



**NORTHLAND'S
DIVERSIFIED FORAGES**

A difficult autumn?

Certainly a difficult autumn for the Far North, having its driest autumn for 70 years and this followed a very dry mid-January to end of February. Despite this very dry period, many of the 12-month production results, generally ending in May, have been very strong.

Summary Points

- A major question is whether we should be relying on perennial ryegrass to survive and produce, as a perennial ryegrass, in hostile Northland environments. The project monitoring is indicating that under very dry soils, perennial ryegrass is not really “doing its job” near the end of its second year, let alone, further out. The perennial ryegrass made just 30% of the total pasture growth for the December 2018 to May 2019 period. A huge amount below cocksfoot and tall fescue.
- A good advantage or increase in net pasture growth when adding herbs. The project results show a net growth increase of 2.4 tonne DM/ha for the first year.
- The cost of this herb production was just 1.6 cents/kg DM.
- The “combined” clover growth, being the annual clovers, red clover and white clover yielded an impressive 16.7 tonne DM/ha for the year ending April 2019. This from our heavy clay site at NARF, Dargaville.

Control Grasses Monitoring

The growth and pasture composition data raises questions in terms of how suitable perennial ryegrass is when targeting a persistent pasture, especially on free-draining soils within Northland. The treatments sown in 2017 were perennial ryegrass, tall fescue or cocksfoot, each sown with white clover.

Pasture Production Tonnes Dry Matter/hectare/year						
	Ryegrass		Tall Fescue		Cocksfoot	
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 1	Yr 2
Free-draining sand	15.9	12.0	17.0	11.0	16.2	14.0
Heavy, poor-draining clay	11.6	9.0	13.7	11.3	12.8	12.0
Presence in April/May 2019 of sown grass species						
Free-draining sand		24		87		98
Heavy clay		68		80		89

Points

- In Year 1, there was limited difference in pasture growth between the ryegrass, tall fescue or cocksfoot, with cocksfoot being slightly strong at both sites.
- In Year 2, there was a large drop-off in ryegrass growth at both sites, @ 25% between years. This drop in growth from the ryegrass plants was huge on the free-draining sand site. For the period from December 2018 up to May 2019, ryegrass made up just 30% of the total growth, within the ryegrass treatment. In comparison, the growth from the tall fescue and cocksfoot grasses held constant between the two years on both sites.

These results raise the question of whether we should be relying on perennial ryegrass to survive and produce in such a ryegrass-hostile environment!

Much of the decline in ryegrass content would have been due to the very dry soils during 2019. Our monitoring indicates that for January to April, soil moisture by volume averaged 8%. This is a 90-day+ period, with the soils at or slightly below permanent wilting point for this free-draining sand.



Control plots at Te Kopuru, on 8 May 2019 after a very dry summer and autumn. Tall fescue and cocksfoot plants surviving soil moisture levels of 8% for January to April 2019



Herb Production

The addition of 1 kg/ha each of plantain and chicory gave a growth advantage of 2,413 kg DM/ha @ 18%, for the first year's production. The plantain contributed a substantial 5,700 kg DM/ha and the chicory contributed 2,700 kg DM/ha, to give a combined yield of 8,460 kg DM/ha. While the treatments with no herbs added, grew more clover and grass, the net advantage resulting from the addition of herbs was 2,413 kg DM/ha, for this, the first year.

Cost of this herb seed was \$38/ha. The net dry matter increase cost – just 1.6 cents/kg DM.

The net benefit was worth \$987/ha or 41 cents/kg DM.



Mixed herb treatments at Te Kopuru with plantain especially, giving strong growth for the 12 months up to May 2019



NARF Update

The 12-month growth results from NARF, heavy-clay site at Dargaville, are particularly impressive. Average growth of 20.1 tonnes of DM/ha. The various treatments showed limited variation, from a low of 19.2 t/ha up to a high of 20.6 t/ha. With very strong clover growth from the Persian and berseem annual clovers in the August to December period, coupled with extremely strong red clover growth in the November to February period, the “combined” clover growth was a huge 16.7 tonnes of DM/ha.

During that surge of red clover growth, the grasses and white clover were almost totally “drowned out”. The monitoring this autumn is showing these grasses are starting to recover – our Year two monitoring will tell us how strongly these grasses do recover.



*This site of strong annual clover growth from last spring
& very strong red clover growth this summer*

June 2019

Ministry for Primary Industries
Manatū Ahu Matua



Hine Rangi Trust

**T.R ELLETT AGRICULTURAL
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NARF – Yield by Annual Clover species: 2018/19 Yield – kg DM/ha							
Treatment Description	Number	Total Yield	Annual Clover	Red Clover	White Clover	Combined Clover	Grass
		12 months	Yield	Yield	Yield	Yield	Yield
Rye + Persian	2	20,147	11,582	6,081	328	17,991	1,813
Cocksfoot + Persian	8	19,231	11,112	6,499	374	17,985	974
Rye + berseem	3	20,584	10,379	7,089	553	18,021	2,150
Tall fescue + berseem	6	20,624	9,189	7,408	1,355	17,962	2,450
Cocksfoot + berseem	9	19,278	8,868	7,850	1,611	18,329	721
Average		19,973	10,228	6,985	844	18,058	1,622
Rye + balansa	1	21,501	2,666	11,906	1,599	16,171	5,029
Tall fescue + balansa	4	20,489	3,419	11,240	2,148	16,807	3,255
Cocksfoot + balansa	7	19,994	4,119	13,157	747	18,023	1,642
Rye + no annual	10	20,023	-	13,180	2,600	14,780	3,835
Tall fescue + no annual	11	19,115	-	13,731	2,391	16,122	2,665
Tall fescue + no annual	5	19,727	-	12,938	4,285	17,223	1,991
Average		20,142		12,692	2,294	16,687	3,070

Persian, berseem and balansa are all annual clovers.