



**Providing knowledge**  
St Peter's School/Lincoln University  
Demonstration Dairy Farm



ST PETER'S • CAMBRIDGE  
NEW ZEALAND



**Lincoln  
University**  
*Te Whare Wānaka o Aoraki*  
AOTEAROA • NEW ZEALAND

New Zealand's specialist land-based university

# Farm Focus Day

Wednesday, 2 March 2016

## 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



# HAZARD SUMMARY

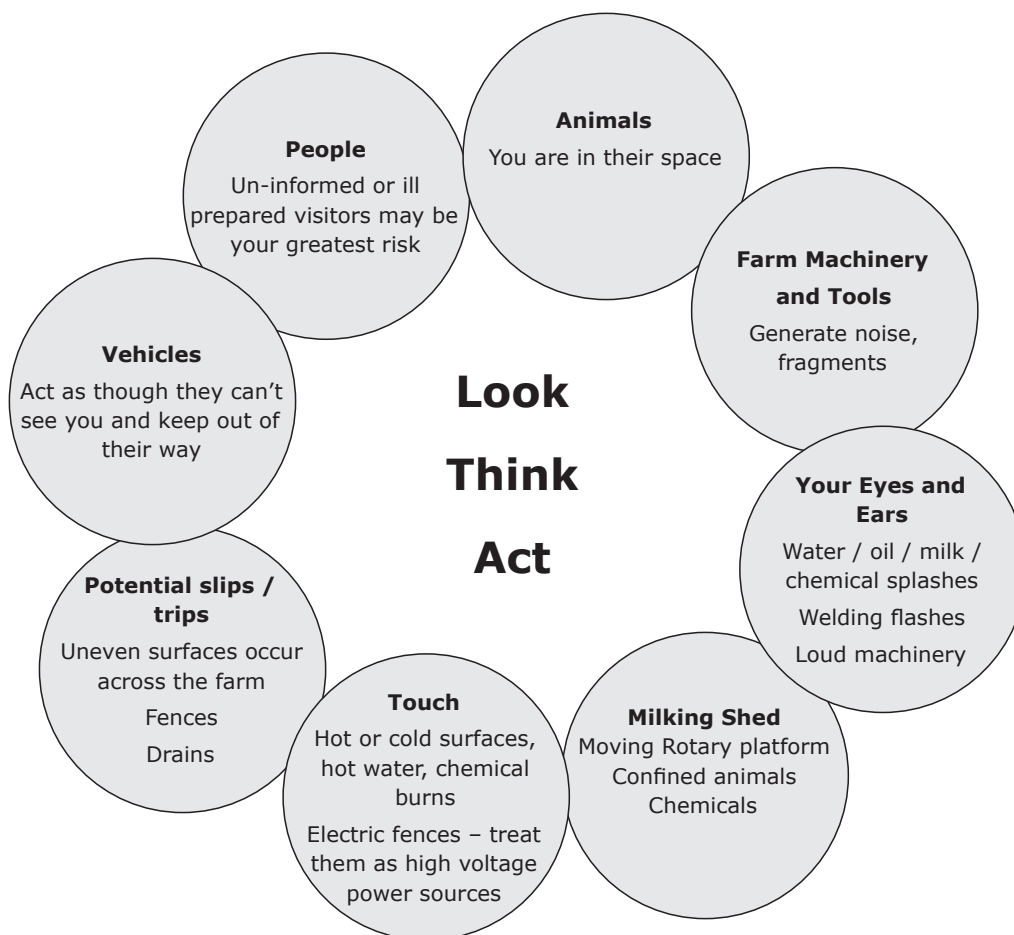
## Welcome to Owl Farm

Owl Farm is 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 providing access to visitors therefore all staff and visitors MUST watch for potential hazards and act with caution.

## Hazard Summary

The following diagram provides a reminder of the types of hazards present.



**ARE YOU TRAINED FOR WHAT  
YOU ARE ABOUT TO DO?**

**If not, STOP.**

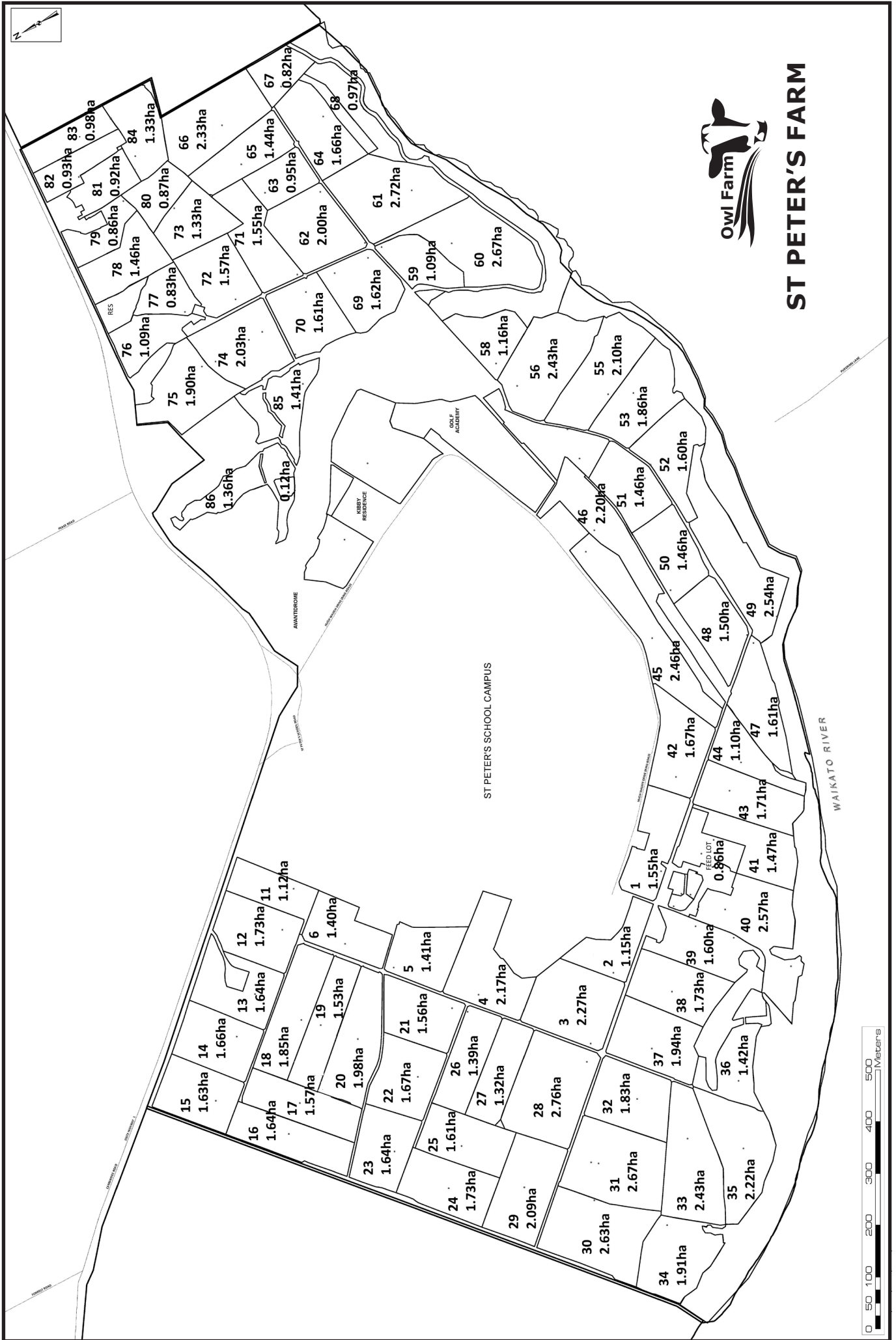
**If you are uncertain how you should act or proceed stop and contact the farm manager, other farm staff or your host.**

In being on Owl Farm you are acknowledging your receipt of this hazard summary. By doing so you also agree to be personally responsible for monitoring any potential hazards and agree to act conscientiously to protect yourself and any others who are also on-farm.



## **CONTENTS**

Hazard Summary	2
St Peter's Farm Maps	4
Owl Farm: St Peter's School Lincoln University Demonstration Farm	6
Owl Farm Snapshot	7
Owl Farm Report – Season to date	9
Health and Safety – Fegan & Co	17
Owl Farm Mating Review: How did it all pan out?	26
Owl Farm 2016/17 Season: What are the options?	34
Summer Cropping and Owl Farm's Older Pastures – PGGW Seeds	37







DISCLAIMER: This product has been created with the highest degree of quality and care possible. However, Unearthed Technologies, nor any of its contractors or suppliers can be held responsible for any errors or omissions. Property boundaries - sourced from LINZ - are indicative but not authoritative.



# OWL FARM

St Peter's School / Lincoln University Demonstration Dairy Farm

## Goal

To apply proven research, utilising good on farm practice and scientific monitoring for the farm to become an exemplar in dairy production, economic performance and environmental footprint.

## Strategic Objectives

To work in collaboration with the wider dairy industry and community to maximise sustainable profit embracing the whole farm system by

- Increasing productivity
- Achieving an acceptable farm environmental footprint
- Meeting or exceeding animal welfare targets
- Providing leadership to dairy farmers by demonstrating practices that can be achieved by progressive farmers
- Demonstrating career opportunities to students
- Provide educational opportunities for students

## Farm Development

The development of farming systems and demonstration activities on the farm will proceed in two stages

### Stage 1

*To establish credibility by addressing current issues and performance, whilst setting up the farm for future development (Years 1-3; 2014/15-2016/17).*

#### Specific Objectives During Stage 1:

- To establish Owl Farm to develop and demonstrate good practice in pasture based dairy farming systems and to transfer them to dairy farms
- To generate profit through tight control management with appropriate re-investment
- To appoint a Farm Demonstration Manager
- To delineate areas of farmland assigned to milking platform, dairy support and wintering
- To include the farm's full environmental footprint, land requirement and resource efficiency in system decision making and reporting
- To use good environmental management systems in the development and implementation of farm practices that achieve sustainable growth and profit and protect the wider environment
- To engage with Waikato Regional Council and Waikato River Authority staff to accelerate progress towards their goals relating to the environment and Waikato River
- To develop a communications plan (including photos of the journey to establish and develop Owl Farm)
- To implement optimal use of all nutrients on farm including effluent, fertilizer, and nutrients imported from supplements
- To implement nutrient recycling so that there is no significant contamination of water and that the farm meets all resource consents
- To show leadership in establishment of biodiversity management practices relevant to the Waikato
- To implement a staff training matrix
- To implement a Health & Safety plan
- To implement a time and motion study for staff with associated rosters
- To optimise pasture growth and pasture management so that cows consume as much metabolizable energy as practical from grazed pastures and supplements
- To achieve industry targets for mating performance with a 10 week mating period, including a 6 week in-calf rate of 78% and 10 week in-calf rate of greater than 90% (empty rate < 10%)
- To assist St Peter's School and Lincoln University to attract top quality domestic and international students into their organisation and into the New Zealand Primary Sector.

### Stage 2

*To develop, in conjunction with partners, higher risk strategies to lead sustainable profit (Years 4-6; 2017/18-2020-2021).*

*The farm system will be developed over years 1-3 and reflect the demonstration requirements of the industry that are relevant and appropriate at that time.*

#### Specific objectives during stage 2

- To push the boundaries of sustainable profit through increasing productivity without increasing the farm's environment footprint.



# OWL FARM SNAPSHOT

## Year One and Two Objectives:

- To maximise our current system and dramatically improve both our economic and environmental sustainability
- To get accurate baseline data so that we can benchmark the property for future management and comparison

## Area:

Milking 150 hectares effective  
Free hold land 137 hectares  
Lease land 22 hectares

- The area that has been available has varied from year to year depending mainly on availability of lease land from the McGrath block. Ultimately, the area will be set in concrete so that we have a fixed base and this will be the freehold area owned by St Peter's

## Soils:

- Vary dramatically from heavy clays to light sands. The topography is flat contour over three terraces
- The farm is long and narrow with 3.4 kilometres bordering the Waikato River

### Soil type:

Otorohanga deep clay

Pukehina deep sand

Kainui deep silt clay

Turangi deep sand

Rotokauri deep clay loam

Kaipaki deep peat

### Location:

SH1, river and centre north

North of farm

Behind Kahikatea Stand

Deer block

School grounds

Gully below the Avantidrome

## Fertility:

pH average 6.0  
Phosphate 53  
Potassium 9  
Sulphur 15  
Magnesium 122

## Nitrogen:

- 150kgN/ha is being budgeted for the coming season

## Production:

	2011/12	2012/13	2013/14	2014/15
Production kgMS	181,625	153,049	158,207	201,000
Cows Milked	465	453	446	453
Calves reared	174	171	158	150
Heifers grazed	100	102	112	104
Production/ha	1,094	945	993	1,256

## NOTES

---

---

---

---

**Stock:**

BW 147/48

PW 196/69

- Historically there has been a lot of AB mating using DNA semen and mating all the Yearlings to AB with herd now in the top 3% in NZ
- The objective has been to rear as many heifer replacement animals as possible and sell surplus (usually February)
- There have been six weeks AB followed by a further ten weeks use of the bulls

**Calving Date:** 01 July 2016

**Cowshed:**

- 36 bale rotary shed with cup removers, built in 1970 and the plant is Waikato
- Need to run two herds as yard has only capacity to hold 400 cows

**Effluent:**

- Effluent holding pond used when conditions don't suit application
- Otherwise effluent applied directly when suitable over 36 hectares using a cobra travelling rain-gun

**Staff:**

Farm Manager, Assistant Farm Manager and Farm Assistant (3 FTE)

**Cropping:**

- 14 ha of chicory and potentially 5ha of maize to come onto the milking platform
- This will work in with a planned pasture regeneration plan given little cultivation has occurred on farm over the past 10 years

NOTES

---

---

---

---

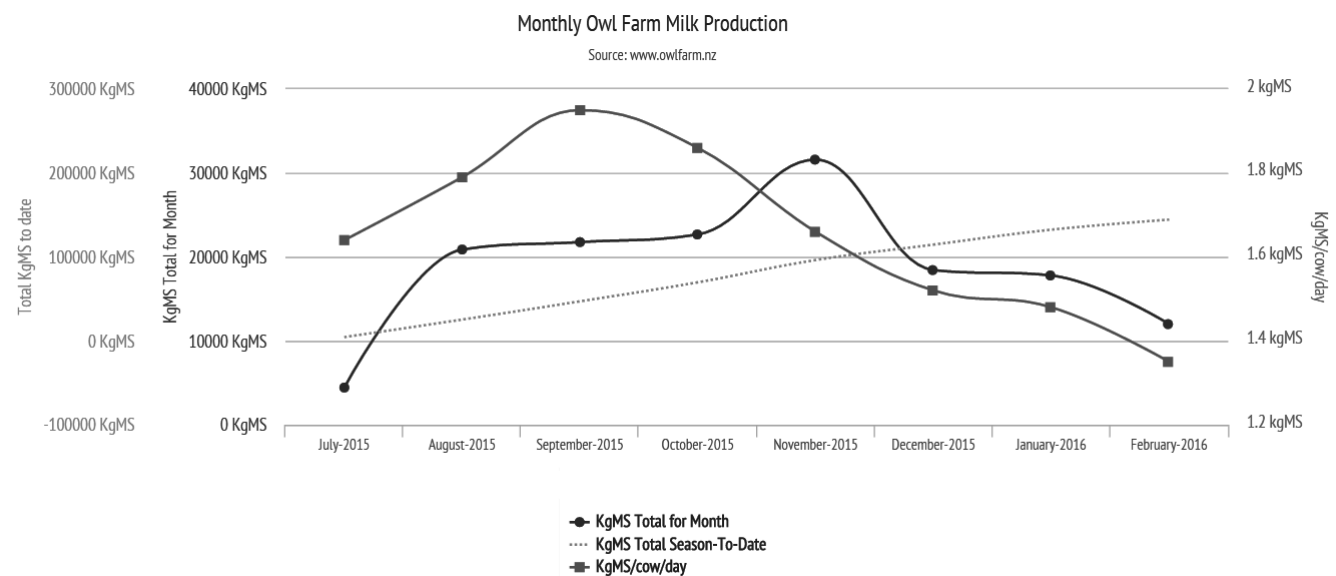


# OWL FARM REPORT – SEASON TO DATE

NB: All information below can be found on our new and interactive website [www.owlfarm.nz](http://www.owlfarm.nz)

## Milk Production

- As expected milk production has continued to decrease throughout the season.
  - Season to date 8.8% down
  - Month to date (February) 15.1% down (10% less cows so only essentially 5% down per cow)
- 30 cows were culled prior to Christmas as a result of losing 10ha of lease land, this means we maintain a consistent stocking rate and farm system.
- Continued climatic influences throughout the season have been responsible for lower than anticipated growth rates which has had an impact on production and supplements used.
- The most significant factor influencing production traces back to not having achieved and held our desired peak in spring. We hit an average of 2.1kgMS/cow but held this for only one week when ideally we would have hit 2.3/2.4kgMS/cow and held this for a month, even with the same rate of decline the herd would have still been producing significantly more than present.
- Initial production targets for the season were 210,000kgMS based off the year ending production for 2014/15 of 201,000kgMS. We have realigned our milk production targets to a more realistic 185,000kgMS, however that still requires the herd to hold the current production for the remainder of the milking season.



