



## **BNZ NORTHLAND DAIRY DEVELOPMENT TRUST ANNUAL CONFERENCE**



**Tuesday 7 March 2017**

**Whangarei**

# BNZ NORTHLAND DAIRY DEVELOPMENT TRUST

<b>NDDT Chair:</b>	Penny Smart
<b>NARF Chair:</b>	Sean Bradbury
<b>NDDT Secretary:</b>	Natalie Davidson
<b>NDDT Trustees:</b>	Peter Flood Kerry Chestnut Allister McCahon Kim Robinson Logan Hewlett Terence Brocx Andrew Booth
<b>NARF Farm Manager:</b>	Kate Reed
<b>Science Manager:</b>	Chris Boom, AgFirst Northland
<b>Coordinator:</b>	Kim Robinson, AgFirst Northland

On behalf of the staff and organising committee, we would like to welcome you to the conference and hope you have a valuable and enjoyable day.

Thanks to the sponsors for their continued support:



Ministry for Primary Industries  
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**Hine Rangi Trust**

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## PROGRAMME

- 9.45am Registration
- 10.00am Introduction - Andrew Booth
- 10.10am Tony Alexander, BNZ Chief Economist
- 10.40am New regional plan for Northland - NRC (Ben Lee and Ben Tait)
- 11.15am Morning tea**
- 11.35am John Monaghan, Fonterra Director
- 12:35 Science update
- NARF Trial - Chris Boom & Kate Reed
  - Legumes Trial - Gavin Ussher & Allister McCahon
  - Northland Partner Farms - Gareth Baynham, Tony & Briar Lunjevich
  - Extension 350 Project - David Wilson & Luke Beehre, Northland Inc
- 1.25pm Conclusion and farewell
- 1.35pm Lunch**





# Northland Dairy Development Trust Update

## Who are NDDT?

### **People Providing Purpose and Direction**

Collaboration is key to the continued success of the work carried out by NDDT. The members of NDDT are an influential and high performing group. Their common passion for farming and belief in balancing science with on-farm experience to overcome industry challenges, is what drives a pragmatic approach to the research projects.

The dairy industry is well known for its turbulent but ultimately cyclic nature, and with such a long history and body of work spanning many decades, NDDT is uniquely positioned. It is this valuable history combined with the future focus that safeguard the integrity of this work and its ongoing benefit to the wider Northland economy.

Trustees are well respected dairy farmers and industry professionals. Three are appointed from the NARF Government Committee and the balance are from a geographic spread from around Northland.

Part time project managers are contracted to run each trial and there is a Coordinator and an Administrator also contracted on a part time basis.



## NDDT Objectives



To raise the profile of Northland as an innovative and progressive dairying region.



To encourage and strengthen the dairy farming community, attract new members and facilitate knowledge sharing.



To positively promote the dairy industry to both existing suppliers and people outside the industry through sound research with a focus on profitability and environmental stewardship.



To assist with improving the financial performance of the Northland dairy industry and its contribution to the Northland economy.



To objectively evaluate new dairying technologies within robust scientific frameworks.



To encourage and facilitate on-farm extension work.



To utilise the valuable resource at NARF to conduct and share research relevant to Northland dairy farmers.



To be inclusive and assist other related bodies with their science and research.



To attract a consistent level of funding and support from industry members and the community.

**Partnership. Integrity. Commitment.**



# NDDT

## Establishment, Purpose and Objectives

In 2006, the Northland Dairy Development Trust (NDDT, the Trust) was formed with the primary aim of commissioning relevant research to support and strengthen the Northland dairy industry. The trust formation was a joint initiative between the Northland Agriculture Research Farm (NARF) and Fonterra.

The Northland Agricultural Research Farm (NARF) was set up to research and trial innovative farming techniques, to provide training opportunities for young farmers and supply relevant information to the wider dairy industry. Originally established in the 1920's as the Northern Wairoa Experimental and Demonstration Farm, the name was changed in 2001 to reflect a broader, Northland-wide focus which had developed over the years.

Today it is operated as an incorporated Society, owned by all Northland dairy farmers and managed by an executive committee of Northland farmers and rural professionals.

Recognising the need to safeguard the future of the work carried out at NARF, the NDDT was established as a central administrator, facilitator and enabler for this work. Trustees are appointed by NARF and Fonterra and are headed by an independent Chairperson.



## Recent Highlights

Leading Science and Research for Northland Dairy

*This is an introduction to the **Northland Dairy Development Trust**.*

*Custodian of influential agricultural scientific research in Northland and the facilitator of an innovative future.*

## The Science and the Value

### An Economic Impact Assessment

The assessment, commissioned by NDDT and Dairy NZ was conducted by experienced agribusiness analysts Nimmo-Bell & Company Ltd. While scientific research has been conducted for many years, the assessment focused on just six trials carried out between 1998 and 2011.

This comprehensive evaluation not only provides insight into how important this work is to the Northland dairy industry and farming community, but it also illustrates impressive economic benefits to the wider economy. In addition to the quantifiable effects, the assessment also highlights spill-over advantages such as the role it plays as an independent industry watchdog, relevance to the wider agricultural industry and more. The full EIA report can be accessed online at [www.nddt.nz/industryimpact](http://www.nddt.nz/industryimpact).

**Delivered benefit to the Northland economy of over \$315 million\***



**Resulting in a net return on-farm of \$162 per hectare per year\***



**Represents a return on investment into research of \$76 per \$1 spent\***

**Split Calving Trial net on-farm benefit of \$163 million**

**Kikuyu Trial net on-farm benefit of \$141 million**

**Endophyte Trial net on-farm benefit of \$9 million**

**Standoff Pad Trial net on-farm benefit of \$5 million**

All figures quoted are from the 2015 NDDT Economic Impact Assessment conducted by Nimmo Bell. \*Benefits are assessed over six projects and cover a period of approximately 17 years. Benefits delivered outside the Northland region are not included.



# Northland Regional Council - Regional Plan

*Facilitators: Ben Lee & Ben Tait*

Northland Regional Council is developing a new regional plan – the rule book for how Northland’s water, soil, air and coast are used and managed. It is set to replace our three existing regional plans that are now over 10 years old. It takes into account some important changes that have happened over the last decade (such as new national direction and an improved understanding of our natural resources) and is required by the RMA.

