

# Future Forage Systems Project

## Plantain/clover – Tokaroa Farm Notes Updated April 2016

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### *Future Forage Systems - Background*

The East Coast Future Forage Systems Project provides the opportunity to road-test a range of forage technologies such as lucerne, plantain and annual clovers – both as crops and on hill country. Where possible, this consists of on-farm demonstrations where new options are benchmarked against existing farm practice. Once we understand how these alternatives perform locally, we can then look at integrating them into farming systems.

The focus at Tokaroa is to understand the contribution that plantain and clovers can make to lamb and ewe growth rates and how this impacts on the whole farm system. Additional studies will look at reseeding of annual clovers

### *Tokaroa Farm*

- Area 607 (585 effective)
- 80 ha in plantain/clover (15%)
- Farmed in conjunction with Bush Gully 808 ha, 30 km away, managed by Dan's brother Matt.

## *Plantain in Second Rush – 12.0 ha*

### **Objective:**

- Evaluate plantain sown with perennial and annual clovers on summer dry flats.
- Obtain seasonal production and animal performance data
- Measure seed set following different closing dates.
- Monitor regeneration from seed bank (over several seasons).

### **Cultivation**

- Spray, summer fallow
- Disk, power harrow, drilled with power harrow and then rolled
- Note – the intention was a second spray prior to sowing but it was not applied because there was little live vegetation at sowing.

### **Seed Mix**

- White clover (2 cultivars) – ‘Tribute’ or Sustain 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

Seed cost \$280/ha (ex GST)

**Fertiliser** - Lime – 2.5 tonne/ha at first cultivation, 250 kg/ha DAP at sowing

**Closing Dates** – Four closing dates to look at seed production using on the northern 2ha area. These areas will be grazed up until closing. Closing dates to be used are:

- 5 October
- 19 October
- 2 November
- 16 November

### **Timeline**

- **5 December 2014** – Sprayed (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)
- **26 March 2015** – Sown with one pass power harrow direct drill (\$150/ha)
- **15 May 2015** – Seedling counted
- **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.

## Results

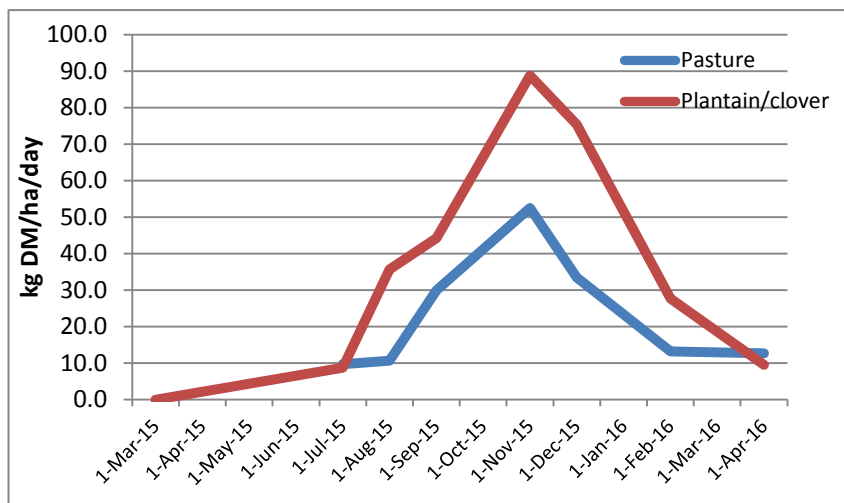
**Weeds.** During April 2015 some areas of the paddock had significant numbers of grass, flat thistle or nettle seedlings developing and all but the southern facing areas were sprayed in May.

**Pests.** Paradise duck have been preferentially grazing some of the Persian clover. As they concentrate in small areas quite a bit of foliage has been affected. Often all 3 trifoliolate leaves have been removed with only petioles left. However, overall plants did not suffer as they compensated by growing laterally whilst being grazed. No insects/slug damage seen.

**Pasture Production.** Cage cuts were initiated on 27 May 2015. Production cuts were taken and cages replaced on trimmed sites for rate of growth measurements.

