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DoloZest® News

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A decade of data

After ten years of monthly pasture cuts from the Berryman property, we wonder whether we can use the word proven.

For those who wish to accept the data, it's more than sufficient, for those wedded to the conventional 'bag nitrogen' system it will never be enough.

Total growth at the **Berryman** property for the 12 months to the end April was **19,728kgDM/ha**.

All data requires interpretation and these figures are probably a little above the actual growth for the property. At times during winter and early spring, areas of the property were exceptionally wet and the cage cut figures do not fully reflect the subsequent slower growth in those areas.

With the herd wintered at home the utilisation of the feed grown will also have been lower than that achieved during a dry frosty winter.

We were expecting to see slower growth in September, October, and November due to the higher than usual winter growth, however the reverse was the case.

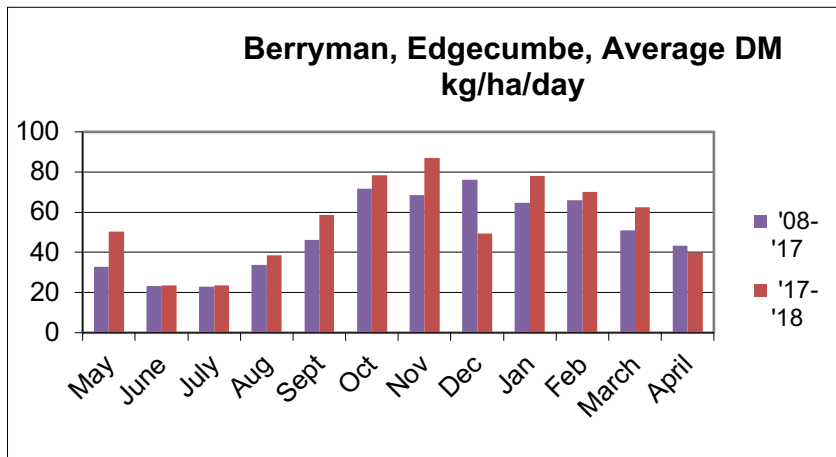
The figures accurately reflect the dry conditions in late November/early December. This was when droughts were being predicted in various regions, however it rained mid-month and there's been no shortage of moisture since.

Milk solid production has consistently been lower than what might have been expected, given total

growth. Volume of pasture is one thing, however it didn't result in the usual brix (soluble sugar) levels recorded. Brix levels at the time of cage cutting were a little down on 'normal'.

Without knowing the met service sunshine hours for the Whakatane area, our expectation is that they would also be less than the norm and as pastoral farming is primarily an energy conversion process, it follows that fewer sunlight hours results in less plant sugar being manufactured.

If this is a reasonable deduction then milk solid production would also be lower than usual, which is the case with production down 5% for the season.



Total pasture grown Average of 2 sites	
	kg/ha
08-'09	16,146
'09-'10	15,070
10-'11	18,420
'11-'12	18,281
'12-'13	14,066
'13-'14	21,397
'14-'15	18,976
'15-'16	20,670
16-'17	21,151
17-'18	19,728

To put this into perspective the best recorded single season pasture growth data ever recorded for permanent grazed pastures, that we know of, is 21,500kg.

With one of the two sites on the Berryman property recording 22,363kgDM/ha in the 2013/14 season and figures greater than 22,000kg for two other seasons, we confidently claim **the highest permanent grazed pasture production** of any farm in the country.

This is achieved with annual nitrogen inputs of less than 30kgN/ha annually, the significance of which will become apparent when the carbon sequestration data is discussed in the next DoloZest News.

Comparison with historical data.

The dimensions of the cages used for the measures on Functional Fertiliser properties are the same as those used for the recording the growth taken by MAF staff in the late 1970s and 80's shown.

This was before the widespread and increasingly regular applications of fertiliser nitrogen, primarily urea, from 1990 onwards.

