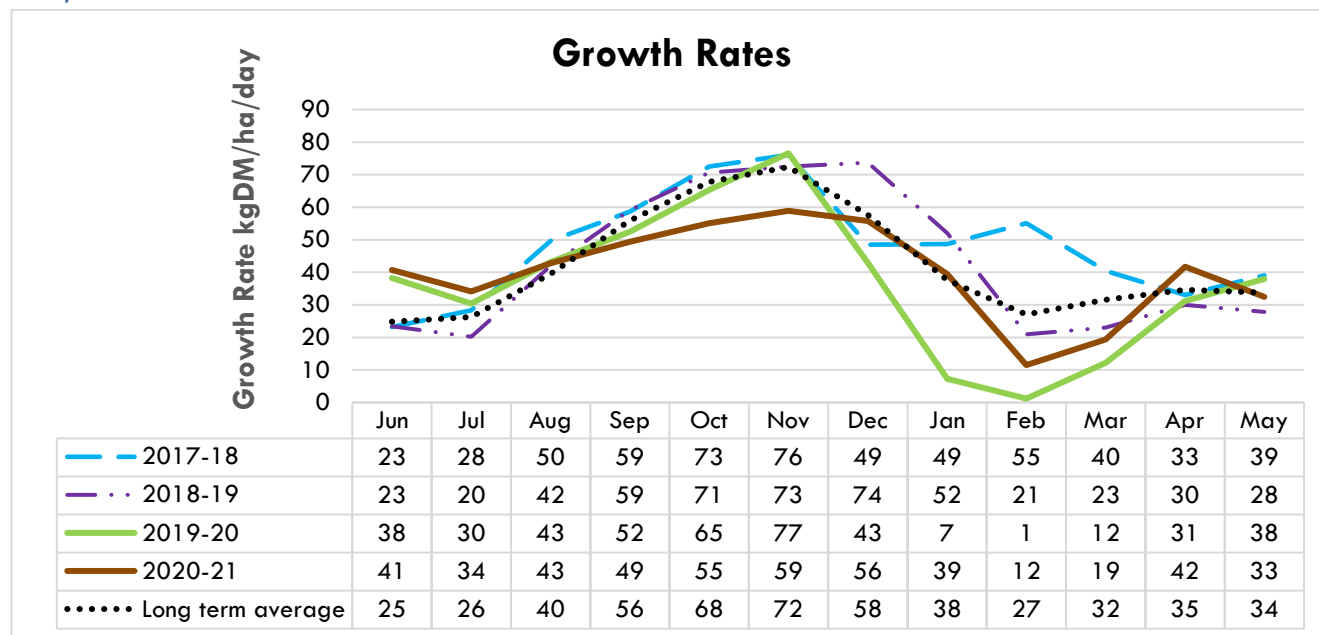
Graphic 1.6: Rainfall by month



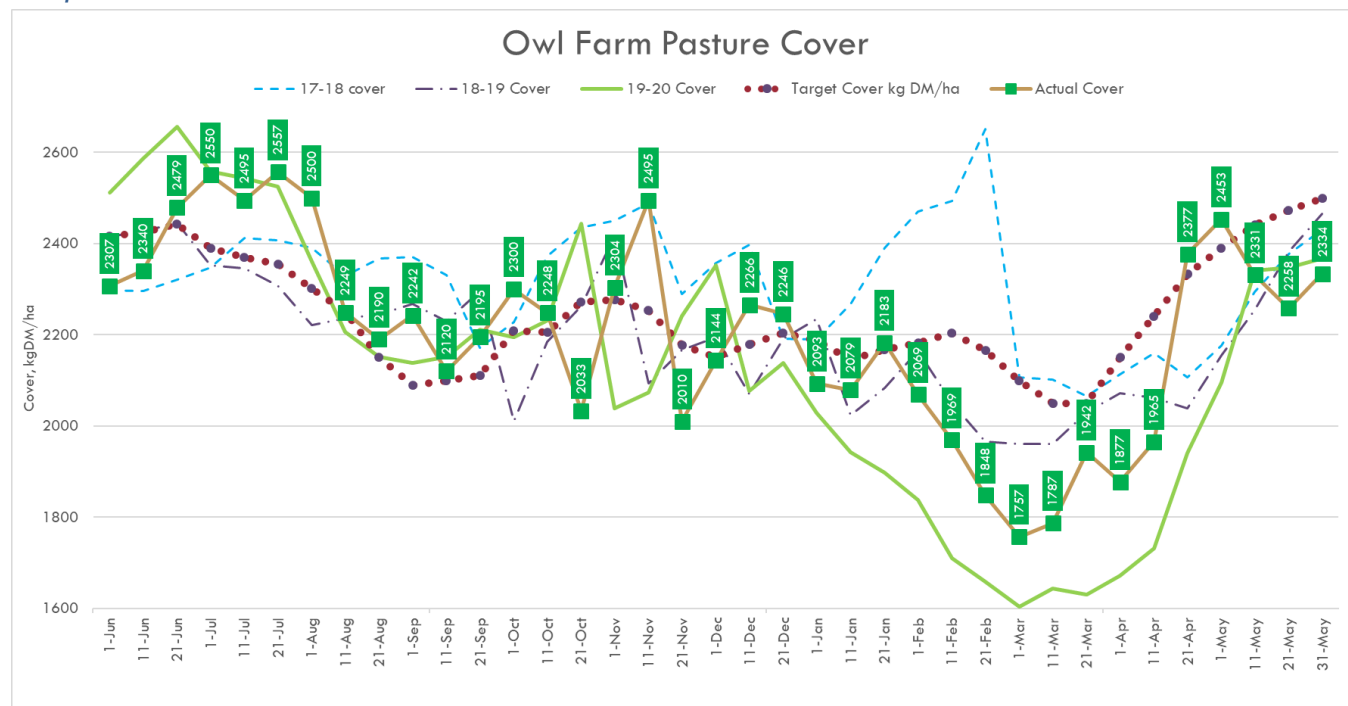
Growth Rates

We use Farmax for our farm system modelling to plan the year ahead and also record actuals. This modelling generates pasture growth rate data based on inputs and outputs. While PGR last season was not as low as the drought year prior we did suffer from dry soils in September and October which restricted peak growth. Covers dropped until we received 49mm of rain in November, then pastures took off and quality deteriorated very quickly. It then became a challenge to remove the surplus as silage quick enough while maintaining enough quality pasture for the cows. Consistent autumn rain supported high April growth rates which allowed us to achieve BCS and APC targets and exceed production targets.

Graphic 1.7: Pasture Growth Rates



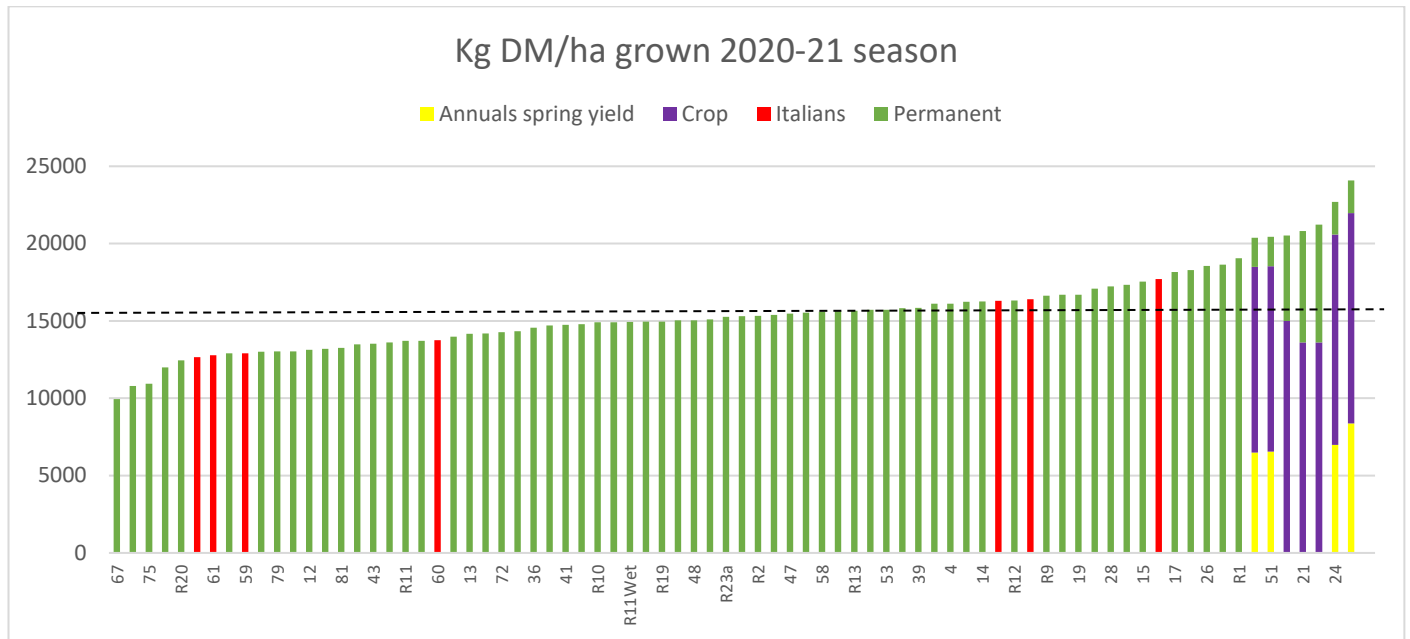
Graphic 1.8: Pasture Cover



Paddock performance

To continue improving Pasture and Crop harvested we monitor individual paddock performance via weekly farm walks. The yield data is analysed every year to determine which paddocks require investment in fertiliser, plant species, weed management or physical characteristics. We also record populations of clover and plantain over the summer months and give each paddock a pasture condition score. We use this data along with herd logistics and paddock access to shade and water etc to determine where to grow our brassica crops and which paddocks require pasture renewal.

Graphic 1.9: Relative yield of paddocks using weekly farm walk growth rate data:



Pasture renewal

