



NORTHLAND'S DIVERSIFIED FORAGE PRODUCTION

UPDATE DECEMBER 2016

Project Overview

To increase the range of forage solutions available to Northland farmers.
To provide physical, financial results and the demonstration of a range of forages grown on a range of sites spread through Northland.



**NORTHLAND'S
DIVERSIFIED FORAGES**

Plot trials are being used to grow and evaluate a range of annual and perennial legumes. Paddock-scale sowings are also being used for some of these legumes. Whole farm assessments are being undertaken on five farms: these farms are growing substantial areas of non-ryegrass pastures/forages.

Overview of Plot Trials

Five sites: Awanui, Kerikeri, Hikurangi, Dargaville & Te Kopuru
Generally, all sites had the same legume species sown at the same rate between 20 April and 19 May.

Why these plots?

Perennials – to establish, monitor, see some of the new clovers, i.e. Kakariki, Legacy and Mainstay white clover plus Relish red clover.

Monitor some other perennial legumes:

Lotus - major and minor, strawberry clover, Aberlasting kura hybrid, Permatas – talish clover, lucerne, sulla

ANNUAL LEGUMES - Why the annuals?

They grow more quickly, earlier than any other clovers.

- Research in Kaitiaia 40 years ago showed a range of annual clovers producing 8-12 tonne of dry matter from an early-April sowing up to 20-26 October harvest
- Research work in Marlborough 2011-12.

Clovers sown 26 March @ very high seeding rate.

This research showed very high yields by a range of annual legumes: across six annual clovers the typical yield was 15.1 tonne of dry matter per hectare, with a high of 19.5 t/ha. A white and red clover produced 11.3 and 12.4 t/ha respectively, over the same period.

Paddock-scale sowings for our project

Four farms sowed a range of ryegrass and clover species autumn 2016: A focus being the annual clovers sown with companion species.

Paddock-scale sowings – Yields up to end Oct 2016:

Comparison of Yields to Date – end Oct 2016

Name	Seed Mix Kg/ha	Period Monitored	Paddock Name	Yield Kg DM/ha	Growth Kg DM/ha/day	Composition %		
						Berseem Clover	Persian Clover	Grasses
Stanisich	Italian Rye 5 Mix of clovers 19	18 June – 21 Oct	Pdk 24	6496	52	24	13	50
			Pdk 35	8021	64	23	0	69
Ussher	Perennial rye 15 Mix of clovers 15	12 April – 21 Oct	Berseem 16	7894	41	23	14	50
			Tick 15	5583	29	8	15	65
Cookson	Annual Clover only: Persian 14 Berseem 14	10 June – 28 Oct	Persian	3105	22		0	99
			Berseem	3987	28	1		97

Legume Seed Germination

Laboratory germination results showed:

- Typical germination levels of 85%, ranging from 58 to 98%
- Very low (2-3%) germination for three seed lines used in the plot trials, explaining the failures in these plots.

Forage Quality – NDF Spring 2016 – Ussher Plots – All Vegetative Material Sampled 12 October 2016 – NIRS testing				
	White Clover	Berseem	Balansa	Persian
Dry Matter %	12.3	11.7	10.3	11.4
Metabolisable Energy MJ/kg DM	11.3	11.2	11.8	11.6
Crude Protein %	25.8	24.4	24.4	20.1
Acid Detergent Fibre %	25.5	24.4	25.1	24.8

Features of our results to date:

- Need high plant population of the annual/perennial clover in August so there are sufficient plants to drive high legume growth in the August to December period.

Important factors here are:

- Using high quality seed
 - Achieving high field germination : kikuyu trash has to be “got rid of”!
 - Addition of companion species to these annuals is not easy. A major danger of companion species out-competing the clovers during the June and July period while most annual clover growth is slow
 - Do not pug these plants.
- Strong suspicion that these annuals (and perennials?) need a slow grazing round through July and August (50-60 days?) and Sept-Oct (35-45 days). These annuals need time to slow their potential growth.
 - Soil fertility : Potassium is a critical element for maximizing legume growth and is possibly more important for annual legumes than perennials.

PASTURE MASS – Kerikeri site						
	Cultivar	Mass Sept 1 st (kg DM/ha)	Daily Growth Rate from sowing	Mass Oct 16 th (kg DM/ha)	Daily growth Rate between cuts	% Ground Cover
Balansa Clover	Viper	1952	17	7136	115	99
Persian Clover	Lusa	2057	18	3992	43	98
Berseem Clover		2624	22	6181	79	93
Berseem Clover	Tabor	4475	38			91
Berseem Clover	Meteor	3327	28	10591	161	94
Sub Clover	Coolamon			2828		66

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