



## MARLBOROUGH FORAGE PROFIT PARTNERSHIP



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## Marlborough Forage Profit Partnership

Annual Field Day  
16 August 2016

Ben & Jane Millton, Waipapa  
&  
George & Ben Murray, Woodbank

**A focus on:  
Developing forage systems to underpin  
consistent livestock performance in  
challenging climates**

Our sincere thanks go to the Millton and Murray families for sharing their information and farms

Funding for this programme has been made available by Beef+Lamb New Zealand through your levies

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## Introduction

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The Marlborough Forage Profit Partnership commenced in November 2014 where the group ratified the project focus as being:

**“To lift forage productivity and farm profitability by 5% per year (15% over 3 years)”**

Little did we know that we were about to enter a period of challenging climatic conditions which would seriously influence the outcomes of the project. As a group we also underestimated the breadth and complexity achieving our project focus.

Now, 20 months on, the group has come to understand much about their forage systems, influencing factors and the management systems which can be employed to more effectively manage feed and livestock.

### The Group

- Paddy & Anna Trolove
- Simon & Pip Todhunter
- Richard and Victoria Gorman
- Ben and George Murray
- Ben & Jane Millton
- Simon, Lynda and Tom Harvey
- Warwick Lissaman
- Simon & Caroline Dick
- Hamish & Jess Murray

### Facilitator

Greg Sheppard  
Farm Management Consultant  
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### Beef+Lamb New Zealand Extension Manager

- Sarah O'Connell

### HEALTH & SAFETY IN EMPLOYMENT ACT, (1992)

*The farm owners wish to point out to all visitors to these properties that they are working livestock farms and as such to take extreme care when travelling over the property in vehicles, moving around yards and facilities and in handling stock. All practicable steps have been taken to ensure your visit to the property is a safe and enjoyable one.*

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## **Key Messages to Date**

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To date the group has identified the following key messages:

### **Simon Todhunter**

*Since the group started the Kekerengu/Clarence area has seen probably the driest couple of years in history. The group has a large number of farmers from this area.*

*The most valuable thing I have received is the support of the group with us all having the same issues. Also having Greg on call.*

*Unfortunately the climate may stop the full potential of the group being realized. Despite the weather I have still learnt some ideas around forage production.*

### **Ben Millton**

*Be flexible with stock policies and aim to have a % of stock wintered that can be tradable.*

*Be prepared for an unreliable autumn and make early decisions with grazing/selling stock.*

*Aim 1200 kgDM/ha minimum set stocking covers.*

### **Simon Dick**

*Joining the FPP group has encouraged me to change my conservative ways and try and push production and get out of my comfort zone. The peer pressure of having my performance compared to the other group members is great motivation to try and lift profit.*

*I've been introduced to feed budgeting which has made me aware of how important monitoring and measuring information is, giving a huge advantage to making management decisions based on sound knowledge rather than gut instinct.*

### **Paddy Trolove**

*Being involved in the group has given me more awareness of pasture covers and getting better at assessing covers. Makes decisions on buying, selling, or supplementing a lot clearer.*

*Breaking the farm down into 3-4 areas and identifying their potential monthly production per hectare. By knowing how much you are*

*growing and where, you can more accurately utilise each area with the right number and type of stock.*

*Being able to discuss ideas with other farmers and then implementing those ideas into your own systems has been great.*

### **Simon & Tom Harvey**

*Lambing twin bearing ewes onto 1200 kg quality DM is necessary to optimise lamb growth rates. However we need to be ready to take steps to maintain quality if a good spring pushes pasture covers too high.*

*Feed budgeting is a challenge on extensive hill country but potentially offers some valuable management information.*

### **Hamish Murray**

*The two key things that keep coming up at each property we visit, and which are very relevant for me, are Capital fertiliser and subdivision.*

*Both provide simple and significant improvements to forage production and its utilisation. Very basic, and not reinventing the wheel but on each property these two factors often provide the answers for many further improvements.*

*Also, when analysed, the return from the investment is often significant and impressive.*

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## Waipapa Farm Information

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Waipapa is comprised of 759 ha Effective in 5 blocks:

Irrigated Flats	94 ha
Dry Flats	75 ha
Medium Hill Country	300 ha
Steep Hill Country	150 ha
Semi Grazed Range	140 ha

The topography ranges from coastal river flats to high range country varying in height from 10 – 1000 m asl.