We continue to see advantageous use of cocksfoot in many of the 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 are not present we continue to use permanent ryegrass cultivars.

As part of our strategy to invest in Ecotain plantain and increase the clover content of our pastures we have used paddock condition scoring to identify which paddocks require seed this autumn and spring. These paddocks required low weed content or a winter weed spray prior to spring sowing.



Graphic 1.10: Pasture Renewal programme

Autumn Re-grassing	Area (ha)	Notes	Cultivars Rate/ha
Permanent pasture after crop	13	Establish permanent ryegrass/cocksfoot mixed sward	Legion + Savvy + Quartz + Legacy + Amigain + Ecotain 14kg/ha 4kg/ha 3kg/ha 2kg/ha 3kg/ha 4kg/ha
Permanent pasture after crop	3	Establish permanent ryegrass dominant pasture	Platform + Quartz + Legacy + Amigain + Ecotain 18kg/ha 2kg/ha 2kg/ha 3kg/ha 4kg/ha
Undersown permanent ryegrass	5	Stitch permanent pastures that don't need crop	Platform Permanent Ryegrass 14kg/ha
Italian	12	Improve short term yield on dry soils	Supercruise 20kg/ha
Total area re-grassed	33	23% of farm	
Autumn sown annuals	8	Drive winter yield ahead of crop in annual ryegrass	Winter Star II 30kg/ha
Total area drilled in autumn	41	28% of farm (including annuals ahead of crop)	

Crop yields

Summer crops provide valuable high-quality feed from January to March. Kale cost \$1979/ha, turnips \$1747/ha and chicory \$1200/ha to establish. Turnips and kale are fed at 3-4 kg DM/cow/day once transitioned, along with PK and grass silage as needed, to offer cows 16 kg DM/cow/day during the summer months.

