EVALUATION OF VARIOUS CARBONACEOUS COMPOUNDS AS A PRODUCTIVITY ENHANCEMENT ON THE GROWTH OF MAIZE AND CITRUS

In-house trials

Eastern Cape – South Africa

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1. Background

We have been approached by a number of product providers recently to evaluate their products for distribution through our sales network. Below is an extract of data relating to carbonaceous compounds in pelletized form.

2. Materials and methods

MAIZE

Maize was planted in 50 litre bags in a sand medium. All treatments received the same fertilizer and water. Each treatment had ten

repetitions

The following Carbonaceous materials were trialed:

- Biochar powder
- Biochar and chicken manure pellet
- Biochar, Chicken Manure and Carbotech pellet.

All three treatments were administered at planting at a rate of 50kg per hectare.

After the second top dressing we measured photosynthesis daily for two weeks, with a Pocket PEA chlorophyll fluorescence meter from Hansatech. The parameter we plotted in the graphs below is the Performance Index (PI) which gives an indication of overall

photosynthesis efficiency.

In addition we measured the plant weight at the end of the two weeks.

The PI figure is an average of the ten treatments over the two weeks and the weight is an average of the ten treatments at the end of the two weeks.

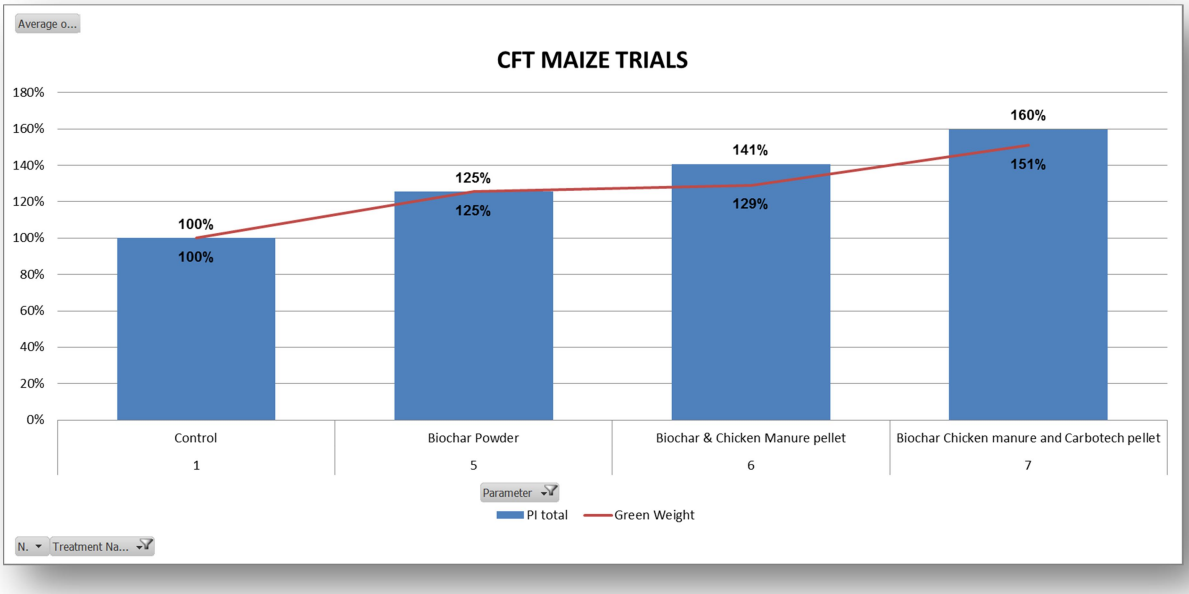
CITRUS

Based on the results on maize the trial was extended to bearing citrus trees. The Biochar, Chicken Manure and Carbotech pellet, was applied at different rates (250g, 500g and 1Kg) in the drip zone. A spade was inserted in the soil below the dripper at an angle and then lifted to make space for an application of pellets underground in the drip zone.

