



BEETROOT TRIAL

COMPARING GROWER STANDARD AS CONTROL, WITH GROWER STANDARD PLUS MOBILIZER

By Richard Smith - Roots Shoots & Fruits Ltd.
In conjunction with Hawkes Bay Beetroot Grower

Special thanks to Blake Steele for his assistance in the measurement and weighing of hundreds of Beetroot.

BACKGROUND

Improvements to crop yield is a constant endeavour for farmers to stay viable in these economic times. Mobilizer, a Fulvic acid product developed by JH Biotech Inc. has shown excellent yield improvements and financial rewards from one or two applications applied at appropriate timings to a wide range of field grown crops as well as indoor glasshouse production. Mobilizer has many attributes, one of the main being the ability to unlock complexed minerals in the soil and to deliver or transport the nutrients from the soil to the plant. This long chained organic carbon material stimulates the plants metabolism and immune system and by increasing the pressure of the cell membrane it also enables plants to withstand wilting or periods of extreme heat and cold. Mobilizer is a buffer so it is excellent to apply to water adjusting pH to appropriate levels allowing ease of mixing of products.

OBJECTIVE & PURPOSE

The objective of the trial was to measure any improvements to the beetroot crop in terms of yield, size and weight as well as circumference of the beets after one application of Mobilizer was applied compared to a control where no Mobilizer was applied. If consistent with prior trials, Mobilizer will increase yield and overall profitability of the crop.

TRIAL DESIGN

A piece of land was divided into four blocks, two 'Control' and two 'Mobilizer'. One application of Mobilizer was applied with a field sprayer to the leaf on the 10th December 2013, when beets were approximately 14-15cm in height. Visually, control block 4 and Mobilizer block 2 appeared to be healthier than Control 1 and Mobilizer 3 so within those blocks a number of randomised measurements were taken.

Control 4	Mobilizer 2
Control 3	Mobilizer 1

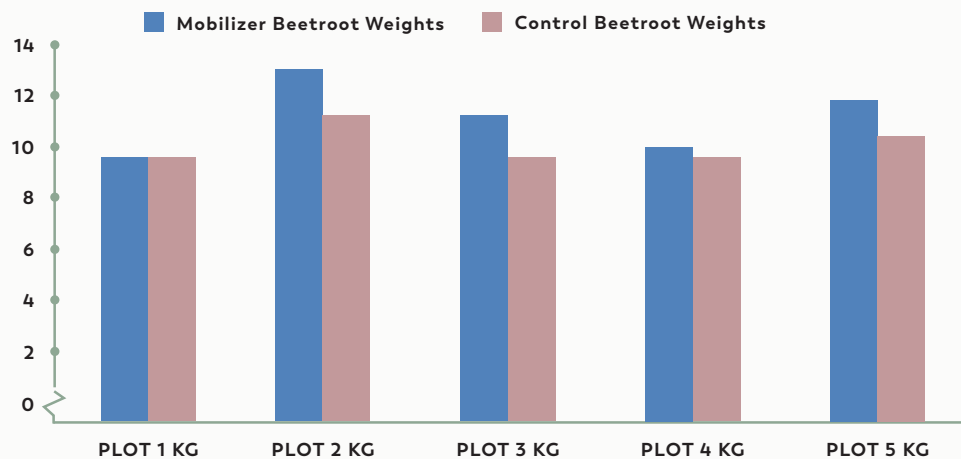
1/ Five by one metre plot areas were measured randomly within the Mobilizer and Control areas and all beets were picked and weighed.

2/ Five x 10 (50) random beets were picked from within both the Control and Mobilizer blocks, weighed and the circumference measured.

3/ Five hundred (500) beets from a row of the Mobilizer treated area and 500 beets from a row of Control area were dug and measured.