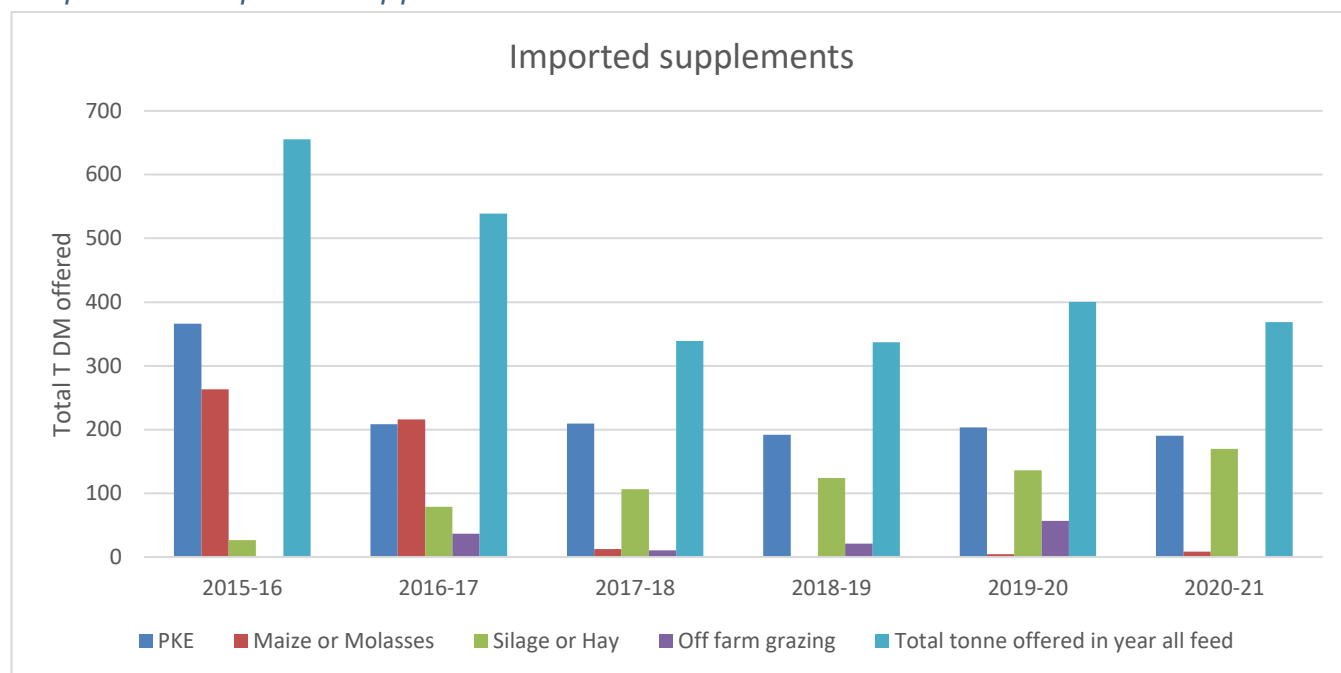
Graphic 1.11: Crop yields

Ha	Variety	Sow date	Grazing period	Yield at grazing (t DM/ha)
3.25	Toto Clean Crop Turnip	20 th October	4 th Jan – 27 th Jan 2021	15.2 t DM/ha
3.25	Bulb Clean Crop Turnip	20 th October	28 th Jan – 22 nd Feb 2021	12.0 t DM/ha
4.92	Firefly Clean Crop Kale	1 st October	23 rd Feb – 20 th March 2021 20 th Mar – 2 nd Apr 2021	12.0 t DM/ha 16.2 t DM/ha
4.71 (runoff for calves)	Puna II Chicory	30 th September	27 th Nov 2020 - 20 th Apr 2021	Estimated 8.5 t DM/ha