## Month to date (23 Feb)

Period	Litres	KgMS	KgMS %	Fat (Kgs)	Protein (Kgs)	Protein/Fat ratio	SCC
Feb 2016	129,278	12,503.6	9.67	7,501.7	5,001.9	0.67	112
Feb 2015	147,949	14,733.8	9.96	8,980.9	5,752.9	0.64	124
% Variance	↓ 12.6%	↓ 15.1%	↓ 2.9%	↓ 16.5%	↓ 13.1%	↑ 4.1%	↓ 10.2%

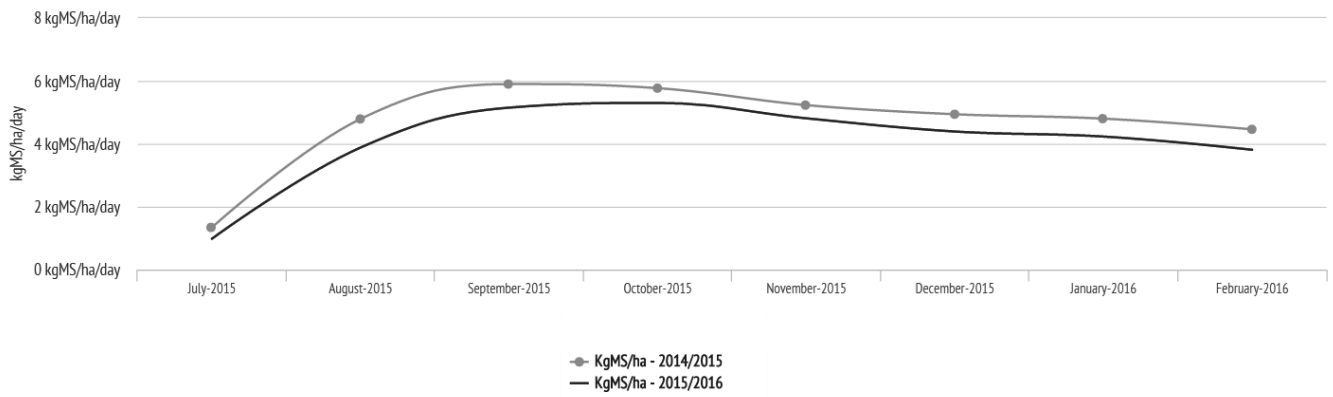
## Season to date

Period	Litres	KgMS	KgMS %	Fat (Kgs)	Protein (Kgs)	Protein/Fat ratio	SCC
This Season	1,598,226	148,592.1	9.30	84,741.9	63,850.2	0.75	100
Last Season	1,751,698	162,838.1	9.30	94,278.8	68,559.3	0.73	100
% Variance	↓ 8.8%	↓ 8.8%	↑ 0%	↓ 10.1%	↓ 6.9%	↑ 3.6%	0%



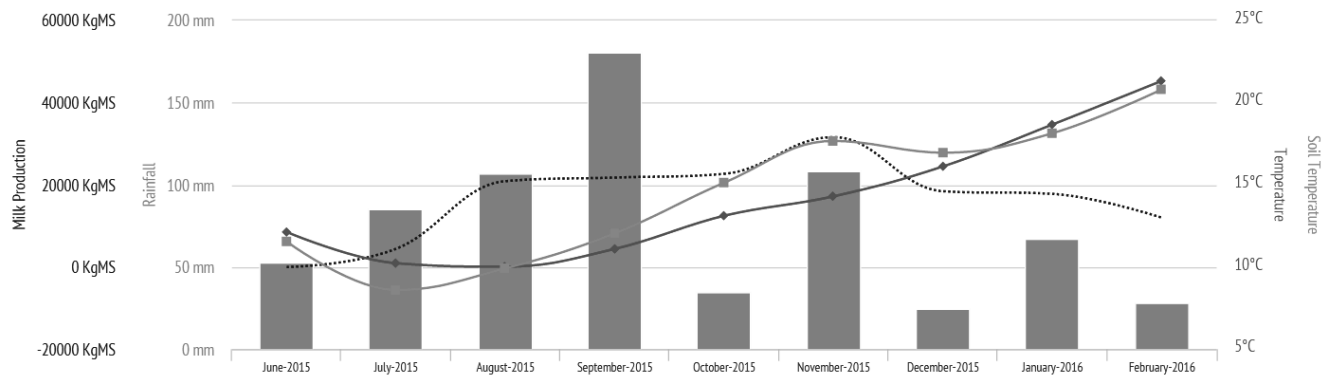
### Monthly Owl Farm Milk Production - per ha

Source: www.owlfarm.nz



### Owl Farm Milk Production vs Climate

Source: www.owlfarm.nz

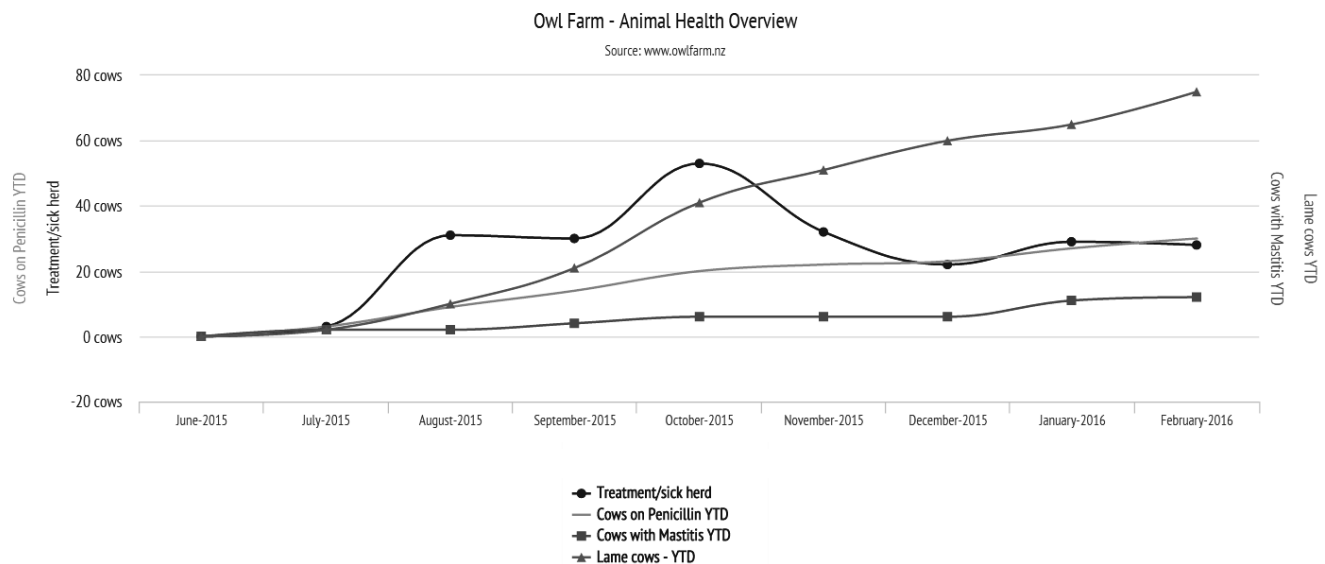


2016 Milk Production - Week ending	19/01	26/01	3/02	9/02	16/02	23/02	Variance
Cow's in milk	428	428	428	428	412	411	-1
Springer herd/dry cows	0	0	0	0	0	0	-
Number of cows in big herd	265	265	263	260	250	250	-
Number of cows in small herd	157	157	157	158	152	157	+5
Number of cows in colostrum herd	0	0	0	0	0	0	-
Number of Cows in the Treatment/Sick herd	6	6	8	10	10	4	-6
KgMS/cow/day (cows in the vat only)	1.51	1.43	1.32	1.40	1.33	1.35	+0.02
KgMS/cow YTD	299.43	309.44	318.68	328.48	337.79	347.24	+9.45
Milk production for week ending (kgMS)	4550.00	4284.70	3958.30	4190.20	3843.00	3888.20	+45.2
Total milk production - YTD (kgMS)	128190.40	132475.10	136433.40	140623.60	144466.60	148354.80	+3888.2
Milk production per ha (kgMS/ha/day)	4.33	4.08	3.77	3.99	3.66	3.70	+0.04
Total milk production per ha - YTD (kgMS/ha/YTD)	854.38	882.94	909.33	937.26	962.88	988.78	+25.9
Protein/Fat ratio	0.71	0.74	0.68	0.68	0.64	0.66	+0.02
Bulk Milk SCC (SCC x 1000)	100	89	103	126	96	110	+14

### NOTES

## Animal Health

- Despite low production the cows have been gaining condition over the past couple of months, although the warmer temperature is certainly starting to have an impact now. Across the herd there is a range from 4-5.5BCS with an average condition of 4.34. Most pleasing is the heifers who have improved significantly over the past few months following a rough introduction to dairy. The average BCS of the heifers is 4.35.
- Our R1s and R2s which are at an off farm grazer are also doing exceptionally well and hopefully this investment will be rewarded once the R2s return next season. Currently 38% of R2s are above target weight, 46% are ideal with 15% underweight. Particularly pleasing is that 60% of these animals were underweight when the grazer received them last season.
- More attention on feeding 2015 R1s on farm prior to leaving to the graziers has also put this group in good stead with 80% of our 2015 born calves above target, 13% ideal and only 6% underweight.
- In calf rates are particularly pleasing given the early season struggles we encountered. We had a 74-80% 6 week in-calf rate, this isn't a complete number due to culling 30 cows prior to pregnancy testing, if all were in calf we would have achieved 80% if not 74%, the reality probably being somewhere in between. We also achieved a 6% empty rate of all the cows that were tested, again the 30 cows missing may have slightly skewed this result.
- Still a few lame cows being identified but this has dropped markedly from spring. Generally lameness is the result of a combination of entrance/exit races, yard management and exiting the rotary where there are 5 90o turns required for the cows to exit the shed and yard area. Plans are in place to remove trees surrounding tracks and to improve camber and drainage channels from the farm track, this will hopefully eliminate the small stones currently evident.
- Mastitis control has been great throughout the season with very little identified and SCC has generally been under 100 throughout the season.



2016 Animal Health - Week ending	19/01	26/01	03/02	9/02	16/02	23/02	Variance
BCS (average whole herd)	4.25	4.34	4.34	4.34	4.34	4.34	-
BCS (average heifers)	4.30	4.35	4.35	4.35	4.35	4.35	-
Lame cows - new cases	2	1	3	3	4	2	-2
Lame cows - YTD	64	65	68	71	75	77	+2
Mastitis - new cases	2	1	0	1	0	1	+1
Mastitis - YTD	10	11	11	12	12	13	+1
Number of cows on penicillin	2	1	1	1	1	1	-
Number of cows on penicillin YTD	26	27	28	29	30	31	+1
Culls - new cases	0	0	0	0	16	0	-16
Culls - YTD	44	44	44	44	60	60	-
Deaths - new cases	0	0	0	0	0	1	+1
Deaths - YTD	6	6	6	6	6	7	+1

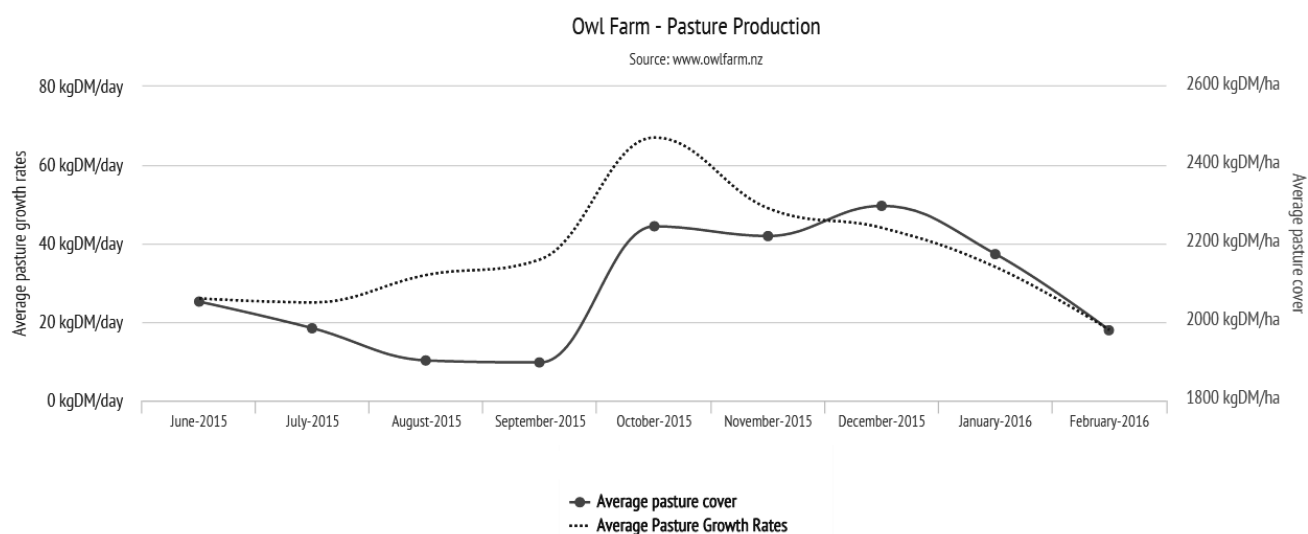
## NOTES

## Pasture Production

- During early summer the average growth rates (AGR) and subsequent average pasture covers (APC) were better than anticipated due to the post-Christmas rain.
  - November - APC = 2219kgDM/ha with AGR = 49kgDM/ha
  - December - APC = 2296kgDM/ha with AGR = 44kgDM/ha
  - January - APC = 2173kgDM/ha with AGR = 34kgDM/ha
  - February - APC = 1979kgDM/ha with AGR = 18kgDM/ha
- One aspect worth mentioning regarding pasture covers is the presence of seed head and weed burden which has been identified over the past couple of months. Our tow behind pasture meter measures covers based on height rather than density, in some situations this will have over inflated the actual covers of some paddocks. Although it still provides a great indicator the eyeometer still needs to be used when planning grazing and supplementary inputs.
- Topping has been undertaken throughout summer in an attempt to manage quality through providing an even residual in which the pasture can regrow and eliminating the stalk, two complete rounds of topping had been undertaken while more recent topping has been weather dependant prior to rain. A combination of pre and post grazing topping has been undertaken.
- Temperature and lack of moisture is currently the limiting factor influencing poor growth.
- Recent pasture condition scoring has identified serious weed burden over most of the farm as well as presence of pests and issues with persistence. We are currently finalising a programme of work which will likely involve spraying and undersowing. Yes this will represent a significant financial contribution but we need to invest in our pastures to enable our vision and to achieve pasture production and subsequent production targets.
- Prior to Christmas we undertook re-modelling of our feed budget based on predicted growth rates anticipated by El Nino, certainly January was much wetter than expected and average growth rates of 35kgDM/ha/day were observed. However February largely played out as modelled. March and April were always expected to have the biggest impact – so fingers crossed we are wrong.

	Dec	Jan	Feb	Mar	Apr	May
Previously modelled growth rates	55	40	20	30	35	30
Anticipated El Nino forecast growth rates	40	30	20	10	20	35

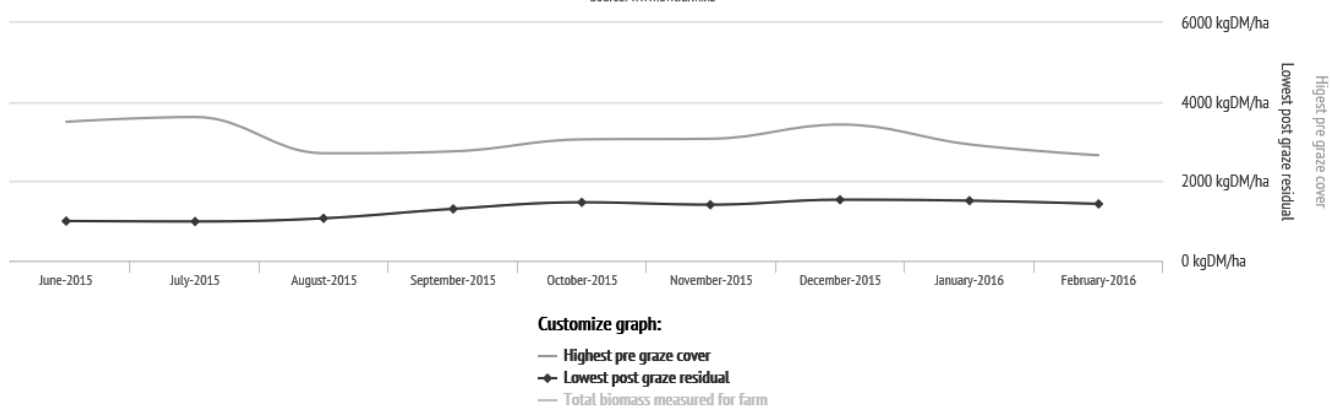
- Feed offered via pasture has been around 15kgDM/cow/day through Dec, 13kgDM/cow/day during January and is now sitting at approximately 8kgDM/cow/day.
- We have been on a 30 day for the majority of summer only just pushing out towards a 40 day round at present. The basis for this is to allow the pasture more time recover and regrow as we try and build some feed out in front of us. The wedge below illustrates the hole which is currently being filled with supplement in the form of chicory, PKE and maize.
- Summer cropping has been undertaken in the form of chicory, this has been feed on a 21 day round with the cows getting approximately 2.5kgDM/cow/day.
- Black beetle identified around a number of paddocks throughout the farm also.
- Next season's feed budget is currently under development to understand what we are likely to get through pasture and what additional supplement we need to buy in.





