

Comments and observation on BEST TM21 trial – Tammin, Western Australia

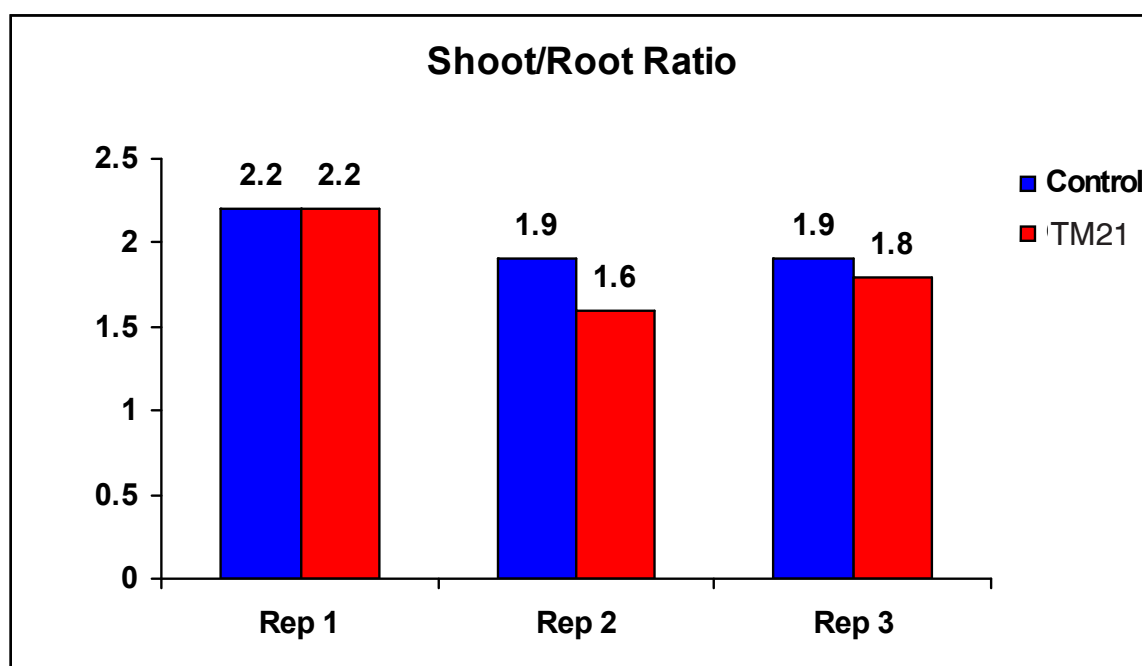
The objective of this trial was to see if the use of a bio stimulant on the seed and as a foliar, will improve specific parameters like nutrient bio-availability, soil biological activity and root development. All of these parameters are very significant in grain yield.

Soil Analysis:

The soil where this trial was conducted is loamy with a low organic fraction. Because of the low organic matter the C/N ratio is low, reflecting a low biological activity. The soil level of phosphorus is low with sulphur deficient. All the trace elements are deficient. This is critical for any enzyme reaction.