Some relevant content includes:

- Changes to the amount of water that can be taken from a water body without resource consent
- Limits for fresh quality and quantity
- New rules for keeping stock out of certain waterways
- Changes to the rules for farm dairy effluent discharges

The main challenge in developing the new Regional Plan is striking a balance between protecting the things that Northlanders value, like clean water, while providing for our important economic activities – farming, horticulture, forestry, tourism and marine enterprise.

The goal is to release the new regional plan for public submissions in August this year.

Council staff will provide an overview of the new regional plan and matters that may affect dairy farmers.

For more information go to [www.nrc.govt.nz/newregionalplan](http://www.nrc.govt.nz/newregionalplan)



# Reducing Reliance on Imported Feed - Trial Update

*Facilitators: Chris Boom & Kate Reed*

This trial is being conducted by the Northland Dairy Development Trust and the Northland Agricultural Research Farm. The project is funded by DairyNZ, Ministry of Primary Industries (Sustainable Farming Fund) and Hine Rangi Trust.

## Summary

This project is testing and demonstrating how two dairy production systems using all 'home grown' feed (Grass Only farm and Cropping farm) compare to a system using Palm Kernel Expeller (PKE farm). Stocking rate is 7% lower on the Grass Only farm compared to the other two farms.

The trial has been running for 20 months. Through this time pasture growth and pasture covers have generally been better than historical average, while supplement use has been lower than expected on the PKE farm. During 2015/16, crops were established on the Cropping farm with a total of 23% of the farm area in turnips, fodder beet and maize (silage). Turnip yield was estimated at 9.0 t DM/ha, fodder beet 15.5 t/ha and maize silage 22.0 t/ha.

For the 2015/16 season, milk production was highest on the Cropping farm at 1,049 kg MS/ha compared with 870 kg MS/ha on the Grass Only and 1,028 kg MS/ha on the PKE farm.

Costs were calculated for each of the farms, including differential labour requirements. Farm working expenses/kg MS were \$3.59, \$4.20 and \$4.01 for the Grass Only, Cropping and PKE farms respectively. At a \$3.90/kg MS pay-out, the Grass Only farm had the highest operating profit at \$975/ha followed by the PKE farm at \$480/ha and the Cropping farm at \$298/ha. A milk payout would have needed to be \$6.00/kg MS before the PKE farm was the most profitable and \$18.00 before the Cropping farm was the most profitable.

Wet conditions during spring 2016 resulted in high levels of pugging damage on ex-crop paddocks due to poorer soil structure. This had a significant impact on the productivity of the Cropping farm. To date (31<sup>st</sup> January 2017), production is 752, 765 and 810 kg MS/ha for the Grass Only, Cropping and PKE farms respectively.

The 2015/16 results of this study have shown how a Grass Only farm system can be more profitable than alternative systems. However, this study has had relatively good pasture growing conditions to date. The Grass Only farm is ahead of the previous seasons production to date and likely most profitable so far, however summer 2017 is looking more challenging and may even up profitability between farms.

## Background

New Zealand dairy farms have come to rely on imported feed, such as PKE. There is concern in the farming community that this feed may not always be available due to lack of supply, market pressures, milk composition requirements or food safety concerns. Flexibility of feed supply is a major advantage of systems that use imported feed. However, increased levels of imported feed have also driven up farm working expenses making farm systems vulnerable during seasons with lower pay-out.

Removal of imported feed would impact on the productivity of New Zealand dairy farms in the short to medium term. A farm systems trial was established at the Northland Agricultural Research Farm (NARF), located at Dargaville, to test and demonstrate how dairy systems might maintain production and/or profit without use of imported feed. This trial commenced in June 2015 and will run at least until May 2018.

## Trial Structure

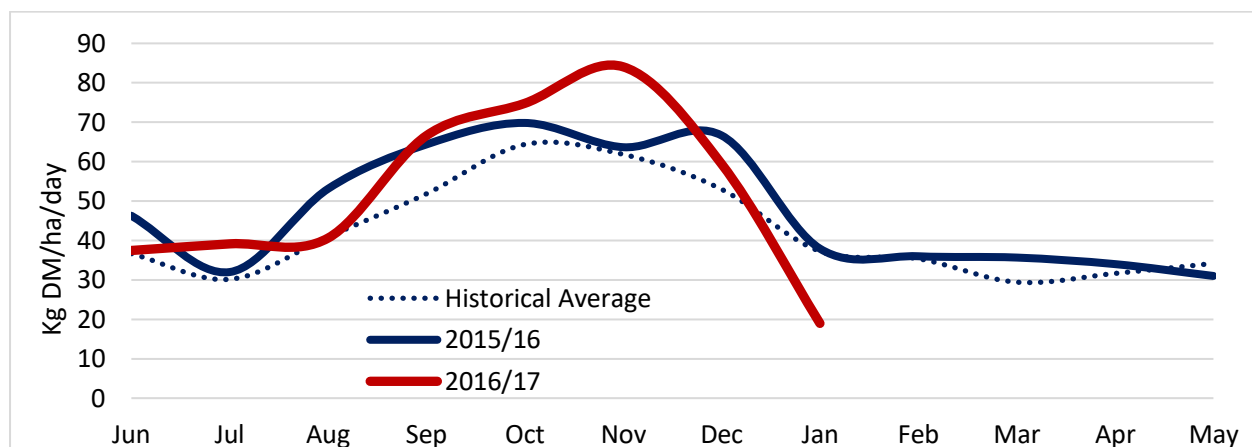
The trial compares three farms:

1. **Grass Only Farm** - No imported supplement, home grown grass silage may be used. Stocking rate of 2.6 cows/ha (73 cows calving on 28 ha)
2. **Cropping Farm** - No imported supplement, crops grown on farm (turnips, fodder beet and maize silage). Stocking rate of 2.8 cows/ha (80 cows calving on 28 ha)
3. **PKE Farm** - Importing of PKE as required to optimise profit from pasture. Stocking rate of 2.8 cows/ha (80 cows calving on 28 ha)

## Pasture Growth

The first 18 months of this study saw pasture growth better than historical averages, with the 2015/16 season having a calculated pasture growth of 17.4 t DM/ha (based on post and pre-grazing rising plate assessments). Good pasture growing conditions continued into the 2016/17 season until January 2017 where conditions have been dry.