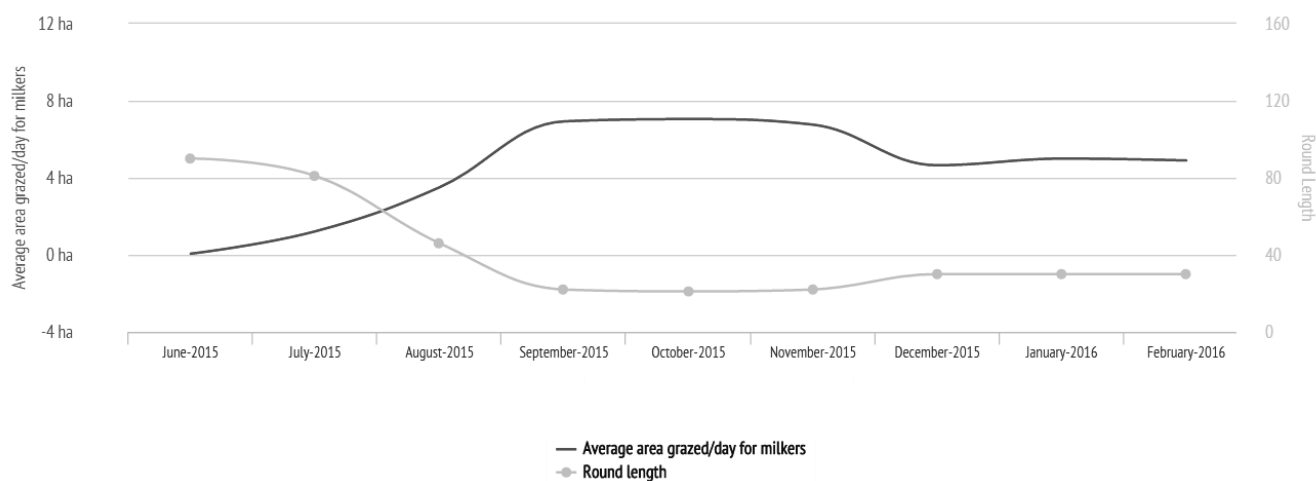
### Owl Farm - Low/High Graze

Source: www.owlfarm.nz



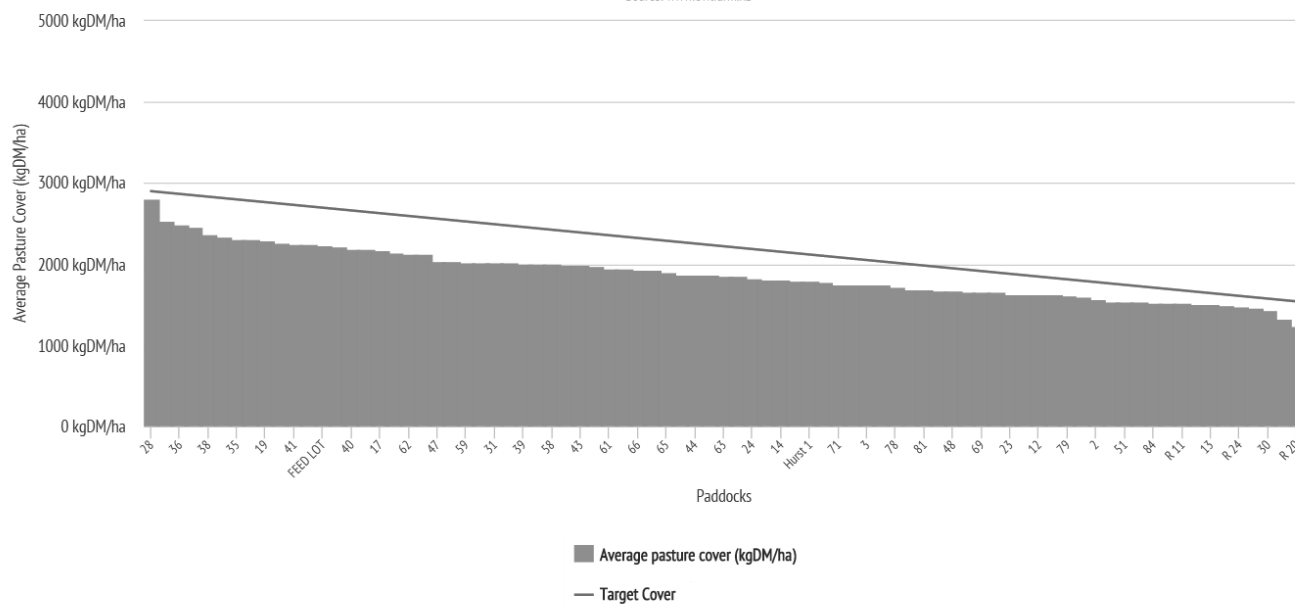
### Owl Farm - Pasture Production

Source: www.owlfarm.nz



### Owl Farm - Feed Wedge for 16/02/2016

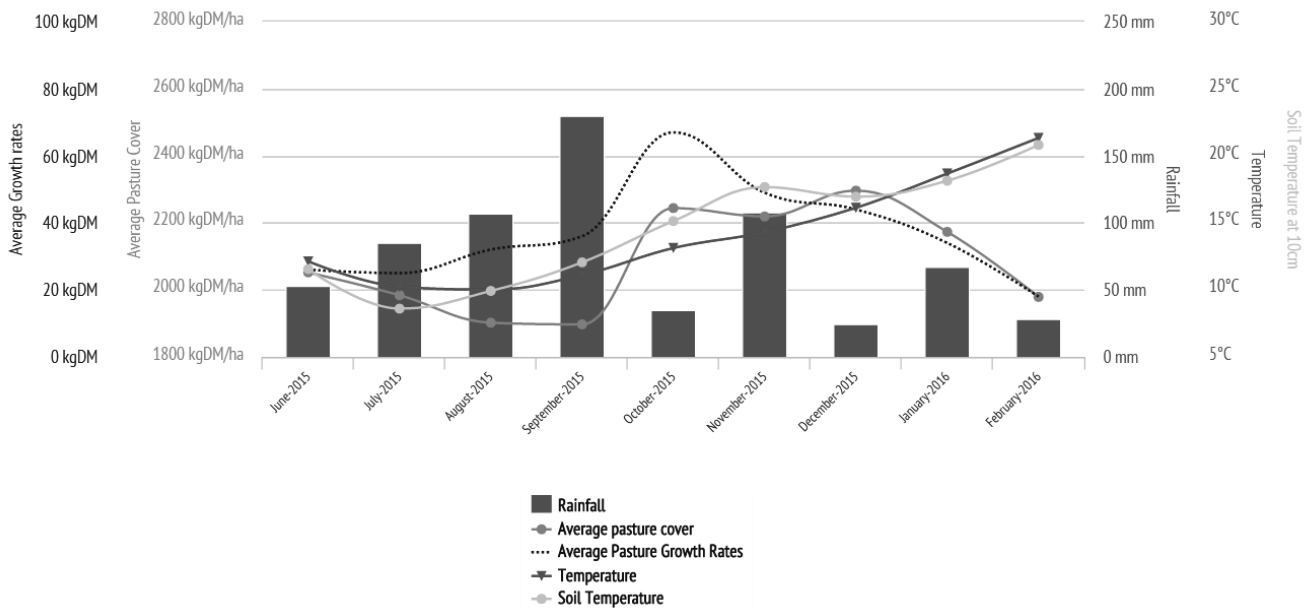
Source: www.owlfarm.nz



### NOTES

## Owl Farm - Climate vs Pasture Growth

Source: www.owlfarm.nz



2016 Pasture production - Week ending	12/01	19/01	26/01	3/02	9/02	16/02	Variance
Average pasture cover (kgDM/ha)	2267	2184	2121	2015	2040	1883	<b>-157</b>
Average pasture growth rates (kgDM/day)	57	24	26	12	30	14	<b>-16</b>
Lowest post graze residual (kgDM/ha)	1535	1585	1539	1548	1510	1244	<b>-266</b>
Highest pre graze cover (kgDM/ha)	3145	3122	2731	2577	2589	2810	<b>-221</b>
Average area grazed/day for milkers (ha)	5.00	5.00	5.00	5.00	5.00	4.70	<b>-0.3</b>
Round length	30	30	30	30	30	32	<b>+2</b>
Total Biomass Measured (kgDM)	322289	311276	301279	283870	287516	268305	<b>-19211</b>

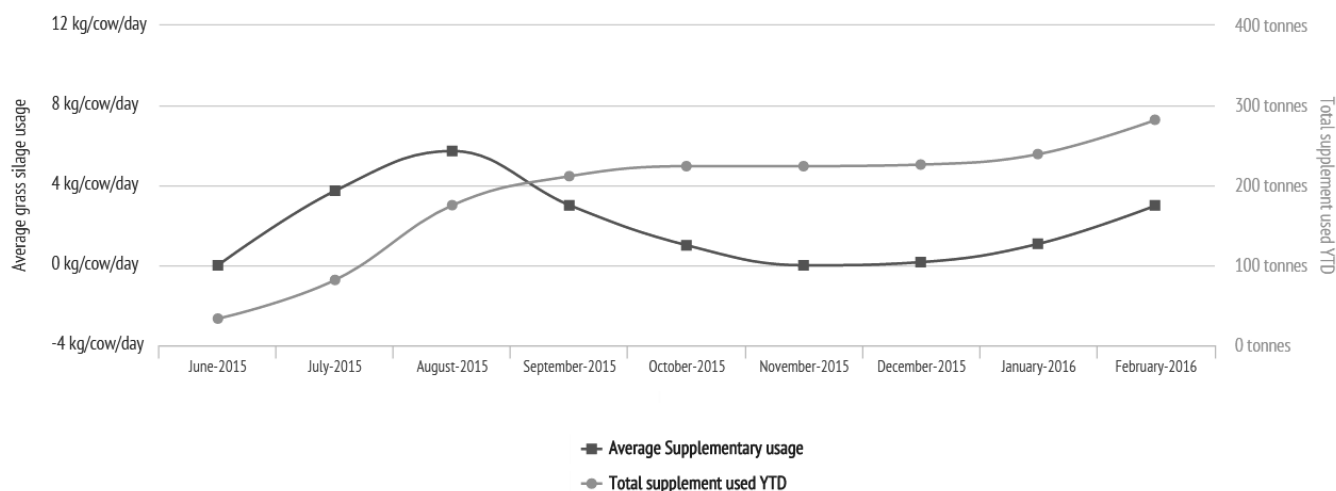
### Supplementary Use

- After reviewing our summer feed budget we quickly identified a potential and significant feed deficit if the El Nino predictions for pasture growth came to fruition.
- Modelling was undertaken prior to Christmas, and prior to the pay-out dropping, which showed it still makes economic sense at that point to invest in further feed to extend the lactation season rather than look at early dry off or OAD. With that the Farm Management Committee agreed to purchase additional maize and PKE.
- We purchased 165 tonnes of ensiled maize and contracted an additional 85 tonnes of PKE to supplement the 300 tonne previously contracted for the 15/16 season. Due to a colder/wetter spring than anticipated much more of our 300t PKE contract had been used than budgeted for.
- The additional ensiled maize was brought in to supplement the PKE, chicory and pasture prior to our own maize being harvested in March. We had anticipated supplementing in January but fortunately rain meant our growth rates remained solid for this month. We have however started feeding maize over the last 3 weeks, starting on 1.5kgDM/cow/day before transitioning to 4kgDM/cow/day which they are still receiving. We invested in a side feed wagon which allows better utilisation of feed through the ability to feed up against fence line. At a cost of \$6000 to swap our existing feed wagon out this investment will have paid for itself before the end of summer based on an estimated 15-20% wastage that would have otherwise been the case.
- We have 5ha of maize being grown off-farm which we anticipate will yield 20 tonnes per ha.
- We have also contracted an additional 100t of maize post-harvest this year, which will go into feed inventory for next summer. As a Farm Management Committee we came to the conclusion that we didn't carry enough contingency feed into summer for a farm system such as ours. In that sense we have had to invest in maize twice this season to cover both this summer and next. Next season only one additional amount of maize will need to be brought. Next spring will dictate what this amount will need to be based on, and what we can shut up for silage.
- PKE is currently being feed at 3kgDM/cow/day and is likely to remain at this level for the remainder of the season. Levels of feed were again much lower than anticipated in January at an estimated 1kgDM/cow/day.
- Fortunately we have managed to get more silage late in the season from surrounding land which is leased off neighbours but not part of the milking platform. We have an estimated additional 70 tonnes of grass silage on hand now as a result.

### NOTES

## Owl Farm - Supplementary Use

Source: www.owlfarm.nz



Supplementary Use - Week ending	19/01/2016	26/01/2016	3/02/2016	9/02/2016	16/02/2016	23/02/2016	Variance
Average PKE (kg/cow/day)	1.40	1.30	3.00	3.00	3.00	3.00	-
PKE YTD	211.25	215.15	224.15	233.15	241.93	250.58	<b>+8.65</b>
Average maize (kg/cow/day)	0.00	0.00	0.00	1.50	4.00	4.00	-
Maize YTD	30.94	30.94	30.94	35.44	47.14	58.65	<b>+11.51</b>
Average silage (kg/cow/day)	0.00	0.00	0.00	0.00	0.00	0.00	-
Silage usage YTD	4.80	4.80	4.80	4.80	4.80	4.80	-
Silage Harvested Tonnes (DM)	0.00	0.00	0.00	0.00	0.00	0.00	-
Total Supplement Feed (per cow kgDM)	10.00	9.10	21.00	31.50	49.00	49.00	-
Total Supplement YTD (Tonnes)	235.25	239.15	248.15	261.60	282.05	302.25	<b>+20.2</b>

### Nitrogen and Fertiliser

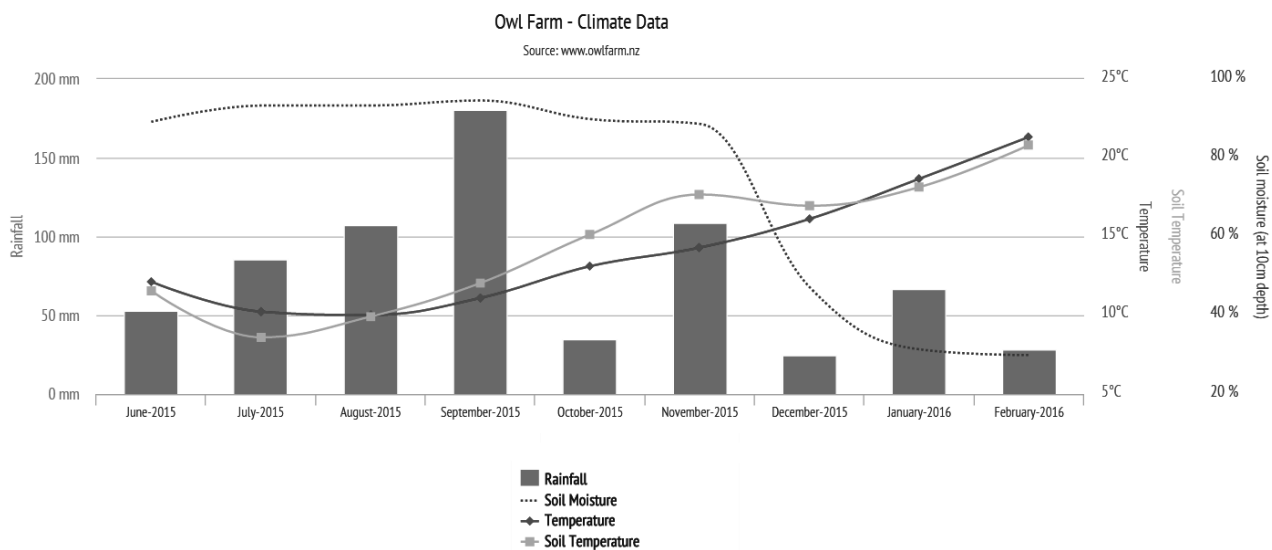
- Haven't applied any nitrogen over the past two months, except for two 60kg side dressings of Sustain to the chicory crops post grazing.
- Our current nitrogen allowance is sitting at an average of 99kgN/ha. We initially said our maximum for the season was going to be 150kgN/ha, which, based on current growth opportunities, we will most likely need to utilise in the next couple of months once we get some rain, as we need to start building the feed wedge in front of us come winter.