Supplements used

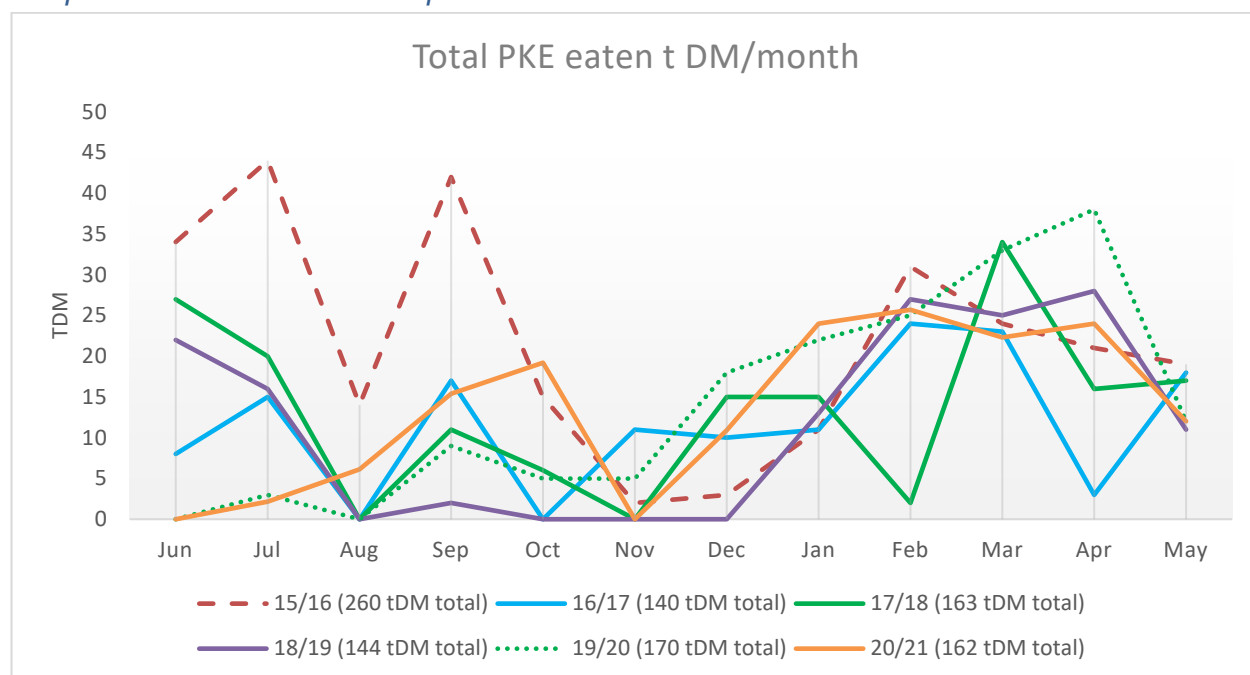
Total purchased feed of 368 t DM was made up of 170 t DM silage and hay, 8.3 t DM molasses, and 190 t DM PK. This is equivalent to 2.5 t DM/ha or 900 kg DM/cow.

Graphic 1.12: Imported supplements



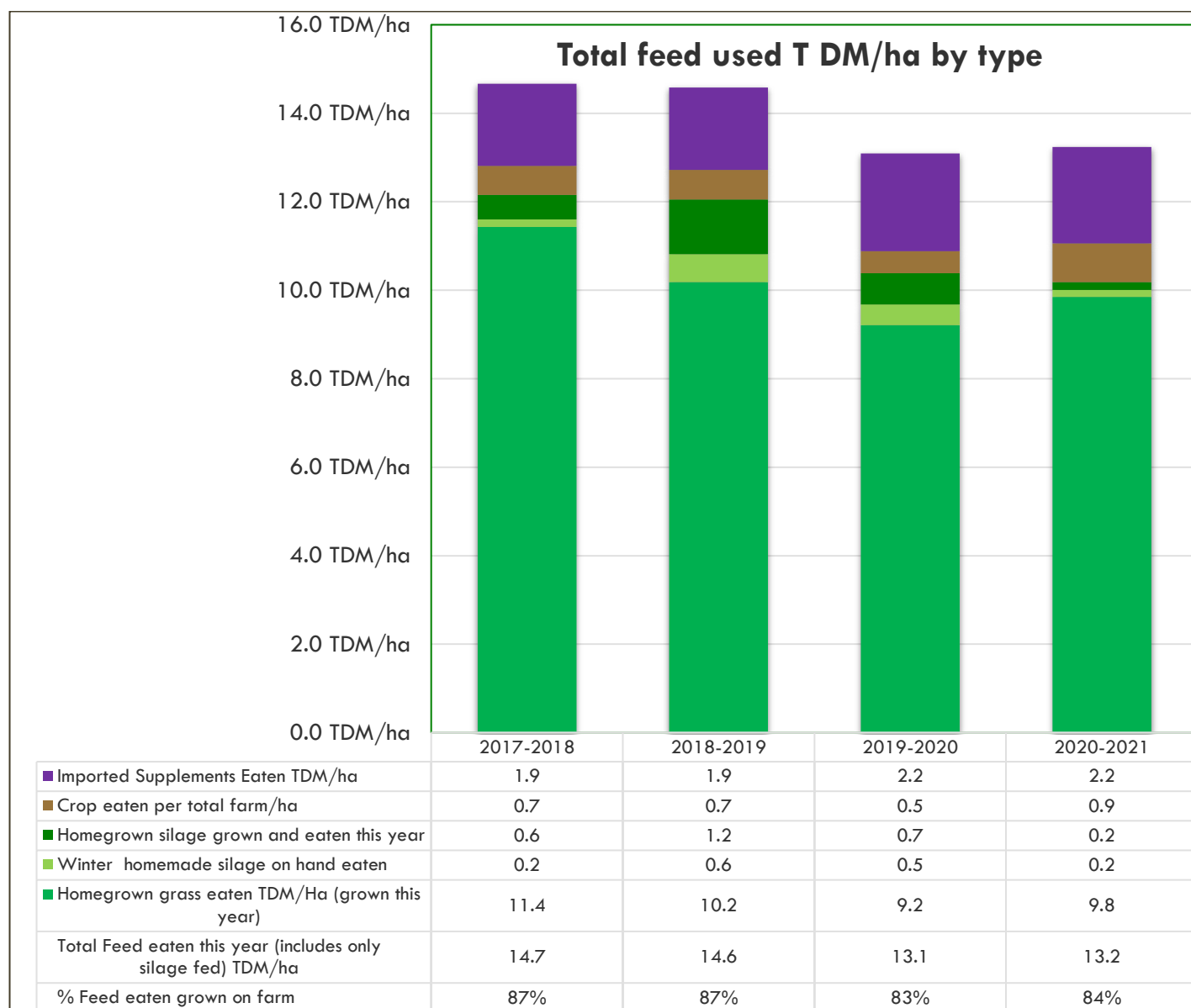
The last two years reflect the change in reduced PK being needed during winter, with low rates eaten in spring and the bulk of PK used through January – April. Due to the increasing dry periods and ability to improve BCS in late lactation, PK has been used within FEI limitations to support late lactation targets when fed in trailers in the paddock or on races.