**Figure 1.** Calculated pasture growth rates at NARF for 2015/16 and 2016/17 season to date and historical average.



## Pasture Covers

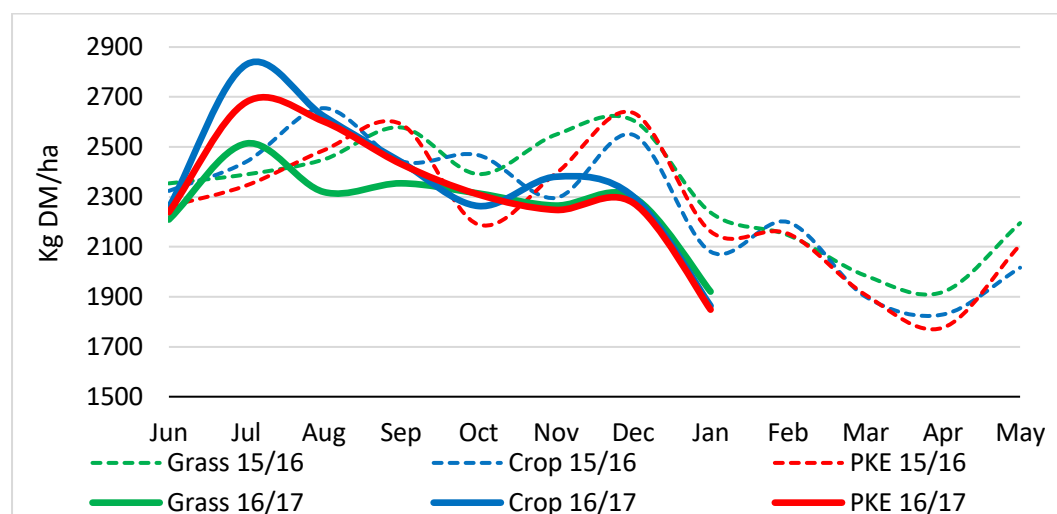
Pasture covers for the three farms are shown in Figure 2. Good pasture growth during most of the trial has led to good pasture covers. The drop in pasture cover during March/April 2016 was largely bought on by all kikuyu based pastures being mulched (with Italian ryegrass being introduced) on each of the farms. High covers during spring have allowed grass silage to be made on the Grass Only and PKE farms in both years.

In both years the Cropping farm has held higher covers than the other farms through the June to August period, likely due to this farm having a lower proportion of kikuyu based pastures because of the cropping to ryegrass regime. Areas have been taken out of grazing for cropping



from September/October in each year which effectively increases stocking rate to 3.5 cows/ha on the Cropping farm, thus allowing for no pasture silage conservation.

**Figure 2.** Average monthly farm pasture cover for the 2015/16 and 2016/17 season to date.



## Supplement and Crop Use

PKE is used in the PKE farm only when pasture is insufficient to fully feed cows. The use of PKE on the PKE farm was well below expected levels during the 2015/16 season, with 469 kg/cow being fed, compared to an expected requirement of 1,047 kg/cow in an 'normal' season. To date, 369 kg/cow has been fed during winter 2016 and summer 2017.

During 2015/16 season crops were established on 23% of the land area on the Cropping farm, being 9% of the farm in maize silage, 7% turnips and 7% fodder beet. Turnip and fodder beet yields were disappointing averaging 9.0 t DM/ha and 15.5 t DM/ha respectively. Turnips were fed during January and February 2016, while fodder beet was fed February – early May. Maize yield was estimated at 22 t DM/ha. Cropped paddocks were sown into either perennial or annual ryegrass.

Cropping for 2016/17 season occurred on 21% of the Cropping farm, being 7% in maize silage, 9% in turnips and 6% in fodder beet. A wet mid spring delayed establishment of the maize and one of the turnip paddocks. Turnip yield to date has averaged 8.3 t DM/ha.

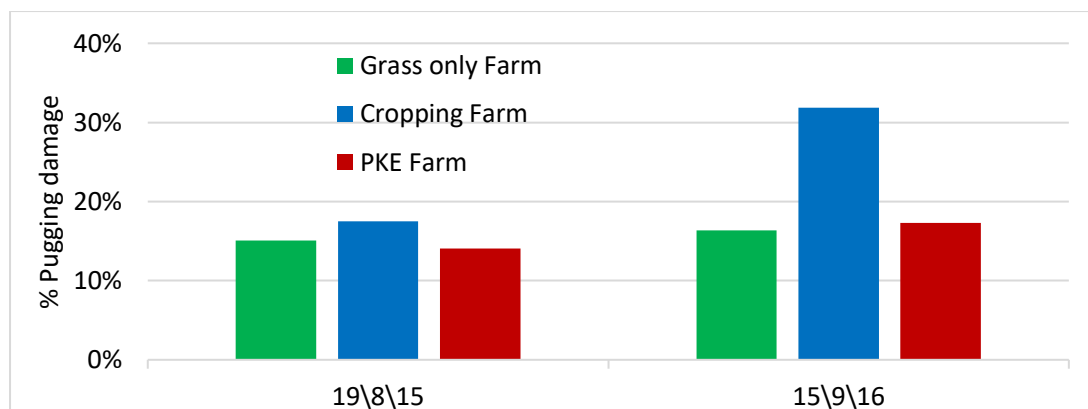
**Table 1.** Supplement and Crop fed during 2015/16 season and 2016/17 to 31st January 2017 (kg DM/cow/annum).

	Grass Only Farm		Cropping Farm		PKE Farm	
	2015/16	2016/17 (to date)	2015/16	2016/17 (to date)	2015/16	2016/17 (to date)
Grass Silage (home grown)	99	174			123	99
Turnip & Fodder Beet			622	109		
Maize Silage			630	516		
PKE					469	369
<b>Total Supplement &amp; Crop/Cow</b>	<b>99</b>	<b>174</b>	<b>1252</b>	<b>625</b>	<b>592</b>	<b>468</b>

## Pugging Damage

Soils at NARF are predominantly marine clay which is subject to waterlogging and pugging damage (treading) when conditions are wet. Paddocks were surveyed for pugging damage during early spring of both years. 2015 was a particularly dry winter and spring. Winter 2016 was also relatively dry, however mid-spring was wet. The Cropping farm had higher levels of pugging damage than the other farms during spring 2016. This was due to the ex-crop paddocks having very high levels of pugging, a consequence of the cultivation process having a negative effect on soil structure.