The climate is generally favourable traditionally being winter wet and summer dry with reliable autumns. Unlike many parts of Marlborough, summer pasture growth is generally good with the property receiving an average of 900 mm annually (700 – 1500 mm range). However the past two seasons have been uncharacteristically dry in the Clarence valley with rainfall being 648 mm in 2015 and 340 mm YTD in 2016. A NIWA weather station is located on the property measuring a range of data including soil moisture.

The farming system is described as “breeding and finishing” by Ben.

The wider farm business incorporates 3 other properties:

- Oxford 500 ha Leased
- Waiti 200 ha Owned
- Glentoi 750 ha Owned

### FPP Business Goals

- To increase the Meat & Fibre produced and sold
- To increase the scanning and lambing performance of the Two tooth ewes
- To mate all replacement ewe hogget's
- To consistently wean lambs at 34 kg Lwt (average)
- To increase the winter carrying capacity by 750 stock units
- To increase forage utilisation by 15%

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## Livestock Policies

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### Sheep

A flock of 2400 Romney (Wairere) ewes plus 650 replacement hogget's is maintained on the property. The breeding and management focus of the flock is that of achieving 150% lambing (survival to sale) with lambs sold prime at 17 – 19 kgCwt.

Lambing performance in 2015/16 was 146% in the MA ewes. All but 377 lambs were sold prime.

Ewes are mated 1 April (24<sup>th</sup> August lambing) for 3 cycles and Hogget's 18 April for 21 days only.

The first draft of lambs is sold at the end of November to a minimum of 36 kgLwt. Lambs are weaned by Christmas and drafted every 2 weeks thereafter at a minimum of 38 kgLwt. In a normal season additional lambs are finished on Waipapa having been sourced from the family's other properties. Alternatively lambs will simply be purchased from a stock agent. The majority of lambs will be sold by April with a small proportion wintered and finished in the spring.

Reproductive performance summary:

	Ave. Scanning %	Lambing %	Scanning 2016
MA Ewes	175 – 185 %	150 - 155%	174 %
2 Tooth Ewes	160%	140%	155 %
Ewe Hogget's	50 – 80%	75 – 80% of those in lamb	52 %

## Cattle

This year cattle numbers are somewhat different to normal as a result of the drought conditions. There were no R2yr cattle wintered as they were either grazed off or sold prime at lighter weights prior to winter. Typically the majority of cattle wintered on Waipapa are trading/finishing stock with 40 – 45 MA cows calved on Waipapa.

Fodder Beet is now being used to ensure faster live weight gain over winter.

First calving heifers are calved at Waipapa before being moved to Glentoi for their second calving.

## Livestock Reconciliation

Stock Class	2016	2015	2014	Typical
MA Ewes	2392	2475	2354	2400
Ewe Hogget's	675 winter grazed off farm*	600	850	700
Rams	33	36	35	35
<b>Sheep Stock Units</b>	<b>2418</b>	<b>2924</b>	<b>2977</b>	<b>2918</b>
MA Cows	58	82	10	100
R2 yr Hfrs	34 IC wintered off + 9 dry	72 IC + 19 dry	44 IC + 92 dry	40 IC + 40 dry
R1 yr Hfrs	118	74	85	100
R1yr Strs/Bulls	133	52	97	150
R2yr Strs/Bulls		79	112	40
Breeding Bulls	6	5	4	5
<b>Cattle Stock Units</b>	<b>1704</b>	<b>1974</b>	<b>2145</b>	<b>2345</b>

<b>Total Stock Units</b>	<b>4122</b>	<b>4898</b>	<b>5122</b>	<b>5263</b>
<b>Stocking rate su/ha</b>	<b>5.5</b>	<b>6.5</b>	<b>6.8</b>	<b>7.0</b>
<b>Sheep:Cattle</b>	<b>59:41</b>	<b>60:40</b>	<b>58:42</b>	<b>55:45</b>

\*As at 16 August, 376 ewe hogget's remain off farm grazing

Based on the typical carrying capacity of 5160 stock units it can be estimated that approximately 4480 kgDM/ha is consumed annually.