Graphic 1.13: Total PK eaten per month



Graphic 1.14: Feed supply and demand graph

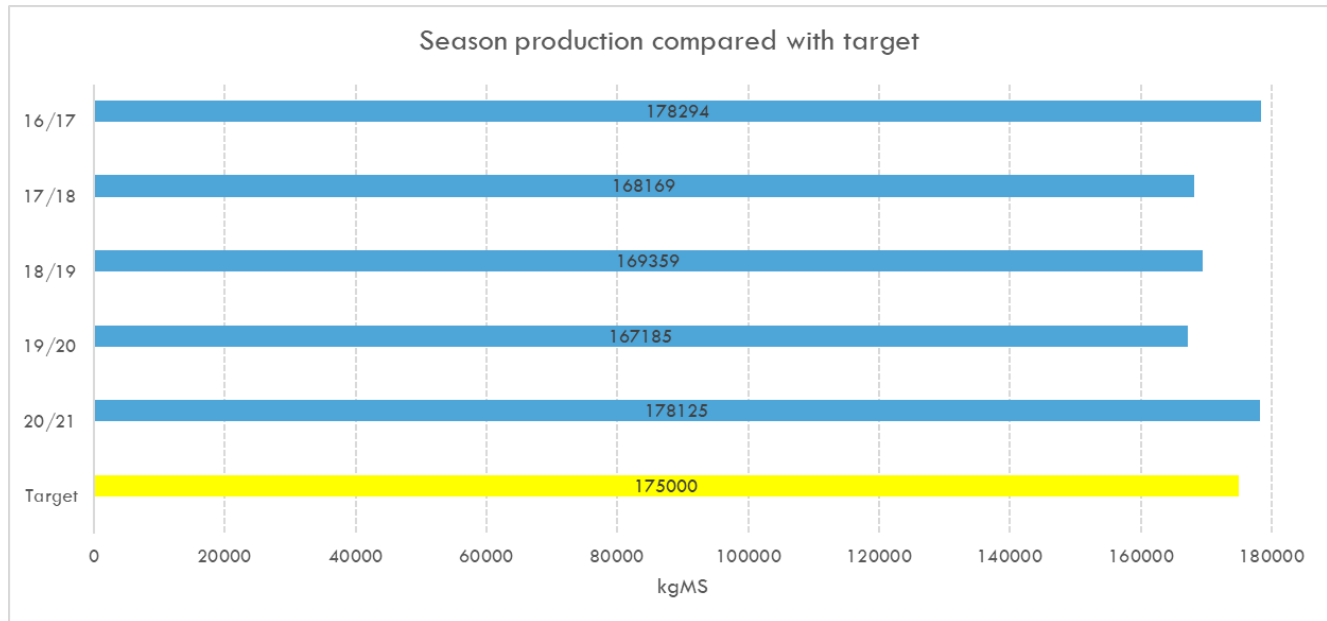
While total feed supply has declined each year we have been able to produce more milk from less feed by focusing on the quality and strategic use of the feed, i.e. less used for maintenance and more for milk production.