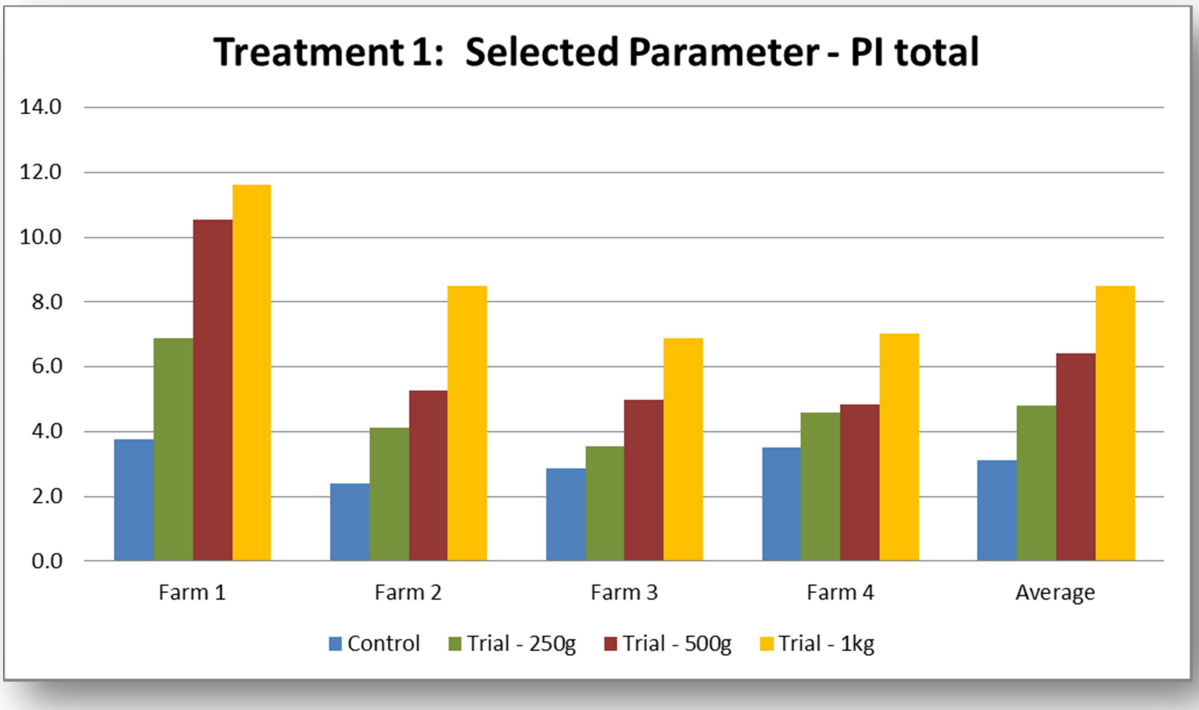
3. Results

MAIZE

Results are expressed as a % of the control for both PI and weight. The graphs below shows the relative performance of the treatments to the control treatment for both PI and weight



CITRUS



4. Discussion

The results above reflect very closely what was expected beforehand, i.e:
Biochar on its own will not be as good as Biochar with chicken manure because of the extra nutrients and organic material and the addition of Carbotech should add an extra advantage due to its ability to chelate minerals in the sandy soil, stimulate root growth and to stimulate the microbial population.

The application on citrus at different rates, gave very stable results and it is obvious that the maximum dosage have not yet been reached

The correlation of the weights, the photosynthesis results and the expected results as well as the trends at different dosages, give a very high confidence that the observed effects were as a result of the products added. In addition, the effects observed have to do with the soil's ability to store and provide minerals and is therefore in our opinion not plant specific.

5. Conclusion

We believe we can safely conclude from the trial above that a significant growth advantage on maize and citrus can be secured by the use of the carbonaceous additives mentioned above and specifically the Biochar, Chicken Manure and Carbotech pellets.

This advantage can probably be achieved on various crops as the mechanism of action has more to do with soil dynamics rather than plant specific processes.