



CARBOTECH™

ON FARM DEMONSTRATION - 2012

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TRIAL AIM

CARBOTECH is a liquid carbon product derived from plant extracts. CARBOTECH is useful in improving the efficiency of plant nutrient uptake.

The CARBOTECH mechanisms of action are as follows:

1. CARBOTECH will bind with nutrients and protect it from lock-out in the soil or from leaching and volatilization.
 - a. Cat-ions such as Ammonia, Potassium, Calcium and Magnesium binds with CARBOTECH to form larger molecules, aiding in reducing leaching through the soil.
 - b. Anions such as Phosphates binds with CARBOTECH in 'n proses called organic Phosphate clustering protecting it from Calcium / Phosphate lockout.
2. CARBOTECH will improve root growth by stimulating cell division and growth as well as having a positive effect on phosphate availability and mobility
3. The beneficial carbonaceous bacterial food source available in CARBOTECH promotes the bio-life in the soil to thrive and assist in the promotion of nutrient uptake, root development and root health to give natural defence against attacks on plant health

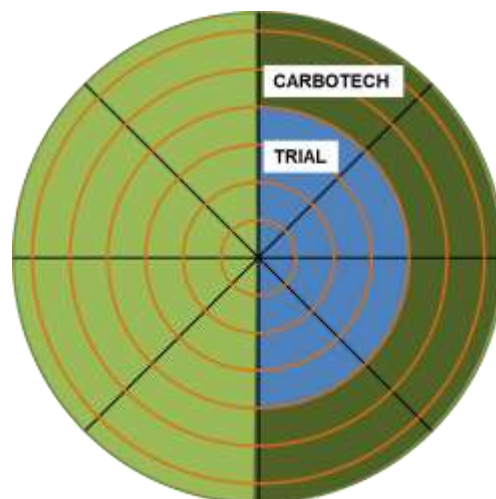
On dairy pastures a strategy of a reduction in application of Nitrogen or one of improved yield could theoretically be achieved. A combination of the two strategies might also be possible.

In this particular case CARBOTECH was applied on a farm that has successfully reduced the use of Nitrogen from as high as >800kg N p.a. to 230kg N p.a. The aim therefore is to see if the addition of CARBOTECH and the expected improvement in the utilization of applied nutrients will translate into an improved yield

FIELD TRIAL SETUP

The on farm demonstration was undertaken in order to demonstrate the effect of CARBOTECH on dairy pastures.

A 6 span centre pivot, divided into a number of similar camps was selected. It was decided to apply CARBOTECH on the last two spans and the overhang of the pivot, across four camps: This allowed for the application of the exact same treatment for trial and control as the fertilizer would be similar and the cattle grazing the pastures would be the same in all cases.





8 Litres of CARBOTECH per Ha was applied on 20 April 2012. Two more similar applications will follow during the balance of the year CARBOTECH application is at 100% of CARBOTECH norm 107Kg of LAN and 26kg of K₂SO₄ per Ha was applied on 01 May 2012.

SUMMARY OF RESULTS

Total Dry Matter produced on the CARBOTECH trial was 22.7% higher than the control. The Dairy Cows seemed to have preferred the CARBOTECH treated pastures (the were free to utilize either the trial area or the control area in each individual camp.)

The Cattle took in total 20.3% more of the CARBOTECH treated area than the control. In spite of the more severe grazing that dry matter that remained after grazing on the CARBOTECH treated area was 29.7% more than the equivalent of the untreated area.

MEASUREMENTS

Plant Material growth was measured at various intervals:

TRIAL RESULTS - CARBOTECH

Date	Kg/Ha Dry Matter	Increase net of Grazing	Taken Through Grazing	Total Dry Matter Produced
23-04-2012	1389.0			
30-04-2012	1620.5	231.5		231.5
07/05/2012	2061.0	440.5		440.5
29/5/2012	1788.5	-272.5	272.5	
04/06/2012	2315.0	526.5		526.5
12/06/2012	2519.5	204.5		204.5
20/6/2012	1597.0	-922.5	922.5	
28/6/2012	1832.3	235.3		235.3
		443.3	1195.0	1638.3