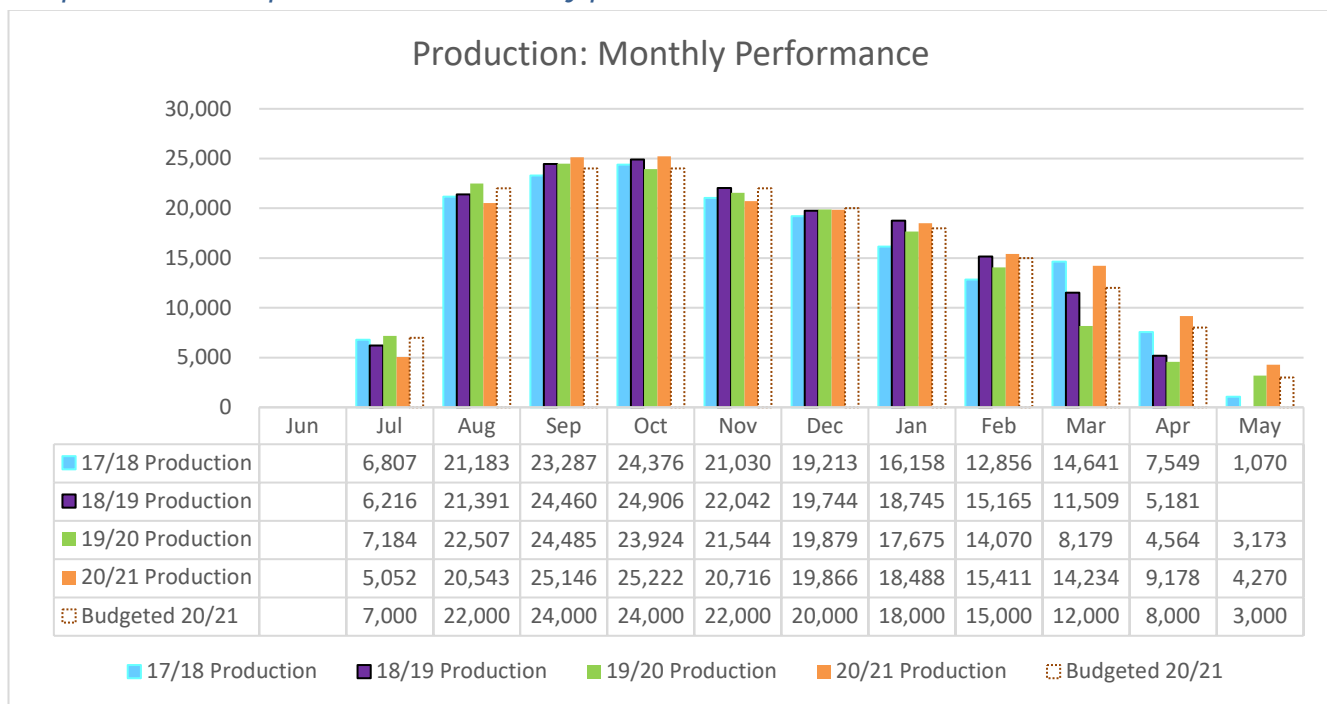
Milk Production

Owl Farm achieved record milk production of 1,237 kg MS/ha and 440 kg MS/cow. Slower early season production was a result of our breeding programme delaying start of calving and requiring more calf milk to rear Wagyu and beef calves beyond four days old. However, cows have peaked higher in September and October and, along with improved crop yields and milking frequency to carefully manage BCS and APC, we have been able to make the most of rapid autumn regrowth for milk production.

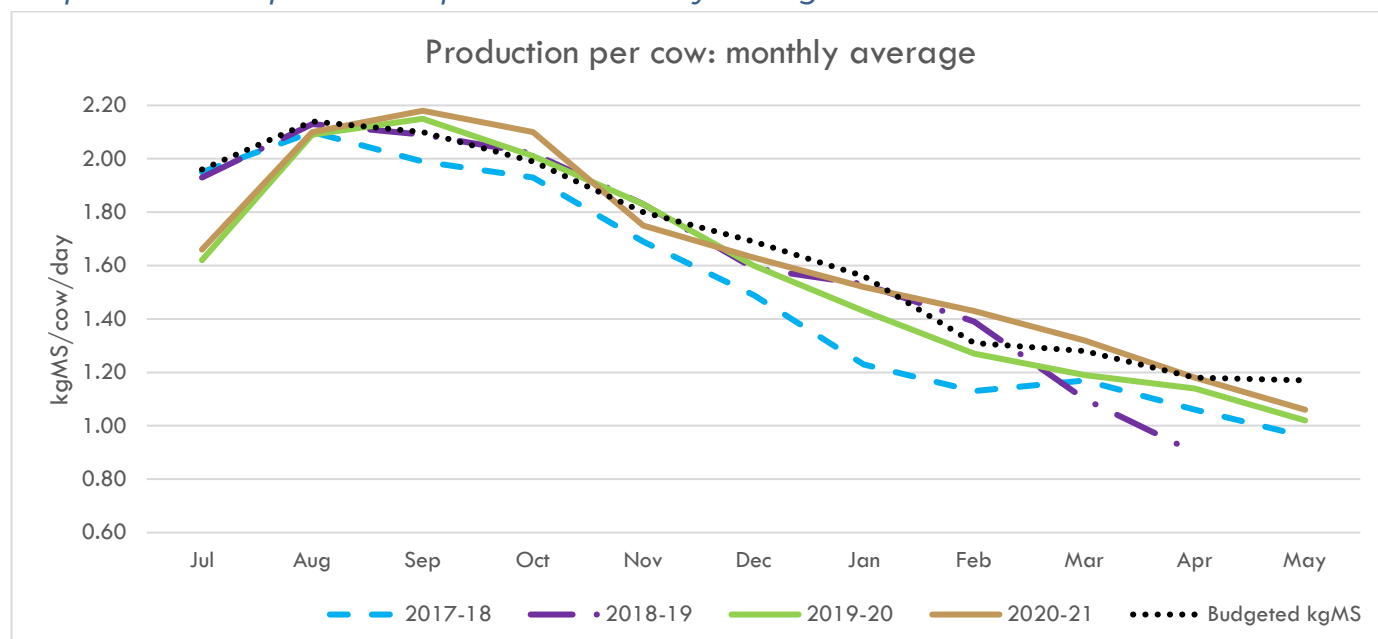
Graphic 1.15: Total annual milk production



