

# Forages for Dryland

Tokaroa Field Day  
26<sup>th</sup> Oct 2016

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## *Forages for Dryland*

Project Objective: To benchmark the performance and profitability of lucerne, plantain and annual clovers against pasture and determine their fit within a dryland farming system

### *Tokaroa Farm (Dan and Reidun Nicholson)*

- Area 607 (585 effective)
- 80 ha in plantain/clover (15%)
- Farmed in conjunction with Bush Gully 1408 ha, 30 km away, managed by Dan's brother Matt.

## *Plantain (Second Rush – 12.0 ha)*

### **Seed mix** (cost \$280/ha plus GST)

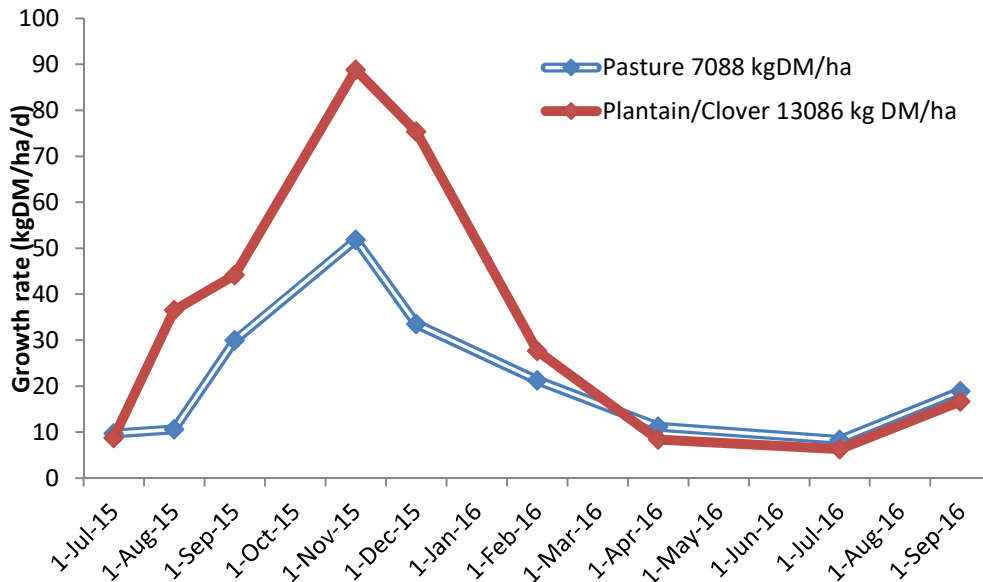
- White clover (2 cultivars) – ‘Tribute’ 2 kg/ha, ‘Kopu’ II 2kg/ha
- Red clover – ‘Sensation’ 5 kg/ha
- Persian clover - ‘Lightning’ 2 kg/ha
- Balansa clover – ‘Bolta’ 3 kg/ha
- Arrowleaf clover – ‘Arrotas’ 2 kg/ha
- Plantain – ‘Tonic’ 6 kg/ha

### **Timeline**

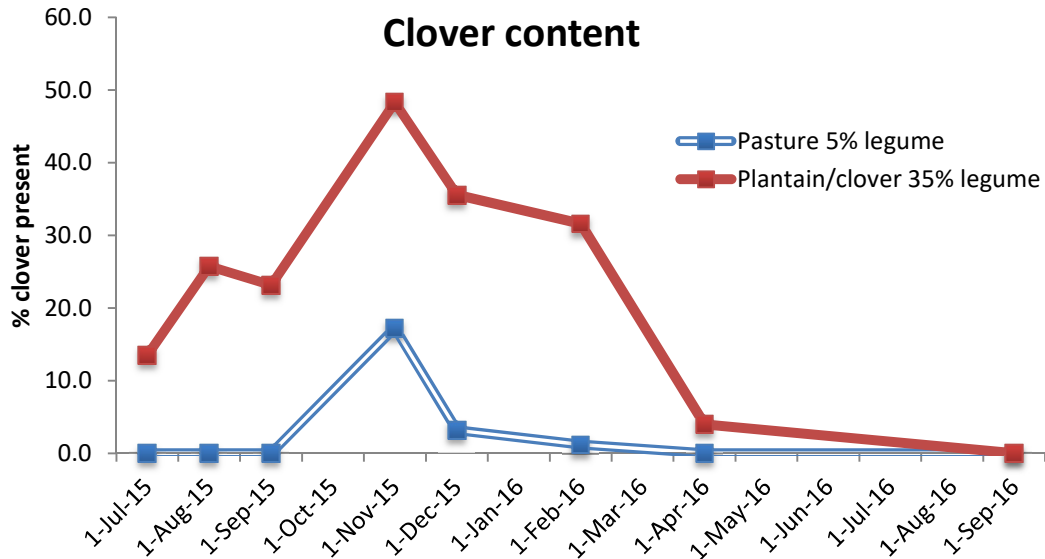
- **5 December 2014** – Spray for summer fallow (3 litre WeedMaster 540T/ha (glyphosate) and 70 ml/ha Hammer (carfentrazone-ethyl) plus Pulse.
- **Late December** - Mid rip tiger disk (\$120/ha)
- **February** - Cultivated to break up clods (\$80/ha). 2.5 tonne lime/ha
- **26 March 2015** – Sown with one pass power harrow direct drill (\$150/ha). 250 kg DAP/ha
- **20 May 2015** – Sprayed all northern areas with 250 ml/ha Crest (Haloxypop-P @ 130 g ai/ha) and 0.5 litre/ha, 2.5 litres/ha Dictate (Bentazone) in 200 litres/ha) and 0.5 litre/ha Bonza (wetting agent).
- **20 May 2015** – Spray nettle affected areas with and 50 ml Headstart (flumetsulam) in 200 litres/ha.
- **Closing dates in 2015 – to look at seed production on northern 2 ha**
  - 5 Oct
  - 19 Oct
  - 2 Nov
  - 16 Nov
- **May 2016** – 300 kg Potassic Super
- **August 2016** – Worst areas of paddock topped for nettles