Nitrogen and Gibberellic Acid - Week ending	19/01/2016	26/01/2016	3/02/2016	9/02/2016	16/02/2016	23/02/2016	Variance
kgN applied per ha/% of farm	0	0	0	0	0	0	-
kgN applied YTD (average kgN/ha)	99.00	99.00	99.00	99.00	99.00	99.00	-
GA applied (20gm/ha)	0.00	0.00	0.00	0.00	0.00	0.00	-
Effluent applied							
Effluent Applied y/n	Y	Y	Y	Y	Y	Y	-
Paddocks effluent applied	21	26	27	28	25	24	<b>-1</b>
Application Depth (mm)	6.50	6.50	6.50	6.50	6.50	6.50	-

### NOTES

## Climate

- Much has been made of the climatic conditions this season. Obviously experienced an uncharacteristically cold and wet start to the season which put us on the back foot from the outset. Oct-Jan offered some good growing opportunities but now we are drying out fast and growth rates are falling as a result.
- Rain between now and the beginning of next season will have a huge bearing on how we finish up this season and how well prepared we are for next.



<b>2016 Climate - Week ending</b>	<b>19/01</b>	<b>26/01</b>	<b>3/02</b>	<b>9/02</b>	<b>16/02</b>	<b>23/02</b>	<b>Variance</b>
Temperature (ave. °C)	19.03	20.14	21.60	21.36	21.03	19.62	<b>-1.41</b>
Rainfall	5.80	20.80	27.00	1.00	0.20	37.20	<b>+37</b>
Rainfall Season-to-Date	639.40	660.20	687.20	688.20	688.40	725.60	<b>+37.2</b>
Soil temperature (ave. °C at 10cm depth)	18.05	19.14	21.60	20.52	20.32	19.79	<b>-.53</b>
Soil Moisture(% at 10cm depth)	31.50	31.40	30.14	30.16	29.36	29.60	<b>+.24</b>

## NOTES

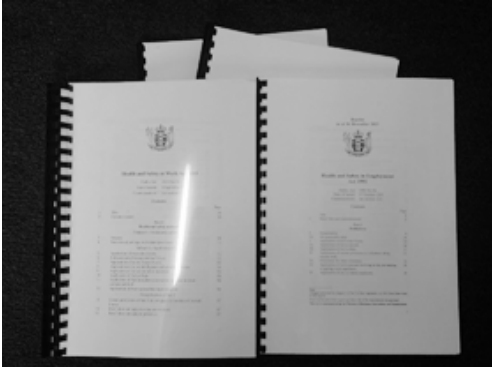


# HEALTH AND SAFETY - FEGAN & CO

## Legislative Framework

Officers and managers need to understand the legislative framework and the hierarchy of documents to guide them on what they must do, versus where more discretion lies. You often hear that you cannot do things due to the Health and Safety Act, but the Act itself has very little prescriptive requirements. Almost all key parts of the Act refer to, 'All practicable steps' or for the new legislation, 'Reasonably practicable'.

When deciding what is practicable, and reading material to obtain the state of knowledge required to effectively manage health and safety, you need to know the weight or place in the hierarchy that various documents have.



### Legislation

Must do! Main Acts are:

- Health and Safety in Employment Act 1992
- Health and Safety at Work Act 2015

Many others affect health and safety, on Farms including:

- Hazardous Substances and New Organisms Act 1996
- Smoke Free Environments Act 1990
- Fire Service Act 1975
- Trespass Act 1980
- Biosecurity Act 1993
- Animal Welfare Act 1999



### Regulations

Must do! Main Regulations are:

- Health and Safety in Employment;
  - General workplace regulations 1995
  - Asbestos Regulations
  - Adventure Activity Regulations
  - Prescribed Matters Regulations
  - Major hazard facilities
- Fire Service Regulations
- Hazardous Substances and New Organisms;
  - Control regulations class 1-5
  - Control Regulations class 6-9
  - Qualifications
  - Track Substance

**Note:** Many Regulations are being reviewed and reissued or created e.g. General Risk and Workplace Regulations (including aspects of hazardous substance management) and Worker Engagement, Participation, and Representation Regulations.



### Approved Codes of Practice and NZ Standards

Will be used as what is, 'Reasonably practicable' in evidence by WorkSafe. The only defence is, what you were doing was the equivalent or better than the Code of Practice requirements. NZ standards must be met if one applies. There are numerous NZ standards applicable to fire safety equipment and systems, Personal Protective Equipment design and manufacturing etc.

It's not law, but it might as well be! Full list of ACOP's available on WorkSafe's website: <http://www.business.govt.nz/worksafe/information-guidance/approved-codes-of-practice-acops>

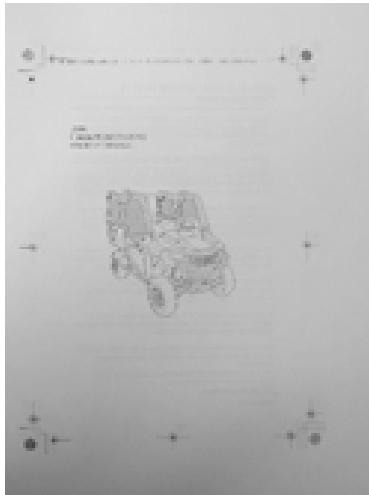
## NOTES



### Guidelines

Will be used as what is, "Reasonably practicable" in evidence by WorkSafe. PCBU's / organisations have more room to argue that the guideline was not practicable for them, however the guidelines are taken as being part of the current state of knowledge for managing a hazard or risk. You need to take the guidelines into consideration. If you were to not follow them, you need to have sound reasons not to and ideally record why you're not.

Full list available on WorkSafe's website: <http://www.business.govt.nz/worksafe/information-guidance/guidance-by-industry>



### Manufacturer's Instructions

Will be used as what is, "Reasonably practicable" in evidence by WorkSafe, PCBU's / organisations have room to argue that the instruction was not practicable for them, however the instructions are taken as being part of the current state of knowledge for managing a hazard or risk, especially for machine maintenance. You need to take manufacturers Instructions into consideration and if you were to not follow them, you need to have sound reasons not to.

Many instructions are held on-line and often suppliers have instructional videos on U-tube.

NOTES

---



---





---



---

### Example hazard control for Owl Farm – work in progress

The full hazard control details are mainly for new staff or contractors unfamiliar with a hazard, and to ensure all aspects have been considered. In practice they would not be referred to often, instead Owl Farm intends using prompt cards for reminders at staff meetings or for new staff still getting used to things like the pre-start check requirements. Initially the review frequency is quite short, once the rules/requirements settle down, we would anticipate these hazard controls will only be reviewed every couple of years. St Peter's also intends supplementing the written material with videos or more photos showing the correct PPE being worn, how to do the pre-start check etc. as staff will find these more interesting than a written document.

Location or task	<b>Honda Pioneer SXS 700 Side by side</b>				ID number	
Hazard Picture		PPE required		Helmet, safety glasses, enclosed footwear 		
Last review	12/02/16	Review frequency	6 months	Next Review		12/08/16
GPS Coordinates (if applicable)	North			East		
Risk assessment with no controls	Extreme	Risk Re-assessment with controls implemented				Medium
Hazard/risk		Controls				
Steep terrain		Areas this vehicle is not to be driven are marked on the farm map				
		Areas that change seasonally are marked on the farm map and discussed as part of weekly meeting, or as daily tasks are allocated. Sudden changes will be noted on farm entrance board				
Untrained operators		No one to operate unless signed off as competent or under direct supervision of someone who is competent  Detailed training will include all vehicle warning labels and being familiar with the safe driving techniques				
Under age or under sized drivers and occupants, lack of ability to brace occupants or for seatbelts to retain person within the vehicle		Drivers need to be at least 16 years of age and able to reach the pedal controls in the seated and seat belted position  Seatbelts must be worn when driving over 30km/hr  Occupants only allowed to be carried if wearing a seatbelt. i.e. maximum capacity of two persons (including driver and no passengers on rear tray)				
Arms or legs exiting the vehicle during a roll over		Secure doors and side nets at all times				
Vehicle instability caused by overloading or load movement		Maximum tray load capacity of 450kg's, always secure the load from shifting during transport and always load as far forward and as centred as possible  Maximum tow capacity, including the trailer or object being towed is 680kgs. Operators can tow two feed trailers which will exceed the maximum weight, but only on main race and not past paddock 54				
Mechanical failure		Each driver to conduct a pre-start check the first time they drive the vehicle each day, visual check on all other occasions. Have external maintenance conducted every 6 months by qualified mechanic				

NOTES

## Example prompt card

The prompt cards are at the very early stage of development and will have graphics experts tidy them up and then create a template to use for other hazards, e.g. chainsaw use, use of spray unit with various chemical sprays. They are intended to be A5 size plastic double-sided cards, hung up where equipment is stored or put on the wall in the plant or beside machinery.

### Front side



# HEALTH & SAFETY CHECK

## SIDE-BY-SIDE

- ✓ Wear helmet and covered footwear
- ✓ Wear seatbelt, except at gates or using xyz
- ✓ Tray capacity: 450kg
- ✓ Tow capacity: 648kg
- ✓ Farm speed limit 30km / hour
- ✓ Check farm map daily for areas that can be driven, hazards in paddocks and other updates

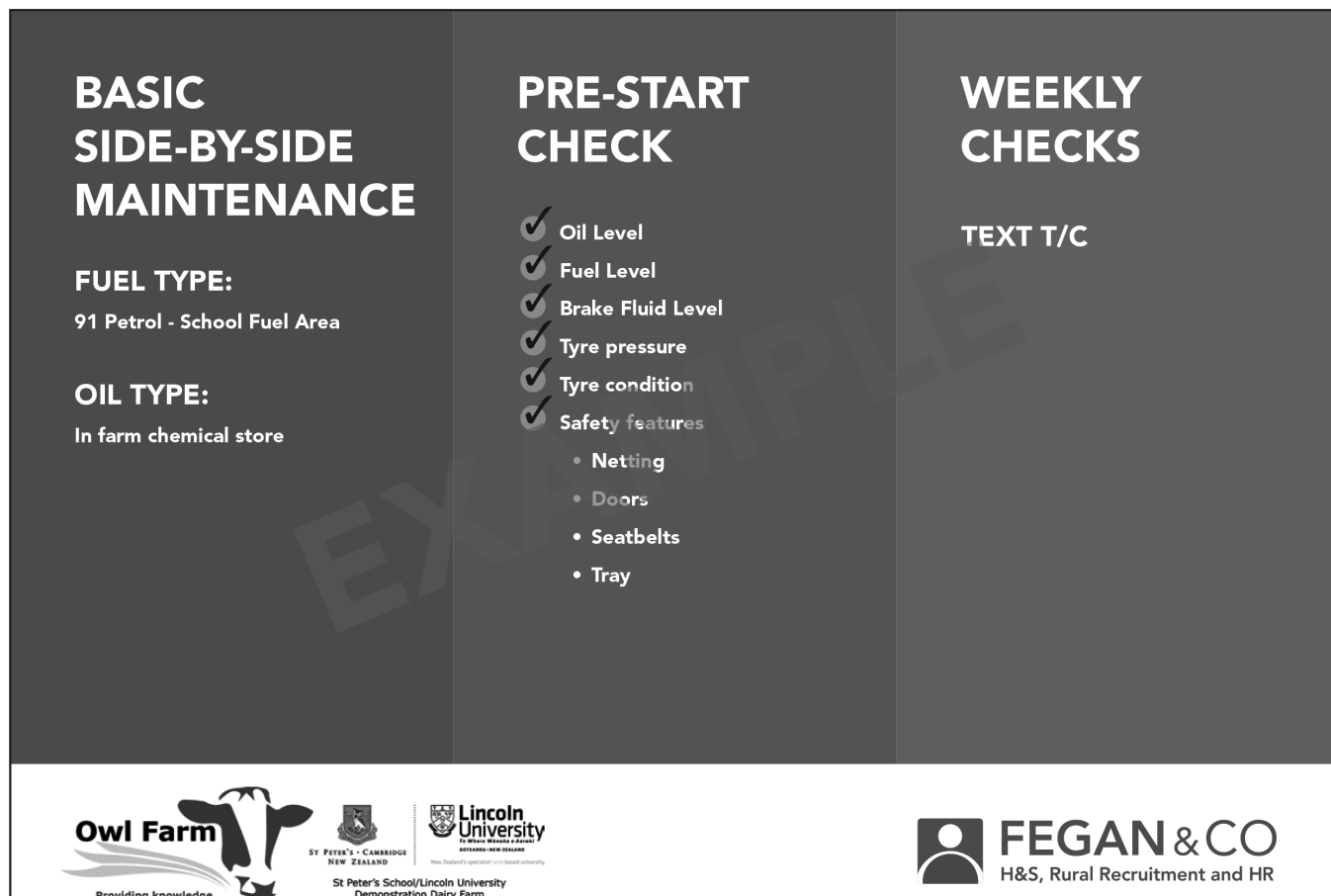
**Owl Farm**  
Providing knowledge

**ST PETER'S - CAMBRIDGE NEW ZEALAND**  
St Peter's School/Lincoln University  
Demonstration Dairy Farm

**Lincoln University**  
Te Whare Wānanga o Aotearoa  
HATFIELD NEW ZEALAND  
New Zealand's specialist land-based university

**FEGAN & CO**  
H&S, Rural Recruitment and HR

### Rear side



## BASIC SIDE-BY-SIDE MAINTENANCE

**FUEL TYPE:**  
91 Petrol - School Fuel Area

**OIL TYPE:**  
In farm chemical store

## PRE-START CHECK

- ✓ Oil Level
- ✓ Fuel Level
- ✓ Brake Fluid Level
- ✓ Tyre pressure
- ✓ Tyre condition
- ✓ Safety features
  - Netting
  - Doors
  - Seatbelts
  - Tray

## WEEKLY CHECKS

TEXT T/C

**Owl Farm**  
Providing knowledge

**ST PETER'S - CAMBRIDGE NEW ZEALAND**  
St Peter's School/Lincoln University  
Demonstration Dairy Farm

**Lincoln University**  
Te Whare Wānanga o Aotearoa  
HATFIELD NEW ZEALAND  
New Zealand's specialist land-based university

**FEGAN & CO**  
H&S, Rural Recruitment and HR



## Officer Duties under Health and Safety at Work Act 2015

- To acquire, and keep up to date, knowledge of work health and safety matters, and
- Have an understanding of the nature of the operations and generally of the hazards and risks associated with those operations, and
- Ensure the availability for use, and uses, appropriate resources and processes to eliminate or minimise risks to health and safety from work carried out as part of the conduct of the business, and
- Ensuring there are appropriate processes for receiving and considering information regarding incidents, hazards, and risks and for responding in a timely way to that information, and
- Ensuring your PCBU and its entities has, and implements, processes for complying with their PCBU duties or obligations under the Health and Safety Act, and
- To verify the provision and use of the resources and processes referred to above.

### Who is an officer?

This definition has been summarised, refer to the Act for the full details. An officer is any person occupying the position of a director of the company by whatever name called:

- a partnership (other than a limited partnership), any partner
- a limited partnership, any general partner
- a body corporate or an unincorporated body, other than a company, partnership, or limited partnership, any person occupying a position in the body that is comparable with that of a director of a company
- includes any other person occupying a position in relation to the business or undertaking that allows the person to exercise significant influence over the management of the business or undertaking (for example, a chief executive); but to avoid doubt, does not include a person who merely advises or makes recommendations to a person

### What does all this mean?

In a farming sense, owners/directors/trustees/contract milkers/sharemilkers etc will be officers and often the farm manager will be too.

### What do I need to do?

Any non-farming director etc will need to get knowledge of the operations and associated risks and processes in place. Farming directors probably have this knowledge. Most though will need to gain knowledge on the legislative and regulatory requirements and just what Codes of Practice do apply and/or does the farm have systems in place for obtaining this knowledge. The duty to obtain knowledge is a positive duty, i.e. its not a defence to say you did not know, it is expected you will seek information and keep your knowledge up to date.

The remaining obligations relate to you ensuring the resources and processes are available and then used. The verification obligation means it is not enough to just get a report from the Farm Manager saying everything is fine, you need to check or have processes for checking independently. This can be done by:

- Looking for yourself at times: go for a walk around the farm, have a chat to the staff
- Look at the records yourself: check that training records are up to date
- Have an independent audit conducted and include if reality matches what is written
- If you have multiple farms or business interests, have a manager from one business review another and vice versa

### Owl Farm Accident Reporting

Although St Peter's School uses a database system for reporting accidents, this was not realistic for a farm of this size. It also does not suit a situation where all staff may not have access to a computer. To help achieve a high level of accident reporting, two levels of forms are used.

- 1) A basic piece of paper any employee should feel comfortable completing and that the manager can follow up for the details:

Name	Date
Phone	
What happened?	
What have you done about it so far?	

The basic form is not technically legal, but for capturing information for close calls, minor injuries or for staff who might have literacy issues or an affliction for filling out forms, it is deemed to be practicable.

