MegaPhos™ SP

Phosphorus Solubilizing Microbe

- Solubilizes normally unavailable phosphorus
- Makes phosphorus more available for plant uptake
- Produces larger roots and more robust plants
- Significantly increases yield

BLACKSMITH BIOSCIENCE

OMRI LISTED® For Organic Use

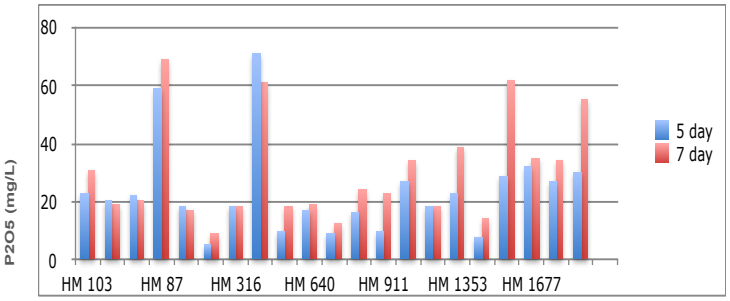
REGISTERED cdfa ORGANIC INPUT MATERIAL

The Phosphorus Problem:
Phosphorus is an important macronutrient abundant in several soils and is one of the major nutrients needed in crop production. When phosphorus is limited in the soil it can be supplemented by applying it to the soil in the form of phosphatic fertilizers. A large portion of this soluble inorganic phosphate applied to the soil as chemical fertilizer is rapidly immobilized and becomes unavailable to plants. Because of the formation of insoluble complexes, the overall phosphorus use efficiency following phosphate fertilizer application is low. As a consequence, frequent applications of soluble forms of inorganic phosphorus are necessary for crop production. This results in leaching to the ground water, eutrophication of aquatic systems and soil pollution.

The Solution:
MegaPhos SP aids in transformation of soil phosphorus into an assumable form for plants. The active ingredient in MegaPhos SP, *Bacillus megaterium* HM87, produces enzymes and other secondary metabolites that solubilize and mineralize normally unavailable phosphorous.

Strain Discovery
Our scientists screened multiple bacterial strains for their ability to release phosphorus. The chart in Figure 1 shows the results of extensive shake flask tests to determine the ability of 21 proprietary strains to release phosphorus over a 7-day period.

Figure 1: Multi-strain testing for phosphorus solubilization



The strain HM 87 was chosen as the active ingredient for MegaPhos SP.

BENEFITS

* Contains high concentration of a unique beneficial strain of *Bacillus*
* Solubilizes phosphorus normally unavailable to the plant
* Can help cure phosphorus deficiency
* Increases crop yield and production
* Perfect rotational or tank mix partner
* OMRI listed and CDFA organic certified

For more information please contact us.
Blacksmith BioScience
(832) 647-9663
www.blacksmithbio.com

TECHNOLOGY SPECS

Active Ingredient: *Bacillus megaterium* HM87,
A gram positive, rod shaped, endospore forming bacteria.

Purpose:
Solubilizes phosphorus and makes it available to plants even in high calcium soils.
Produces metabolites beneficial to plant growth, yield & root production

Secondary Metabolites Produced:
Lactic acid, gluconic acid, citric acid succinic acid, propionic acid and enzymes that help solubilize the fixed phosphorus into an exchangeable form that is usable by plants. These organic acids, through their hydroxyl and carboxyl groups, chelate the cations (mainly calcium) bound to phosphate converting them into the soluble forms.

Plant Interaction:
Able to colonize the rhizosphere

Additional Benefits:

- Increases crop yield
- Creates more developed root & top growth
- Enhances plant vigor

Formulation:
Water-soluble powder

Carrier:
Proprietary blend of natural microbial enhancers to promote biofertility properties

Application:
Soil incorporation, seed treatment, soil application or foliar spray

Figure 2: Glasshouse trials using MegaPhos SP