## DM production (Year 1)

### Pasture and plantain growth rates



## Legume content (Year 1)



## ***Animal performance***

In spring 2015, the new plantain pasture on Second Rush and a resident pasture paddock were both stocked with 1 year ewes rearing twins. The combination of higher productivity yields and higher stocking rates, heavier lambs and ewes at weaning and better premiums in early November saw spring sheep gross margins around 3x those of similar sheep set stocked on resident pasture.

Tokaroa Farm – Ewe and lamb performance (1/9-18/12/2015)

		LWG/head	LWG/ha	Value/kg	Value/ha
Plantain (12 ha)					
19.2 ewes & 27.8 lambs/ha	Ewes	7.6	153	\$1.50	\$230
	Lambs	17.2	477	\$3.00	\$1431
	Extra wool	1		\$4.34	\$83
18.3 hoggets & 19.8 lambs/ha	Hoggets	3.5	64	\$2.00	\$128
	Lambs	6.9	137	\$2.50	\$342
					<b>\$2214</b>
Pasture (12.1 ha)					
6.5 ewes & 11.6 lambs/ha	Ewes	8	52	\$1.50	\$78
	Lambs	20.9	242	\$3.00	\$726
					<b>\$804</b>

### ***Plantain at Tokaroa has enabled:***

- A move from 30% to 70% of lambs finished
- An increase in cull ewe weights of 3-4 kg carcass weight with slaughter 3 weeks earlier
- Greater percentage of first draft lambs and first draft away earlier. Second draft 3-4 kg ahead
- Store lambs growing at 300 g/day post weaning