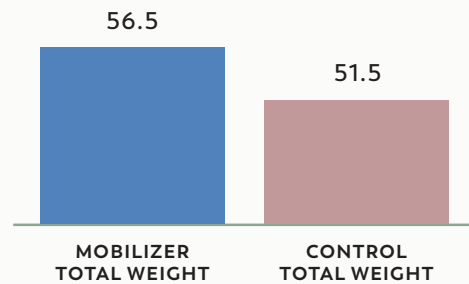


Beetroot Randomised Plot Design Showing Weights



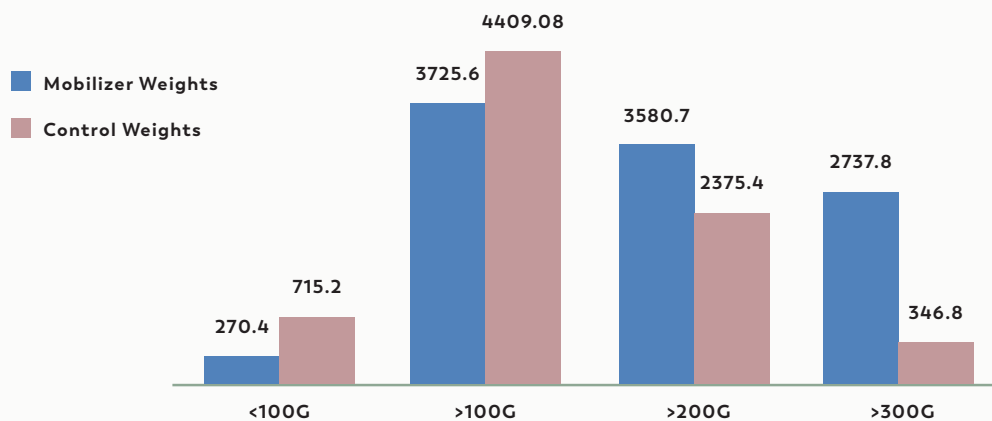
TOTAL WEIGHT KG MOBILIZER V'S CONTROL

■ Mobilizer Total Weight
■ Control Total Weight



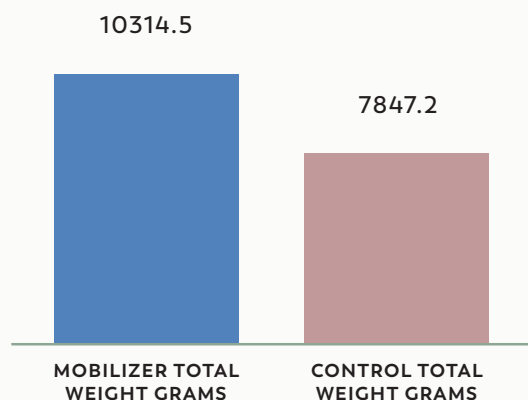
Mobilizer had increased weights in each trial replicate over control except plot one where they were the same with an average weight of 11.3kg compared to control average of 10.3kg.

Beetroot Mobilizer Weight Range Compared to Control



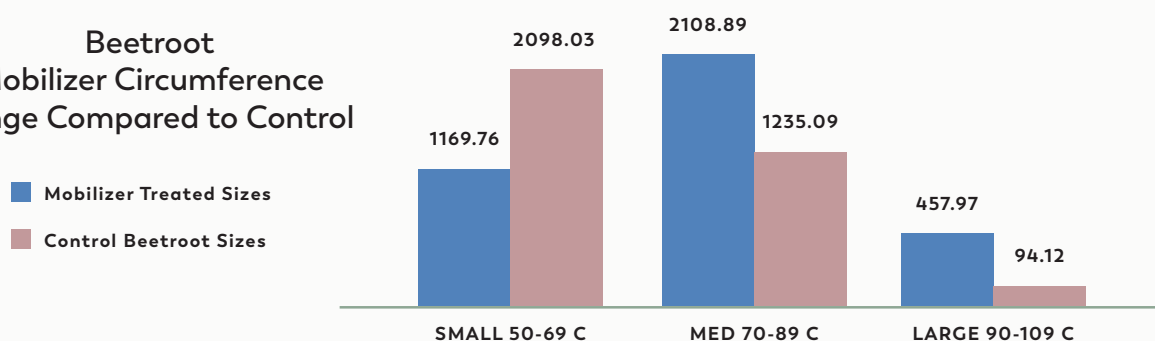
Mobilizer increased weights of beetroot compared to control which had more beets in the lower weights.

Beetroot
Mobilizer Total Weight Compared
to Control



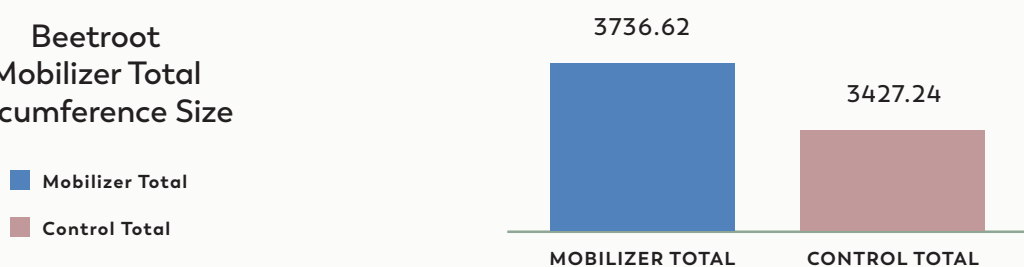
Mobilizer showed a total overall increase in weight of beetroot compared to Control.