**Figure 3.** Average points of soil or plant disturbance due to pugging in August 2015 and September 2016.



## Milk Production

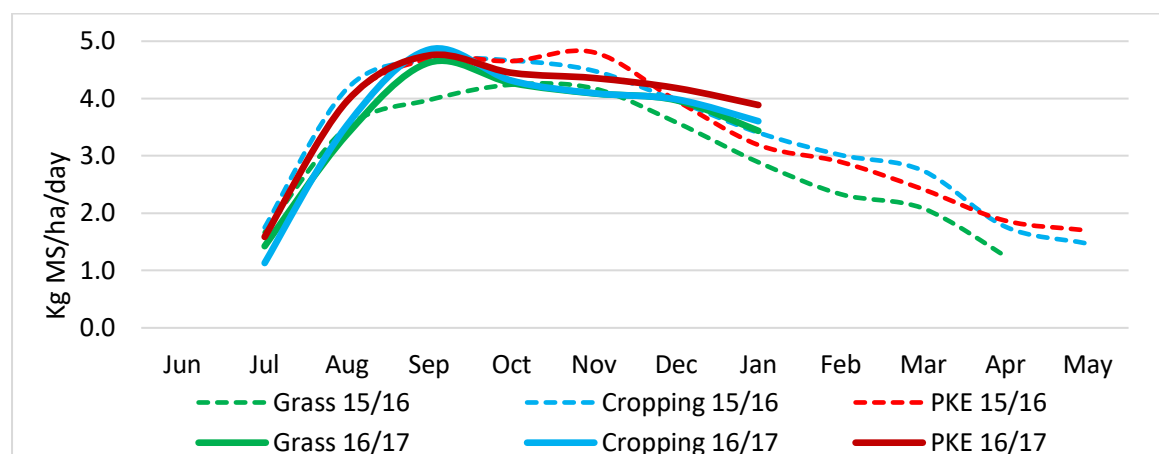
The Cropping farm had the highest milk production and Grass Only the lowest during 2015/16 season. Light conditioned cows were dried off on all farms from early April. Remaining cows were dried off on the Grass Only farm on the 3<sup>rd</sup> May and on the other two farms on the 13<sup>th</sup> May.

To date (31<sup>st</sup> January 2017), the Grass Only farm has had a good start to the 2016/17 season, with milk production being 9% ahead of the previous season. The Cropping farm is 5% behind and the PKE farm 1% ahead. On a per cow basis, the Grass Only farm has the highest production so far.

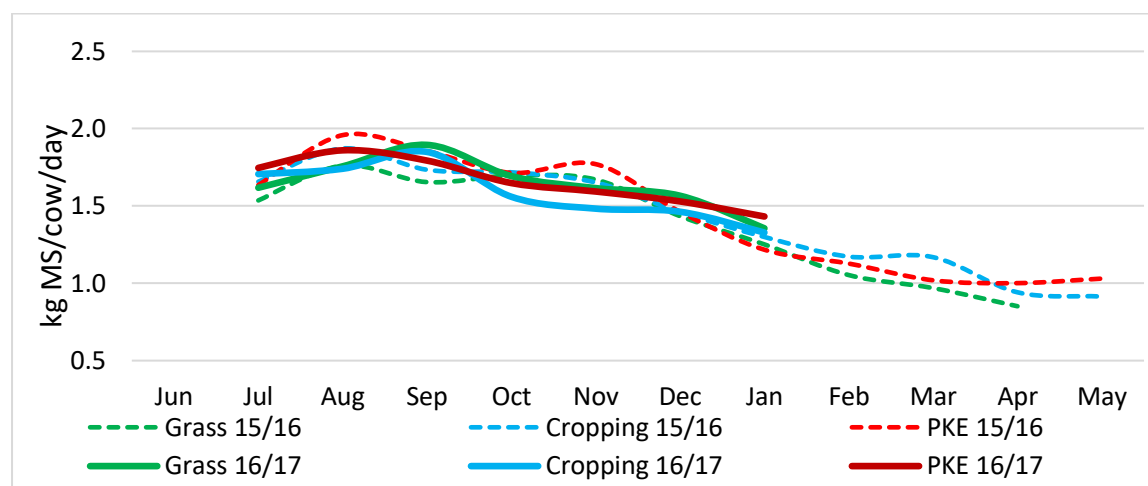
**Table 3.** Milk solids production per ha and per cow.

	2015/16 kg MS/ha	2016/17 to 31 <sup>st</sup> Jan 17 kg MS/ha	2015/16 kg MS/cow	2016/17 to 31 <sup>st</sup> Jan 17 kg MS/cow
<b>Grass Only Farm</b>	870	752	347	296
<b>Cropping Farm</b>	1,049	765	384	275
<b>PKE Farm</b>	1,028	810	379	291

**Figure 4.** Milk solids production for the 2015/16 and 2016/17 seasons (kg MS/ha/day).



**Figure 5.** Milk solids production for the 2015/16 and 2016/17 seasons (kg MS/cow/day).

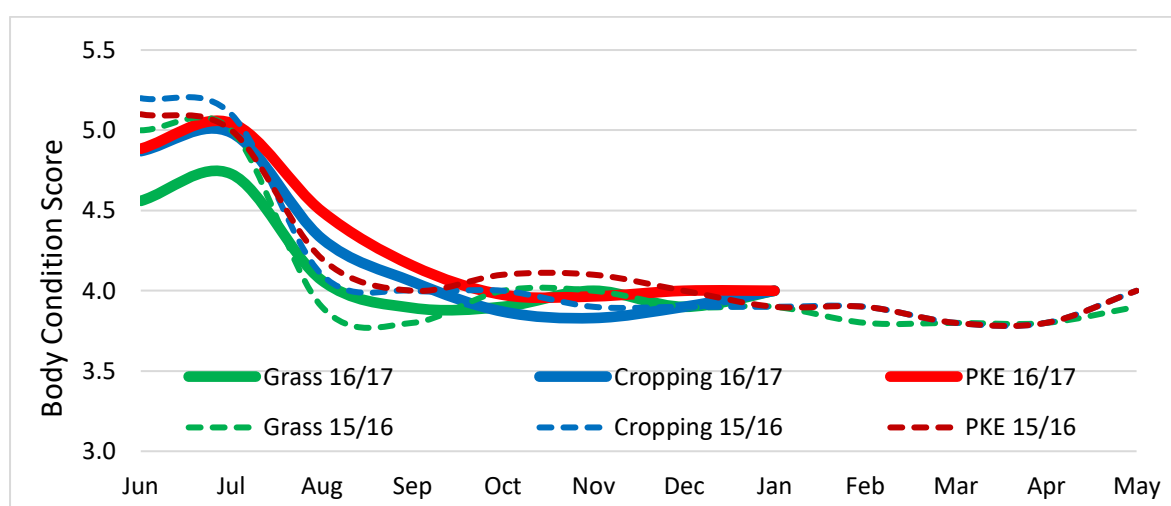


## Body Condition Score

Body condition score has been assessed every two weeks. The Grass Only farm has tended to have a lower score than the other farms, particularly during winter and early spring. The PKE farm has tended to have a higher score.



**Figure 5.** Average herd body condition score.



## Mating Results

Empty rates in both years have been relatively low. Once-a-day milking was utilised for cows with BCS of 3.5 and under from 2 weeks prior to mating. Despite differences between farms, these results do not indicate a significant difference between treatments.

**Table 4.** Empty rates at pregnancy diagnosis in February of each year.

	2015/16	2016/17
Grass Only Farm	6%	10%
Cropping Farm	13%	7%
PKE Farm	9%	1%

## 2015/16 Financial results

The financial results for the three farms have been calculated for the 2015/16 season and are shown in the table below. The income is based on a \$3.90/kg MS plus other income from livestock sales. The expenses are based on actual expenses with some adjustments for labour and administration to compensate for extraordinary expenses of the research farm.

Farm working expenses/kg MS were \$3.59, \$4.20 and \$4.01 for the Grass Only, Cropping and PKE farms respectively. At a \$3.90/kg MS pay-out, the Grass only farm had the highest operating profit at \$975/ha followed by the PKE farm at \$642/ha and the Cropping farm at \$444/ha. Milk payout would have needed to be \$6.00/kg MS before the PKE farm was the most profitable and \$18.00 before the Cropping farm was the most profitable.

Additional capital is required to run develop infrastructure, machinery and additional cows for the more intensive systems. Assumptions were made and adjusted operating profit is shown in the table below based on servicing the additional capital. Taking the additional capital requirement into account further favours the Grass Only farm.

**Table 6.** Calculated income, expenses and operating profit for the three farms along with scenarios based on alternative pay-out and adjustment for additional capital required for the alternative farm systems.

2015/16 Financials	Grass Only Farm		Cropping Farm		PKE Farm	
<i>Income</i>	<i>\$/ha</i>	<i>\$/kg MS</i>	<i>\$/ha</i>	<i>\$/kg MS</i>	<i>\$/ha</i>	<i>\$/kg MS</i>
Income from milk	\$3,391	\$3.90	\$4,071	\$3.90	\$4,013	\$3.90
Other Income	\$707	\$0.81	\$754	\$0.72	\$754	\$0.73
<b>Total Income</b>	<b>\$4,098</b>	<b>\$4.71</b>	<b>\$4,825</b>	<b>\$4.62</b>	<b>\$4,766</b>	<b>\$4.63</b>
Total Working Expenses	\$3,123	\$3.59	\$4,381	\$4.20	\$4,125	\$4.01
<b>Operating Profit at \$3.90</b>	<b>\$975</b>	<b>\$1.12</b>	<b>\$444</b>	<b>\$0.43</b>	<b>\$642</b>	<b>\$0.62</b>
<b>Alternative pay-out</b>						
<b>Operating Profit at \$5.50</b>	<b>\$2,334</b>	<b>\$2.68</b>	<b>\$1,968</b>	<b>\$1.89</b>	<b>\$2,127</b>	<b>\$2.07</b>
<b>Operating Profit at \$7.00</b>	<b>\$3,638</b>	<b>\$4.18</b>	<b>\$3,534</b>	<b>\$3.39</b>	<b>\$3,670</b>	<b>\$3.57</b>
<b>Additional Cost of Capital</b>						
Additional Capital Required	\$500	\$0.57	\$2,242	\$2.14	\$2,483	\$2.42
Cost of Capital at 6.5%	\$33	\$0.04	\$146	\$0.14	\$161	\$0.16
<b>Adjusted Operating Profit at \$3.90</b>	<b>\$942</b>	<b>\$1.08</b>	<b>\$298</b>	<b>\$0.29</b>	<b>\$480</b>	<b>\$0.47</b>

## Further Information

For further information visit the website [www.nddt.nz](http://www.nddt.nz) or contact Chris Boom at [chris.boom@agfirst.co.nz](mailto:chris.boom@agfirst.co.nz)

This project has been made possible by funding from DairyNZ, MPI – Sustainable Farming Fund, Hine Rangi Trust and NDDT sponsors. NARF also thanks Pioneer Brand Products and SeedForce for their support.



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# Northland's Diversified Forage Production

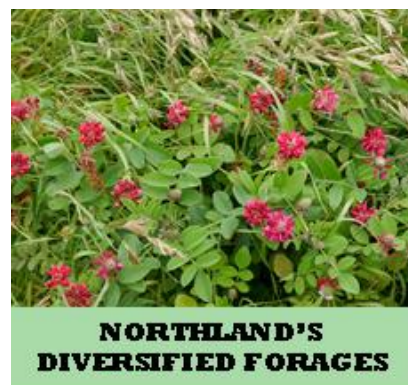
*Facilitators: Gavin Ussher & Allister McCahon*

## Project Overview

Our aim, over the 3 year project life is:

To increase the range of forage solutions available to Northland farmers.

To provide physical, financial results and the demonstration of a range of forages grown on a range of sites spread through Northland.



Plot trials are being used to grow and evaluate a range of annual and perennial legumes. Paddock-scale sowings are also being used for some of these legumes. Whole farm assessments are being undertaken on five farms: these farms are growing substantial areas of non-ryegrass pastures/forages.

## Overview of Plot Trials

Five sites: Awanui, Kerikeri, Hikurangi, Dargaville & Te Kopuru

Generally, all sites had the same legume species sown at the same rate between 20 April and 19 May 2016.

## Why these plots?

Perennials – to establish, monitor, see some of the new clovers, e.g. Kakariki, Legacy and Mainstay white clovers plus Relish red clover.

Monitor some other perennial legumes including:

Lotus - major and minor, strawberry clover, Aberlasting kura hybrid, Permatas – talish clover, lucerne, sulla

## ANNUAL LEGUMES - Why the annuals?

They grow more quickly, earlier than any other clovers.

- Research in Kaitia 40 years ago showed a range of annual clovers producing 8-12 tonne of dry matter from an early-April sowing up to 20-26 October harvest
- Research work in Marlborough 2011-12.

Clovers sown 26 March @ very high seeding rate.

This research showed very high yields by a range of annual legumes: across six annual clovers the typical yield was 15.1 tonne of dry matter per hectare, with a high of 19.5 t/ha. A white and red clover produced 11.3 and 12.4 t/ha respectively, over the same period.

## Paddock-scale sowings for our project – Year One

The focus being the annual clovers sown with companion species



## Comparison of Yields to Date – up to 12 January 2017

Name	Seed Mix Kg/ha	Period Monitored	Paddock Name	Yield Kg DM/ha	Peak Growth (Oct) Kg DM/ha/day	Composition % in Oct 2016			
						Bersee m Clover	Persian Clover	Grasses	White & Red Clover
Stanisich	Italian Rye 5 Mix of clovers 19	18 June – 12 Jan	Pdk 24	8,276	75	18	15	62	3
			Pdk 35	11,925	93	15	0	84	
Ussher	Perennial rye 15 Mix of clovers 15	12 April – 12 Jan	Bersee m 16	12,792	71	7	53	35	5
			Tick 15	8,772	61	6	42	32	7

## Perennial Legume Plot Data

Site – Te Kopuru

42 day regrowth period up to 6 December 2016

Species Sown	Dry Matter %	Growth Total Kg DM/ha	Growth per day Kg DM/ha/day	Sown Species as a % of pasture mass cut
Tall Fescue	24.2	3175	76	58
Ryegrass + White clover	24.7	3411	81	90
White clover	15.1	2752	66	94
Red clover	18.0	3272	78	83
Lotus Major	17.9	3086	73	61
Strawberry clover		2500	60	35

## Legume Annual Plot Data

Daily Growth Rates – Kilograms of dry matter/hectare/day						
	Awanui		Kerikeri		NARF Dargaville	
	From Sowing up to 19 Aug	From 19 Aug up to 11 Oct	From sowing up to 1 Sept	From 1 Sept up to 17 Oct	From sowing up to 30 Aug	From 30 Aug up to 19 Oct
Species Cultivar						
Balansa Viper	31	64	17	115	43	103
Berseem	44	109	22	79	47	108
Berseem meteor			28	161		
Persian Lusa	41	105	18	43		
Medic Burr					37	88
Sulla Wilpena					37	83

## Monitoring Results from Diversified Forages Farms

### Farm 1:

Lucerne – Dryland

Free-draining sand west coast of Dargaville.

Period	Forage Growth Kg DM/ha/day	Lucerne in cut %	Soil Moisture %
10 Nov – 13 Dec 16	92	59	16.5
14 Dec – 20 Jan 17	36	79	15.6

Points:

- Areas being monitored have variable soil fertility, e.g. pH of 6.1 and 6.2, potassium of 6 to 8 but Olsen Phosphate being very low at just 6 and 8.
- A major difference in some growth data from different cages: with 4 cages a close fit around 28 kg DM/ha/day for Dec-Jan, but one cage @ 80 kg/day with a 98% lucerne content compared to 78% for the other cages.

### Farm 2:

Tall fescue under irrigation and dryland conditions.

Peat soils – Awanui.

Most of the growth data has been collected for the period 15 September 2016 up to 6 January 2017.

Pasture Type	Average Daily Pasture Growth for the period kg DM/ha/day
Tall Fescue – High plant density Irrigated	87
Tall Fescue – Low plant density Irrigated	62
Tall Fescue – Dryland	50
Ryegrass – control	70
Italian ryegrass – Irrigated	100
Kikuyu dryland (sand)	46

### Farm 3

Tall Fescue under dryland, both peat and sand soils.

West coast of Dargaville.

Period	Pasture Growth: kg DM/HA/DAY	
	Peat	Sand
21 Sept – 16 Oct	114	87
17 Oct – 3 Nov	58	66
4 Nov – 2 Dec	68	65

Soil moisture had been high through to the 2 December sampling date, e.g. sand had 34% soil moisture when permanent wilting point would be 10-15%.

**Farm 4**

Chicory being spring-sown under irrigation and dryland, plus ryegrass and kikuyu.

Location: Kerikeri, volcanic soil.

Measurements from 16 Oct to 6 Jan, so almost 100 days.

Pasture Type	Average Daily Pasture Growth for the period kg DM/ha/day
Chicory broadcast Old pasture – kikuyu-dominant With Italian ryegrass sown in the autumn	77
Irrigated ryegrass Chicory 2014	83
Kikuyu – dryland	24
Drilled chicory Spring '16 Dryland	64
Drilled Chicory Spring '16 Irrigated	114

**Legume Seed Germination**

Laboratory germination results showed:

- Typical germination levels of 85%, ranging from 58 to 98%
- Very low (2-3%) germination for three seed lines used in the plot trials, explaining the failures in these plots.

Forage Quality – NDF Spring 2016 – Ussher Plots – All Vegetative Material Sampled 12 October 2016 – NIRS testing				
	White Clover	Berseem	Balansa	Persian
<b>Dry Matter %</b>	12.3	11.7	10.3	11.4
<b>Metabolisable Energy MJ/kg DM</b>	11.3	11.2	11.8	11.6
<b>Crude Protein %</b>	25.8	24.4	24.4	20.1
<b>Acid Detergent Fibre %</b>	25.5	24.4	25.1	24.8

## Features of our results to date:

- Need high plant population of the annual/perennial clover in August so there are sufficient plants to drive high legume growth in the August to December period.

Important factors here are:

- Using high quality seed
  - Achieving high field germination: kikuyu trash has to be “got rid of”!
  - Addition of companion species to these annuals is not easy. A major danger of companion species out-competing the clovers during the June and July period while most annual clover growth is slow
  - Do not pug these plants: pugging and/or overgrazing will result in plant loss and substantially reduce future clover growth.
- Strong suspicion that these annuals (and perennials?) need a slow grazing round through July and August (50-60 days?) and Sept-Oct (35-45 days) to show their potential growth
  - Soil fertility : Potassium is a critical element for maximizing legume growth and is possibly more important for annual legumes than perennials
  - The range in genetic material among the annual and some of the perennial legumes, means they are soil specific, e.g. Balansa, berseem and Persian annual clovers will “tolerate” wet soils far better than other clovers
  - Arrowleaf clover, Lucerne, sulla and Tick bean will not tolerate wet soils at all: they may only be suitable for free-draining sand soils or volcanic soils?
  - Annual clover growth rates up to July will be low, e.g. 10-20 kg DM/ha/day, from an autumn sowing. An exception will be Berseem clover which has shown higher growth rates in May to July than the other annual clovers. To compensate for these low growth rates a companion species may have to be sown, e.g. ryegrass, but at reduced rates compared to standard sowing rates
  - These annual clovers may be best suited to intercropping forage systems rather than grazing systems. Work looking at adopting these clovers into kikuyu or other perennial pasture species is still evolving.

**Gavin Ussher**  
**Project Consultant**  
**Feb 2017**

**Ministry for Primary Industries**  
Manatū Ahu Matua



# Partner Farm Project – Profit from Pasture

*Facilitators: Gareth Baynham, Tony & Briar Lunjevich*

## Background

The partner farm project was created to provide demonstration/extension of management practices from the Northland Dairy Development Trust (NDDT) Kikuyu project and follow on from the success of the Focus Farm at Alister & Lyn Candy's farm near Okaihau. The *Profit from Pasture* theme is central to the project. NDDT and DairyNZ jointly fund the project.

There are two partner farms, one in the Far North and one in the Lower Northland area. Both farms are supported by a management team of local farmers. The DairyNZ whole farm assessment was used at the initial visit to identify opportunities, then supported by the management team with monthly meetings for the first 6 months, moving to quarterly management team meetings.

Management teams have been held quarterly on both farms for the last 12 months. Despite 2016/17 presenting challenges for most Northland farms, both farms are demonstrating good gains.

## Far North Partner Farm: Tony & Briar Lunjevich, Kaitaia

The Final annual field-day is scheduled for Thursday 18<sup>th</sup> May 2017

### The Far North Partner Farm management team includes:

*Scott Rumsey (Chair), Aaron Switzer, Clive Walden, Kerry Cutler, Alister & Lyn Candy, Joe King and Bob Campbell.*

## Background

The Far North Partner Farm started in May 2014 and is now in the final year of the project. Tony and Briar Lunjevich (and 18 month old Abel), are 50:50 sharemilking for Tony's parents at Takahue (south of Kaitaia). Tony and Briar purchased an adjoining run down beef block just before the partner farm started, some of this block (~22ha) has now been added to the milking platform (increasing the platform from 107 ha to 130 ha).

Tony & Briar's goals are to build equity by \$500,000. They have exceeded their goal; increasing the herd size from 260 cows to 350 cows, increasing milk production and adding value to the rundown block through development. These changes in cow numbers and farm size make it difficult to quantify the impact of management changes, but the underlying theme of profit from pasture is still very relevant.

A major change during the project has been the shift from TAD milking in 2014/15 to 3 milkings in 2 days in 2015/16 and to full season OAD milking in 2016/17. This change has allowed Tony & Briar to keep a very tight labour system, milk off the new block and increase cow numbers. In addition to changes to the farm system, Tony and Briar have made gains in pasture management (pasture eaten increasing from ~8tDM/ha to 9.4 tDM/ha last season) and financial management: Farm working expenses reducing from \$2.60/kgMS to \$1.51/kgMS last season (50% sharemilkers costs) or an equivalent of \$3.50/kgMS to \$2.73/kgMS for the whole business.

## Key Changes Made:

- Increase stocking rate from 2.1 to 2.7 cows/ha
- Improve genetic merit, age and reproductive performance of the herd



- Implement pasture management changes (monitoring, spring rotation plan, feed wedge)
- Improve feed quality through summer/autumn by achieving target post graze residuals (using a mower where required), a high quality chicory crop & PKE to fill feed deficits
- Aggressive budgeting and monitoring actual expenditure against the budget

## Update

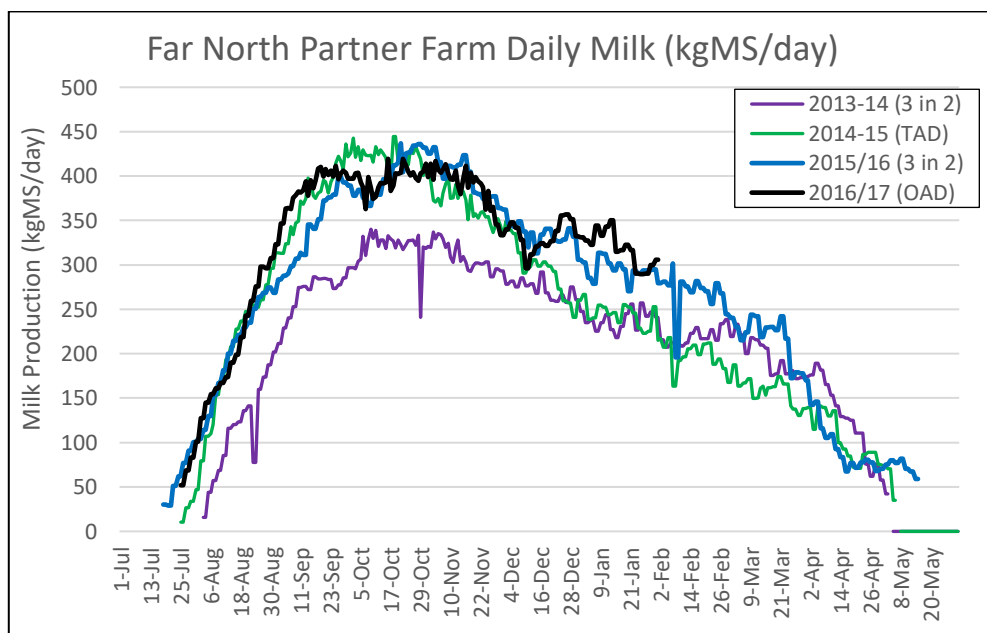
This season cow numbers were increased (from 290 cows to 330 cows) to allow for culling power to ensure that the cows in the herd suited OAD milking, to suit the increased land area and to help reduce the drop in production expected from changing to OAD. An extra area of the runoff was also added to the milking platform (from 124 ha to 130 ha). The chicory area was expanded from 14 ha last season to 21 ha this season, both to provide a high-quality summer feed and to accelerate regressing on the milking platform.