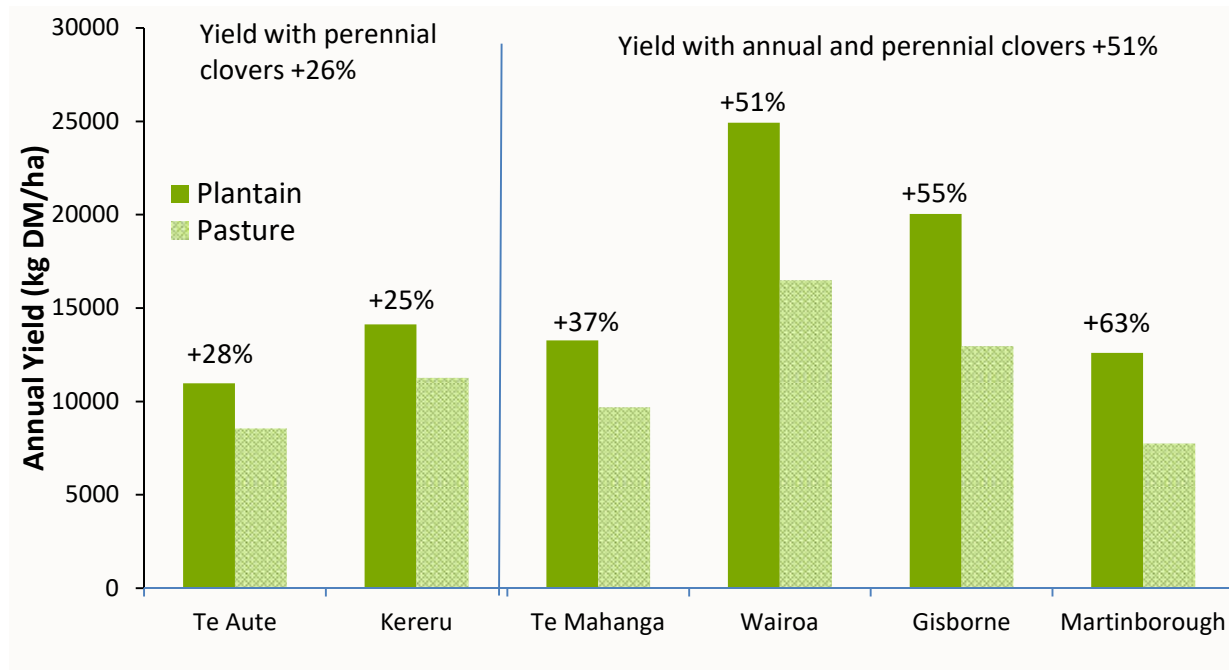
### ***What has happened since:***

- Driest season on record. Very slow growth rates through winter
- Sown red and white clovers have disappeared. This has happened across all Dan's plantain paddocks. Do we need to look at including sub clovers in the mix

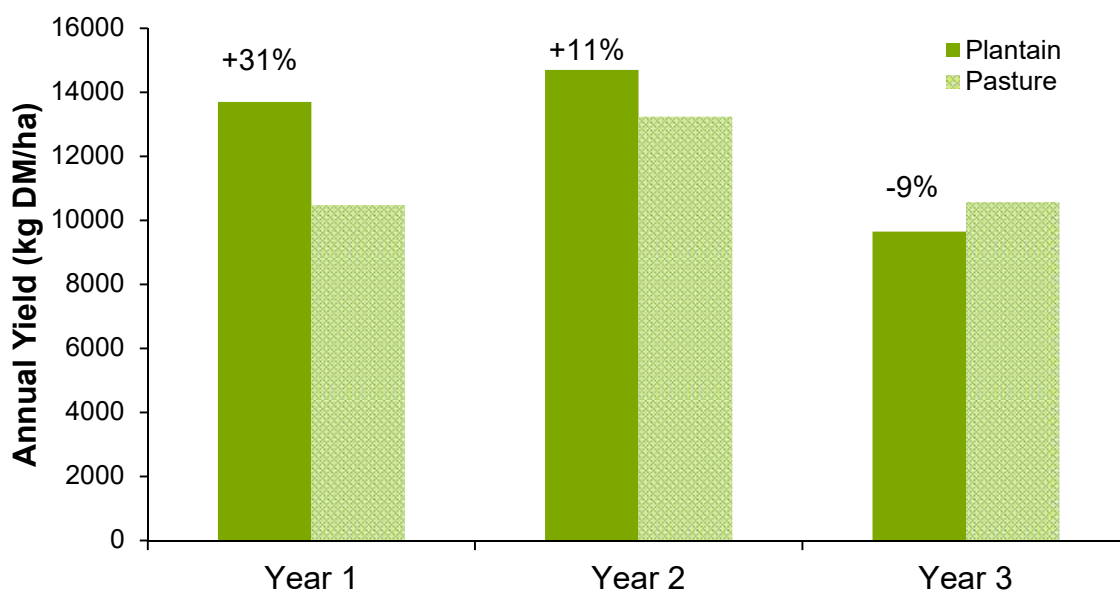
## Summary of data collected over the wider project (Wairarapa to Gisborne)

### Yield data

- In Year 1, inclusion of annual clovers (Balansa and Persian) in the mix appears to increase DM yields significantly – from +26% to +51%



- Cut data over 3 years (only from two farms) suggests significant decline in productivity of plantain pastures with little or no yield advantage over pasture after 3 years