Graphic 1.16: Milk production - monthly performance



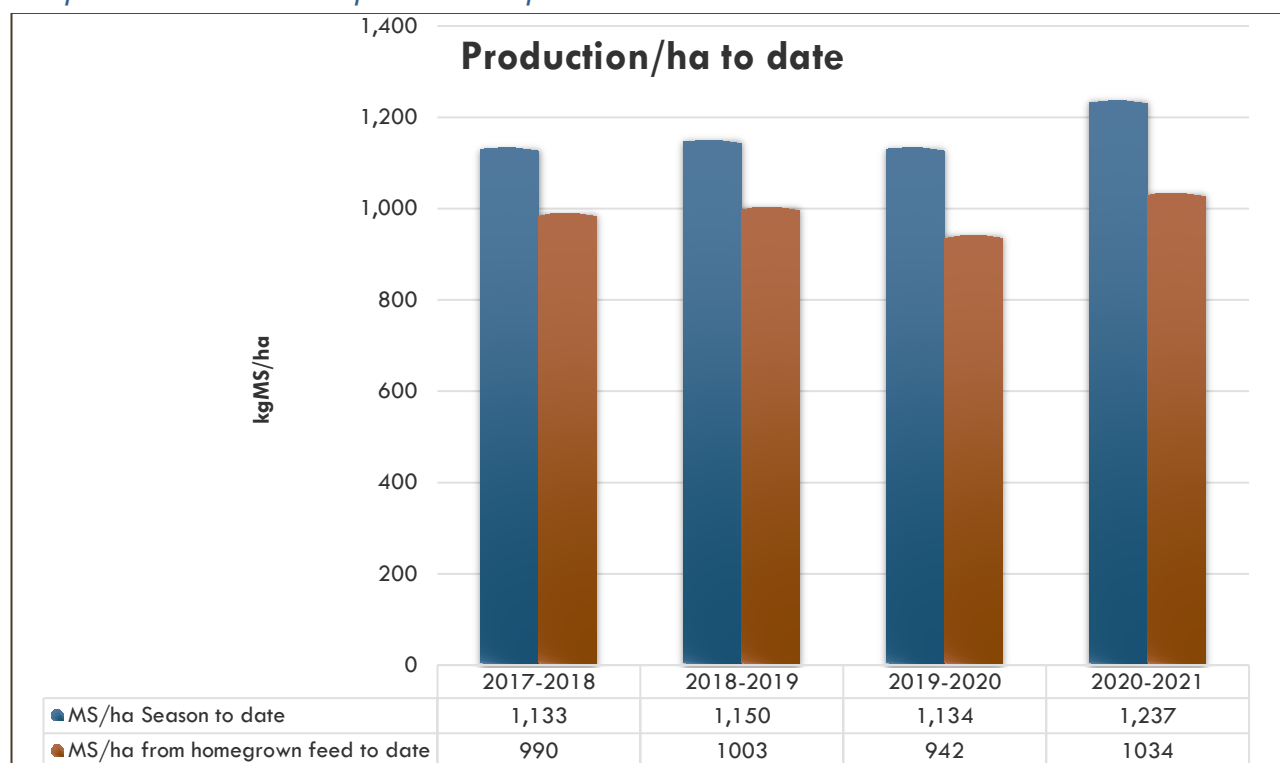
Graphic 1.17: Milk production per cow - monthly average



MS/ha from homegrown feed

Imported supplements enable us to grow and harvest more pasture and crops on farm. In winter and spring they are a tool to prevent overgrazing and pasture damage, and in summer they are used to maintain BCS and keep some cows in milk to utilise the autumn regrowth. We have produced more milk from homegrown feed by focusing on quality of pasture, crops and feed allocation management.

Graphic 1.18: Milksolids production per hectare



Feed conversion efficiency

While climatic conditions have reduced total feed supply over time we have increased the quality of feed and improved its utilisation to achieve greater feed efficiency year on year, from 13.9 kg DM eaten to produce 1 kg MS in 2015-16 to only 10.7 kg DM eaten in 2020-21. Increasing production per cow with a lower stocking rate and improved herd genetics have also assisted this.

