



## **CARBOTECH™**

### **ON FARM DEMONSTRATION - 2013**

#### **POTATOES, UGIE, SOUTH AFRICA**

#### **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**

Three pivots on three different farms were used for the Trial. A section of a pivot was treated with Carbotech and harvested separately. Carbotech was applied at 10 liters each at week 4,6 and 8. *(We have since learned that applying Carbotech in week 4 negatively influences tuber initiation to due to vigorous vegetative growth – The application should instead be made in week 2)* The potatoes harvested were weighed and classed and the results are detailed below.

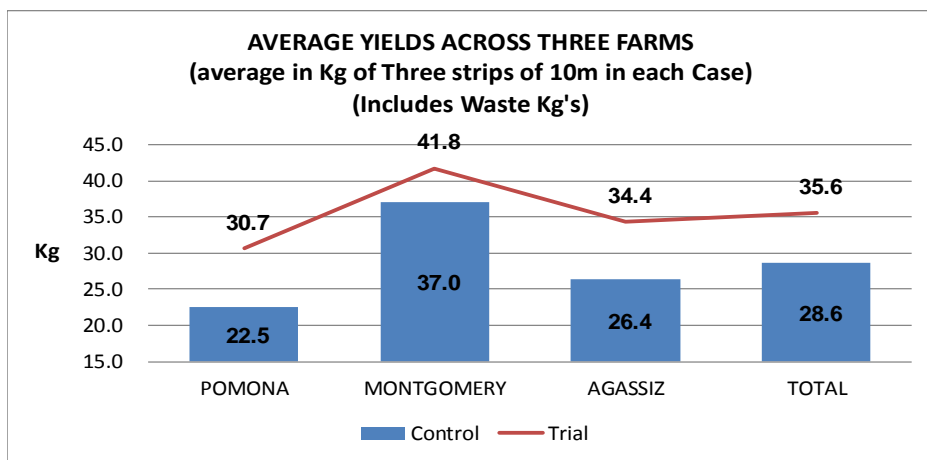


## RESULTS

### AVERAGE YIELDS ACROSS THREE FARMS

(average in Kg of Three strips of 10m in each Case)  
(Includes Waste Kg's)

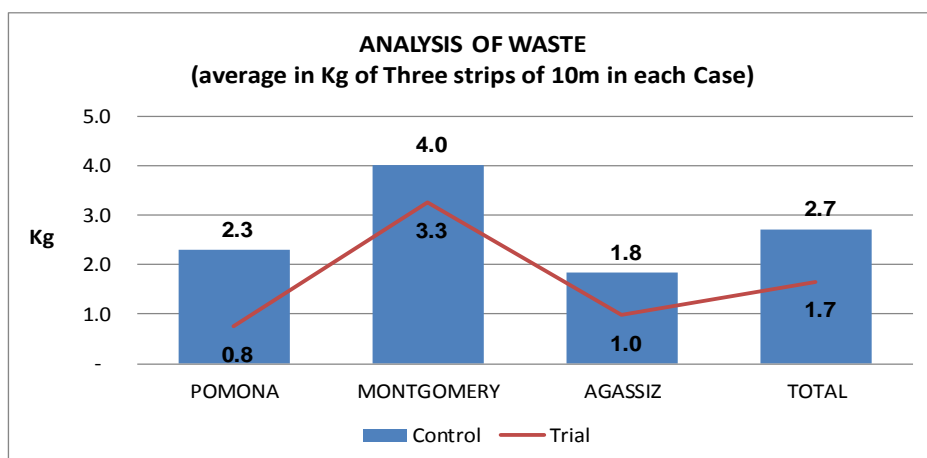
Total Production	Control	Trial	Variance	%
POMONA	22.5	30.7	8.2	36.4%
MONTGOMERY	37.0	41.8	4.8	12.9%
AGASSIZ	26.4	34.4	8.0	30.4%
TOTAL	28.6	35.6	7.0	24.4%



### ANALYSIS OF WASTE

(average in Kg of Three strips of 10m in each Case)

Total Waste	Control	Trial	Variance	% Less
POMONA	2.3	0.8	1.5	67.2%
MONTGOMERY	4.0	3.3	0.7	18.6%
AGASSIZ	1.8	1.0	0.9	47.1%
TOTAL	2.7	1.7	1.1	38.8%