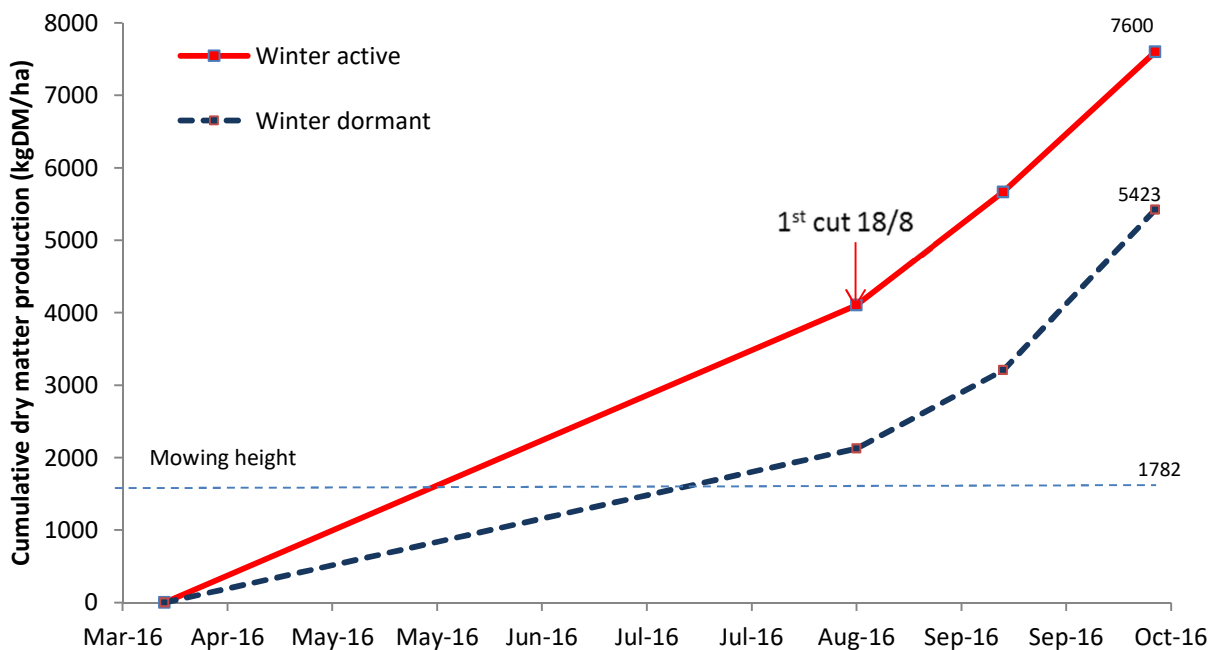
## Plantain cultivars

- We have seen large cultivar differences in winter activity. Cultivars such as Tonic, PG742 and N16PL3 produced substantially more grazeable winter DM than more winter dormant cultivars such as Boston and Tuatara. Winter dormant cultivars are also late seeders so will they produce more summer feed ?



Photo taken 18<sup>th</sup> August 2016

### Plantain cultivars – total DM accumulation from sowing



## Animal Performance

- Animals perform significantly better on plantain pastures – across 8 trials we have measured lambs growing 65 g/d faster on plantain than on resident pastures.
- Lambs drafted off plantain have a higher DO% because they are fatter (virtue of a faster growth rate) and because the higher quality plantain/clover mix means they have smaller rumen contents. This is the equivalent of 20 g/d liveweight gain from birth to weaning.
- Ewe liveweights increase dramatically. In 7 local trials ewes and hoggets at weaning were 6.8 kg heavier off plantain. These differences are even greater when the increase in DO% is taken into account.

## Summary and lessons learnt

- High winter and spring yields in dryland.
- The leaf architecture of plantain encourages clover growth.
  - 20 kg ryegrass plus red and white clover → 5% legume
  - 6 kg plantain plus red and white clover → 25% legume
  - 6 kg plantain plus red and white plus Persian and Balansa → 45% legume
- On dryland, autumn sowing means the benefits of annual clovers can be captured. Spring sowing means missing out on large amounts of high octane spring feed.
- Big gains in animal performance possible through more DM, higher energy feed and better carcass yields.

## But To get the gains that are possible, also need to **change management**

- Plantain/clover pastures best viewed as short term forage crop (2-3 years) rather than as a replacement for ryegrass.
- Susceptible to springtails, slugs and moths. Need close monitoring for insect attack. Sowing in remote paddocks just doesn't work.
- Post emergence spray to take out broadleaf weeds usually essential.
- Manage for the forage, not the animals – get the forage management right and animal performance follows. Rotationally graze but shift on at high residuals. Optimum management is start graze at 20 cm and move stock out when residuals are 10 cm. Monitor carefully - there time between 10 and 2 can be very short.
- Plantain pastures do not need a “nip-off” or a “clean-up” when feed is short. But what they do need is careful monitoring and avoidance of over grazing

# Tokaroa Demonstration Site – Sown 21<sup>st</sup> April 2016

Plots 3 m \* 20 m

Raceway	1. Narrikup	10 kg/ha	
	2. Napier		
	3. Monti		
	4. Denmark		
	5. Coolamon		
	6. Antas		
	7. Woogenellup		
	8. Denmark		
	9. Antas		
	10. Napier		
	11. Narrikup		
	12. Woogenellup		
	13. Coolamon		
	14. Monti		
< House	15. Taipan	8 kg/ha	
	16. Bolta		
	17. Laser		
	18. Lightning		
	19. Lusa		
	20. Arratas		
	21. Cefalu		
	22. PG742		8 kg/ha
	23. Boston		
	24. Tonic		
25. N16PL3			
< House	26. Tuatara	8 kg/ha	
	27. Relish		
	28. Tuscan		
	29. TP22		
	30. Sensation		