The drop in stock wintered this year represents a drop in forage consumption of approximately 960 kgDM/ha (a 20% drop) from that normally expected.

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### **Forage Cropping**

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- 8 ha Fodder beet 23 TDM/ha average (measured)
  - Jamon cultivar sown 1 November
  - Wintering 250 mixed sex R1yr cattle for 90 days. So far cattle have grazed 4.54 ha
  - 550 two tooth ewes since May have grazed approximately 2 ha
- 4 ha Kale utilised for tuppung ewes
  - Sown into GF Oats post tuppung
- 4 ha Rape utilised for tuppung ewes
  - Sown into GF Oats post tuppung
- 8 ha of winter Rape 5 TDM/ha (estimate)
  - Grazed by twin bearing ewes
- 13 ha green feed Oats
  - Early sown crop yield 5 TDM/ha (estimate)
  - Post tuppung sown GF Oats yield 3 TDM/ha
  - Being grazed by late lambing ewes
- 8 ha Italian Rye Grass is/will be grazed by twin bearing ewes pre-lamb and/or ewe hogget's
- 8 ha of Lucerne
  - A further 15 ha will be sown in the spring
  - Red clover will be established on 15 ha

#### **Fodder Beet Costs/ha**

Plough/cultivate	\$215
Fertiliser/urea	\$370
Lime	\$90
Chemical/application	\$1,100
Drilling	\$190
Seed	\$500

**Total** **\$2,565/ha 11c/kgDM**

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## Grazing Management

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<b>Ewes</b>	Rotation except for set stocking over lambing
<b>Hogget's</b>	Rotated during winter on Italian/Rape forage (break-fed)
<b>Lambs</b>	Rotated on a shift every 4 days
<b>Cows</b>	Rotated and grazed on the hills in 1 – 2 mobs or at Wai Iti. Either calved behind a wire or set stocked on the hill country. Cows are single sire mated (bulls changed every cycle)
<b>Growing cattle</b>	Break-fed or in grazed in small paddocks of improved pasture on a rotation

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## Fertiliser and Soil Test Results

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Fertiliser has historically been applied over the flats and hill country annually. Normally this has been Sulphur Super with lime also flown on.

In addition, DAP is applied at a rate of 100 – 150 kg/ha to new pasture and brassica crops. Urea is generally only used on established brassica, new pasture and irrigated land.

Fertiliser applied mid-August

- Dry Hill receives a mixture of
  - 60 kg DAP
  - 60 kg Ammonium sulphate
  - 30 kg Elemental Sulphur
  - Applied at a rate of 150 kg/ha
- Back Hill receives
  - 120kg Double Super 15% P plus 30kg elemental Sulphur
- Flats will get same as the Back Hills but a higher rate

Recent soil test results (February 2015):

	<b>pH</b>	<b>Olsen P</b>	<b>Potassium</b>	<b>Sulphate S</b>
2 <sup>nd</sup> Down	6.1	37	12	NA
8	6.2	29	11	28
9	6.2	35	16	12
Back Gill	5.8	13	8	17
Front Gill	5.7	11	13	NA

Soil test results from August 2010:

	<b>pH</b>	<b>Olsen P</b>	<b>Potassium</b>	<b>Sulphate S</b>
4 <sup>th</sup> Down	6.2	65	11	12
Bottom Bdy to Kale	6.6	26	7	10
2B to Kale	6.3	49	11	12
3B Lucerne	6.4	26	8	3
5A to Kale	6.6	19	11	7



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## **Farm Management Focus**

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As a consequence of being part of the FPP, management is now focused on:

- Achieving higher lambing over – minimum of 1200 kgDM/ha and an average of 1400 kgDM/ha
- Improving spring and summer forage quality – more Lucerne and legume based forages will be established
- Lifting soil fertility on the hill country to support a greater legume contribution to forage production in spring
- Lift 2 tooth mating weight and flush on Kale/Rape
- Improving ewe hogget autumn live weight
- Use Nitrogenous fertiliser to boost pasture supply when necessary

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## Woodbank Farm Information

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Woodbank Station has a total area of 1600 ha with an estimated 1550 ha being effective grazing land. This is broken into distinct farming blocks:

- Irrigated flats 95 ha
- Dryland flats 164 ha
- Improved hill 362 ha
- Native hill 844 ha
- Forage crops 85 ha

Located on the North Bank of the Clarence River and extending inland the climate is considered summer dry receiving 750 mm rainfall on average annually.