- 2) For a proper accident report, the following form is used. The Farm's rule of thumb is: if it's bad enough to see the doctor, then it's bad enough to fill out a full form. If the worker has issues doing this, then the manager should assist. This form is used across all of St Peter's for consistency.



# Accident/ Incident Form



ST PETER'S • CAMBRIDGE  
NEW ZEALAND

## Details of Person involved:

Name of person: \_\_\_\_\_

Department: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Contact Number: \_\_\_\_\_ Gender: (please circle) Male / Female

Job Title: \_\_\_\_\_ Length of Employment: \_\_\_\_\_

Please circle: Staff / Student / Contractor / Visitor / Other \_\_\_\_\_

Residential Address: \_\_\_\_\_

Name of Manager of injured person: \_\_\_\_\_

Name of person completing form on behalf of injured person:

\_\_\_\_\_

## Location of Accident/ Incident:

Date of Accident/Incident: \_\_\_\_\_

Time of Accident/Incident: \_\_\_\_\_

Location of Accident/Incident: (please circle)

Sports fields / Swimming pool / Farm / Kitchen / Grounds / Classroom / Office / Offsite

Specific Location: (e.g. staff common room, main administration building)

\_\_\_\_\_

Description of Accident/Incident:

\_\_\_\_\_

\_\_\_\_\_

Witnesses and their role in the Accident/Incident: \_\_\_\_\_

\_\_\_\_\_

Detail any property damaged in the Accident/Incident? \_\_\_\_\_

\_\_\_\_\_

**Treatment of Accident/Incident:**

**Category: (please circle)**

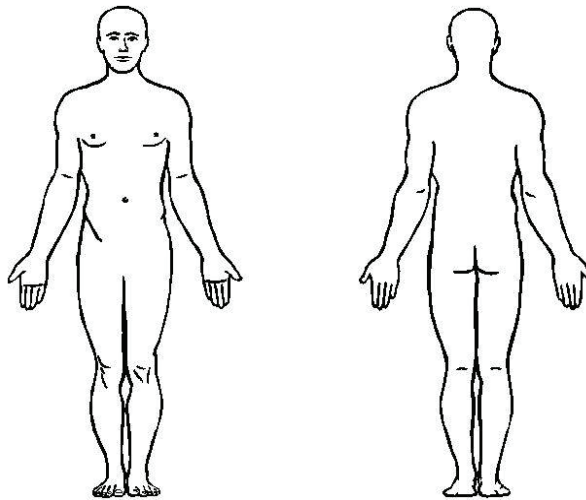
Accident / Incident / No harm injury / First Aid Treatment / Medical Treatment Injury / Serious Harm / Fatality

**Describe injury/illness type: (e.g. cut, burn, abrasion)**

\_\_\_\_\_

**Injury location: (e.g. head, arm, leg)** \_\_\_\_\_

**Select location on diagram:**



**What was the cause of the injury/illness?**

\_\_\_\_\_  
\_\_\_\_\_

**Treatment of injury/illness?**

\_\_\_\_\_  
\_\_\_\_\_

**Injured person signature, that details are correct:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Entered on Register:** \_\_\_\_\_ **Date:** \_\_\_\_\_

For close call reporting, Owl Farm workers are encouraged to report the instances that make their heart beat faster, but no one got actually hurt (if they did get hurt, it's an accident anyway).

St Peter's School does have a third form required to be used for serious harm accidents. This is available from the WorkSafe website. WorkSafe will guide you to the form when you're reporting serious harm accidents. Changes will need to be made after 4 April as terminology and what is reportable to WorkSafe is changing.

You will have to report notifiable events. Notifiable events are made up of notifiable injuries (similar to the existing serious harm accidents) and notifiable incidents (serious close calls). The notifiable incidents is one area all managers and organisations need to understand to avoid non-reporting offences.

**Contact details for follow up queries:**

Steve Sharpe from Fegan & Co is happy to discuss your queries later if you don't have time during the Open Day at no obligation. Fegan & Co offers a range of health and safety related services, which he can adapt to your needs.

These include, but are not limited to:

- Health and Safety system reviews
- Systems development or updates
- Critical incident management
- Health and safety updates subscription
- Training
- Expert witness
- Health and safety culture development

For more detail on each service can be found on their website [http://www.fegan.co.nz/page/fegan\\_97.php](http://www.fegan.co.nz/page/fegan_97.php)

Steve Sharpe's health and safety services cover a range of health and safety related legislation and regulations, from the obvious in the Health and Safety at Work Act 2015 and Hazard Substance and New Organisms Act 1996, through to Approved Codes of Practice and WorkSafe Guidelines.

If you would like to enquire about any of their services please give Health & Safety Consultant Steve Sharpe a call on 07 823 0105 or 021 826 838.

NOTES

---

---

---

---





# Fertility Focus 2015: Seasonal

St Peters School Farm  
Doug Dibley

Report date: 24/02/16

PTPT: HPTT

Herd Code: 2/1884

No of cows included: 463

These cows calved between: 23/05/15 and 28/11/15

Mating start & end date:  
(based on AB or pregnancy test data)  
30/09/15 - 14/12/15

Next planned start of calving: 08/07/16

Duration of mating: 76 days

Duration of AB period: 45 days



Version 2.15



## 1 Overall herd reproductive performance

### 6-week in-calf rate

Percentage of cows pregnant in the first 6 weeks of mating

Your herd 75% (75-81%)

Aim above 78%



### Not-in-calf rate

Percentage of cows not pregnant after 76 days of mating

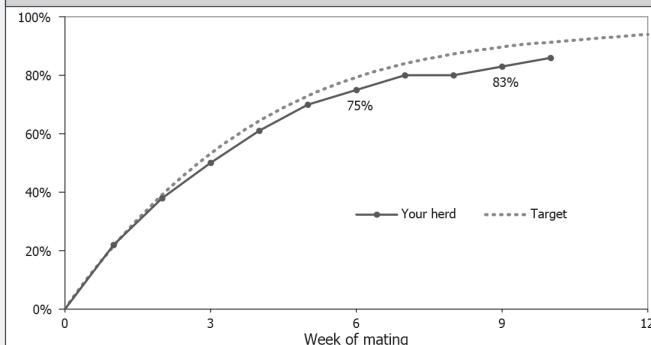
Your herd 11% (6-11%)

Aim for 7%



### % 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 90%

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 58%

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% 91%

Aim above 75% 92%



### Calving pattern of whole herd

Did late calvers reduce in-calf rates?

Calved by Week 3 Week 6 Week 9

Your herd 65% 84% 94%

Aim above 60% 87% 98%



### Pre-mating heats

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

Your herd 0%

Aim above 85%



### 3-week submission rate of first calvers

Well managed heifers cycle early

Your herd 92%

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 23% 0% 0%

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.

### 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 11%

Expected 8%

Seek advice

(C)Copyright DairyNZ Ltd May 2013. 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 2.15



## Report period: Cows calved between 23/05/15 and 28/11/15.

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: 24/02/16

PTPT: HPTT

Herd Code: 2/1884

Calvings up to this date requested for analysis: 23/02/16

No of cows included: 463

These cows calved between: 23/05/15 and 28/11/15

Mating start & end date: 30/09/15 - 14/12/15  
(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.

2015/16	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
No. of calvings		38	283	95	54	1							471
No. of AB matings					4	549	89						642
No. of preg tests								422		75			497
No. of non-aged/late aged positive preg tests										1			1
No. of cows culled or died	6	1		5	10	1	4	27		16			70

## 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	403
Recorded empty	25
Doubtful/recheck*	1
Culled without pregnancy test	32
No record of cull or pregnancy test	2
<b>Cows analysed</b>	<b>463</b>

\*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

462 cows had calving dates in the required range and were not culled before day 21 of mating and 90% 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 596 AB inseminations on and between 30.09.15 and 13.11.15.

### 3 Key indicators to areas for improvement

#### Calving pattern of first calvers

89 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

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

#### Pre-mating heats

462 cows had calving dates in the required range and were not culled before day 21 of mating and 0 of these had a pre-mating heat recorded.

#### Non-cycling cows

462 cows had calving dates in the required range and were not culled before day 21 of mating and 107 of these were identified as being treated for non-cycling.

#### 3-week submission rate of first calvers

89 first calvers had calving dates in the required range and were not culled before day 21 of mating and 92% of these were submitted during the first 21 days of mating.

#### Heat detection

198 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.

#### 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 2013. 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.

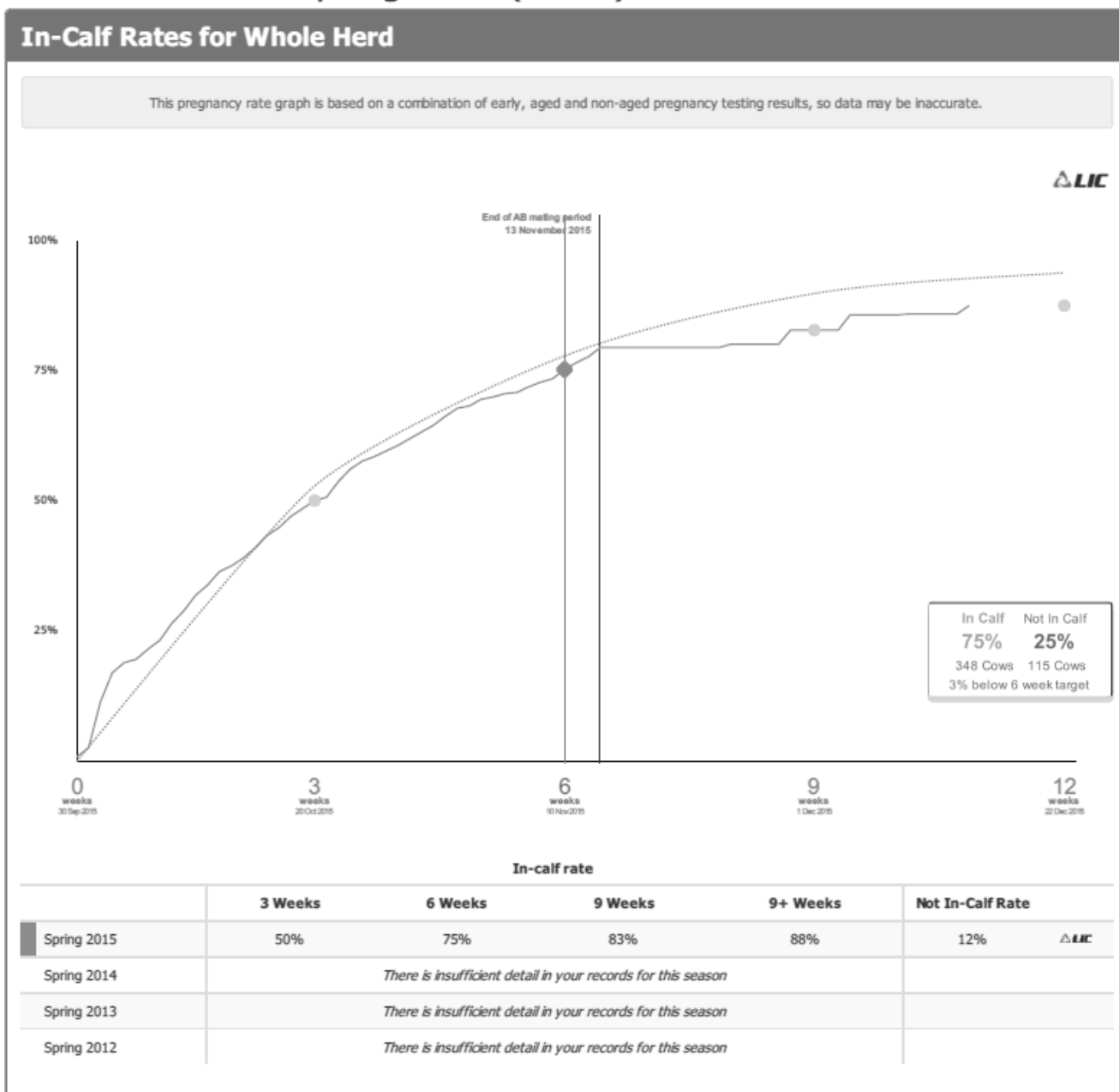
# OWL FARM MATING REVIEW: HOW DID IT ALL PAN OUT?

This season has been anything but 'normal' for the farm. Staff changes, undergrown heifers, lower than expected rates of cows cycling and a less than ideal feed situation early in the season were the main challenges. A decision was made quickly to seek guidance from the team that supports the farm. Bill Hancock from Cambridge Vets, Jack Hooper and Joyce Voogt from LIC, and Doug Dibley (Owl Farm Demonstration Manager) sat down and compiled a plan of attack to try and help maximise performance from a herd in the top 3% of NZ on BW.

After carefully accessing the data and information available a plan was put in place which included putting all first and second calvers, as well as older cows in poor condition on once-a-day for two weeks, early hormonal intervention, and an emphasis on rearing better heifers. A timeline was set up to aid the completion of all repro related tasks by the staff, who have since bought into and executed the plan brilliantly.

The outcome is shown in the graph below with the herd achieving very good results in both, 6 week in-calf and not in-calf rates.

## In-Calf Rates for Spring 2015 (HPTT)



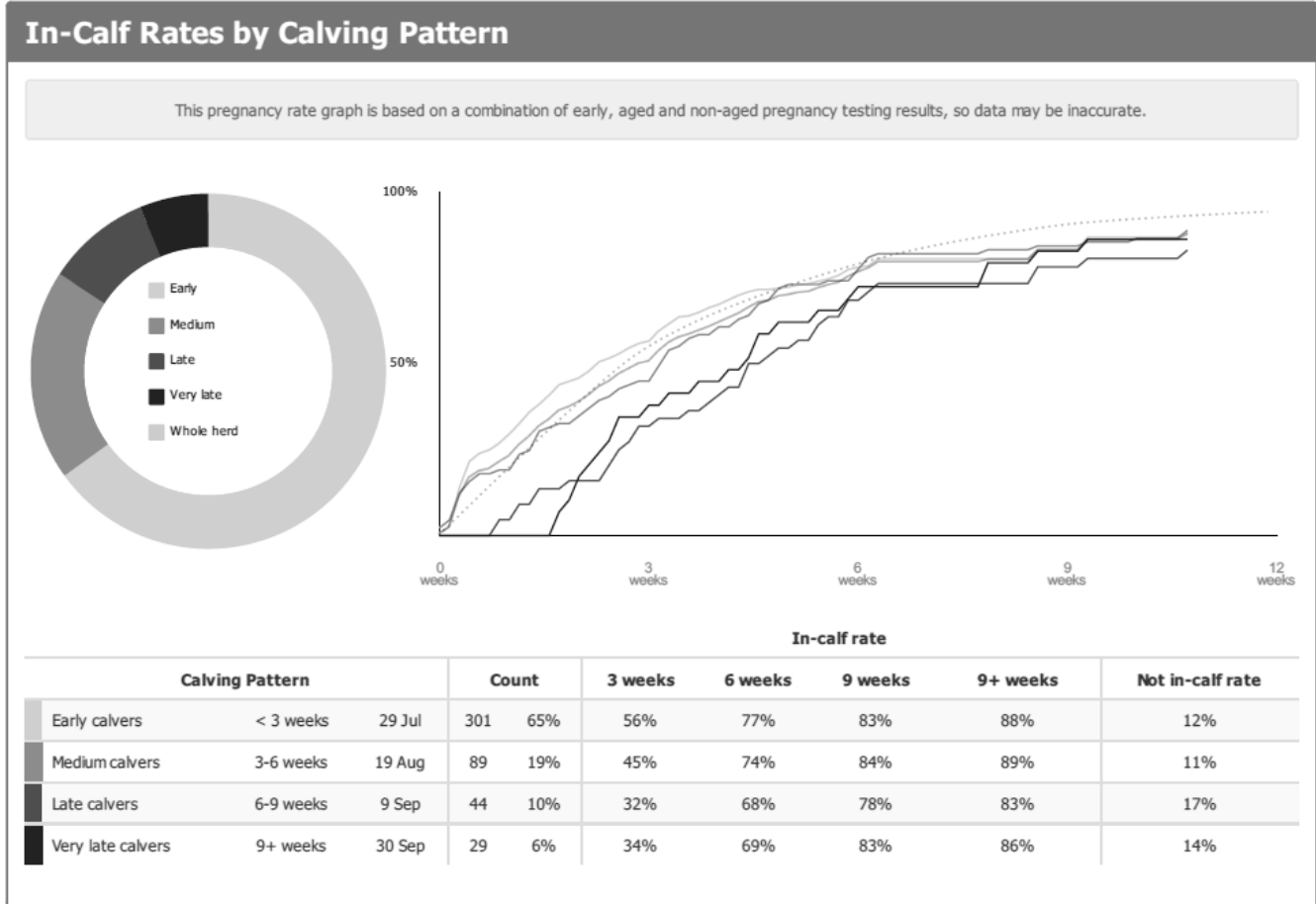
### NOTES

# In-Calf Rates for Spring 2015 (HPTT)

In-Calf Rates for Whole Herd Breakdown								
	In-Calf Aged	In-Calf Non-Aged	Empty	Doubtful	Pregnancy Loss	Removed with no PD	No removal or PD	Total Analysed
Animal Count	399	1	25	1	3	5	29	463
Percent Analysed	86%	<1%	5%	<1%	<1%	1%	6%	100%

- Early aged pregnancy testing information has given quality data for Owl Farm this year, with actual in-calf rates and conception rates and cumulative pregnancy rate graphs on MINDA reproduction giving visibility into how cows in the herd got in-calf over time.
- Owl Farm has achieved a 6 week in-calf rate between 74-80% (refer to Fertility Focus Report attached), with the exact figure unknown due to the need to reduce cow numbers prior to PD.
- Whichever way you look at it this is a very good result, improved on the estimated results of 69% 6 week in-calf rate in 2014 driven by a 90% submission rate and 58% conception rate overall.

