



SOIL²

BIOLOGY | NUTRITION | SAVINGS

UNLOCK YOUR SOIL'S POTENTIAL

**IMPROVED ROOT
DEVELOPMENT
AND GROWTH**

UNTREATED

TREATED

INNOVATION

**Natural Feed
& Nutrition**

 **Omnicrobe**
NATURAL SOLUTIONS, INC.

Increases Profits

Supports Soil Health

Reduces Synthetic Inputs

Increases Nutrient Cycling

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For ORDERING information, contact:
(432) 940-2126 | crop@307Ranch.com

WHAT IS SOIL²?

Soil² is an advanced liquid soil enhancer powered by plant-boosting microbes to offer a sustainable and cost-effective alternative to synthetic fertilizers.

WHY MICROBES?

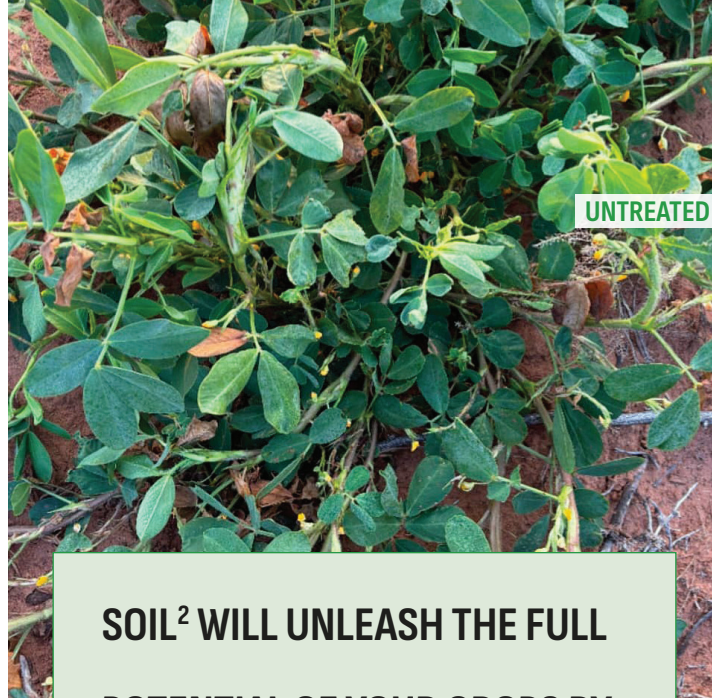
Microbes play a crucial role in reducing the amount of commercial fertilizer needed by enhancing its effectiveness. We achieve this by utilizing nitrogen-fixing bacteria, phosphorus-solubilizing bacteria, and potassium-solubilizing bacteria. **Soil²** will unleash the full potential of your crops by encouraging plant growth and increasing your total yield.