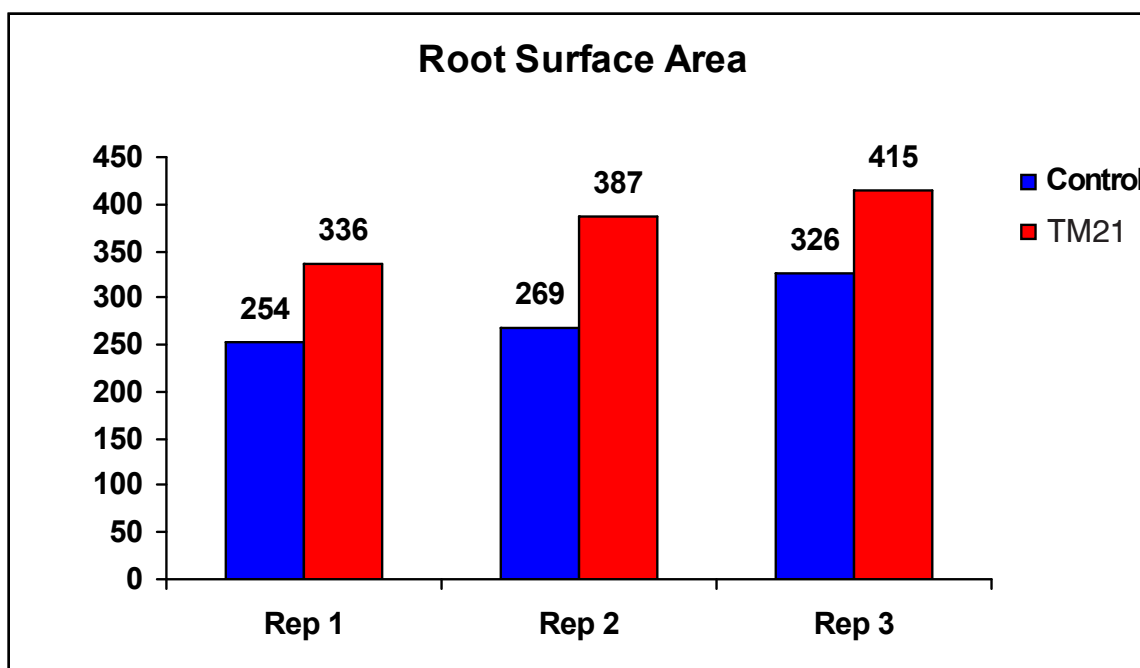
Early root development:

A good developing root system is very important in the early stages of the crop. Not only set a good root system the plant up to intercept water and nutrients but also create an environment for beneficial micro-organisms to multiply. Poor soil structure causes water logging and anaerobic conditions suppressing root development. Low levels of base cations like calcium, magnesium and potassium bring about low pH or high acid levels, suppressing root development.



(Fig 1)

A more aggressive root development will result in a lower shoot/root ratio (Fig 1). Considering the raw data the shoot weight over the different treatments didn't change a great deal. The lower shoot/root ratio is mainly due to a bigger root system, even in the early stages.



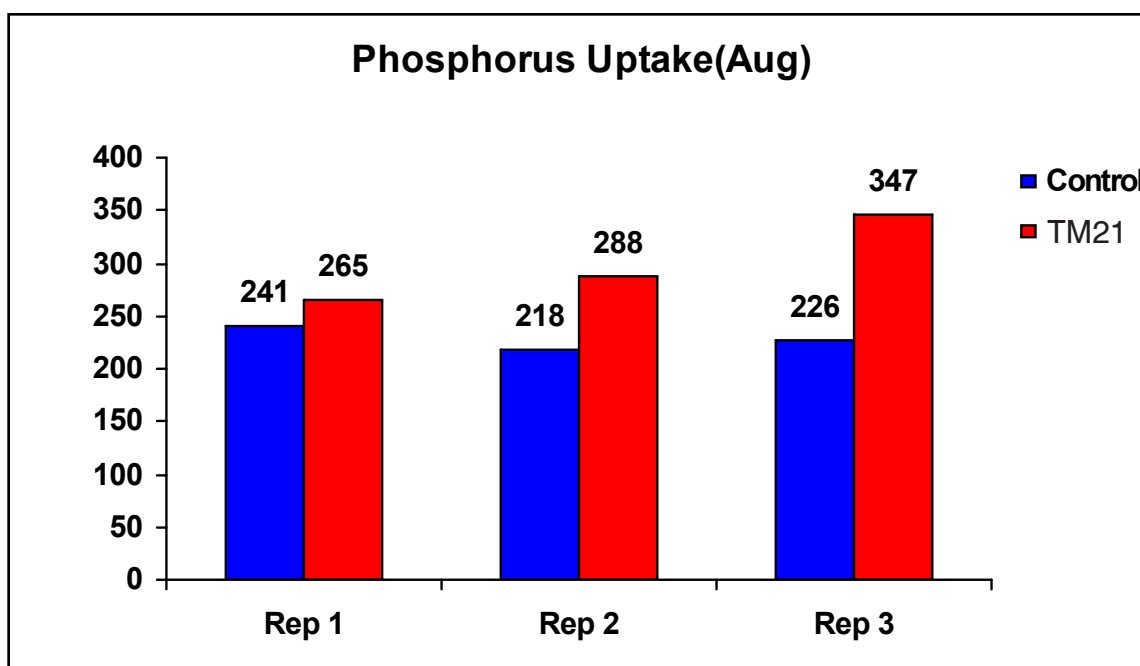
(Fig 2)

