

## Evaluation of Biological Seed Coating Technology On-Field Performance of Wheat in Regenerative Agriculture and Conventional Systems

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**Abstract :** Increasing farmer awareness of soil health, the impact of agricultural management practices, and the requirement for high-quality agricultural produce are major factors driving the rapid adoption of biological seed treatments - currently valued globally at USD 1.5 billion. Biological seed coatings with multistrain plant beneficial microbial technology have the capability to affect plant establishment, growth, and development positively. These beneficial plant microbes can potentially increase soil health, plant yield, and nutrition - acting as bio fertilisers, rhizoremediators, phyto-stimulators, and stress modulators, and can ultimately reduce the overall use of agrichemicals. A field trial was conducted on MACE wheat in the central wheat belt of Western Australia to evaluate a proprietary seed coating technology (Langleys Bio-Energetic™ Microbe blend (BMB)) on a conventional program (+/- BMB microbes) and a Regenerative Biomineral fertiliser program (+/- BMB microbes). The Conventional (+BMB) and Biomineral (+BMB) treated plants had no fungicide treatments and had no disease issues. Control (No fertiliser, No microbes), Conventional (No Microbes), and Biomineral (No Microbes) were treated with fungicides (seed dressing and foliar). From the research findings, compared to control and no microbe treatments, both the Conventional (+ BMB) and Biomineral (+ BMB) showed significant increases in Soil Carbon (SOC), Seed germination, nutrient use efficiency (NUE) of nitrogen, phosphate and mineral nutrients, grain mineral nutrient uptake, protein %, hectolitre weight, and fewer screenings, yield, and gross margins.

**Keywords :** biological seed coating, biomineral fertiliser, plant nutrition, regenerative and conventional agriculture

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