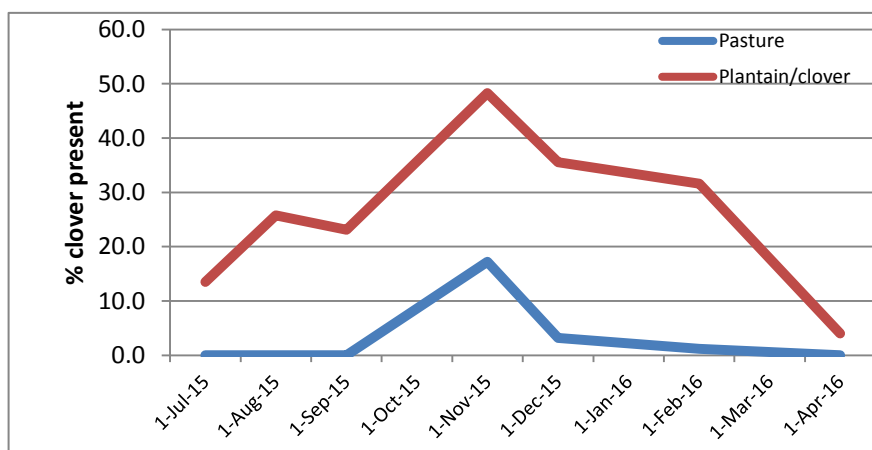
Pasture DM – 7088 kg DM/ha

Plantain/clover DM – 13086 kg DM/ha



Legume content in pasture - 5%

Legume content in plantain - 35%



## Animal Performance

**Plantain.** On 1<sup>st</sup> September, 124 ewes and their lambs were weighed and rotationally grazed on a 12 ha paddock of plantain/clover. A further 106 ewes and their lambs were added on the 15<sup>th</sup> October giving a ewe stocking rate in mid-late spring of 19.1/ha. On the 11<sup>th</sup> November, 333 lambs were weaned off 224 ewes. Average ewe weight increased by 7.6 kg and average lamb weight increased from 16.7 kg to 33.9 kg. Of the 333 lambs weaned, 60% were drafted off the ewes and slaughtered at an average weight of 37.4 kg. Ewes were shorn at docking and yielded an additional kg of wool.

Between 11<sup>th</sup> Nov and 18<sup>th</sup> Dec, 220 hoggets (18.3/ha) and 238 lambs were rotationally grazed on the plantain/clover. Hogget liveweights increased by 3.5 kg and lamb liveweights increased by 6.9 kg. Combining the ewe/lamb and hogget/lamb returns gave estimated gross sheep return over spring of \$2199/ha. Including the extra wool produced by the ewes, per ha returns off the plantain/clover block averaged \$2199.

	Weight on	Weight off	kg/head	Total kg gain	Value/kg	Total value
Ewes (224)	71.8	79.5	7.7	1724	\$1.5	\$2587
Lambs (333)	16.7	33.9	17.2	5728	\$3.0	\$17184
Extra wool			1	224	\$4.34	\$972
Hoggets (220)	61.8	65.3	3.5	770	\$2.0	1540
Lambs (238)	23.2	30.1	6.9	1642	\$2.5	4105
						\$26388
Return/ha						<b>\$2199/ha*</b>

\*This understates the returns because ewes off plantain have a 3% higher DO% and lambs a 2% higher DO%.

**Pasture.** On 1<sup>st</sup> September 141 lambs and 79 ewes were set stocked on 12.1 ha of pasture (a stocking rate of 6.5/ha). Ewe weights were 65.6 kg and lamb weights were 12.5 kg. On 11<sup>th</sup> November lambs were weaned and ewes averaged 73.6 kg and lambs averaged 33.4 kg. Over 109 days, lamb growth rate averaged 255 g/d. Of the 141 lambs, 42 (42%) were drafted off the ewes and slaughtered at an average weight of 39.7 kg. Total product of the pasture block was 295 kg/ha. A rough valuation of liveweight gain over spring (see below) gave a gross sheep return of \$809/ha. Post weaning, feed quality on the pasture block was not suitable for finishing stock and ewes were mobbed up and used in a clean-up role.

	Weight on	Weight off	Kg/head	Total kg gain	Value/kg	Total value
Ewes (79)	65.6	73.6	8.0	632	\$1.5	948
Lambs (141)	12.5	33.4	20.9	2947	\$3.0	8841
				<b>3579</b>		<b>9789</b>
Return/ha						<b>\$809/ha</b>

### *Plantain has enabled:*

- A move from a 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