# In-Calf Rates for Spring 2015 (HPTT)



- Calving pattern had an effect on how fast cows have become pregnant as seen above. Early calvers, representing 65% of the herd, achieved a 77% 6 week in-calf rate as a group. The flow on effects of an improved reproductive performance look promising if we can replicate this level of performance next season as we expect to see more cows calving earlier.

NOTES

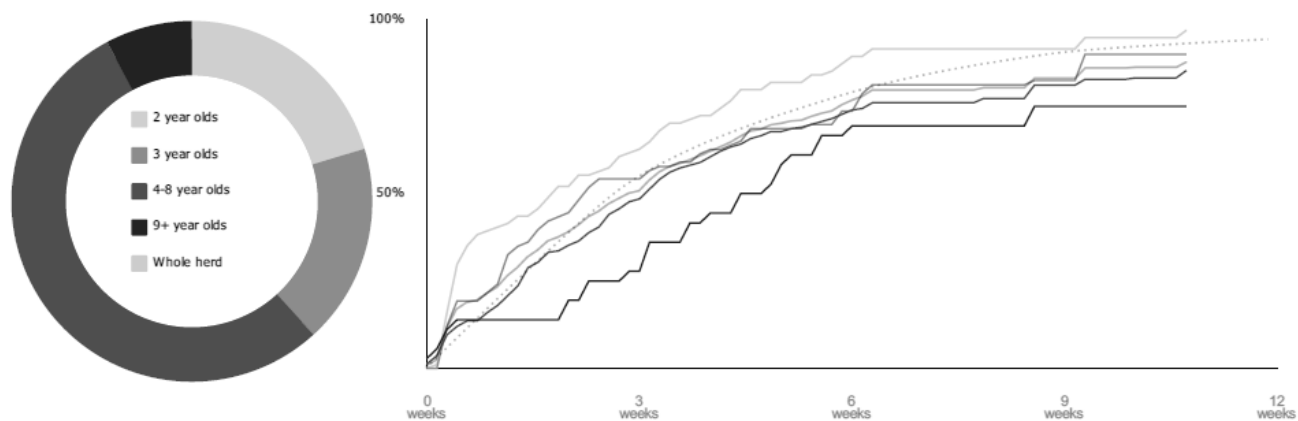
How about the decisions made? Did they pay off?

Once-a-day/CIDR

## In-Calf Rates for Spring 2015 (HPTT)

### In-Calf Rates by Age

This pregnancy rate graph is based on a combination of early, aged and non-aged pregnancy testing results, so data may be inaccurate.



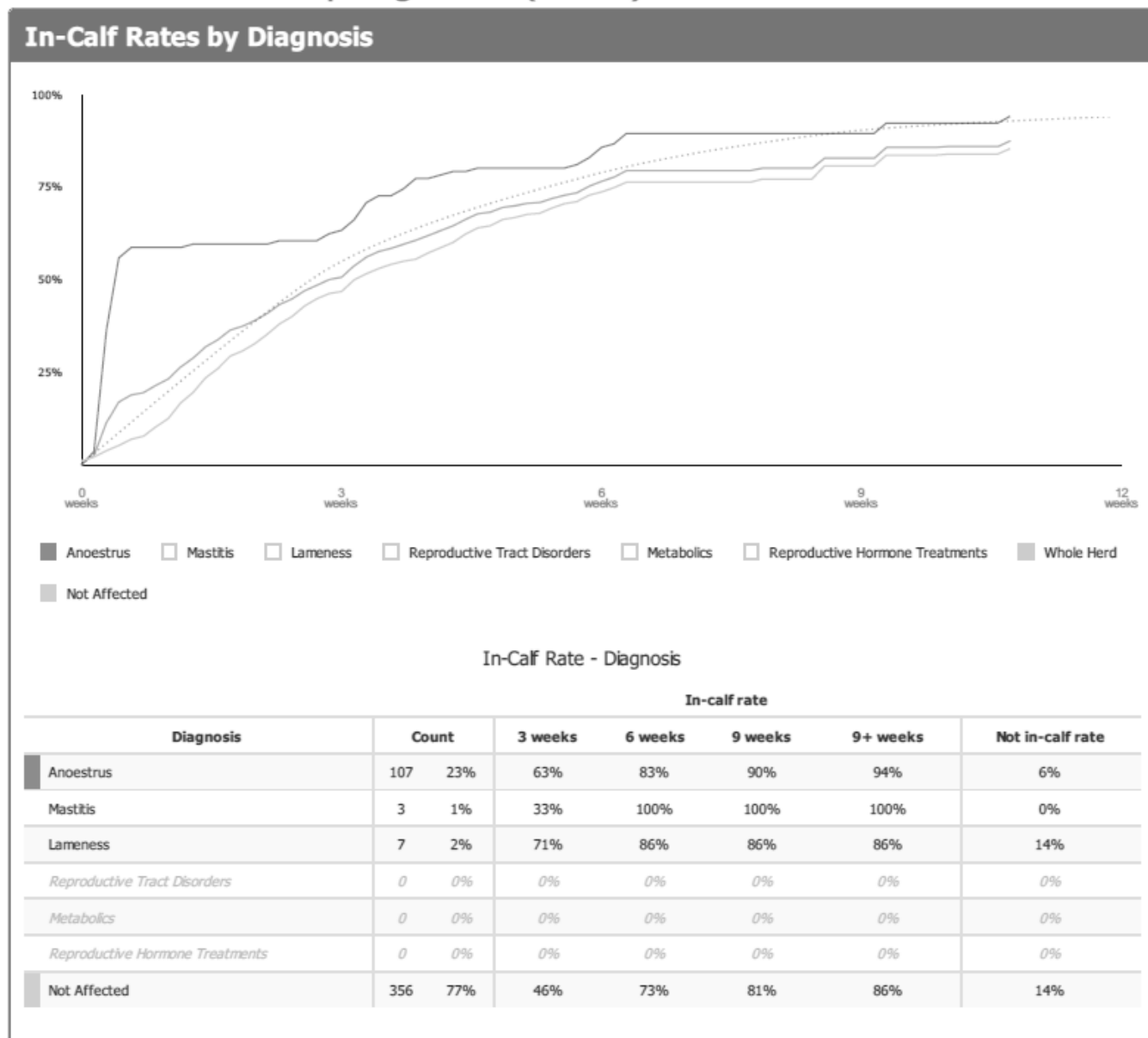
		In-calf rate					Not in-calf rate
Age Group	Count	3 weeks	6 weeks	9 weeks	9+ weeks		
Two year olds	94 20%	62%	87%	91%	97%		3%
Three year olds	83 18%	54%	74%	82%	90%		10%
Four to eight year olds	250 54%	48%	73%	81%	85%		15%
Nine+ year olds	36 8%	28%	67%	75%	75%		25%

- Heifers responded well to once a day milking, pro-active pre-mating heat monitoring, and early CIDR intervention on non-cyclers
- Achieved 86% 6 week in-calf rate and 67% conception rate as a group – the highest in the herd

NOTES



# In-Calf Rates for Spring 2015 (HPTT)



- Early targeted CIDR intervention, as discussed with Owl Farm vet Bill Hancock from Cambridge Vet Services was very successful with 17% of the cows in calf in the first four days of mating

NOTES

## 2014 Spring Born

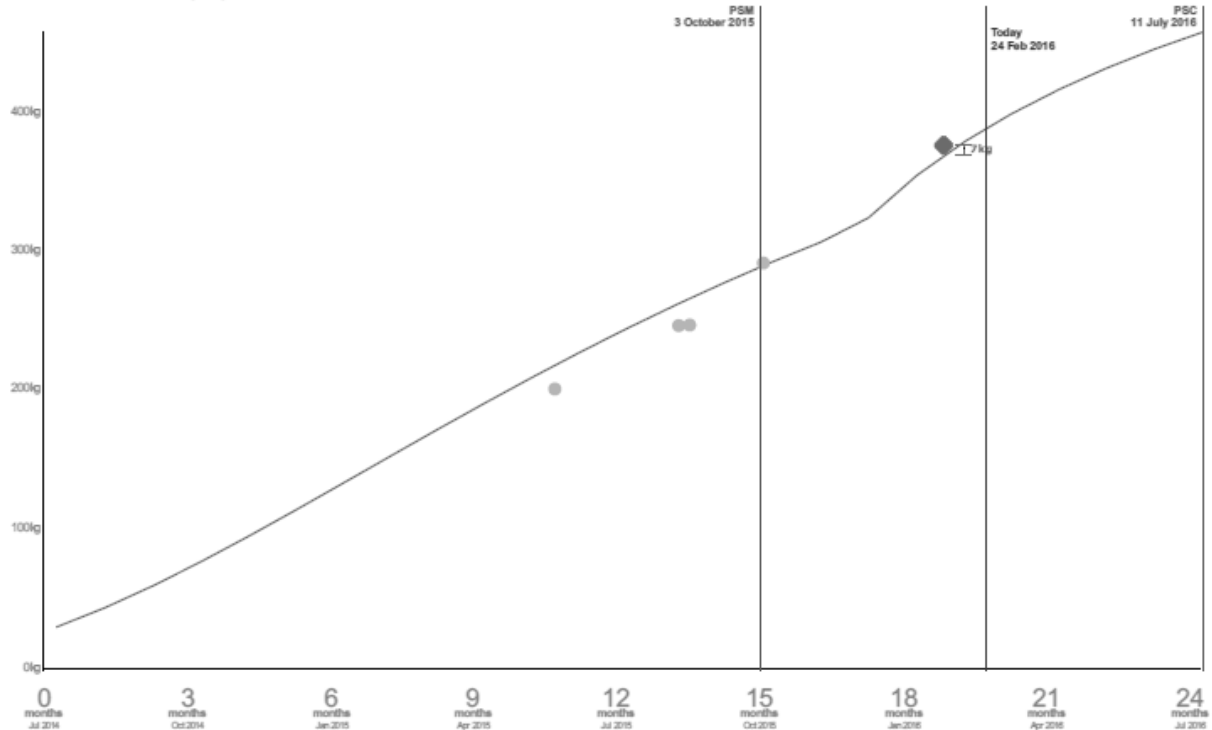
14 BORN HEIFER JAN 16

28/01/2016

HPTT

### Young stock trend

All 106 animals in this weighing are displayed



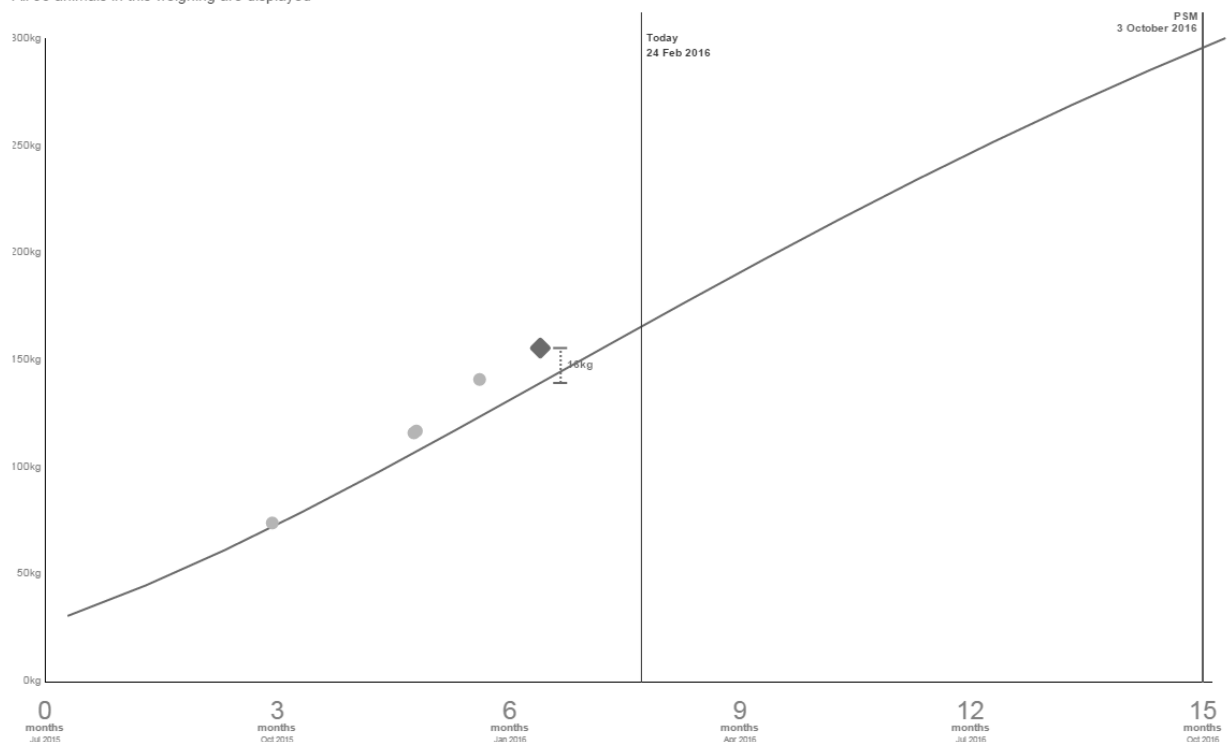
## 2015 Spring Born

15 BORN HEIFER JAN 16

15/01/2016

### Young stock trend

All 96 animals in this weighing are displayed

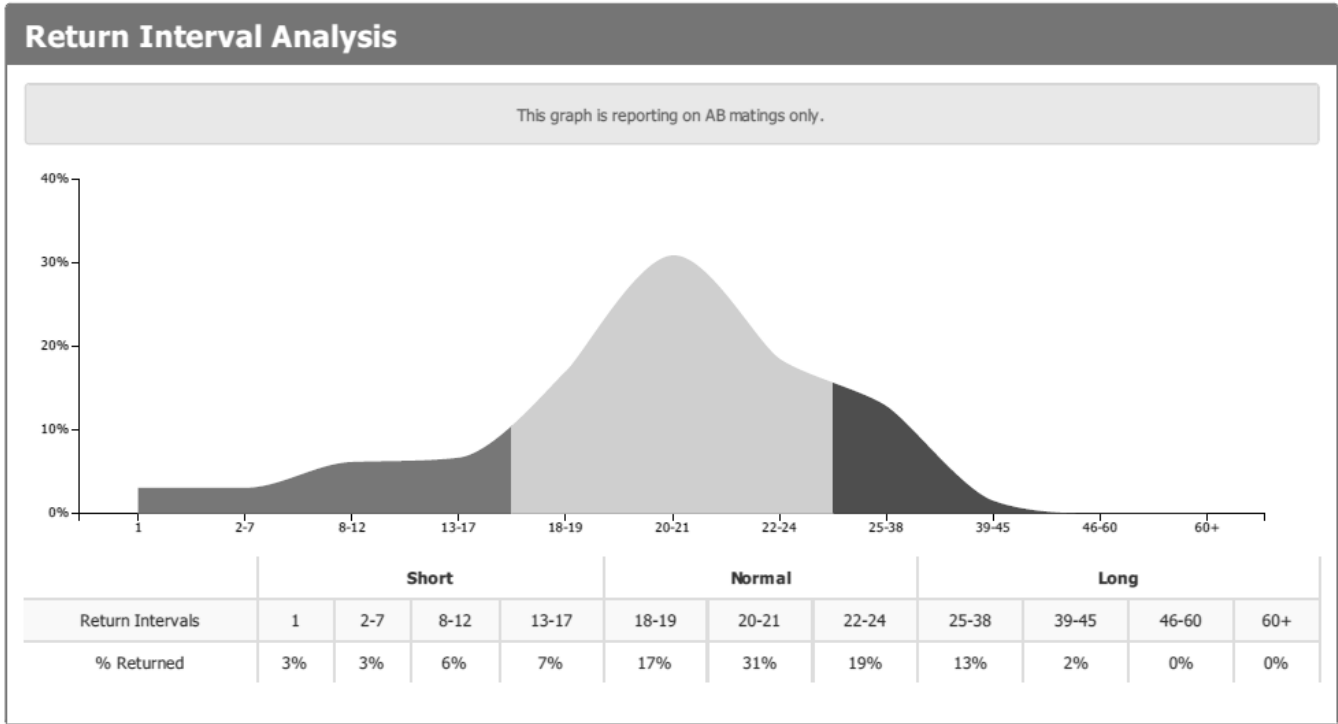


- Changes on rearing practices have resulted in successfully achieving liveweight targets for both 2014 and 2015 born, on average.

