

Newsletter No. 1

September 2016



Northland's Diversified Forages

This is the first newsletter for our Northland's Diversified Forages project which officially commenced back in July of this year. The aim of this and future newsletters will be to keep you up to date with progress by way of some of our results as we move through the next three years – both good and bad results!

We as a project team, have been fortunate to have Ministry for Primary Industries as our main funder through their Sustainable Farming Fund. In addition, we have a range of co-funders contributing cash and/or time and materials for this project. See the logos of the various companies and other entities which have “come on board” with us for this project: many thanks to them all.

Northland's Diversified Forages – What is it?

We have three strands to our project:

- The first is the setting up of five sites with replicated plots of annual and perennial legumes which were planted back in April-May. These sites, located between Te Kopuru and Awanui, generally have up to 80 plots and we have sown some annuals that are commonly used in other parts of New Zealand, but we also have some species that have not really been seen in Northland. Currently some of the annuals, especially berseem, Persian and balansa clovers are looking very good.

The aim of these plots is to grow a wide range of annuals and perennial legumes to see what they look like when they grow, when they flower and to gather some measurements as to how well they do grow through pasture cuts.

- The second strand of work is growing some of these annual clovers with companion species, e.g. ryegrass and white plus red clover, in paddock-scale situations. Four farms drilled these mixes back in April, located between Kawakawa and north of Awanui. Pasture growth and other measurements have been collected since June.
- The third strand of our project is moving the use of diversified forages onto a whole-farm basis. We will be monitoring the impact on the whole farm business for farmers who are growing substantial areas of non-perennial ryegrass forages, eg. 50% of the farm is in tall fescue or there is a substantial area of lucerne being grown.

RESULTS

One of the first pieces of monitoring was to check on the quality of seed that we were using in the plot trials and also the paddock-scale evaluations.

Table:

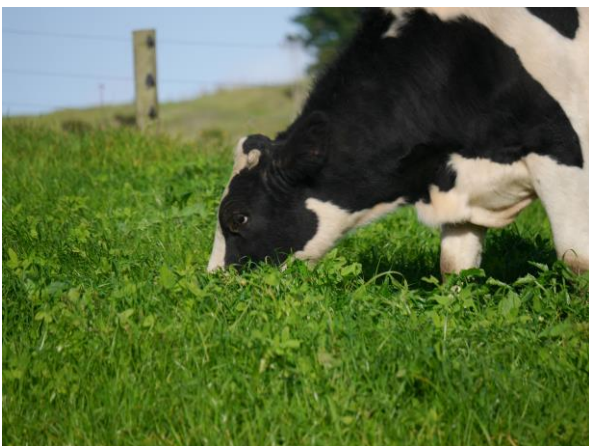
Legume Plots – Seed Germination in the lab Compared to field seedling population across five sites

	Lab Germination June 2016 %	Viable Seed %	Seeding Rate – Total seed used Kg/ha	Field Seedling Population – seedlings/m ² May – July 2016 Average of 5 sites
ANNUALS				
Balansa	58	78	6	392
Persian – Iusa	88	90	8	352
Berseem	58	58	10	164
Spineless Burr Medic	72	82	5	152
Faba bean	88	88	200	40
Arrowleaf – Arrotas	23	94	6	132
Sulla – Aokau	78	83	10	88
Sub – Coolamom (coated)	69	70	10	104
Sub – Woogenullup	35	35	10	84
Sweet white clover	2	3	12	104
Crimson clover – Au Sunrise	2	2	10	40
Serradella – yellow	3	100	6	8
PERENNIALS				
Kura x white hybrid – Aberlasting	88	93	5	348
Lotus pendiculatus – Trojan	91	91	5	304
Lotus Corniculatus – Goldie	68	68	6	80
Lucerne – SF7 (coated)	80	83	10	120
Red clover – Relish (coated)	86	89	8	32
White clover – Mainstay	88	95	5	284
Strawberry clover – Onward	60	98	2	96

- Seeding rate for all sites was the same for each species, apart from Ussher’s “unofficial” plots
- Base perennial ryegrass and Kakariki white clover acting as a control planting:
 - Base rye @ 20 kg/ha
 - Kakariki white clover @ 3 kg/ha

Comment:

Three seed lines being sub clover, Woogenullup cultivar plus Sweet white clover and crimson clover were all sourced from the Margaret Forde Germplasm Centre: these three lines of seed may be very old, e.g. 10 years++? Even though they are being housed in very stable conditions, I think their probable age has really dropped their germination percentage.