Currently 100 ha of flats are irrigated (K-Line on 8 – 10 day return) whilst a further 135 ha remains dryland (and has the potential to be irrigated).

Subdivision on the flats is very good with paddocks ranging in size from 4 – 10 ha. On the better hill country paddock size varies from 10 – 25 ha whilst on the more extensive country has paddocks from 25 – 60 ha.

### FPP Business Goals

- To improve pasture utilisation on the hill country
- To improve the quantity and quality of specialised forage crops produced under irrigation and dryland
- To realise 150% lambing in the MA ewes consistently
- To achieve an average lamb weaning weight of 32 kg
- To increase profitability

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### Livestock Policies

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#### Sheep Enterprise:

The flock of 2050 MA Romdale ewes is mated from April 4<sup>th</sup> (1<sup>st</sup> September lambing) with the poorer quality ewes mated to a terminal sire ram.

Reproductive performance summary:

Average	Scanning %	Lambing %
MA Ewes	170 – 175 %	132 – 143 %
2 Tooth Ewes	160 – 170 %	0
Ewe Hogget's	80 – 100 %	0

Approximately 100 % of the ewe hogget's were mated this season from April 23<sup>rd</sup> (19 September start of lambing) for 1 cycle. These hogget's weighed 42 Kg Lwt when the ram was introduced.

The majority of the lambs are sold store at weaning.

A 12 month shearing programme is in place whereby the ewes are shorn when the ram is removed in May. Lambs are shorn in January with ewe hogget's shorn in August pre lamb.

### **Cattle Enterprise:**

The cattle enterprise is based around the Stud Angus herd which sees all cows single sire mated. In addition 100 -150 are synchronised and Artificially Inseminated.

Each year approximately 70 R2yr bulls are sold along with 30 yearlings in the spring sales. Following this a further 25 yearlings are sold outside of the on farm sale. In total approximately 125 bulls are sold annually.

Two year old heifers calve from 10 August whilst the cows start calving from August 23<sup>rd</sup> (88 – 92 % calving).

The heifers are weaned from mid-January followed by the cows in April. Typically the calves average 220 kg Lwt at weaning.

A mob of 50 surplus cattle are wintered with animals sold either store in the autumn or prime in the spring depending on feed conditions and market prices.

A further 100 MA commercial cows are grazed on the Waiau Toa lease block and another 40 pedigree cows are at brother Tim's in the Greta Valley. These are not included in the table below.

### **Livestock Reconciliation**

<b>Stock Class</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
MA Ewes	2200	2450	2100
Ewe Hogget's	550	800	630
Trade Hogget's	40	0	100
Rams	30	30	35
<b>Sheep Stock Units</b>	<b>2641</b>	<b>3034</b>	<b>2649</b>
MA Cows	213	217	228
R2 yr Hfrs	112 IC	150 IC	90 IC
R1 yr Hfrs	158	160	160
R1 yr Bulls	124	160	160
R2yr Bulls	110	100	100

Other Cattle			75
Breeding Bulls	4	4	5
<b>Cattle Stock Units</b>	<b>3822</b>	<b>4086</b>	<b>4173</b>
<b>Total Stock Units</b>	<b>6463</b>	<b>7120</b>	<b>6822</b>
<b>Stocking rate su/ha</b>	<b>4.17</b>	<b>4.6</b>	<b>4.4</b>
<b>Sheep:Cattle</b>	<b>41:59</b>	<b>43:57</b>	<b>39:61</b>

