

FIELD APPLICATION OF PSEUDOMONAS STRIATA (AS PHOSPHATE SOLUBILIZER)

Introduction

Microorganisms being an integral part of the soil P cycle are effective in releasing P from inorganic and organic pools of total soil P through solubilization and mineralization, respectively. Soil microbes that mobilize P are significant in providing this nutrient to plants and contribute toward sustainability of agriculture.

Phosphate-dissolving microorganisms can be vital in promoting the bioavailability of phosphorus in soil characterized by high total P. Their additional property of phyto-hormone production can be advantageous for improving crop growth.

Application

Inoculation method of phosphate solubilizer Generally biofertilizers in powder form are applied as for organic matters onto the soil. This type is very convenient for users on the management of biofertilizer. Some biofertilizers are costly products for farmers, so their use would be restricted on the specific condition of agronomy. Microorganisms are generally supplied by producers of biofertilizer, so it would only necessary that the users or farmers follow the application method prepared by manufacturers. However, the popular application method is regarded as next procedure (Fig. 3).

Solubilization benefits

Pseudomonas striata evaluated for phytate mineralization and solubilization of tricalcium, rock, ferric, and aluminum phosphate showed high potential as phosphobacteria. Chromatographic analysis of cell-free culture filtrate showed the presence of tartaric acid, malic acid, citric acid, succinic, and gluconic acid. Tartaric acid was effective in solubilization of tricalcium phosphate. The test strain also produced extracellular phytase (43.05 EU ml⁻¹) in phytase-specific broth medium. The microphos inoculants developed from the bacterial strain with multiple functional attributes can help the marginal farmers replenish the soil P more economically compared with costly inorganic phosphate fertilizer.

Reference

Gaind, S. (2013) *Pseudomonas striata* for Improving Phosphorus Availability in Soil under Pearl Millet Cultivation *Journal of Crop Improvement* Vol 27, pp. 255-271.