



Trial Summary

Investigating the impact of Converte Bio-Fertiliser and Seed Primer on soil and plant health

JobsforNSW Building Partnerships Grant, Converte, University of Western Sydney and Corkhills Ag, (2018)

Trial Objective

Evaluate the impact of Converte Plantfood and Seed Primer on soil biological health at two different sites in NSW: **Boorowa (wheat)** and **Laggan (pasture)**. Microbial diversity and composition was assessed using next generation sequencing and quantitative polymerase chain reaction.

Trial Methodology

Converte plantfood was applied at 250 ml / ha across trial areas with and without seed primer. All areas including controls were treated with synthetic fertilizers and chemical controls such as herbicides.

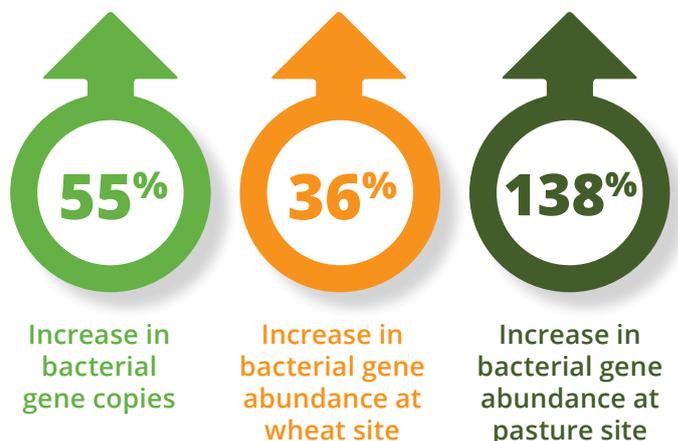
Key Trial Findings

Significant improvements in soil biological health

The addition of Converte Plantfood resulted in:

- Consistently higher activity of enzymes involved in N and P Mobilisation.
- Increases in basal respiration (considered a good predictor of overall biological activity in the soil) by 38% for wheat and 41% for pasture.
- Bacterial gene abundance (as a proxy for bacterial biomass) increased by 36% for wheat and 138% for pasture.

- The use of both Converte Plantfood and Seed Primer at the wheat site increased bacterial gene copies by 55%, providing strong evidence that Converte plantfood treatment stimulated bacterial growth in these soils.
- Soil C and N increased by approximately 50% at the pasture site. Visual observations of the field showed a greener, denser sward. This drove higher plant derived carbon inputs into the soil and stimulated microbial (particularly fungal) growth as evidenced by higher gene copy numbers in these soils.





Overall Quality and Yield



Grain yield in wheat was consistently higher in treated plots



Bio-fertiliser treatment increased total grain weight by 20-58% on collected samples at the Seed Primer treated wheat site

Conclusion

It was evident that bio-fertiliser treatment had a positive impact on microbial activity and abundance and on the crop performance measurements.

Because both farms also received a high level of synthetic fertiliser and chemical input, crop response to bio-fertiliser was likely to be curtailed somewhat as a consequence. Nevertheless, clear overall positive impacts on several soil health attributes were evident.

For a full copy of the trial study including detailed findings, go to URL:

<https://www.convertte.com.au/wheat-trial-final-report-2019/>

Key Takeaways

- Our analysis demonstrated that microbial activity (as assessed by respiration) was stimulated under bio-fertiliser treatment in both the wheat and pasture systems. This was supported by increases in either bacterial and/or fungal abundance at each site.
- The impact of bio-fertiliser treatment on the fungal community was particularly strong at the arable site, Boorowa (wheat).
- Although potential enzyme activities were variable, there was the general observation that the activity of enzymes involved in N and P mobilisation were consistently higher in treated plots compared to control plots.
- A clear shift in microbial community structure was observed at both sites under the bio-fertiliser treatment.