This is confirmed by the bigger root surface area (Fig 2). A bigger root surface area relates to more contact points where nutrients and water can be absorbed. A bigger surface area also contributes more effectively to the organic fraction.

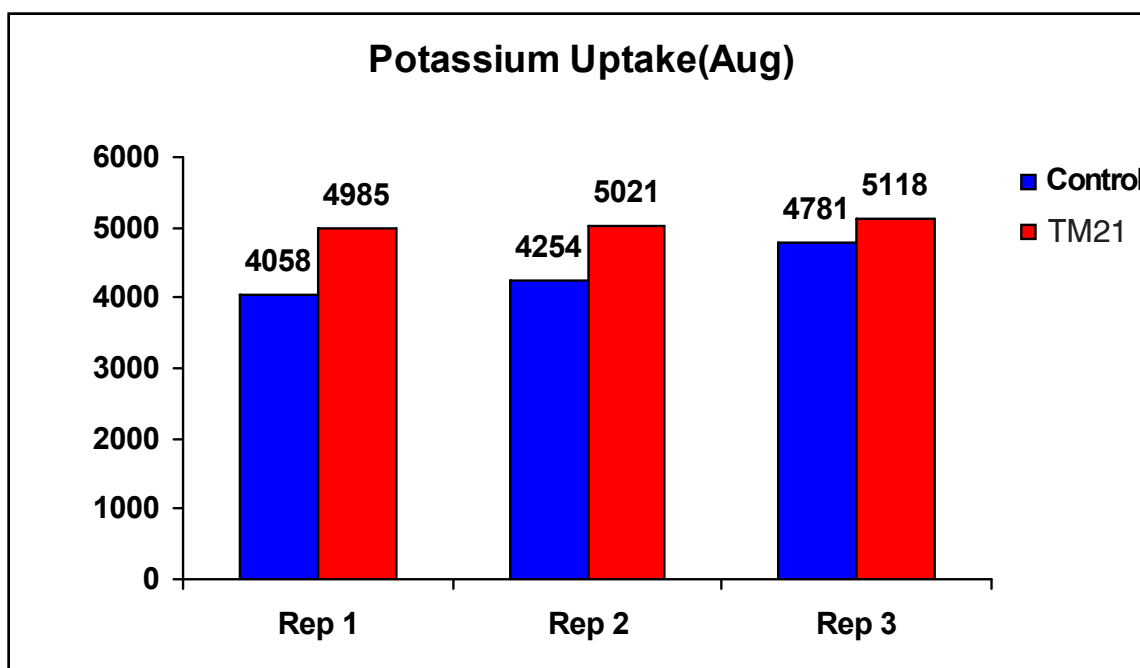
This trend can be seen to a larger extent in the later stages of the crop where the readings were done in August (see raw data).

Nutrient Uptake:

Regarding the uptake of nutrients there was a significant increase in the value of phosphorus and potassium in the sap (Fig 3; 4).



(Fig 3)



(Fig 4)

The ability of a crop to intercept or absorb more major nutrients like phosphorus and potassium is a huge advantage.