Beetroot
Mobilizer Circumference
Range Compared to Control

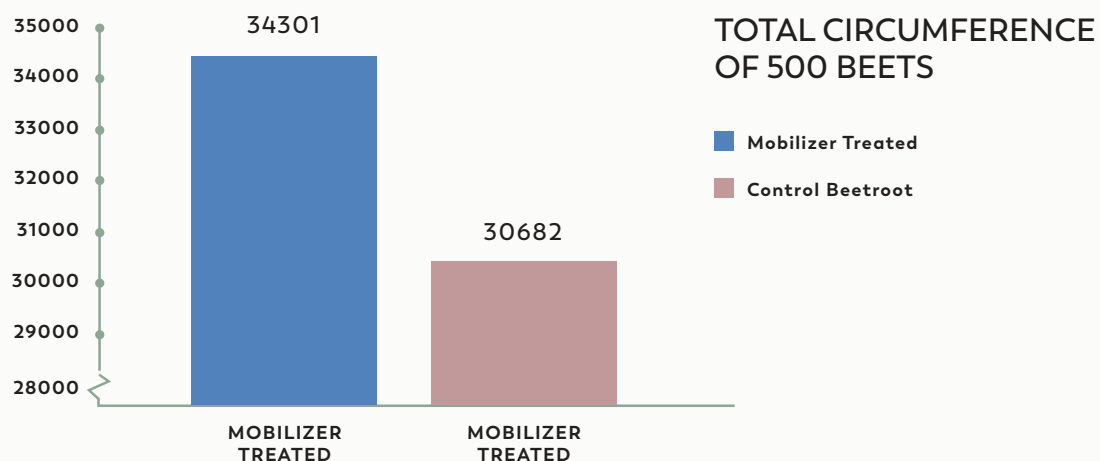


Mobilizer treated samples had more larger circumference beets; Control samples had more smaller sizes.

Beetroot
Mobilizer Total
Circumference Size



Mobilizer treated samples had a larger overall size of beets.



RESULTS

Results show that Mobilizer increased the weight and size of treated plants. Mobilizer treated beetroot were larger in terms of circumference size and there were more beetroot in the larger size bracket overall in each plot replicate compared with Control.

Mobilizer treated samples had a larger overall size of beets with an average measurement of 74.73mm and an average weight of 206.29 grams. i.e. for every mm of growth on the Mobilizer treated plots there was an average increase in weight of 2.76 grams whilst the control showed for every 1mm growth there was a lower average increase of 2.33 grams in weight. The result also showed an average increase of 31.4% in beetroot weights from the control due to Mobilizer treatment.

Average control weights 1570g

Average Mobilizer weights 2063g

Difference

493g $493/1570=0.314 \times 100=31.4\%$ increase.

STATISTICAL ANALYSIS

Circumference Comparisons

	MOBILIZER	CONTROL
PLOT 1	782.93	723.12
PLOT 2	786.85	692.20
PLOT 3	738.31	695.86
PLOT 4	700.35	643.82
PLOT 5	728.18	608.43

RESULTS OF THE STATISTICAL ANALYSIS

AVERAGE RESULT FOR EACH TREATMENT	
MOBILIZER	CONTROL
747.3	673.0

The p-value is between 0.005 and 0.01.

This means that the probability of the differences between treatments being due to chance is between 0.5% and 1%

The least significant difference, or LSD (95%) is 39

The LSD is the smallest difference between treatments that can be detected.

The '95%' relates to the percentage of times the LSD gives the correct answer.

WEIGHT COMPARISONS

	MOBILIZER	CONTROL
PLOT 1	2398	1883.2
PLOT 2	2283	1613
PLOT 3	1980.2	1810.2
PLOT 4	1677	1212.6
PLOT 5	1976.3	1328.2

AVERAGE RESULT FOR EACH TREATMENT	
MOBILIZER WEIGHTS	CONTROL WEIGHTS
2063	1570

The p-value is between 0.005 and 0.01.

This means that the probability of the differences between treatments being due to chance is between 0.5% and 1%.

The least significant difference, or LSD (95%) is 250.

The LSD is the smallest difference between treatments that can be detected.

The '95%' relates to the percentage of times the LSD gives the correct answer.

FINANCE

Beetroot growers are paid by weight and with a statistical difference of **31.4 % in average weight increase** through the use of Mobilizer this would definitely make a marked difference in profitability of beetroot production.

This is an **exceptionally good result** and we would not expect this sort of increase to be repeated on the same block, however it is not abnormal to get upwards of 10% increase in production through the use of Mobilizer allowing increased mobilization and utilisation of what would normally be locked up or leached nutrients.