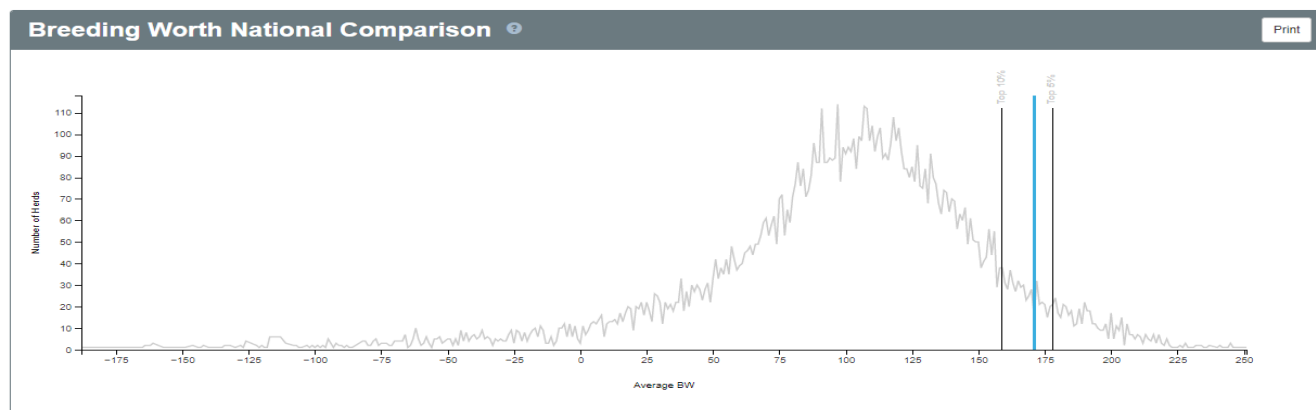
Graphic 1.19: Production across years

	Season to date 31/05/2021	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Stock	Milking Platform	157	146	148	147	147	144
	Peak cows	445	423	418	406	405	405
	Peak stocking rate	2.83	2.90	2.82	2.76	2.75	2.81
Production	Total kgMS Season to date to factory	168,169	178,295	168,169	169,359	167,184	178,125
	MS/cow Season to date	378	422	402	417	413	440
	MS/ha Season to date	1,071	1,221	1,133	1,150	1,134	1,237
	MS/ha from homegrown feed to date	841	987	990	1003	942	1034
Feed and Inputs	Average Pasture Cover 1 June	2,142	2,951	2,256	2,430	2,516	2,517
	Pasture growth rates total TDM/ha	15.9	15.1	17.4	15.7	13.4	14.7
	Actual pasture grown to graze and harvest as silage excl area sprayed out in crop	13.8	13.0	15.8	14.7	12.5	12.8
	Total pasture supply TDM/ha	13.8	14.0	15.8	14.7	12.5	12.8
	Yield of Crop grown per total farm /ha	1.0	1.5	0.8	0.8	0.6	1.0
	Winter homemade silage on hand fed	0.0	0.2	0.2	0.8	0.6	0.2
	Imported Supplements fed/ha	4.2	3.7	2.3	2.3	2.7	2.6
	Total Feed supply TDM/ha	19.0	19.3	19.1	18.6	16.4	16.6
	Homegrown grass eaten TDM/ha (grown this year)	10.8	10.4	11.4	10.2	9.2	9.8
	Homegrown silage grown and eaten this year	0.0	0.4	0.6	1.2	0.7	0.2
	Crop eaten per total farm/ha	0.9	1.2	0.7	0.7	0.5	0.9
	Homegrown feed EatenTDM/ha (grown this year)	11.7	11.9	12.6	12.1	10.4	10.9
	Silage harvested TDM/ha Season to date	0.0	0.6	1.1	1.6	1.0	0.8
	Total Homegrown feed Harvested TDM/ha	11.7	12.5	13.8	13.7	11.4	11.7
	Winter homemade silage on hand eaten	0.0	0.1	0.2	0.6	0.5	0.2
	Imported Supplements Eaten TDM/ha	3.2	2.9	1.9	1.9	2.2	2.2
	Total Feed eaten this year (includes only silage fed) TDM/ha	14.9	14.9	14.7	14.6	13.1	13.2
	% Feed eaten grown on farm	79%	81%	87%	87%	83%	84%
	Feed conversion Eff (kgDM/kgMS eaten)	13.9	12.2	12.9	12.7	11.5	10.7

Breeding Worth comparison

Our herd average BW of 171/55 and PW of 197/65 with 100% Ancestry means we are in approximately top 6-7% of herds nationally (as at 9/9/21).

Graphic 1.20: BW national comparison



Milk quality

We received Level 1 milk quality last season with 3 months meeting the criteria, and achieved all other areas of the co-operative difference.

Owl Farm received 3 Alerts, 3 Grades and 6 Demerit points for the season, compared to the 2019/20 season when we received 20 Alerts, 7 Grades and 8 Demerits. This demonstrates the continued focus on improved milk quality through effective teat spraying, early identification of infection, and an aggressive approach to culling repeat offenders prior to changing milking frequencies.

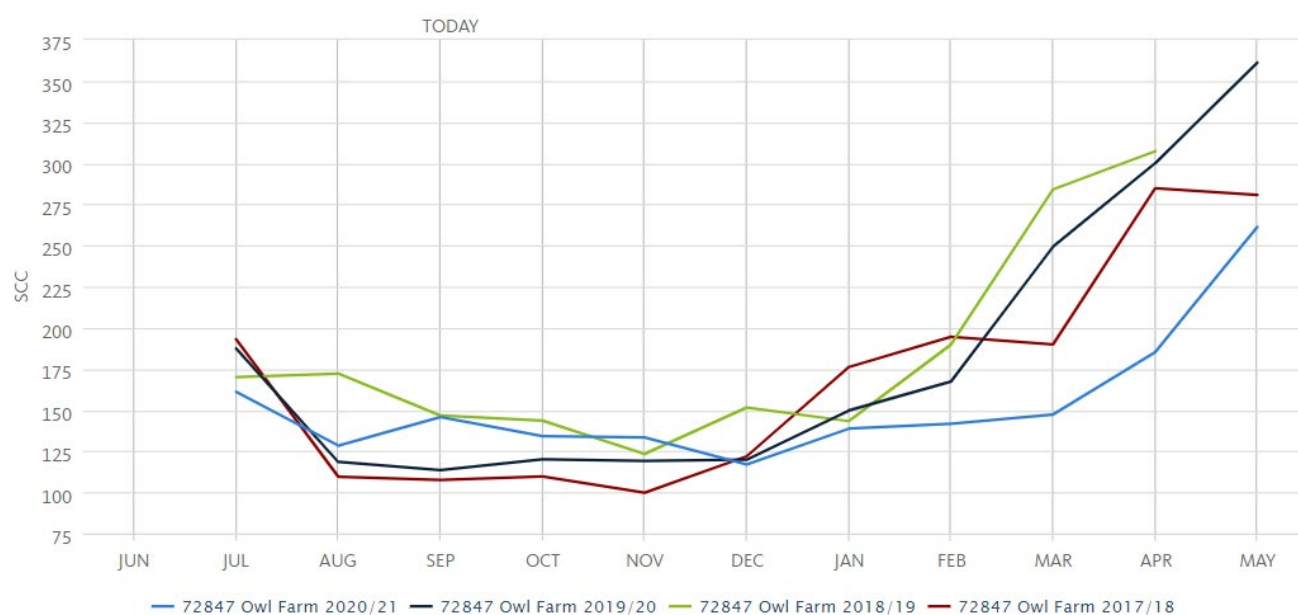
We have a goal of achieving Te Tihi with 90% of all milk achieving excellence quality in the 2021/22 season.

Somatic Cell Count (SCC)

Removal of cows with high SCC counts and repeat mastitis cases prior to transitioning to 3 n 2 milking after Christmas has reduced the SCC through the latter half of the season.

Graphic 1.21: monthly average SCC comparison between years

SCC for 1 June – 31 May



Fat Evaluation Index (FEI)

With strategic feed planning we were able to maintain FEI levels below the threshold with approximately 2-2.5 kg PK/cow/day being fed.

Graphic 1.22: FEI average this year compared to last year:

FEI Average : **2020/21** compared to **2019/20**

