

Introduction

AminoBoost is a phytofulvic acid chelated carbon (C), nitrogen (N) and phosphorous (P) product that is totally soluble in water. AminoBoost is an acidic phytofulvic acid product that aids in soil rehabilitation and improves soil structure. Due to the acidity of the product and the high fulvic acid content it can assist in mineralization of insoluble minerals in soils, neutralizing the ionic charges by chelating the minerals. It therefore keeps the neutralized minerals in solution and maintains availability for root uptake. It has strong chelating characteristics and will neutralize cation and anion charges of mineral nutrients to assist in the management and prevention of insoluble phosphate salts forming in the soil. This will maintain the minerals in a water soluble form for effective uptake and utilization by plants.

Motivation for doing the trial

To determine the effect of phytofulvic acid as a soil amendment on plant growth as well as to create a dosage response curve to determine the optimum application concentration.

Treatment

AminoBoost was applied as a soil amendment at different concentrations to determine the optimal concentration for the highest efficiency. The trial was split into two parts. In the first part of the trial plants were treated with a solution containing only the mineral nutrients as per the product analysis and specification. In the second part, plants were treated with a solution containing phytofulvic acid plus the mineral nutrients to determine the absolute effect of the fulvic acid alone.

Crop	Treatment	Application	Control	Repetition
Maize	AminoBoost + Fulvic acid	15ℓ/ha, 20ℓ/ha, 30ℓ/ha, 40ℓ/ha	Untreated	3
Maize	AminoBoot - Fulvic Acid	15ℓ/ha, 20ℓ/ha, 30ℓ/ha, 40ℓ/ha	Untreated	3

AminoBoost contains 15 % Fitofulvic acid and is enriched Phosphorous (P) and Nitrogen (N).

Composition:

Nitrogen (N) 18 g/kg
 Phosphorous (P) 13 g/kg
 Fulvic Acid 15% ± 2
 pH 1.9 ± 0.1

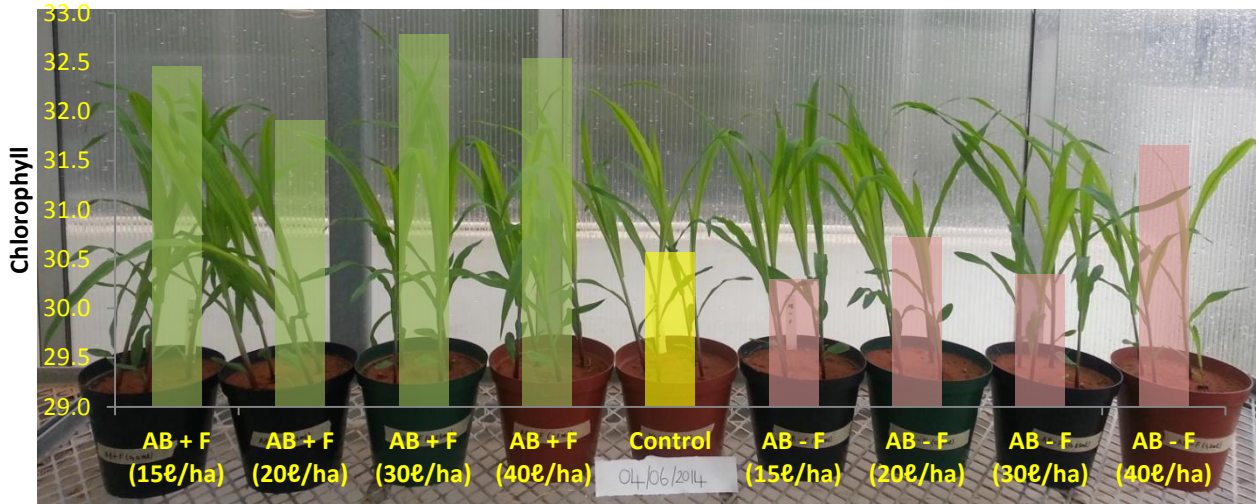
LC - F : Nutrients alone without fulvic acid.

LC + F : Fulvic acid product containing the same nutrient content as above.

