

Trial 29

Phosphate Solubilising Fungus Trial

Sponsored by Bio-Care Technology Pty. Ltd.

Aim: to determine if inoculation with *Penicillium bilaii* (*P. bilaii*) will increase the availability of phosphate (P) to wheat under Victorian Mallee soil and climatic conditions.

Background: These trials conducted by the BCDS for Bio-Care Technology Pty Ltd were designed to assess the Australian applicability of the Canadian product Provide®. Wheat seed was inoculated with the fungus *Penicillium bilaii* prior to sowing. Canadian experience has shown that the fungus grows into the rhizosphere (root zone) of the wheat plants and solubilises soil bound P by the production of organic acids. The fungus is particularly effective in alkaline, strongly P-binding soils (such as those in the Birchip region) where the production of acids in the rhizosphere will have maximum effectiveness.

In Canada, Provide® is marketed and distributed by Dow Elanco who have shown that the use of the product increases profit in wheat by \$35/ha. The product has also been shown to be effective in peas and canola.

The Birchip trials are a part of the initial evaluation of the product by Bio-Care Technology. If the trials in Birchip, and others from around Australia, show significant increases in wheat yields then Bio-Care will expand testing next year, prior to any marketing of the product.

Bio-Care Technology has considerable experience in the production and marketing of biological products for agriculture and horticulture. The company's core business is the production and marketing of *Rhizobium* legume inoculants. The company has recently registered an insecticide based on an insect-killing fungus. This is the first such registration in Australia.

Methods: Ouyen wheat was sown with 0, 5 and 10 kg of P/ha with (+) and without (-) inoculated seed. The trial was undertaken at two sites (the BCDS main field day trial site on the property of Keith and Helen Barber, and at John and Judy Jones). Each treatment was replicated 10 times.

Soil test results:

(topsoil -10cm only)

Site	P (Colwell) ppm	Organic Carbon %	pH (water)	soil type
Barber	13	0.85	8.10	clay-loam
Jones	19	0.68	8.5	clay-loam

Results:

Yield t/ha

Fertiliser	<i>P. bilaii</i> fungus	Barber	Jones
0P	-	2.87	4.05
0P	+	2.88	3.73
5P	-	3.03	4.18
5P	+	3.03	4.05
10P	-	3.47	4.17
10P	+	3.49	4.18
Significant difference		P<0.05 LSD=0.28	P<0.05 LSD=0.26

Interpretation: a significant yield increase was observed on the Barber site from the application of 10 kg P/ha as compared to the zero and 5 kg P/ha treatments. At the Jones site no fertiliser effect was observed. There was no effect of the seed treatment (*Penicillium bilaii*) on yield.

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