NITROGEN-FIXING BACTERIA

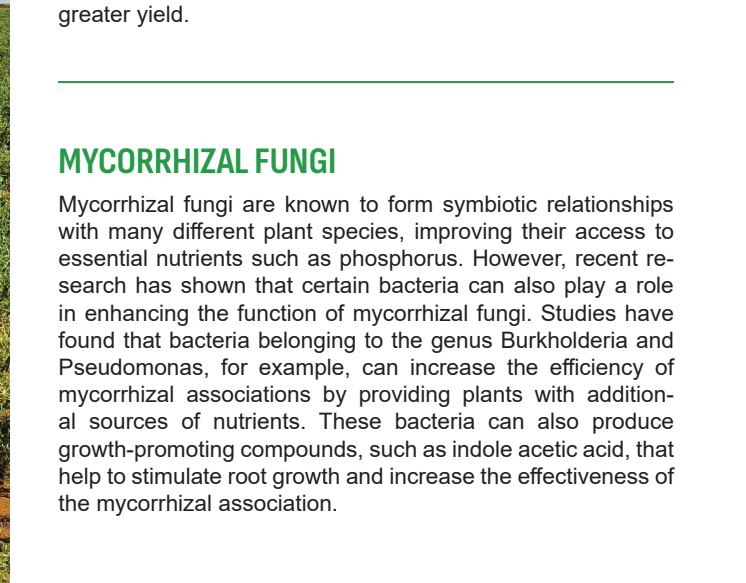
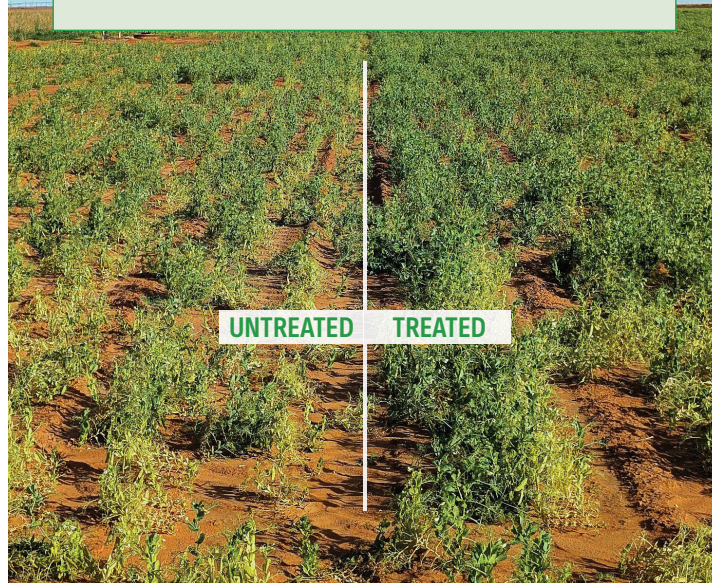
The use of nitrogen-fixing bacteria significantly decreases the need for commercial nitrogen fertilizers in agriculture. This bacteria forms a symbiotic relationship with the plant roots, providing a steady supply of fixed nitrogen in exchange for sugars from the plant. This helps to sustain soil fertility over time, reducing the need for regular applications of commercial fertilizers. The use of other types of microbes, such as mycorrhizal fungi, contribute to soil fertility and plant growth by improving the uptake of essential nutrients, including nitrogen, from the soil. This helps reduce the need for commercial fertilizers.

PHOSPHATE-SOLUBILIZING BACTERIA

Phosphate-solubilizing bacteria (PSB) are a group of microorganisms that solubilize and mobilize inorganic phosphate in soil. PSB play an important role in maintaining soil health by improving the availability of phosphorus to plants. Phosphorus is an essential nutrient for plant growth and is often a limiting factor in soil fertility. While phosphorus is present in most soils, it is often in a form that is not readily available to plants. PSB can solubilize and mineralize phosphorus, converting it from an insoluble form into a soluble form that can be readily absorbed by plant roots. This increases the availability of phosphorus to plants, which improves their growth and yield. PSB can also enhance the soil's nutrient cycling by promoting the decomposition of organic matter, releasing nutrients such as nitrogen, phosphorus, and sulfur. In addition, they can help to suppress plant diseases and promote root development, which can further contribute to plant health and growth.



**SOIL² WILL UNLEASH THE FULL
POTENTIAL OF YOUR CROPS BY
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POTASSIUM-SOLUBILIZING BACTERIA

Potassium-solubilizing bacteria (KSB) are a group of microorganisms that solubilize insoluble potassium compounds in the soil into plant-available forms. Bacteria such as *Acidithiobacillus ferrooxidans*, *Bacillus circulans*, *Bacillus mucilaginosus*, *Paenibacillus* spp., and *Bacillus edaphicus* have the capacity to solubilize K minerals (e.g., biotite, feldspar, illite, muscovite, orthoclase, and mica). KSB secrete organic acids and enzymes that break down the complex mineral structures of Potassium into simpler forms that can be absorbed by plant roots. This process enhances the availability and uptake of Potassium by plants, leading to improved plant growth and greater yield.

MYCORRHIZAL FUNGI

Mycorrhizal fungi are known to form symbiotic relationships with many different plant species, improving their access to essential nutrients such as phosphorus. However, recent research has shown that certain bacteria can also play a role in enhancing the function of mycorrhizal fungi. Studies have found that bacteria belonging to the genus *Burkholderia* and *Pseudomonas*, for example, can increase the efficiency of mycorrhizal associations by providing plants with additional sources of nutrients. These bacteria can also produce growth-promoting compounds, such as indole acetic acid, that help to stimulate root growth and increase the effectiveness of the mycorrhizal association.