

## EVALUATING THE EFFICACY OF BSN SUPERSTRIKE

Comparative Analysis and Microbial Testing of Samples from Canola Crop



By:

**Dr Hooshang Nassery**  
Global Technical Director

### What's in this Insight

This IN highlights the early growth and microbial testing milestones of a canola crop in South Australia. One section of the trial crop was treated with **BSN Superstrike** (BSNSS) and the other treated with a competitor seed treatment product.

### One Month after the Crop was Sown.....

These photo images were taken on 25th May 2017 and show the advantage given to the crop when 'kick-started' by seed priming with **BSN Superstrike**.

#### BSN SUPERTRIKE



Sample being taken from the ground



Strong root growth and rhizosphere with balanced top growth

#### COMPETITOR PRODUCT



Sample being taken from the ground



Weak root growth and rhizosphere with less advanced top growth

## Fact Finding Framework

- The photo images were taken by Aimee Kilpatrick, RLF Area Manager based in Mt Gambier, South Australia. Aimee managed the day to day activities associated with the trial and further comment of the analysis and results has been made by Dr Hooshang Nassery, RLF Head of Technical.
- The canola crop was sown on 23rd April 2017, and nineteen days later the samples were extracted (at random) from the allocated crop treatment areas and delivered for testing.
- The base soil preparation was the same for both seed priming treatments, and was in line with local area practice.
- The samples were submitted for soil indicator and key microbial group analysis to be processed by washing the whole rhizosphere as a measure of number and type of bacteria per plant, or per plant rhizosphere, or per dry weight. *(Unfortunately due to misunderstanding or laboratory work priorities at the time this was not done. Further comment is made on this in the Summary section that follows).*
- The laboratory did not measure the quantity of rhizosphere associated with the two treatments, and only a sub-sample was taken for comparison. This therefore did not allow for the added benefits of stronger root growth, greater rhizosphere development with the ability for more exploration of soil-based nutrient, or the actual number of microbes present to be quantified.
- However the visual observations from photographs taken 19 days after sowing, when the performance advantage of any seed treatment could be expected to be seen, show a considerable advantage for plants treated with **BSN Superstrike** (see below).



## Highlights for BSN Superstrike from the Laboratory Results

The results submitted by the laboratory showed very similar results and comments for the two samples included that :

- The soil indicators were good for both samples
- Nutrient Accessibility attributed to mycorrhiza was fair for both samples
- Microbial diversity was fair to good for both samples and it was suggested that this could be improved upon
- It was noted that the fungi to bacteria ratio was elevated for both samples, but considered that this may not be of concern as the growing mix was rich in organic matter which favours fungi over bacteria

Soil Indicator	Competitor Rate/100	BSNSS Rate/100
Rate of Nutrient Solubilisation	76.9	73.3
<b>Rate of Nutrient Cycling</b>	85.7	<b>87.4</b>
<b>Disease Resistance</b>	77.9	<b>82.2</b>
Drought Resistance	76.9	73.3
Nutrient Accessibility	53.9	46.6
<b>Rate of Residue Breakdown</b>	89.9	<b>94.6</b>
<b>OVERALL MICROBIAL BALANCE</b>	<b>81.1</b>	<b>82.1</b>