The impact of the drought on winter stock numbers has seen a reduction in the carrying capacity by just 5%. Relative to many other properties that have been affected by drought this drop is minimal. In fact it should be noted that in June 2015, the winter stock numbers were 4.5% higher those in 2014. These results reflects:

- An increase in subdivision
- A lift in pasture utilisation
- A change in grazing management
- Development of a more effective forage cropping programme

Monitoring and analysis of forage production on the farm indicates the following production is being achieved:

Irrigated flats	13,000 kgDM/ha
Dryland flats	5,600 kgDM/ha
Improved hills	4,400 kgDM/ha
Native hills	2,700 kgDM/ha

Over the past 4 years 15km of sub divisional and insul timbre upgrade fencing has been erected as a means of improving grazing management, pasture utilisation and quality. The investment has amounted to approximately \$79,500:

Material	\$2.20/m (use of old vineyard posts has minimised this)
Labour	\$3.10/m
<b>Total</b>	<b>\$5.30/m (this excludes tractor and bulldozing costs)</b>

This fencing has increased the subdivision to 15 new hill paddocks.

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### **Forage Cropping**

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Crops on the farm include:

- 6 ha Fodder Beet
  - Grazed by 110 R1yr bulls and 550 twin and triplet bearing two tooth's and MA triplets
- 8 Ha Rape/Oats/Italian rye mix plus 4 ha Rape
  - Grazed by 920 twin bearing ewes
- 55 ha Lucerne and Lucerne Prairie Grass mix
  - with another 30 ha to be sown in the spring

- 22 ha Rape plus 4ha Rape/Oats/Italian rye
  - 550 Ewe Hogget's (mated)
- 4ha Kale and Swedes
  - 285 mixed sex calves pre-winter
- 21 ha Rape/Oats/Italian
  - Un-grazed at present

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### Grazing Management

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<b>Ewes</b>	Rotational grazed except for set stocking over lambing
<b>Hogget's</b>	Weaned onto Lucerne, winter on rape.
<b>Cows</b>	Rotational grazed
<b>Growing cattle</b>	break fed

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### Forage Investment on Woodbank

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Fodder Beet:

Area	5.8 ha	
AgLime	\$ 776.87	\$ 133.94
Fertiliser	\$ 2,590.43	\$ 446.63
Urea	\$ 292.17	\$ 50.37
Spray	\$ 342.47	\$ 59.05
Terra Discs	\$ 1,125.00	\$ 193.97
Rotary Hoe	\$ 1,706.00	\$ 294.14
Drilling	\$ 1,102.00	\$ 190.00
Seed	\$ 2,481.14	\$ 427.78
Spray Programme	\$ 6,286.64	\$ 1,083.90
Tractor	\$ 540.00	\$ 93.10
<b>Total Establishment Cost</b>	<b>\$ 17,242.72</b>	<b>\$ 2,972.88</b>
Yield	25000	kgDM/ha
<b>Cost of DM</b>	<b>\$ 0.12</b>	<b>per kgDM</b>

Rape:

Goliath	per ha	
Spray Summer Fallow	\$ 67.56	
Spray prior to Drilling	\$ 83.17	
Drilling	\$ 60.00	
Rape Seed	\$ 86.61	
Fertiliser	\$ 73.04	
<b>Total Establishment Cost</b>	<b>\$ 370.38</b>	
Yield	2750	kgDM/ha
<b>Cost of DM</b>	<b>\$ 0.13</b>	<b>per kgDM</b>

## Irrigation Analysis on Woodbank

This year a new Centre Pivot irrigator will be installed on the flats to improve optimise forage production. This new system will replace some existing K-Line irrigation and incorporate previously dryland flats.

Investment:

Pivot	\$125,000
Generator	\$15,000
<b>Total</b>	<b>\$140,000 (plus some fencing costs)</b>

Dryland production	5,600 kgDM/ha
Irrigated production	13,000 kgDM/ha

Assuming a Red Clover based forage is established and produces 15,000 kgDM/ha annually, up to 220 lambs/ha could potentially be finished.