*13 June
2016
Berseem
annual
clover
making
up 36% of
pasture
@ 60
days
post-
drilling*



Forage Growth Rates – Faba bean crop – Awanui

Yield – 22 September estimates based on cuts:

Paddock average @ 9,040 kg DM/ha.

Gives growth of 67 kg DM/ha/day since sowing on 10 May 2016.

Another crop north of Awanui has had a variable yield through the paddock: 10,000 kg DM/ha in the front half with drier soil conditions, down to 6-7 tonne DM in the wetter back half of the paddock. Last year this farm had a crop of Faba bean growing towards a yield of 15 tonne DM until fungus's became a major problem in Late October-November. While this legume crop offers large potential yields, it is going to be requiring very good soil conditions to achieve this potential.

ANNUAL CLOVERS

Farm: Ivan Stanisich, Waiharara

For the second year, Ivan is evaluating a couple of the annual clovers, being berseem and Persian.

Growth

Paddock 24

Paddock 22 & 24 sprayed and drilled.

Major toad rush infestation was the reason for a spray and drill.

No kikuyu base to mulch (on peat flats, but there was some on hill side).

Drilled 26 April

Seed Mix

	kg/ha	Note:
Tabu Italian ryegrass	5	The very low sowing rate for the Italian ryegrass: this has worked very well by contributing to pasture growth but also being "open" enough to allow the berseem clover to grow very well.
Berseem clover	10	
Lusa Persian clover	5	
Rossi red clover	4	

Cages in place – 18 June 2016

CUT DATE – 22 July – 34 days' growth @ 15 kg DM/ha/day				
Grass %	Berseem %	White clover %	Red clover %	Weed %
35	35	25	3	2



9 September 2016

Duncan Bayne about to cut perennial pasture with berseem yielding 1666 kg DM/ha (approx. 3,000 kg total mass)



11 Sept 2016

Plot trials

As part of the monitoring coupled with visual signs of possible chemical deficiencies, soil samples and a clover leaf sample were tested:

SOIL TEST - 22 JULY 2016						
	pH	Ca	Olsen P	K	S(SO ₄)	Mg
Berseem strong area	5.3	16	52	4	6	32
Berseem poorer by boundary	5.0	12	47	4	8	28

HERBAGE – Around Strong Area						
Element	N	P	K	S	Cooper	Molybdenum
	4.74	0.53	1.61	0.22	12	0.26

A light application of potassium, sulphur and nitrogen was in place on 17 August:

Fertiliser

- 5 t/ha of lime in autumn
- 17 August: Mix of : 60 kg/ha muriate of potash
 119 kg/ha Sulphate ammonia

CUT DATE – 9 Sept – 48 days' growth Growth @ 75 kg DM/ha/day COMPOSITION: Yield was 3,615 kg DM/ha				
Grass %	Berseem %	Persian %	Red %	Weed %
51	19	24	0	6

A second paddock is being monitored. It was sown with the same mix and on the same day, but being on a different soil type.

Pasture growth in this paddock:

37 kg DM/ha/day from 18 June up to 22 July, followed by 60 kg DM/ha/day from 22 July up to 9 Sept. The 5 kg/ha of Italian rye has been contributing 50-72% of the pasture growth and the berseem has contributed 24-31% of the growth. The Persian has not really shown itself at this stage.

Feed Quality

One of our monitoring activities is measuring the plant quality of these annual or perennial legumes. As we move through October to December, more samples will be tested.



18 Sept 2016
Annual legumes
showing Spineless
Burr medic &
berseem clover

Early results for samples from Awanui:

Plant Quality Summary					
Samples Tested 24 August 2016 - USSHER					
	Faba Bean Top Material	Faba Bean Bottom Material	Berseem clover	Persian clover	Balansa clover
Dry Matter %	10.2	11.6	12.0	10.9	11.4
Metabolisable Energy MJ ME/kg DM	12.8	11.0	11.5	12.2	12.2
Crude Protein %	28.4	15.3	24.2	28.4	28.7
Sugar %	11.6	5.1	4.9	7.4	5.4
Acid Detergent Fibre %	-	-	22.7	24.0	21.2

Based on plant quality testing last year, we expect the quality of the bottom stalk material of Faba bean to really drop off through mid-Sept to November. Last year, in late November, this bottom stalk material had a metabolisable energy level of just 5.3.



19 Sept 2016
Bull grazing Faba beans which had a paddock yield of 9 tonne DM/ha from 10 May drilling to give daily growth rates of 68 kg DM/ha/day.

Ministry for Primary Industries
 Manatū Ahu Matua