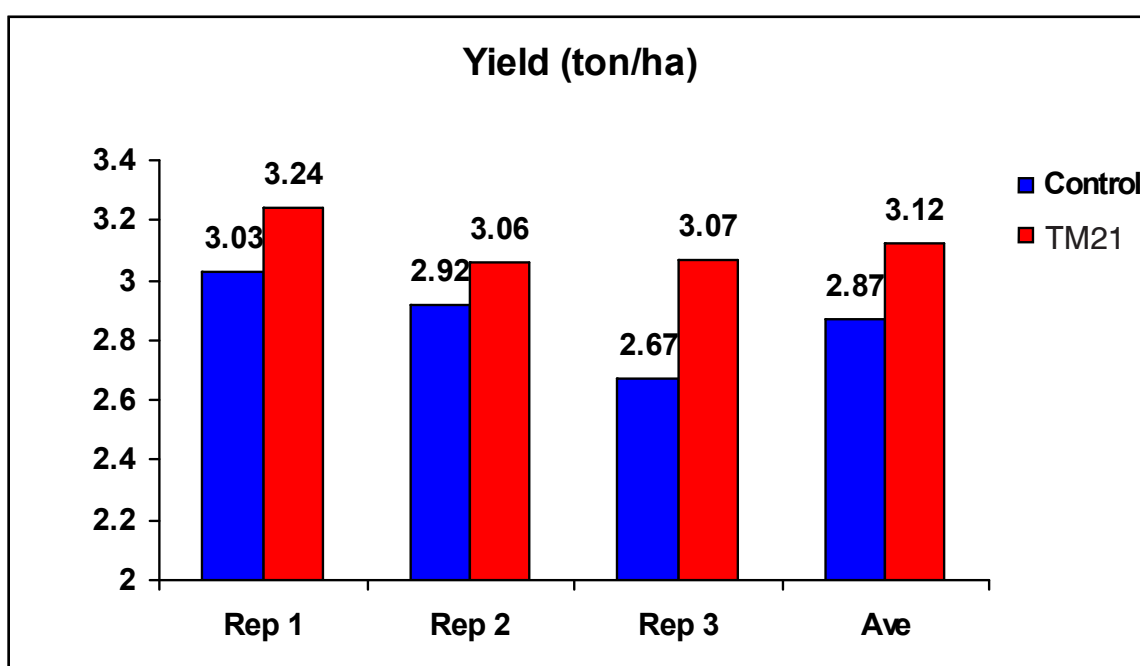
Effective Root Depth and pH in the Root Zone:

There was no significant difference in the effective root depth of the treated crop versus the control. One of the reasons might be the very acid sub-soil reflected by the low pH in the root Zone. Note the big difference in the top soil pH (CaCl) and the pH in the root Zone – sub soil (160-180 mm).

Tiller Numbers:

No significant difference.

Yield and Quality:



(Fig 5)

All the parameters discussed resulted in an average increase in yield of 250kg/ha where the seed was treated with TM21 and a foliar application was applied at 250ml/ha (Fig 5).

The quality data show an increase in protein and hectolitre weight and a decrease in screenings (See raw data).

Grain Analysis:

Good quality grain is essential for any crop to reach full potential. One parameter that is very important in evaluating grain quality is nutrient status of the seed. Higher levels of major nutrients nitrogen and phosphorus were located in the TM21 treatment. Also of great importance are trace elements. Higher levels of copper, manganese, iron and boron were to be found in the TM21 treatment (See raw data).

Conclusion:

Although this is only one year's data where the trial was done on a specific soil type, in a specific location in the Wheatbelt I believe that by using TM21 as a bio stimulant could increase the profitability of farming. Not only is it important to increase grain production but the benefits of growing a bigger root system will contribute to an increase in the organic fraction of the soil.

If using TM21 is responsible for a more effective nutrient uptake due to larger root surface area or higher biological activity, as this data shows, I would encourage grain growers to consider introducing TM21 in there nutrient program.

Call BEST on 1800 455 237 for more information regarding this trial.

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