Late winter and spring were wet, creating challenges with pasture utilisation, but good pasture management and proactive supplement use helped hold pasture cover in the “sweet spot” through spring. In late September milk production dipped along with most Northern North Island farms, but recovered quickly. Milk production has been ahead of last season most months and remains around 3% up for the season.

The dry summer, expanded chicory area and extra cows meant less topping than previous years, but there’s been increased reliance on supplement (PKE) to offset lower pasture and chicory growth.

The cows were dried off early in autumn 2016 to ensure the met BCS targets and fit with the mulching plan. While this reduced milk production last season, it’s had a positive impact on this season; there’s been a massive change in reproduction this season – getting cows in calf has been challenge, with empty rates above 20% in recent years. This season the empty rate was 5.9%, which is a huge improvement and sets the farm up for a great start next season.

The 18<sup>th</sup> May field-day will be the final field-day for this farm, we’ll be recapping the changes Tony & Briar have made during the partner farm project, looking at how they made those critical changes and celebrating the success they have achieved over the past three 3 years.



## **Lower North Partner Farm: Innes Anderson & Tania Dropulich, Kaiwaka - Contract Milkers Philip & Pia Rockell**

The next field-day is scheduled for Wednesday 5<sup>th</sup> April 2016.

**The Lower North Partner Farm Management team includes;**

*Greg McCracken (chair), Peter Flood, Neville Porteous, Brian Mason, Ken Hames, Warren Burke and Dion Aitken.*

### **Background**

The Lower North Partner Farm start was delayed 6 months while the farm was selected. This farm started in May 2015, so the farm is in it's second season – the final season will be 2017/18. Innes and Tania lease the dairy farm from Innes parents and operate a beef farm adjacent to the dairy farm. Contract milkers (Philip and Pia Rockell) are in their third and final season on the dairy farm. The goal is to generate \$180,000 increase in operating surplus in the 2017/18 season by increasing milk production by 30,000 kgMS and holding expenditure. The milking platform is 211 ha, with around 144 ha irrigated (milking 556 cows at peak in 2015/16 & 2016/17, up from 470 cows in 2014/15).

### **Key Changes Made:**

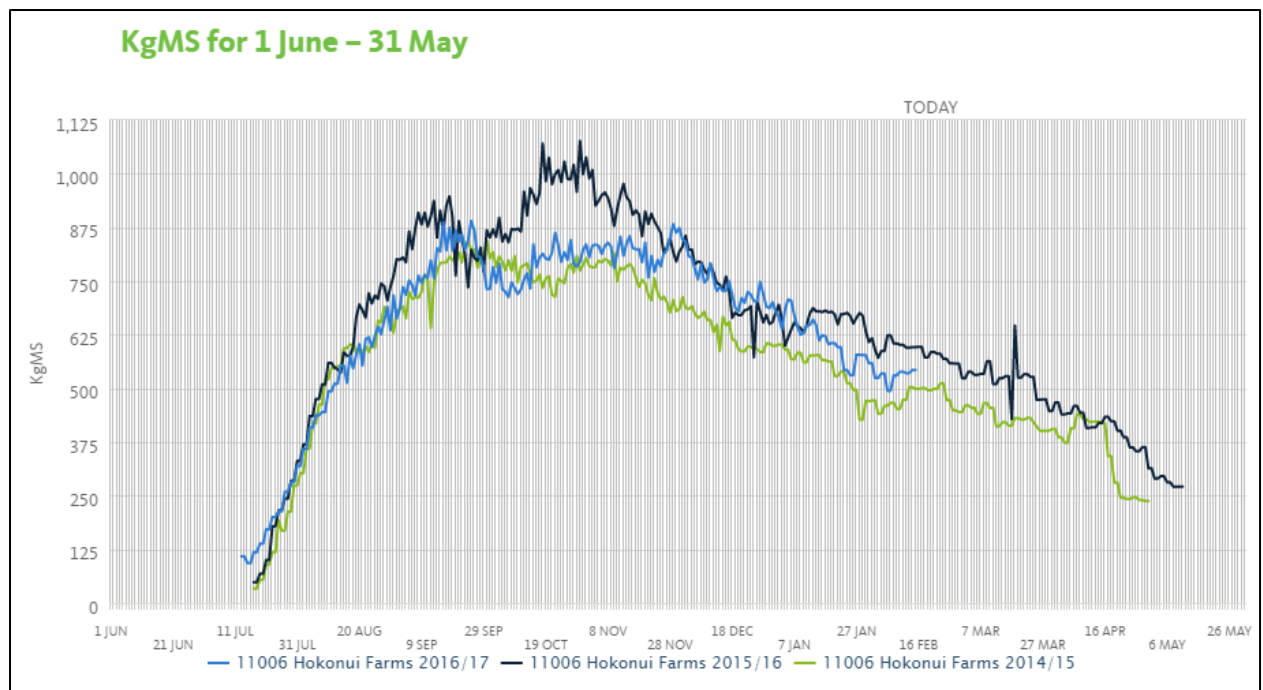
- Mulching and annual ryegrass to boost winter and spring pasture growth
- Increase stocking rate from 2.2 to 2.6 cows
  - OAD milking used as a tactical tool at times (mating, summer, etc)
- Implement pasture management changes (monitoring, spring rotation plan, feed wedge) targeted use of nitrogen & supplement where required
- Separated dairy & beef expenses for budgeting and monitoring actual expenditure against the budget (
- Exceeding MINDA weights targets for replacement heifers

### **Update**

Despite setting the farm up well through the winter and spring and holding pasture cover close to the “sweet spot” through spring, milk production has been running behind last season for most of the season. Milk production to the end of January was around 4% behind last season (adjusting for extra milk fed to beef calves).

As with much of the Lower Northland region, milk production dropped away in late September (milk production peaked on the 25<sup>th</sup> September, one month earlier than normal). Despite this difficult start to spring, the farm had recovered by late November. Dry weather since December has made summer challenging, extra PKE has been used and nitrogen has been used with irrigated areas where-ever possible.

The April field-day will be reviewing lessons learnt over the past two season and looking ahead at how the farm will be set-up to deliver a fantastic final year of the partner farm program in 2017/18.



**DairyNZ**

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