Net Margin from lamb trading:

	Cost \$/ha	Area	Investment
<b>Crop Red Clover</b>	<b>\$ 1,000</b>	<b>44</b>	<b>\$ 44,000</b>
Net Production Gain*	<b>9,400</b>	kgDM/ha	
Utilisation	<b>80%</b>		
Energy	<b>12.5</b>	MJME/kgDM	
Ave. Lamb Lwt kg	<b>35</b>		
Live weight Gain	<b>225</b>	g/d	
Number Grazing days	<b>275</b>		
<b>No. of Lamb Trades/Crops</b>	<b>8.8</b>		
Annualised Average SR	22	lambs/ha	
Lwt Produced	58773	kg	
Lwt Value	<b>\$ 2.00</b>	\$/kgLwt	
Power (Pivot)	<b>\$ 4,000</b>		
Power (Water)	<b>\$ 9,000</b>	Interest Irrig. Capital	
Cost of Capital Total Development	\$ 11,040	<b>6%</b>	<b>\$ 140,000</b>
Depreciation	\$ 4,840	Ave cost over 20 yrs	
<b>Net Value in Lwt Gained</b>	<b>\$ 88,666</b>		
<b>Net Value in Lwt Gained/ha</b>	<b>\$ 2,015</b>	<b>\$/ha</b>	
<b>Return on Investment</b>	<b>202%</b>		

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## **Fertiliser and Soil Tests**

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- The Irrigated flats have had 550kg's of Sulphur Super annually
- Dryland flats 250kg's of Sulphur Super annually
- Improved hill has had fertiliser biannually in the past. This year it has had 220kg's of Sulphur Super – this will continue as annual application
- DAP is applied at 150 kg/ha to forage crops

January 2014 Improved hill country:

Sample	pH	Olsen P	Potassium	Sulphate S
Top FFCH	5.7	12	15	4
BC Shady	5.5	13	8	6
Middle Paddock	5.6	9	14	5

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## **Management Focus**

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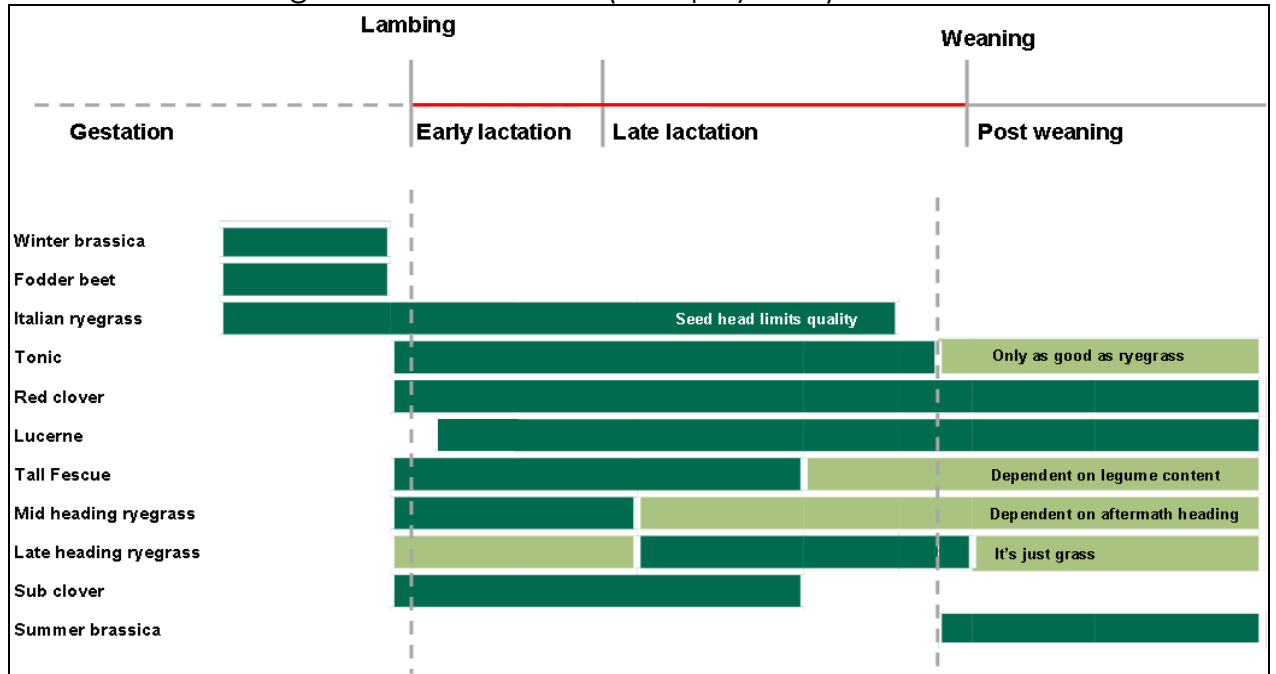
As a consequence of being part of the FPP, management is now focused on:

- To increase the area under irrigation
- To invest further into high quality forage and legume crops to support a higher winter carrying capacity and underpin higher levels of livestock performance
- Lifting soil fertility on the hill country to produce more pasture and of a higher quality
- Continuing to improve subdivision as a means of improving pasture utilisation and quality

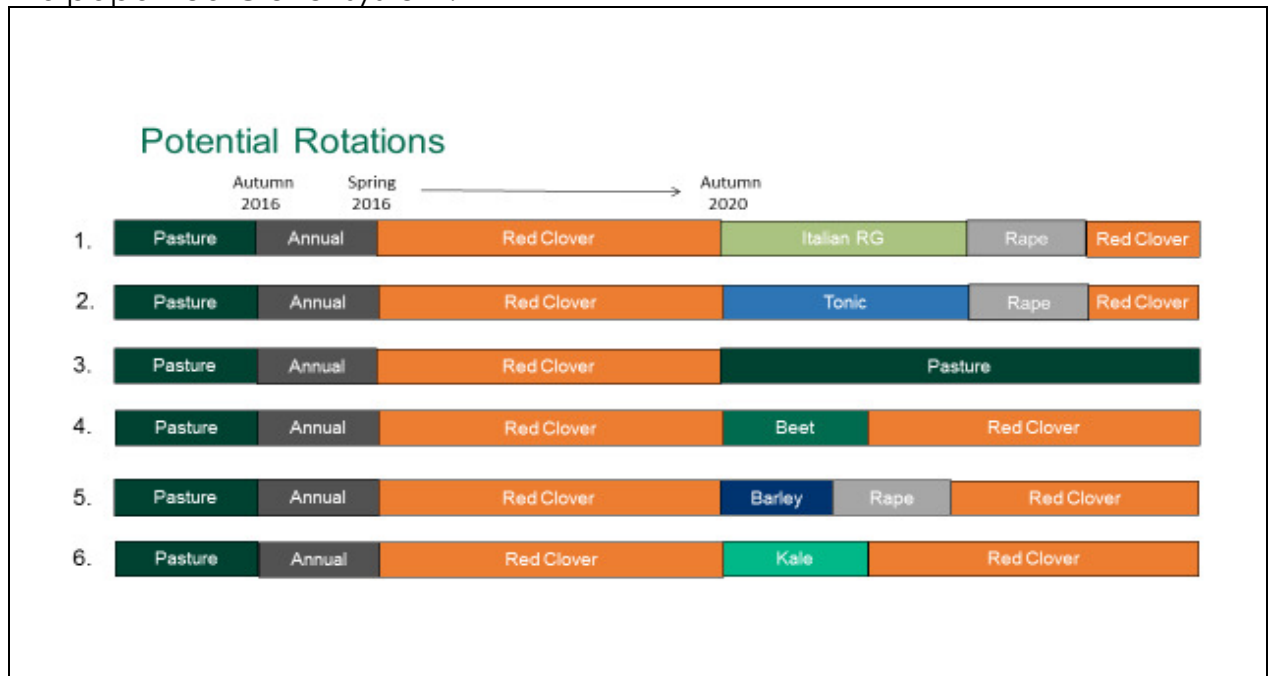
## Forage Production Systems

The following tables have been prepared by Mark Kearny, Agricom.