### Explanatory Notes About the Test

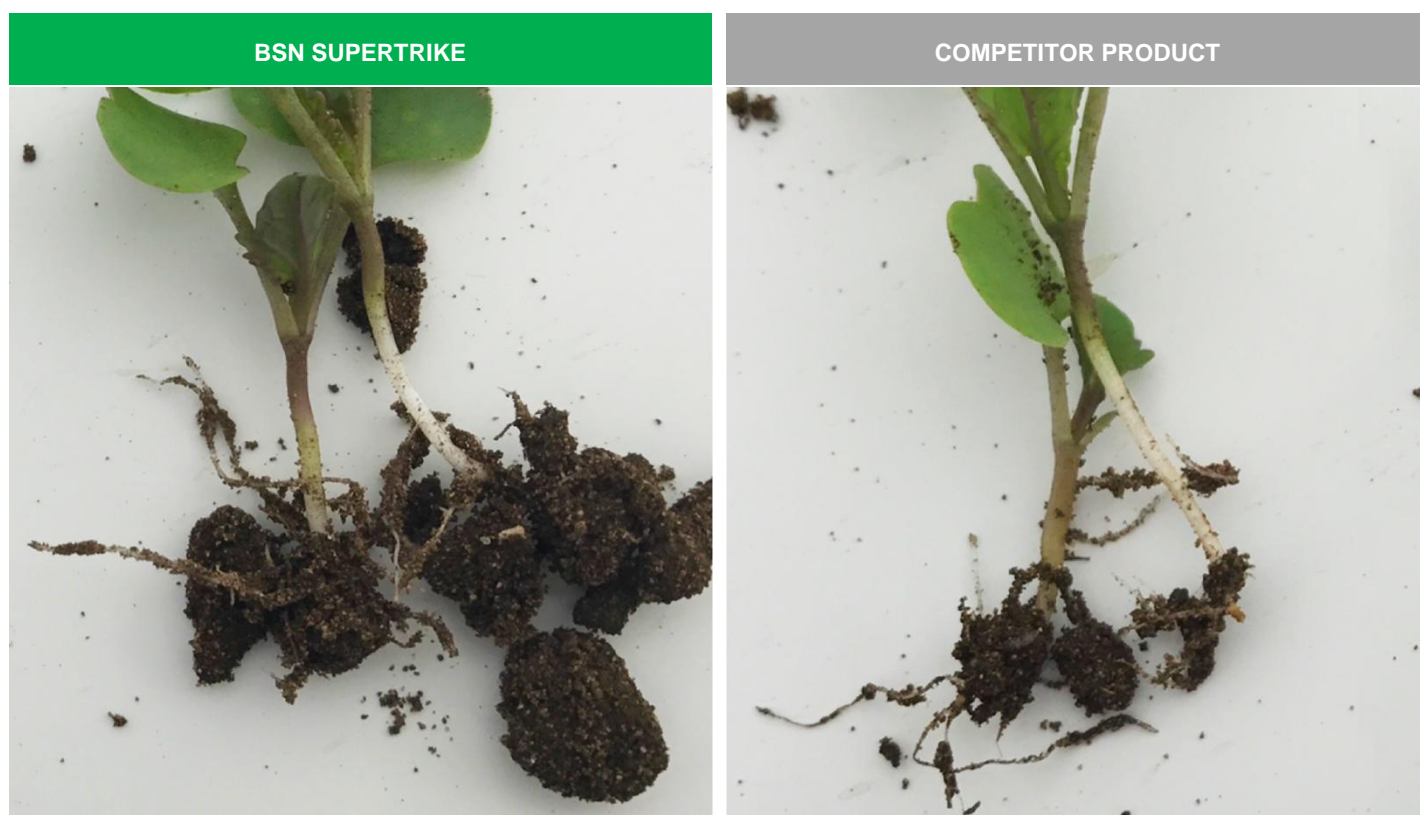
In part, the Microbe Wise test measures the biomasses of key microbial groups directly from the samples submitted. It uses molecular ('DNA-type') technology to analyse the unique cell membrane 'fingerprint' of each microbe type to identify and quantify key groups important to soil processes. This is an accurate and precise means of measurement.

## Summary

All things considered, the overall conclusion from a testing protocol such as was undertaken is that residue breakdown and nutrient cycling, as well as disease resistance, was better for the BSN-treated crop.

It is known that with more rhizosphere in BSN-treated crop, drought and salt resistance is bound to be better. This is due to increased moisture retention, and with the organic matter screening excess salt, allowing this to translate to yield benefits under difficult or stress conditions.

Regrettably, the true advantage of BSN seed priming treatment was simply not reflected in the analysis given by the laboratory in a unit weight comparison. If the rhizosphere from each plant had been washed, and the attached microbial populations accounted for, then the errors that inevitably come into play by selecting just a small sample based on unit weight from each sample could be avoided. In this sense it is feared that the analysis information, whilst broadly useful, does not deliver the quantitative results that reflect the benefits of greater rhizosphere development with healthy populations of microbial activity that allow the unlocking of soil nutrients at a greater pace for the crop.



*Photographs of the samples submitted to the laboratory for testing provide the basis for comment on the limitations of the tests conducted.*

As can be seen the BSN-treated plants produced at least double the rhizosphere mass than that of the competitor product – the bulk of the BSN-treated rhizosphere is bacteria and humus. It is this mass that brings about all the benefits of microbial activity for the crop.

So, we know that **BSN Superstrike** increases rhizosphere activity and exudation of organic acids, and the photographic evidence of the month-old crop (at the head of this Insight) is more evidence of this. Further, it releases soil-based phosphate bound to calcium (in alkaline soils), or soil-based phosphate that is bound to aluminium, iron and manganese in acid soils. Through this increased rhizosphere activity, the resultant faster root system growth protects plants from disease, in contrast to the disease susceptibility experienced by a plant with a slow growing root system.

Therefore **BSN Superstrike** does the job as expected.

The content of this media page was accurate and current at the time that it was written. This media release is provided for interested customers and other parties, and will remain a matter of RLF's historical record. Viewed in this context RLF therefore undertakes no obligation to update either material or content.