Waikato Technical Institute Agriculture/Horticulture Dept											Revised TV file 10/83								
Grass Growth kg DM/ha/day																			
	Gordonton	Waikato	Tairua	Matamata	Cambridge	Tirau	Ohaupo	Ararimu	Aka Aka	Tairua	Witsdown	Ruakura							
	Te Kowhai	Waikato	Hauraki	Waikato	Honouliu	Tirau	Ohaupo			5th Rd	Rd	No.2 Dairy							
	Silt loam	Silt loam	Clay loam	Sandy loam	Sandy loam	Ash soil	Silt loam												
	1975 - 1982 Monthly Cuts							Ideal Dairy Cow Grazing Systems		1982/83		1983/84		1978/84		1980/84		1979/84	
June	20	15	17	15	16	16	16	17	17	15	12	14							
July	19	17	26	21	21	23	23	13	19	13	10	23							
August	25	25	45	30	35	34	35	23	41	21	12	29							
Sept	86	56	69	75	80	80	63	33	24	57	45	46							
Oct	95	90	78	110	97	96	64	54	51	59	49	63							
Nov	83	76	72	58	88	80	50	49	32	67	62	72							
Dec	70	63	43	72	80	72	60	46	45	67	64	68							
Jan	72	50	38	65	70	80	75	32	58	50	45	63							
Feb	32	32	26	35	45	45	22	58	41	37	49								
March	28	28	22	27	30	27	48	29	31	42	40	38							
April	23	20	26	24	24	23	25	27	27	36	26	23							
May	24	24	24	22	24	24	33	23	33	27	16	22							
Total																			
Annual	17,550	15,087	14,782	17,763	18,250	18,250	16,334	11,193	13,262	15,056	12,684	15,508							

Pasture

production now. The figures provided by AgResearch show 12 – 15,000kgDM/ha for the Waikato Basin, a naturally highly fertile area with on average 1375mm of rain annually.

The question is, why has there been a decline in pasture production during the last 25 years? The question has been asked before and the answer was that growth is measured differently now.

Regardless of the method, independent analysis carried out using the Overseer model showed the Berryman property grew 30% more pasture than district average, in the 2013/14 season, with total production calculated higher than that recorded from the cages for the same period.

Why greater growth is important

The three reasons are:-

- ✓ The cost per kg of drymatter steadily declines when all other costs remain the same, and the cost of the FF total nutrient programmes are no higher than conventional ones reliant on 'bag N'.
- ✓ Plants contain more energy due to increased leaf surface area, as well as better overall plant efficiency. Therefore less is required to produce a kilogram of meat, milk, or wool.
- ✓ The environmental footprint steadily declines due to more carbon being sequestered and humus formed.

"Hi Folks - nothing impossible No 9 last winter to today. Exceptional recovery and all species are back and looking very healthy. Cheers Stuart."



Functional Fertiliser – the Future of Farming

Disclaimer statement. The monitoring data is based on data collected by Functional Fertiliser Ltd. The data is provided for information purposes only and will be updated as new information becomes available.

The independent work undertaken with flux meters (drainage pipes) showed a 70% decrease in Nitrate-N concentrations entering groundwater, compared to a neighbouring conventionally fertilised property.

One of the reasons for the lower Nitrate-N figures is that more of the nitrate contained in rapidly growing plants is converted to full protein.

Energy is required for this to occur and when plants are photosynthesising efficiently this naturally happens.

Leaf surface area is an important component of this process. Bigger leaf surface area allows more energy to be generated and an increase in protein, which is then reflected in a higher protein:fat ratio in the milk.

Management also plays a major role, with higher pasture covers allowing more energy to be stored on farm. Maintaining grazing intervals that allow pastures to reach the slow growth phase prior to grazing is important and palatability increases as pasture growth slows.

It's important to remember that natural systems operate 'as a whole', and it's not essential to measure every aspect to know whether health is improving or declining. When one thing improves everything improves.

Pest and disease pressure steadily decreases as soil health improves and, although there will always be challenges due to the vagaries of weather, healthy systems recover more rapidly. Grass with higher nutritional value and energy means stock health and performance is also enhanced.

Pasture and soil damage because of continuous wet weather is unavoidable, as was the case during last winter. Healthy soils recover more rapidly than expected without costly remedial work. Below are photos of a small area of Stuart Pritchard's property as a result of heavy overnight rain, and the same area recently.