Heat Detection

# Mating Reports for Spring 2015 (HPTT)

## Eligible Cows (FFR)



What’s Next?

Make sure we set up the cows and farm so we can capitalise on all the gains made this season by ensuring BCS targets are met and ensuring APC is on target to cater for the higher demand we created by getting more cows in calf quicker and, subsequently, calving earlier and more compactly next season.

The real challenge is achieving similar reproduction results next season with higher production and less intervention.

NOTES

# OWL FARM 2016/17 SEASON: WHAT ARE THE OPTIONS?

Like all dairy businesses Owl Farm is having to take a hard look at the performance of the current system and identify refinements that will minimise financial losses in the coming season.

To better mirror the realities that are on the majority of farms, a lease cost in our financial modelling of \$1300/ha has been included. This is equivalent to a debt loading of \$21/kgMS at 5% interest. This is similar to the average finance cost on Waikato farms.

To help make informed decisions we have assumed a milk income of \$4.30 for the 2016/17 season. To avoid knee-jerk reaction we have also had to make a call on the long-term milk price moving forward. For this exercise we have used \$5.70/kgMS.

A key challenge for the farm is the lack of feeding facilities. The current economic climate dictates that this is unlikely to be addressed in the near future. As a consequence, the utilisation of our supplements is compromised, and in the modelling work undertaken this has been assessed at 25% wastage of supplement energy.

There are a wide range in feeding facilities out there which will have an impact on the most appropriate response for individual farms. If feed wastage was lower, the relative difference in financial performance would be closer.

The following reports should be taken as indicating the direction of travel rather than an absolute plan at this stage. There is still considerable work to be undertaken in reviewing the budget for next year item by item.

Our approach is to attack the financial position from two angles. First: do we have the optimum stocking rate and system for the payouts we are experiencing? Second: irrespective of the system, where can we pull costs out of the budget which won't have a long term effect on the farm and mean that we can't capitalise on the profitability when milk price does rise again?

Heifer replacement numbers have been kept constant at 95 calves reared across all three scenarios. When the milk price does rise we want to be able to increase numbers back to the 440 as soon as possible.

The 3 scenarios reviewed are:

- 1) Winter 440 cows and have 15.7 Ha annual grass in the winter followed by 15.7 ha chicory
- 2) Winter 440 cows and have 15.7 Ha annual grass in the winter followed by 15.7 ha turnip
- 3) Winter 410 cows and have 8 Ha annual grass in the winter followed by 8 ha turnips

PKE has been budgeted at \$230/t delivered.

## Outcomes

Table 1 details the relative physical performance of the 3 scenarios. In the modelling we had assumed a dry February and March with pasture growth rates down to 20kgDM/ha/day over this period.

The difference in the performance of the chicory and turnips is due to the timing of this dry event. If the dry occurred earlier then the chicory option shows a slight advantage. All crops were assumed to yield 11tDM/ha.

## NOTES

---

---

---

---

**Table 1:** Physical Summary

<b>FARMAX</b> <small>YOUR ADVANTAGE</small>		<b>Compare Physical Summary</b> <i>Jun 16 - May 17</i>			
Category	Description	440 cows chicory	440 cows Turnip	410 cows turnip	Units
<b>Farm</b>	Effective Area	150	150	150	ha
	Stocking Rate	2.9	2.9	2.7	cows/ha
	Comparative Stocking Rate	72.2	73.3	72.9	kg Lwt/t DM offered
	Potential Pasture Growth	14.5	14.5	14.5	t DM/ha
	Nitrogen Use	138	138	140	kg N/ha
	Feed Conversion Efficiency (offered)	13.8	13.3	12.9	kg DM offered/kg MS
<b>Herd</b>	Cow Numbers (1st July)	440	440	410	cows
	Peak Cows Milked	433	433	403	cows
	Days in Milk	284	290	293	days
	Avg. BCS at calving	5.3	5.3	5.0	BCS
	Liveweight	1,237	1,240	1,150	kg/ha
<b>Production (to Factory)</b>	Milk Solids total	186,209	190,698	183,123	kg
	Milk Solids per ha	1,241	1,271	1,221	kg/ha
	Milk Solids per cow	430	440	454	kg/cow
	Peak Milk Solids production	2.04	2.01	2.06	kg/cow/day
	Milk Solids as % of live weight	100.4	102.5	106.2	%
<b>Feeding</b>	Pasture Offered per cow *	4.4	4.4	4.8	t DM/cow
	Supplements Offered per cow *	1.5	1.4	1.0	t DM/cow
	Off-farm Grazing Offered per cow *	0.1	0.1	0.1	t DM/cow
	Total Feed Offered per cow *	5.9	5.9	5.9	t DM/cow
<b>Diagnostics</b>	Pasture Offered per ha	12.7	12.8	13.0	t DM/ha
	Supplements Offered per ha	4.6	4.3	2.9	t DM/ha
	Off-farm Grazing Offered per ha	1.6	1.6	1.6	t DM/ha
	Total Feed Offered per ha	18.9	18.6	17.5	t DM/ha
	Supplements and Grazing / Feed Offered *	26.6	24.9	17.9	%
	Bought Feed / Feed Offered *	15.4	13.8	10.9	%
(*) feed offered to females > 20 months old / peak cows milked					

Table 2 (p28) details the financial results.

A milk price of \$4.30 /kgMS has been assumed.

The returns from selling the 30 extra cows in the 410 cow scenario has not been included in the financials. It is realistic to expect \$1200 / cow for these in calf animals.

There is a risk with the 410 cow option in that if the milk price rises significantly the ability to increase production through more supplement is limited as the cows are already forecast to be producing 106% of live weight.

The final decision on what option to take has yet to be made but the key point is a range of options are being considered and evaluated allowing us to make informed decisions as milk price forecasts are updated.

NOTES

			440 cows chicory	440 cows Turnip	410 cows turnip
Revenue	Stock	Net Milk Sales - this season	794,366	813,518	781,203
		Net Milk Sales - last season	0	0	0
		Net Milk Sales - dividend	0	0	0
		Net Livestock Sales	52,642	51,221	49,428
		Contract Grazing	0	0	0
		Change in Livestock Value	53,689	53,689	56,999
		Total	900,697	918,427	887,630
	Crop & Feed	Capital Value Change	-3,949	-4,511	-4,680
		Total	-3,949	-4,511	-4,680
Total Revenue			896,748	913,917	882,950
Expenses	Wages	Wages	188,168	188,168	188,168
	Stock	Animal Health	34,320	34,320	31,920
		Breeding	23,895	23,895	22,224
		Farm Dairy	8,580	8,580	7,980
		Electricity	15,015	15,015	13,965
	Feed/Crop	Feed Crop	17,270	17,270	8,800
		Bought Feed	104,683	92,886	68,434
		Calf Feed	3,000	3,000	3,000
	Grazing	Grazing	77,940	77,940	77,940
		Run-Off Lease	12,380	12,380	12,380
		Owned Run-Off Adj.	5,550	5,550	5,550
	Other Farm Working	Fertiliser (Excl. N)	30,000	30,000	30,000
		Nitrogen	30,218	30,218	30,678
		Irrigation	600	600	600
		Regrassing	9,420	9,420	4,800
		Weed & Pest Control	3,000	3,000	3,000
		Vehicle Expenses	18,000	18,000	18,000
		Fuel	12,000	12,000	10,000
		R&M Land/Buildings	15,000	15,000	15,000
		R&M Plant/Equipment	10,000	10,000	10,000
		Freight & Cartage	16,000	16,000	16,000
		Other Expenses	45,000	45,000	45,000
	Overheads	Administration Expenses	2,500	2,500	2,500
		Insurance	21,000	21,000	21,000
		ACC Levies	4,650	4,650	4,650
		Rates	15,450	15,450	15,450
Total Farm Working Expenses			723,639	711,842	667,040
Depreciation			43,650	43,650	43,650
Total Farm Expenses			767,289	755,492	710,690
Economic Farm Surplus (EFS)			129,459	158,425	172,261
Other Expenses		Rent/Lease	200,000	200,000	200,000
Farm Profit before Tax			-70,541	-41,576	-27,739
Farm Profit per ha before Tax			-470	-277	-185



# CROPPING AND RE-GRASSING FOR OWL FARM 2015 AND 2016

Emma Bell and Charlotte Westwood, PGG Wrightson Seeds

## 1. CHICORY: PADDOCK 45 – THE FACTS

- Paddock 45 = 1.6 ha area from total of 14.3 ha chicory, spring sown October 2015.
- This is the least successful of Owl Farm's 2015 sown chicory = good discussion topics for today's field day.

### Summary: Paddock 45 chicory:

Spray out date:	1 October 2015
Area	1.6 ha
Spray out herbicide:	Weedmaster TS540 at 4 L/ha
Sowing date:	15 October 2015
Soil test results	pH - 5.5, Olsen P mg/L - 47, Sulphate Sulphur mg/kg - 5, Potassium MAF units - 13, Calcium MAF units - 7, Mg MAF units 13, Sodium MAF - 4
Fertiliser at sowing:	None
Nitrogen applied:	80 kg SustainN on 15 November
Cultivar:	Choice chicory
Number of grazing's	4
Approximate kgDM/cow/grazing	2.2 to 2.5kgDM/cow/allocated grazing

### Costs: Chicory areas; Spring 2015\*

Chicory - Cost Analysis <i>ACTUAL</i>			
	Product	Rate	Per Hectare Cost/ha
SPRAYOUT	Weedmaster TS540	4 L/ha	\$56
	Pulse Penetrant	100 ml/100L water	\$2
	Dew 600	400 ml/ha	\$8
	AgChem Application		\$10
FERTILISER	Sustain - pre graze	65 kg/ha	\$42
	Fertiliser spreading application		\$15
PLANTING	S/S Chicory Seed	8 kg/ha	\$184
	SlugOut Slug Bait	10 kg/ha	\$86
	Direct Drill		\$140
POST-EMERGE	Bonza Spraying Oil	500 ml/100L	\$6
	Valdo	65 g/ha	\$31
	Sequence	0.2 L/ha	\$18
	AgChem Application		\$10
FERTILISER	Sustain after grazing x 2 applications	65 kg/ha	\$84
TOTAL COST			\$693

\*Note that inadvertently DAP was not applied to the chicory areas – this reduced costs to establish our chicory, however this is not best practice and to optimise chicory DM yields, DAP is an important step when planning for a chicory crop

### NOTES

## Observations of “Paddock 45”

### (a) DM Yield/ha

DM yield is much less than the other areas of chicory – not unexpected given the thinning out of chicory plant numbers and replacement of these areas with summer grass. See yield assessment information for further clarification around DM yield.

### (b) Summer grass and couch infestation

Why – It is a common problem in crops in the Waikato. Reasons for summer grass infestation here include:

- Post-emergence herbicide application timing – too late, we get poor control of broadleaf weeds
- “Split germination” of chicory in this paddock and subsequent secondary germination of summer grass
- Did not sow this area down to an annual ryegrass in autumn 2015. Best practice is to establish an annual ryegrass during the autumn before spring sowing of summer crop. This allows a triple glyphosate application (autumn, spring then following autumn again) of summer grass and annual weeds, giving us a cleaner summer crop and better likelihood of a cleaner, high quality permanent pasture sown after the summer crop.

### (c) Plans for Paddock 45

- Unsuitable to sow permanent pasture due to summer grass infestation and presence of couch
- Spray out chicory and re-crop via Winter Star II tetraploid Annual Ryegrass. Spray out in spring 2016
- Re-crop as summer crop, most likely Barkant summer turnip (to be confirmed) in spring 2016
- Establish as a permanent pasture in autumn 2017

**Table 2.**

Cost of Winter Star II (WSII) tetraploid annual ryegrass into ex Chicory ground Paddock 45

\$/ha	
WeedMaster TS540 @ 4L/ha	56
AgChem Application	38
S/S WinterStarII @ 28kg/ha	211
DAP @ 150kg/ha	130
Drilling	140
<b>TOTAL COST/HA</b>	<b>575</b>

### Why not just spray out summer grasses and sow down Paddock 45 into permanent pasture?

- Poor likelihood of success due to density of summer grass and weed presence
- High winter growth potential of Winter Star II will provide Owl farm with extra feed for the coming winter
- Autumn sown annual ryegrass before spring sown crop. This offers two key advantages to a farm business:
  - o Extra DM grown from annual ryegrass during the winter before cropping. For example, use of Winter Star II tetraploid annual ryegrass as part of the ‘Programmed approach’ to spring crop programs.
  - o Better chance of successful annual weed and summer grass control. By establishing an autumn sown annual ryegrass, we have a third chance to apply herbicide and control difficult to control species (autumn year 1, spring year 1 and autumn year 2). A paddock sprayed out three times is likely to have a much cleaner successful permanent pasture established after a summer crop.

**Table 3.**

Advantage of using Winter Star II (WSII) as a break crop before spring cropping = More kgDM/ha in a very cost effective manner

Pasture Grown (April-Sep)	4,751	kgDM/ha
WSII Grown from April-Sep	7,541	kgDM/ha
Yield Advantage (WS vs Status Quo)	2,970	kgDM/ha
Value of extra feed*	\$1,010	\$/kgDM
Cost of WSII	575	\$/ha
<b>Economic Benefit (Net Profit/ha)</b>	<b>434</b>	<b>\$/ha</b>

\*Based on this additional winter feed valued at \$0.34/kgDM (refer to the DairyNZ Forage Value Index; FVI for more information)

### NOTES

### Remaining 12.7 ha of chicory sown across rest of farm

- Chicory considered sufficiently free of summer grasses and weeds enough to allow spray out and return to permanent pasture. Recommendations to the Owl Farm Management Committee are as follows:

### TIMELINE – Regrassing ex chicory for 12.7 ha (not Paddock 45)

Mid-March 2016

- Spray chicory paddocks 3L/ha Weed Master TS540 plus penetrant
- Chicory needs at least 15cm of new re-growth = best opportunity to kill chicory plants. Low cover = chicory grows back, competes with new ryegrass
- Sow perennial ryegrass before the end of March
- Late sowings = poor establishment & less likely to have a graze over winter
  - Perennial ryegrass will be a split between half chicory area sown to a mid-season heading diploid ryegrass (e.g. - Rely AR37 perennial diploid ryegrass) and a later heading diploid ryegrass such as One50 AR37 perennial ryegrass

COST – Regrassing ex chicory for 12.7 ha (not Paddock 45)

**Table 4.** Establishment of New Permanent Pasture into ex Chicory areas

COST OF ESTABLISHMENT				
	Product	Rate	Per Hectare	Cost/ha
SPRAY-OUT	Weedmaster TS540	3	L/ha	\$42
	Pulse Penetrant	100	ml/100Lwater	\$2
	AgChem Application			\$38
FERTILISER	Fertiliser	150	kg/ha	\$130
PLANTING	S/S Grass & Clover Seed	25	kg/ha	\$350
	Cultivation		per hectare	\$200
	Roller Drill		Per Hectare	\$150
POST-EMERGE	Selective Herbicide (i.e. Tribal Gold	4	L/ha	\$71
	AgChem Application			\$38
<b>TOTAL COST</b>			<b>\$/hectare</b>	<b>\$1021</b>

### Costs - Regrassing of ex chicory areas

- Total estimated cost for proposed regrassing of ex chicory area (12.7 ha) at \$1021/ha = \$12,966.70 or \$0.068per kgMS at 185,000 kgMS

### Cost benefit analysis: Benefits of regrassing when milk price is low

Low milk prices mean every aspect of expenditure on farm requires careful scrutiny. Regrassing is no different.

- No single 'one size fits all' recommendation on regrassing decisions this autumn
- Farms that have proactively regrassed substantial area of their properties every year over the last decade, could consider a single year of reduced regrassing. If pasture performance across all paddocks is very high, the marginal return from regrassing expenditure won't be as rewarding as for a property with a high proportion of poorer performing paddocks
- For farms such as Owl Farm with relatively poor annual pasture yield, it's important to stick with commitments to a regrassing program. Home grown pasture remains the most important feed source for all businesses – even in a lower payout environment

### Ideas to work through: What regrassing commitments should be made?

- Benchmarking.** Calculate yourself, or ask a consultant or DairyNZ representative to 'back calculate' the kgDM/ha/year pasture harvested over the last 1-2 seasons. Compare against other businesses in a similar area with similar soil types, topography etc through DairyBase, RedSky or similar
- Lower than ideal kgDM/ha pasture yields?** There will be room to improve on this despite the current low milk price. With a history of droughts over recent years, your pastures will have opened up and DM yields will have gradually been dropping - relatively unnoticed

NOTES

- **Paddock challenges:** Provided soil fertility, pH, contour, drainage and other factors aren't limiting, it's worth considering regrassing this autumn. You'll stand to potentially make good gains over the next 3-5 years from ongoing investment in regrassing.
- **Choose the correct paddocks. Paddock Ranking:**

**Paddocks need to be ranked on best to poorest performance based on kgDM yield per hectare per year.**

#### **(a) Annual DM yield**

- o Weekly farm walk data uploaded into software such as Minda Land & Feed will calculate for you a relative ranking of best to worst performing paddocks
- o Assess reasons why your poorest paddocks are failing to deliver. Most commonly drainage, very light free draining soils, fertility and pH result in poor annual pasture DM yield
- o Where poor performing pastures should not be limited by the above factors, pasture condition scoring will
- o Benefits will be greatest if you can lift the performance of your poorest paddocks – provided these paddocks don't have any underlying problems contributing to the poor performance

#### **(b) Pasture condition scoring:**

Scoring can be used alongside annual DM yield ranking, or instead of if that information isn't available

Here at Owl Farm we are pasture condition scoring in addition to yield ranking.

