

Newsletter No. 7

March 2018



**NORTHLAND'S
DIVERSIFIED FORAGES**

Mixed results from continuing on-farm monitoring!

One of our pieces of monitoring has shown the hugely negative impact of potash deficiency. This severe potash deficiency has had a major negative impact on both the presence of legumes and the resultant total growth of the overall pasture.

The table below shows the impact of very low soil potassium levels on the presence of white/red clover and on lucerne, for two of our project farms.

Table: Legume Presence influenced by Soil Potassium Levels

Soil Potassium Level MAF Quick Test	Waiharara White and red clover presence 1 March 2018	Te Kopuru Lucerne as % 26 February 2018
3	0	0
9	22	-
18	-	95

Points:

- Two areas, very easy sidlings, with very low soil potash levels of 3, have zero clover or legume present.
- In contrast, the great majority of area for both paddocks, with high to very high soil potash levels, has 22% clover and 95% lucerne respectively, as the pasture makeup. The other soil nutrients present for both paddocks are generally at medium to high levels.
- The areas of each paddock with nil legume were 8% for Waiharara and 25% for lucerne at Te Kopuru.

Table: Soil Fertility – Lucerne Paddock

	pH	Olsen Phosphorus mg/litre	Potassium MAF QT	Sulphate Sulphur ppm	Magnesium MAF QT	Soil Moisture % Volume
High Lucerne presence	6.3	21	18	32	46	33
No lucerne	6.0	15	4	21	28	27

Points:

- Major difference in soil fertility in the potassium level
- Some differences in the pH, phosphorus, sulphur and magnesium levels but these are more limited and will not have the impact on the lucerne presence that the potassium difference will be having.

Note the very similar soil moisture levels between the Easy Slope and the Flat Area.

The sampling on these two properties was undertaken because there was such a huge difference in the presence of clover or lucerne between the very poor areas and the balance of the paddocks. Most of the area in both paddocks had very good legume presence. These areas with very low potash on both properties are very gentle slopes or sidlings and very well fed, lazy dairy cows while eating the pasture on these slopes, are not “staying around” to pass urine. Their urine is being deposited on other flatter areas of the paddocks: the end result is that there is a shift of potash from the slope to the flat areas. Very similar to “stock camp” areas on steep hill country. There could be some more leaching of potash on these easy slopes but this should be a minimal effect.



Roger Gillatt standing in his Lucerne crop sown spring 2017. Growing very well in mid-February under good soil fertility levels

Pasture Growth Data

Another piece of monitoring has shown the positive impact of sowing annual clovers on improving pasture growth - this extra growth occurring during the critical August to December period.

Table: Pasture Production – Far North 2017				
Kg of DM/hectare per day				
	Awanui	Waiharara	Awanui – Dairy	
	High clover pasture	High Clover Pasture	7 year farm average	2017 farm average
August	42	52	45	45
September	84	70	61	45
October	78	87	67	55
November	88	98	59	55
Feb 2018	51	64	30	47
Average Daily Growth for Sept to Nov inclusive	83	84	61	52

Points:

- The Awanui and Waiharara results are from seed mixes sown in May 2017 with 5 kg/ha of ryegrass and 20 kg/ha of clovers: clovers being a mix of annuals and perennials. Cages cut roughly every 40 days.
- The Awanui High Clover results are the average for three sites, each site with three cages. The Waiharara results are the average of two sites (two paddocks) – each site with three cages. Cages cut on the same day as Awanui High Clover site.
- The Awanui Dairy results are from a farm with an excellent 7 years’ data collection from very regular “farm walks”, also showing the 2017 pasture growth.

Results:

- Very little difference for August production between the three farms.
- September to November was a difficult spring; 16% less pasture growth in 2017 compared to the 7-year average result.
- The difference between the average of the two farms with high clover pastures and the Awanui Dairy 2017 results is 3,042 kg dry matter per hectare for this critical spring period.

While it is not quite comparing “apples with apples” because the two high clover farm results are from cage cuts and the Awanui Dairy results are from pasture walk monitoring, these results reinforce my belief that we can grow at least three tonne of dry matter per hectare extra in the spring by successfully using annual clovers.

- The average of the two high clover farms was 7,657 kg DM/ha for the spring compared to 4,615 kg DM/ha: this increase in pasture production is 3,042 kg, a 66% improvement on the Awanui Dairy farm result.
- The daily growth for both of the High Clover farms averaged 84 kg DM compared to 51 kg DM for the Awanui Dairy during this spring period.

Financial Return

What are the financial implications from successfully growing annual clovers?

The critical factor is how much extra pasture production can be achieved by the annual clovers.

DAIRY SITUATION

Table: Cost:Benefit of Dairy Farm Results using Annual Clovers		
	Scenario A	Scenario B
Increase in Pasture Growth Kg DM/ha	3,000	1,500
Utilisation %	80	80
Increase in eaten pasture Kg DM/ha	2,400	1,200
Milk Solids production – kg	200	100
Revenue Increase - \$	1,200	600
MINUS		
Direct establishment costs	450	450
Net Return -Absolute \$/ha	750	150
-as % of direct costs	166	33

Points:

- Milk Solids production is assuming a conversion of 12kg of dry matter into one kilogram of milk solids.
- This return is based on just the increase in spring pasture growth, over 91 days only.
- The net return has all the direct costs included for pasture establishment.
- This calculation ignores:
 - Any increase in pasture production over the summer and further out!
 - The advantage of a feed quality improvement from a high to a very high clover presence. (This will be covered in the next newsletter).

BEEF SITUATION

Under a similar simple cost:benefit calculation, for a beef finishing operation, Scenario A with high pasture production increase gives a \$600/ha net return, a 126% return on direct costs. A reduced pasture production increase, Scenario B, gives a \$94/ha net return @ 20% return on direct costs.

Annual Clover Presence

The annual clovers have given a large, positive contribution to the pasture production from sowing in May 2017, up to early-December. Seed mixes as mentioned above: 5 kg/ha of ryegrass and 20 kg/ha of clover with exactly the same mixes sown on both farms.

Waiharara dairy farm averaged 41% of total overall pasture production from annual clovers up to early-December.

The Awanui bull farm averaged 68% of total production being from annual clovers: here two sites/paddocks on very wet pan/gum land/podzol soils had 80 & 87% of the production being from annual clovers.



18-month Friesian bull enjoying a mouthful of pure annual clover – December 2017



100kg weaner bulls grazing pasture, which is almost pure annual legume in early-December 2017



Duncan Bayne mowing pasture, which was 51% clover in December 2017. This pasture will produce almost 20 tonne of dry matter by 12 months. The cage cuts from this paddock gave daily growth of 84 kg DM/ha/day for the 28 days up to 7 December 2017. Its neighbouring paddock with a 62% clover content had growth of 112 kg/DM/day for the same period



It looks like Duncan Bayne is finding it difficult to locate the cage for mowing after 40 days' regrowth as at early-December. The cage cuts from this paddock gave daily growth rates of 139 kg DM/ha/day from this almost pure Persian clover pasture

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