29.7% 20.3% 22.7%

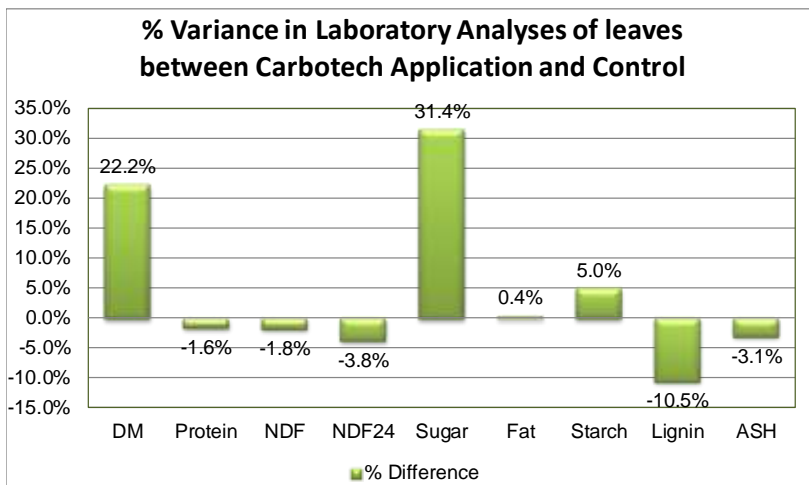
CONTROL RESULTS

Kg/Ha Dry Matter	Increase net of Grazing	Taken Through Grazing	Total Dry Matter Produced
1389.0			
1614.0	225.0		225.0
2102.0	488.0		488.0
1736.0	-366.0	366.0	
2188.3	452.3		452.3
2292.3	104.0		104.0
1664.5	-627.8	627.8	
1730.8	66.3		66.3
	341.8	993.8	1335.5



Leaf Analyses were taken three months after application (after two grazings)

The first comparison is the % difference in the leaf analyses for the various measurements and are as follows:



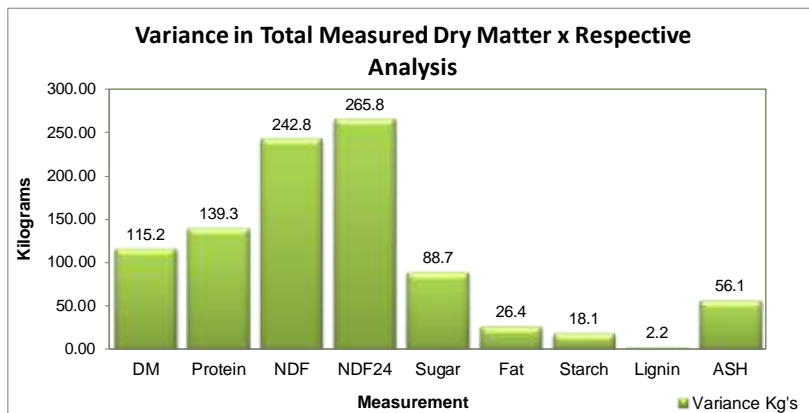
Comparison of Laboratory Analyses

Measure	Carbotech Result (%)	Control Result (%)	Variance	% Difference
DM	12.42	10.16	2.26	22.2%
Protein	29.85	30.33	-0.48	-1.6%
NDF	52.52	53.46	-0.94	-1.8%
NDF24	64.56	67.12	-2.56	-3.8%
Sugar	8.36	6.36	2.00	31.4%
Fat	5.15	5.13	0.02	0.4%
Starch	2.95	2.81	0.14	5.0%
Lignin	0.94	1.05	-0.11	-10.5%
ASH	13.03	13.44	-0.41	-3.1%

The second comparison is a comparison of the physical kilograms of the various dietary components that each of the two applications contributed.

The reasoning is that even though some of the lab analyses might be negative, the total kilos produced might be more as a result of the increased production of plant material on the trial vs. the control.

It is evident that the Carbotech Application has outstripped the trial in every aspect when one considers the kilograms of the various dietary components that was physically produced on the ground.



Totals of Weekly dry matter measurements

	CARBOTECH		CONTROL		VARIANCE
	Kg's		Kg's		Kg's
Taken Through Grazing		1,195.0		993.8	201.2
Total Dry Matter Increases		1,638.3		1,335.5	302.8
Total Dry Matter Produced		2,833.3		2,329.3	504.0

Calculation of contribution in Kg's (Total Dry Matter Produced x Analysis)

	CARBOTECH		CONTROL		VARIANCE
	Analysis	Kg Value	Analysis	Kg Value	Variance Kg's
DM	12.4%	351.9	10.2%	236.7	115.24
Protein	29.9%	845.7	30.3%	706.5	139.26
NDF	52.5%	1,488.0	53.5%	1,245.2	242.81
NDF24	64.6%	1,829.2	67.1%	1,563.4	265.75
Sugar	8.4%	236.9	6.4%	148.1	88.72
Fat	5.2%	145.9	5.1%	119.5	26.42
Starch	3.0%	83.6	2.8%	65.5	18.13
Lignin	0.9%	26.6	1.1%	24.5	2.18
ASH	13.0%	369.2	13.4%	313.1	56.12



CONCLUSION

From the results obtained from the first application and measurements, it is apparent that CARBOTECH is useful for increasing yield and relative feed value in dairy pastures on the short term, in applications where low levels of Nitrogen are being applied.

ACKNOWLEDGEMENTS

We would like thank Mr Herselman for affording us the opportunity to do these trials on Lancewood Dairy 2 and for the meticulous measurements and control that allowed the recording of these results.