## **PASTURE CONDITION SCORE REPORT AUTUMN 2016**

**Emma Bell, PGG Wrightson Seeds**

Date: 12/02/2016

### **PRESENT**

Doug Dibley, Tom Buckley, Anna-Lena Wright (Ballance), Tom MacDonald (Ballance), Martin Ebbett (Ballance), Emma Bell (PGG Wrightson Seeds) & Kyle Gardyne (PGG Wrightson Seeds).

### **OBJECTIVE**

Following the Pasture Condition Scoring Exercise carried out in August 2015, we have completed another pasture assessment prior to the autumn re-grassing season to assist in decision making around pasture renewal opportunities for Owl Farm.

Whilst collecting the Pasture Condition Score data to compare against last year's figures, we took the opportunity to collect other information relating to pest & weed burden, as well as pasture persistence. We are confident the information collected will provide us with some robust information that will go some way towards formulating a pasture renewal plans for the autumn & spring 2016.

The scoring system will continue to play a pivotal role in decisions around pasture renewal on Owl Farm.

### **DATA COLLECTION CRITERIA**

#### **Pasture Condition Score (1-5)**

- 1** – Entire Paddock is severely damaged
- 2** – Parts of the paddock have severe damage
- 3** – Majority of paddock has low level of damage, weeds, and less vigorous grasses
- 4** – Parts of the paddock show signs of low level damage, less vigorous grasses and some weeds
- 5** – Whole paddock has dense sward of desired grasses and clovers

#### **Weed, Pest & Persistence Score (1-3)**

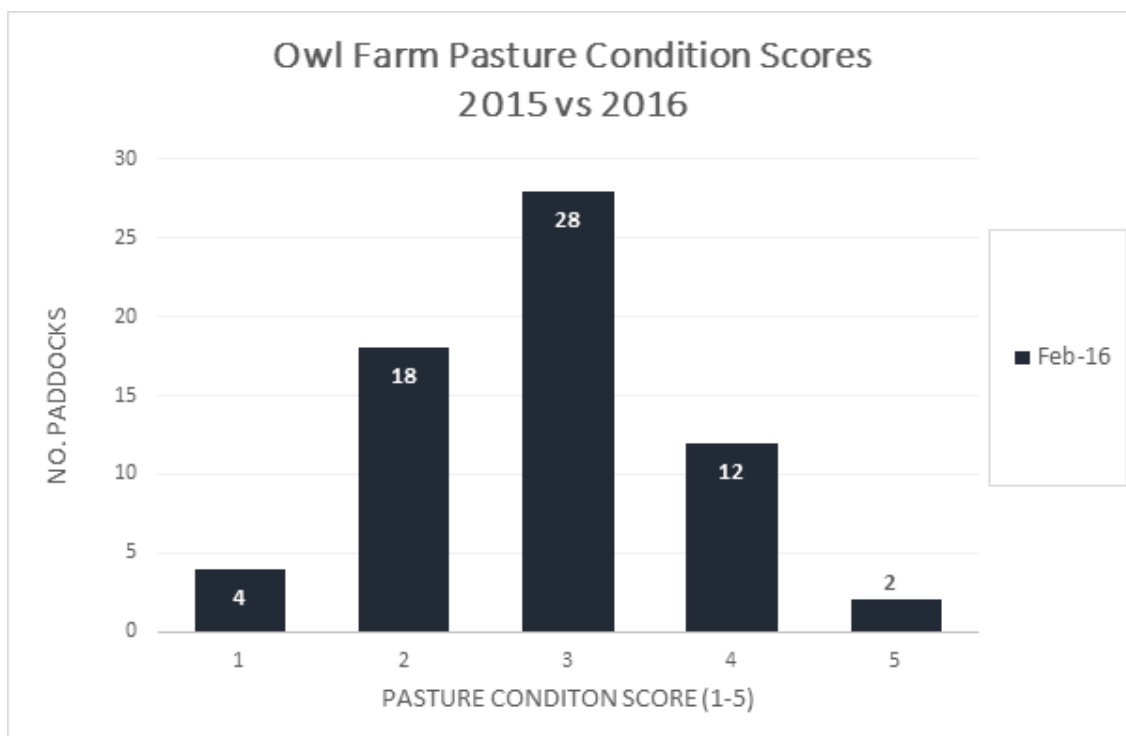
Whilst giving the pasture a condition score, we also ranked the persistence, weed burden & presence of pasture pests to help identify the underlying issue of that paddock.

Each paddock is ranked from 1-3 (1= Good, 2= Average, 3= Poor) for weeds, pests & persistence.

#### **Pasture Condition Scoring**

The graph below demonstrates the number of paddocks in each category (1-5) in both the most recent Pasture Condition Scoring exercise, but also the data from August 2015.

Please take into account the area in chicory which will not have been scored this February.



The table below categorises the individual paddocks into the various Pasture Condition Scores (1-5)

#### PASTURE CONDITION - Paddock Break-Down

Score	Paddock Number
1	25, 37, 38, 49
2	3, 4, 24, 26, 30, 31, 32, 33, 34, 35, 36, 39, 42, 59, 63, 64, 65, 74
3	1, 2, 14, 18, 23, 40, 43, 44, 46, 47, 51, 53, 61, 62, 67, 68, 69, 70, 71, 72, 73, 79, 81, 82, 83, 84, 86
4	12, 13, 16, 17, 19, 20, 28, 29, 41, 48, 50, 54
5	21, 22

#### CONDITION 1 = 7.82ha

- Three of the four paddocks are effluent paddocks (25, 37 & 38), and also in close proximity to the dairy shed – excellent potential for spring crop 2016
- Paddocks presented with dense swards of foreign grasses such as summer grass, couch & crow's-foot
- Pasture pulling was evident as a result of Black Beetle Larvae damage



ABOVE LEFT: Black Beetle Larvae



ABOVE RIGHT: Pasture pulling as a result of Black Beetle



## CONDITION 2 = 33ha

- 18 paddocks presented in this category
- Some paddocks will not be priority for cropping, given contour, soil type etc,
  - Paddocks 30, 31, 32, 33, 34, 35 & 36 would be better suited to under-sowing rather than cropping in the short-term (approximately 15 hectares)
- There are a number of effluent paddocks in this category also, which in my opinion should mean they are a priority for crop and therefore new grass



ABOVE LEFT: Looking for Black Beetle



ABOVE RIGHT: Condition Score of 1, few desired species present

## CONDITION 3 = 41.42ha

This is the biggest category on farm – to help break this category, the following table represents the paddocks which scored poorly (score of 3) for either weeds, pests or persistence.

**Table 2.0 Paddocks with poor persistence, pests & weeds burden**

	WEEDS	PESTS	PERSISTENCE
Paddock	27, 40, 46, 70, 79, 81, 82, 83	14, 18, 23, 70, 73	23, 27, 70, 81

- Paddocks 23 & 27 appear in two or more categories as poorly positioned, suggesting these paddocks may be better suited for winter annual ryegrass than spring crop (4.47ha)
- Paddocks identified in the table as particularly bad for weeds should be targeted for pasture weed spraying in the autumn
- This category also presents an excellent opportunity for under-sowing given the openness of some pastures – budget constraints will dictate the amount of area for this

## CONDITION 4 = 20.75ha

- In this category, paddocks 13, 28, 29, 48 & 50 (7.82ha) were identified as poor (3) for weeds, therefore I would suggest these paddocks be targeted in the pasture weed spray in the late autumn so we can try and maintain these as a Condition Score 4 paddock

## CONDITION 5 = 3.22ha

- Paddocks had good ryegrass & clover density and did not require any action

## NOTES



## IN SUMMARY

### Spring Crop Paddocks

Between Categories 1, 2 & 3, there is sufficient area to select 15ha which will be ear-marked for spring crop. This area will go through an annual ryegrass this autumn, as a lead into crop in spring.

The paddock selection should be based on proximity to the cow shed, but also the potential to access effluent. The following area has potential to be spring crop paddocks:

- 7.8ha of Condition Score 1 paddocks
- 18ha of Condition Score 2 paddocks (this is excluding the area that was specified as least desirable for spring crop (i.e. paddock 31))
- 4.5ha of Condition Score 3 paddocks
- Paddock 45 currently in Chicory will ideally need to go back into crop in the spring (2.46ha)
- Total potential area: 32.7ha

### Pasture Weed Spray Area

While the total allocated area for Pasture Weed Spraying will be determined by the Farm Management Committee & budget constraints, the following area would benefit from a pasture weed spray:

- 15ha of Condition Score 2 paddocks that were highlighted as unsuitable for spring cropping
- Up to 40ha of the paddocks which scored a Condition Score of 3, but in particular those paddocks indicated in Table 2.0
- 7.8ha of Condition Score 4 paddocks which presented as poorly for weeds
- TOTAL POTENTIAL AREA: 62.8ha

### Weeds controlled by chemical

Baton @ 1.5kg/ha	Valdo @ 65g/ha
Buttercups	Amaranthus
Dandelions	Mallow
Seedling Docks	Creeping Yellow Cress
Seedling Ragwort	Chickweed
Fathen	Hedge Mustard
Hedge Mustard	Oxeye Daisy
Plantains	Willow Weed
Thistles (Californian etc.)	Wire Weed (young seedlings)

### Under-sowing

All paddocks in the Condition Score 2 category that are not selected for spring crop will be under-sown with an Italian Ryegrass with Endophyte.

If the budgets permits, the worst paddocks in Condition Score 3 highlighted in Table 2.0 should be under-sown also. Blocks 1 & 2 with a hardy diploid perennial ryegrass, and Blocks 3, 4, 5, 6 & 7 with a good high performance diploid perennial ryegrass.

### Dry Matter Yields of Chicory across 14.3ha

Summer student detail set up:

Over the duration of the Chicory crop in paddock 45, we have been assessing the yield of chicory using three methods, with the help of the Year 10 Ag/Hort class at St Peter's. Our aim was to assess how much the cows were harvesting at each grazing (kgDM/ha) by using a range of methods that farmers might use. At each grazing, we have taken the following measurements:

1. Cut, Weigh & Dry Method – harvesting chicory with a lawn mower leaving a 6cm residual, and taking samples for Dry Matter Percentage
2. Massey University Herb/Clover Sward Stick – Measuring the average height of the stand (cm)
3. C-Dax Pasture Meters – Estimating the pre-grazing mass using the C-Dax Pasture meter

### Table 5. Cut, dry & weigh results

PLOT	11/12/2015	7/01/2016	1/02/2016	25/02/2016
DM%	9	10	11	11
kgDM/ha*	1363	1432	1001	571

\*Assuming a residual of 6cm

### NOTES

**Table 6. Sward Stick results**

PLOT	11/12/2015	7/01/2016	1/02/2016	25/02/2016
Height (cm)	26	20	18	17
kgDM/ha*	2442	1847	1588	1362

\*Assuming a residual of 6cm, which according to Massey University is 2331kgDM/ha during this period

**Table 7. C-Dax Pasture Meter results**

PLOT	11/12/2015	7/01/2016	1/02/2016	25/02/2016
Pre-Grazing (kgDM/ha)	4000	4200	3500	1700
Post-Grazing (kgDM/ha)	1500	1470	1200	1000
Harvested (kgDM/ha)	2500	2730	2300	700

### Interpretation of results

Actual dry matter (DM) yield of chicory (as assessed by quadrat cut methods) did not closely match

- (a) Initial 'eyeball' or visual estimates of feed on offer
- (b) Massey Universities herb/clover sward stick
- (c) C-dax assessment of pre grazing pasture mass

Why did quadrat pasture cuts of chicory not meet expected DM yield appraisals using other methods:

- Low DM% of the harvested chicory material. DM% were consistently the same or less than 11%DM. These levels are low, much lower than summer pastures which might be more typically 16-25% DM. The upright nature of chicory plus these low DM% means that while wet weight of crop per hectare might look impressive, actually there is less feed present than we might think. This will certainly lead to risk of error from DM yield assessments based on height such as C-dax or compressed forage height rising plate meter (RPM) devices
- Chicory density. The Massey herb/clover sward stick is promoted as assessing the probable DM mass of a mixed sward of herbs (chicory or plantain) plus clovers. It's not surprising that these sticks overestimated yield of DM on offer as these chicory stands contained no clover. An interesting exercise to complete, all the same!

Ways that you can assess DM on offer for chicory at your place.

- The 'gold standard' remains assessing chicory yields as we did – harvesting quadrat cuts, weighing the wet weight of the quadrat area and converting to kg wet weight/ha. You must always send away samples of chicory for DM analysis to a feed testing laboratory. Variations of DM% will greatly change yield of chicory / ha – as for any summer or winter crop

Examples of this are below:

- 1m<sup>2</sup> quadrat
- Cut to ground and weigh = 1.8 kg of wet weight chicory
- Multiply by 10,000 (because 1 ha = 10,000m<sup>2</sup>)
- 18,000 wet kg of chicory per every 1 ha

**Table 8.** Influence of DM% on final chicory yield per ha for a chicory crop that weighed at 18,000kg of wet weight per ha

Dry matter % of chicory sample					
	9%	10%	11%	12%	13%
<b>DM yield kgDM/ha</b>	1620	1800	1980	2160	2340

### Take-home

The DM% of a chicory crop is a very important influencer of accurate assessment of the amount of chicory DM on offer!

### Quadrat cuts seem too complicated?

Interestingly our quadrat cuts were quite close to the DairyNZ recommendations for estimating DM yields of chicory on offer. These recommendations were developed jointly by DairyNZ and Professor Peter Kemp at Massey University.

If you're not interested in quadrat cutting your crop (which remains the gold standard), try the DairyNZ recommendations as follows:

### NOTES

### Take-home messages

- The DM% of a chicory crop is a very important influencer of accurate assessment of the amount of chicory DM on offer!! This is true not only for Chicory but also for all summer and winter crops. Never use a text book value for DM% of various crops – DM% values vary for a wide range of reasons and will greatly influence the amount of feed on offer for your cows
- Quadrat cuts and sending a sample away for assessment of DM% remains the best way to accurately determine amounts of DM on offer. This is valuable not only for allocating appropriate areas of chicory to cows, but also to allow you to calculate an end of season DM yield for the chicory – as part of costings of the crop, on a cents per kgDM basis

### Summer cropping for Owl Farm 2016

Why are we talking about summer cropping 2016/2017 when we haven't even finished this years summer crop?!

It's all about planning! Planning for a spring sown crop begins at least a year before hand:

- Identifying candidate paddocks for the following spring sowing. Considerations include:
  - o How far away from the milking shed? If a paddock is too far away, cows have to walk long distances, often in hot, humid conditions to access crop. Cows can often walk off the benefits of the crop. As well, hot, bothered cows may not utilise crop well if they're tired and hot by the time they reach the paddock
  - o Base fertility – Individual paddock soil testing is very important to help identify the best paddocks for cropping. We need lead in time to correct some challenges, e.g. pH – soil testing should be done at least 2-3 months before cropping is underway, preferably earlier
  - o Current performance of the permanent pasture paddock? There's two ways to consider this:
    - (a) Pasture condition scoring – As we've done at Owl Farm. This is a visual appraisal of the condition of the paddock, presence of absence of desirable pasture species, weeds and pests. Condition scoring helps help rank pastures as very good to very poor. Cropping paddocks are almost always going to be the poorest paddocks so we maximise the benefits of regressing following the crop
    - (b) Ranking paddocks on annual DM yield. This can be done in some farm management software packages e.g. Minda Land & Feed. Or, manual calculations can be done on the basis of 'grazing days' – how many cows grazed each paddock how many times, each year. Future crop paddocks will be those paddocks that are the poorest DM yield paddocks

NOTES

---

---

---

---

NOTES





**Providing knowledge**  
St Peter's School/Lincoln University  
Demonstration Dairy Farm



ST PETER'S • CAMBRIDGE  
NEW ZEALAND



**Lincoln University**  
*Te Whare Wānaka o Aoraki*  
AOTEAROA • NEW ZEALAND

New Zealand's specialist land-based university

# Next Farm Focus Day

Wednesday, 25 May 2016



Like us on Facebook  
[facebook.com/OwlFarmNZ](https://facebook.com/OwlFarmNZ)



Follow us on Twitter  
[twitter.com/OwlFarmNZ](https://twitter.com/OwlFarmNZ)

**[www.owlfarm.nz](http://www.owlfarm.nz)**