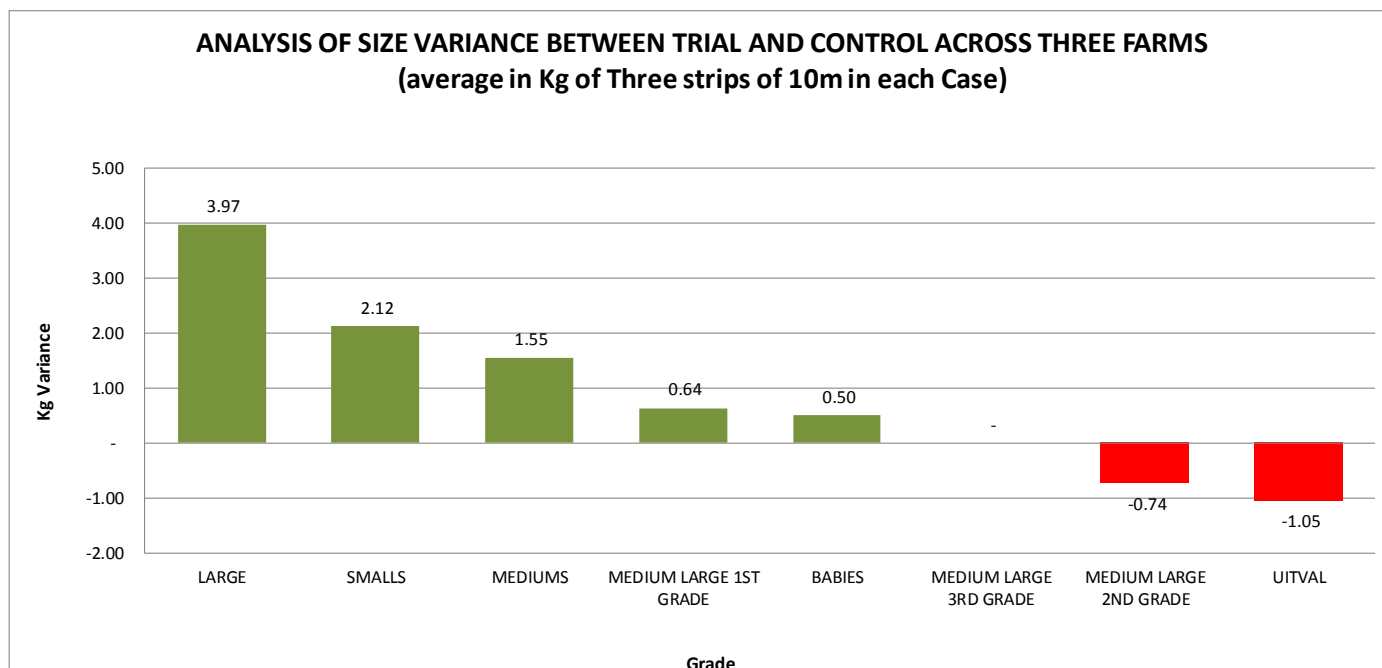




**ANALYSIS OF SIZE VARIANCE BETWEEN TRIAL AND CONTROL ACROSS THREE FARMS**  
(average in Kg of Three strips of 10m in each Case)

DETAIL	POMONA		MONTGOMERY		AGASSIZ		TOTAL: AVERAGE			
	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Variance	%
LARGE	8.37	10.18	12.46	23.51	4.05	3.11	8.29	12.27	3.97	48%
SMALLS	1.59	4.22	3.03	2.40	6.08	10.46	3.57	5.69	2.12	60%
MEDIUMS	3.96	7.98	8.40	5.17	5.56	9.44	5.97	7.53	1.55	26%
MEDIUM LARGE 1ST GRADE	4.96	5.87	6.49	6.29	4.03	5.23	5.16	5.80	0.64	12%
BABIES	0.51	1.21	1.29	0.73	3.84	5.21	1.88	2.38	0.50	27%
MEDIUM LARGE 3RD GRADE	-	-	-	-	-	-	-	-	-	0%
MEDIUM LARGE 2ND GRADE	0.81	0.49	1.33	0.44	1.01	-	1.05	0.31	-0.74	-70%
UITVAL	2.30	0.75	4.01	3.26	1.84	0.97	2.72	1.66	-1.05	-39%

**ANALYSIS OF SIZE VARIANCE BETWEEN TRIAL AND CONTROL ACROSS THREE FARMS**  
(average in Kg of Three strips of 10m in each Case)



The quantity, size and quality variations resulted in a substantial increase in revenue after the cost of the application was taken into account.

**CONCLUSION**

From the results it is evident that Carbotech has a beneficial impact on potato production and quality. This is corroborated by various other trials across the country. Care must however be taken to ensure that the timing of application does not impact initiation due to vigorous growth at a time when the potato plant switches to a regenerative phase.

**ACKNOWLEDGEMENTS**

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