Results

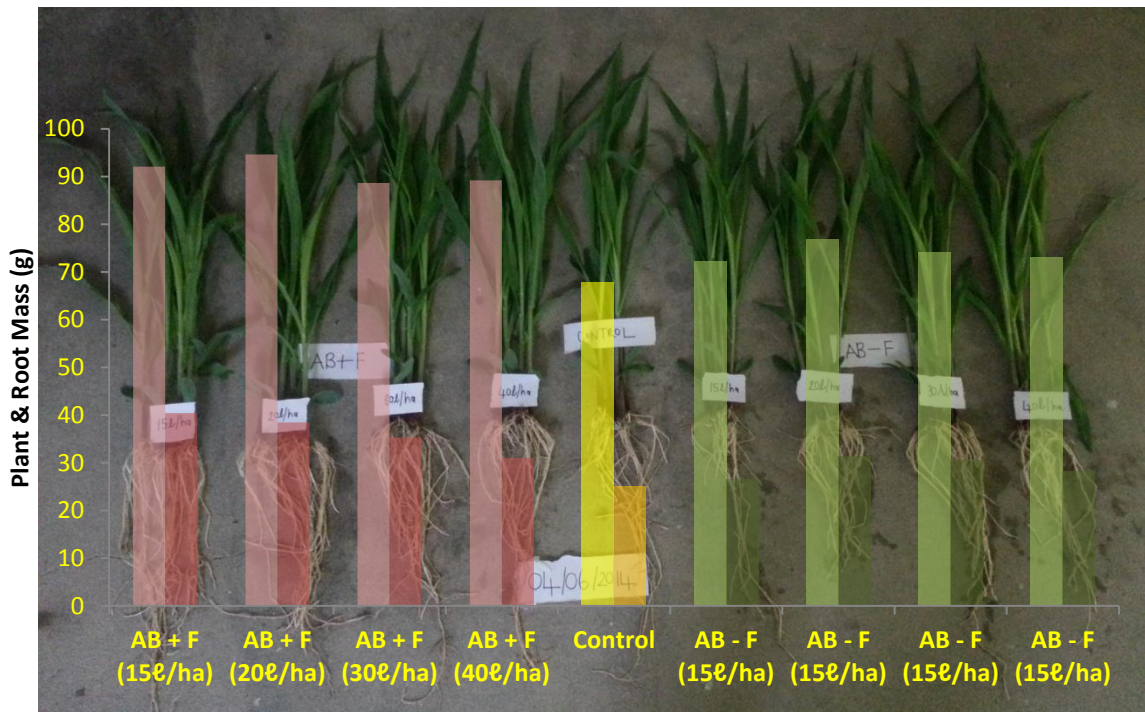
Increase in chlorophyll content.

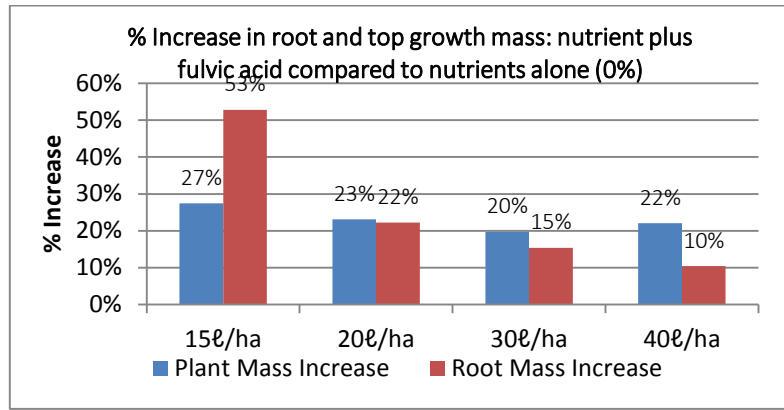
Higher chlorophyll content was measured for plants treated with solution containing fulvic acid (AB+F). Chlorophyll has a direct effect on the plant's ability to photosynthesize optimally and will affect the plant mass and production directly. Note the visual difference in leaf size/area.



Improved growth.

Enhanced top and root growth could visually be observed for treated plants as is illustrated in the photograph below. Better growth was observed for the plants that were treated with the solution containing Fulvic acid (AB+F).





Conclusions

The application of AminoBoost resulted in enhanced plant growth and chlorophyll content which ultimately will contribute to better yield and quality. Ideally AminoBoost should be applied with each fertilizer application and preferably with water soluble fertilizers and added after dissolving the fertilizers in water. Fulvic acid ions have the ability to neutralize cations and anions and therefore enhance nutrient availability and uptake by the plant. AminoBoost acts as a temporary buffer to prevent soil chemical interaction of opposing ions which is specifically important in the reactions between dications and the negatively charged phosphate anion that will result in insoluble phosphate molecules and once in this form it is poorly available for utilization by crops.

The enhanced efficiency of AminoBoost compared to mineral nutrients alone can therefore specifically be attributed to the high concentration of Phytifulvic acid (18.9%).

AminoBoost can therefore be defined as an acidic nitrogen and phosphorous water soluble mineral nutrient phytifulvic acid chelated product that will improve nutrient use efficiency when used as a soil amendment product in conjunction with soluble fertilizers.