When certain forages are at their best (sheep system):

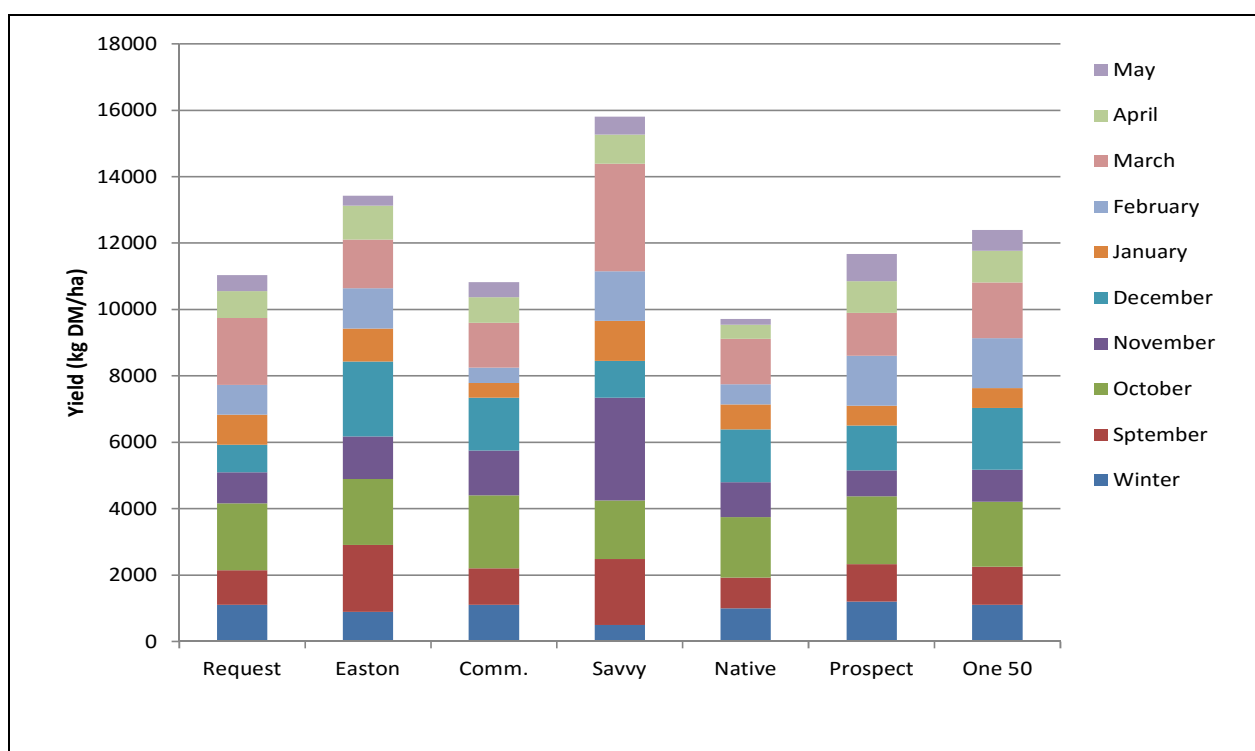


Waipapa Red Clover system:





Comparing grass yields under beef system (Marshdale, Oxford):



Live weight gain and stocking rate/ha (Marshdale, Oxford):

<b>Treatment</b>	<b>Stock</b>	<b>Stocking rate (cows/ha)</b>	<b>Animal Grazing days/ha</b>	<b>LWG (kg/day)</b>	<b>LWG/ha (kg/ha/day)</b>
<b>Savvy</b>	Beef	5.8	110	1.50	8.7
<b>Native</b>	Beef	4.4	87	1.48	6.5
<b>Tonic*</b>	Dairy	4.5	97	1.03	4.6
<b>Commando*</b>	Dairy	5.2	99	1.10	5.7
<b>Easton</b>	Beef	6.6	151	1.16	7.7
<b>Request</b>	Beef	5.9	142	1.04	6.1
<b>Prospect</b>	Beef	4.8	110	1.47	5.9
<b>One 50</b>	Beef	4.6	105	1.45	6.7
<b>Savvy Halo</b>	Est.	0	0	0	0
	Est.	0	0	0	0

Notes: