Newsletter No. 5
August 2017

NORTHLAND'S DIVERSIFIED FORAGES

SUMMRAY POINTS

- Strong results from some of our paddock-scale sowings of pasture mixes with some annual clovers added. Two examples of some of the annual clovers doing what we expect of them, i.e. producing substantial amounts of high quality feed in July onwards:
  - Persian clover added to tall fescue, cocksfoot, white clover mix has been grazed three times by end July, and is making up 30% and 61% respectively, of the pasture in a sand and a peat paddock
  - A pasture sown @ 5 kg/ha of ryegrass and 20 kg/ha of clover is looking equally impressive and has grown at 49 kg DM/ha/day through July.

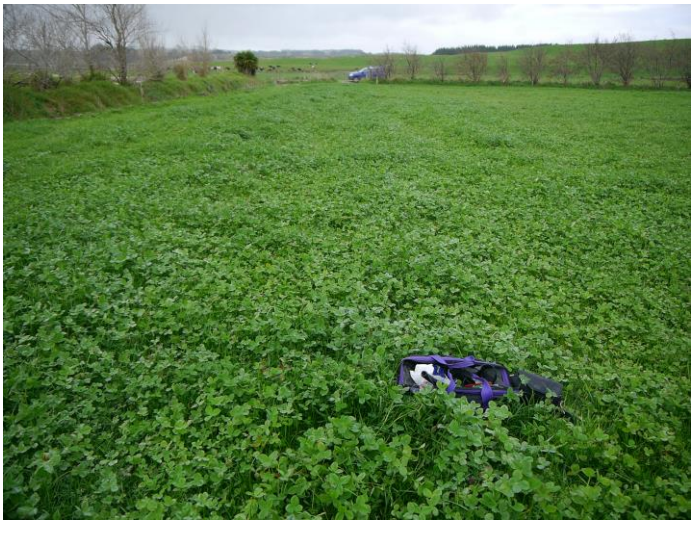
- Clover germination being very variable, more variable than normal?
  White clover sown with a range of grasses in our legume plot sites show a pleasing 53% field germination of viable seed at Te Kopuru and a disappointing 15% at Awanui. But even this 15% compared well with published results from areas of New Zealand

- Some of our clover seedling/young plant population in July in our paddock-scale sowings is high, as they should be for a 20 kg/ha sowing rate. We are not suggesting that we need to sow clovers at 20 kg/ha but we want to see what happens when we do this! Average paddock clover population for one of Ivan Stanisich's pastures is @ 410 seedlings/m^2 which is possibly "not excessively high!"

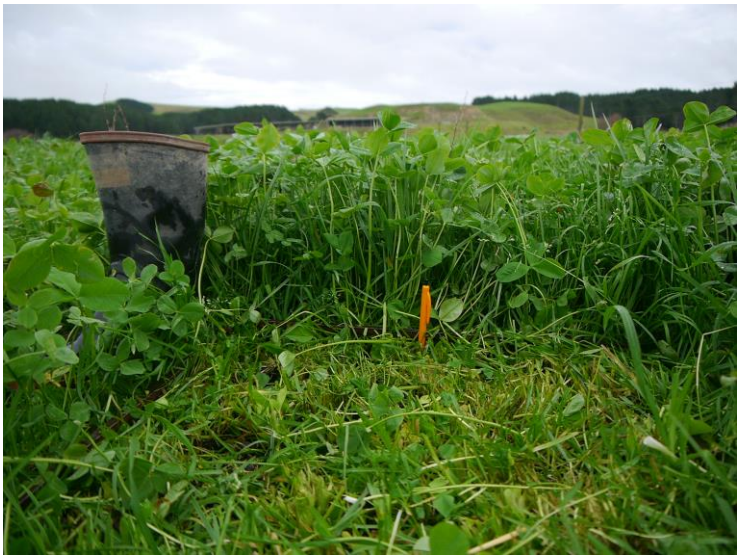
Paddock-Scale Plantings

While it is early days @ just 4 months to assess how well a perennial pasture is performing, the annual clover component of some of these pastures has been looking very good.

Bob Franklin, north of Dargaville, has been using annual clovers for a few years. This autumn this Persian clover was sown at 3 kg/ha, along with tall fescue, cocksfoot and white clover. Paddock 87, peat soil, following a maize crop, has been grazed three times since sowing in mid-March.



Paddock 87 – 21 July 2017 Soil fertility is very well balanced, with pH 6.3, Olsen Phosphorus 87, Sulphate sulphur 11, calcium 21, potassium 9 and magnesium 29



Paddock 87
21st July 2017

Persian clover making up 61% of the tall fescue/cocksfoot & clover pasture sown mid-March. Pasture mass at almost 3 tonne/ha

Pasture composition Measured from pasture cuts on 19 & 21 July		
	Pasture composition %	
	Paddock 65 Sand	**Paddock 87 Peat**
Tall fescue & cocksfoot	57	31
Poa	2	5
White clover	6	3
Persian clover	30	61
Weed	5	0
Pasture Mass present – kg DM/ha	2340	2925
Dry matter %	12.5	10.5

This Persian clover is doing what we are hoping the annual clovers will do: produce a substantial amount of high-quality feed considerably earlier than white clover (by 3 months) and far earlier than red clover (5 months!).

This Persian clover at Bob Franklin's has performed exceptionally well during June and July – ongoing monitoring will tell us how good it performs in August to December. It is this August to December period when it should really "hit its straps" as long as there is a good population present.

Feed quality measurements indicate high quality feed in mid-July:

Dry matter %	12.5
Metabolisable Energy (Mega joules of ME/kg DM)	11.9
Crude Protein %	27.1
Acid Detergent Fibre %	20.8

This from a hand-plucked sample from Paddock 87 with the 61% Persian clover content.

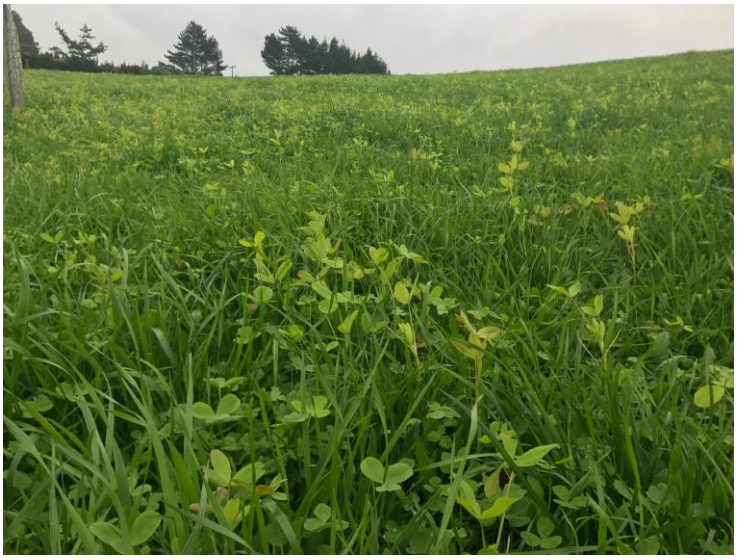
Another paddock-scale planting:
Ivan Stanisich, north of Awanui, has two paddock-scale plantings with ryegrass @ just 5 kg/ha and clover @ 20 kg/ha: clover made up of a strong annual component being berseem, balansa and Persian clovers plus white and red clover. Three other farms have this exact same seed mix sown this autumn.

The programme for Ivan was a spray in mid-May with glyphosate, a graze with cows, a mulch, seed oversown 25 May, rolled and slug bait applied.
While 25 May may seem late, soil temperatures @ this sowing date were 15.2^{o}C for 0-10cm depth and 17.0^{o}C for the more important 0-3cm depth. With very good soil moisture, high soil temperature, good clover germination was expected and achieved. Clover seedling counts on 29 June saw figures varying between 224 up to 655 clover seedlings per square metre:

- 410 seedlings/m2 for paddock 45 as paddock average
- 122 seedlings/m2 for "moderate trash" area and many of these seedlings being very young and small! This "moderate trash" area making up 10-15% of the paddock
- 483 seedlings/m^2 for "trash free" areas in the same paddock
- 1040 seedlings/m^2 for the highest population count!

These results reinforce the critical importance of removing all trash before sowing of any seed.

These two paddocks of Ivan's have just received their first grazing : 10-14 August when 170 milking cows grazed for 2 hours in the clover-dominant pastures, before being shifted. A plate metre reading of 2400 kg DM/ha as a pre-graze mass and an estimated 1400 kg DM/ha as grazing residual.



One paddock showing the low ryegrass and high clover sowing rates: sown 25th May. Photo taken 2 August 2017 shown a pre-graze of 2400 kg DM/ha

A pre-graze of 2400kg DM/ha on 10 August from a 25 May sowing gives daily growth of 31kg DM/ha/day.
Based on observations , the growth for the first 35 days (June) would have been under 10kg DM/ha/day. For the 42 days of July and early-August, daily growth would have been 49kg/day – not too bad for clovers in July!

LEGUME PLOT RESULTS

White Clover Plant Counts In Control Plots with Grasses – July 2017		
	White clover plants per m2	
	Awanui Sown 20 April Counted 14 June Day 55 post-sowing	**Te Kopuru Sown 10 May Counted 18 July Day 70 post-sowing**
Perennial rye grass + white clover	83	296
Tall fescue + white clover	85	244
Cocksfoot + clover	80	322
Average of 3 treatments	83	287

Sowing rate for white clover was @ 5kg/ha of bare seed. Lab germination for this white clover was 71% - a "touch on the low side!"

Based on the sowing rate and white clover seedlings/young plants counted 55-70 days post-sowing, the field germination percentage has been

- 53% at Te Kopuru
- 15% at Awanui.

While these results look and are moderate at Te Kopuru and very low at Awanui, how do they compare with research work in other areas of New Zealand?

Lower North Island work in 2002 to 2004 looked at germination results for grasses and clovers on 16 farms. A few of these results are shown below and compared to our current Northland results.

	PADDOCK RESULTS	
	Seedling Number per m^2	**% seedling emergence**
Research Standard	340	85
North Island 2002		
– Crop to new pasture	125	42
– Green feed to new pasture	140	40
– Grass to new pasture	110	26
North Island – 2003 Farm Average	-	21
Te Kopuru 2017	287	53
Awanui 2017	83	15

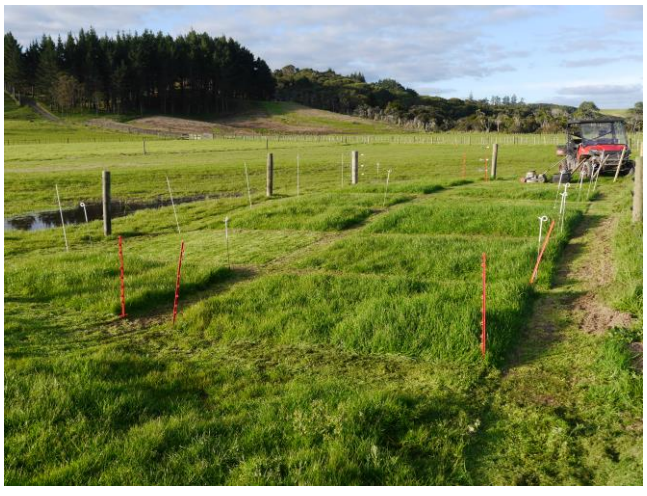
Our Te Kopuru results, while behind the Research Standard results, are considerably better than any of the 16 farm results in 2002:

- 85% & 130% higher for seedling number per m^2 compared to the highest farm result and average result for all farms respectively
- 152% higher for seedling emergence percentage compared to farm average in 2003.

Yes, the Awanui result for field germination looks, and is bad at just 15%, but it is still higher than the 9% shown in the 2003 results for a similar grass to grass establishment of white clover.

The only reasonable establishment in the legume plots at Awanui this winter has been the control plots: perennial ryegrass, tall fescue and cocksfoot sown as pure grasses, along with white clover.

Sown by hand on 20 April. The first harvest was 16 July @ day 87 – wet weather delayed this first harvest!



Grass & clover plots at Awanui at their first harvest – 15 July 2017

AWANUI RESULTS

Species	Growth from sowing Kg DM/ha/day	Dry matter % At Harvest	Mass at harvest Kg DM/ha
Perennial rye	33	18.5	2885
Tall fescue	30	19.3	2638
Cocksfoot	36	22.4	3173

From a sowing of 20 April for tall fescue, which is late for this species, it has been only slightly slower in establishment and growth compared to the ryegrass and cocksfoot. But the ryegrass looks to be far more dense than these other two grasses at this early stage.

Legume Plots – Field Germination

Shown below are the results for this year for paddock germination of the various lines of legume seed.

FIELD GERMINATION RESULTS - JUNE/JULY 2017 YOUNG PLANTS/m^2						
Annual Legumes		**Awanui**	**Kerikeri**	**Hikurangi**	**Te Kopuru**	**Group Mean Result**
Species	**Cultivar**					
Balansa	Viper	149	168	175	269	190
Balansa	Taipan	169	232	124	156	170
Persian	Lusa	124	480	187	413	301
Persian	Lightning	235	189	271	200	224
Persian	Turbo	132	428	296	238	274
Arrowleaf	Arrotas	51	152	12	325	135
Berseem	Clover non-certified	55	153	159	263	158
Sub clover	Monti	137	55	61	100	88
Sub clover	Antas	72	15	116	144	87
Sub clover	Bindoon	148	16	39	219	106
Crimson		175	25	96	88	96
Sweet White clover		28	4	3	-	12
Faba bean		52	32	55	94	58
Burr medic		67	39	109	75	73
Perennial Legumes						
Species	**Cultivar**					
White clover	Mainstay	179		47	462	
White clover	Quest	135		73	268	
White clover	Kakariki	313		20	419	
Red clover	Ceibo	373		203	183	
Red clover	Relish	65		65	39	
Kura Hybrid	Aberlasting	605		65	500	
Lotus	Trojan	244		364	229	
Lotus	Tannet	201		627	569	
Alsike clover	Hytas	224		4	231	

Comment

- Minimum population as a target would be 200 seedlings/m2 for the annual clover!
- NS = Not Sown in that year

- The 2017 year's data excludes the NARF site due to germination failure for the Annuals and NARF and Kerikeri sites for the Perennials.
- Germination of balansa was very much lower this year compared to 2016 being just 45% of last year's result. This year's balansa seed was coated.
- Persian clover is around 15% lower than last year, but is above our target minimum of 200/m^2
- Berseem, sub clovers, arrowleaf, sweet white clover are all very similar to last year
- Of the perennial legumes, white clover is 25% lower this year, whereas the other legumes are slightly (@ 18%) higher than last year.

Mid-July 2017
Bob Franklin's tall fescue, cocksfoot, white and Persian clover pasture on sand country. Pasture looking very good – the setting sun puts a yellow glow to the especially striking Persian clover