

Powder based formulation of *Bacillus megaterium* as growth promoter



Nucleus culture of *B. megaterium*
NBAlI-EXB53

Technology Description

A new plant growth promoting strain of *Bacillus megaterium* (NBAlI EXB53) which can promote growth in different chilli varieties, *Capsicum*, tomato, egg plant, cauliflower and cabbage has been identified at ICAR-NBAIR. Seed treatment with talc based formulation of *B. megaterium* (NBAlI EXB53)@ 10g/kg seeds significantly increased vigour index (20-245%) of different vegetable crops under nursery conditions. Furthermore, *B. megaterium*

(NBAlI EXB53) has higher plant root colonization ability, produce plant growth promoting hormone, indole-3-acetic acid (IAA) and phosphate solubilisation ability. The strain can be mass produced using molasses urea medium and talc formulation can be made as per Central Insecticide Board (CIB) standards.

Background

Various strains of *Bacillus* species act as beneficial bacteria by promoting plant growth through direct action or by providing protection from various plant diseases. Among the different species of *Bacillus* genus, *B. megaterium* is one of the plant growth promoting bacterium found associated with many types of plants and also found in diverse natural habitats. *B. megaterium* is a gram-positive, spore forming aerobic bacterium which can promote direct plant growth through extensive root colonization and production of certain plant growth regulators

Benefits /Utility

The technology will be helpful for raising healthy and robust seedlings (planting material) in nurseries and also for direct seeded vegetable crops. Increased seed germination, root and shoot length, fresh/dry weight with overall increase in seedling vigour can be obtained by seed treatment with *B. megaterium* (NBAlI EXB-53). The present technology is eco-friendly strategy of obtaining healthy and robust vegetable seedlings which can also reduce the use of fungicides for vegetable seed treatment.

Scalability

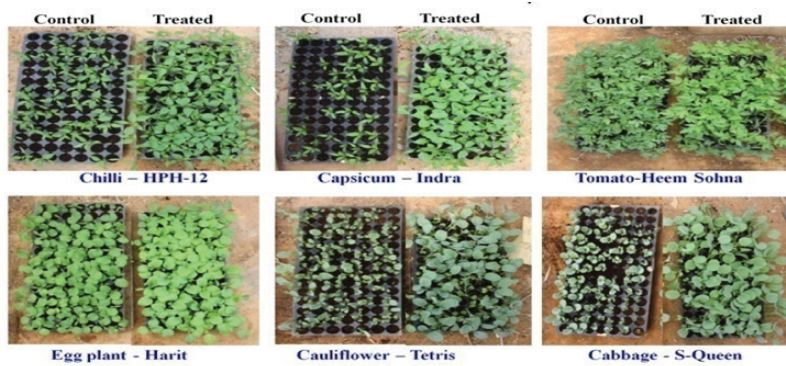
The current scale of operation is 10L and this can be scaled up to 100L or more using industrial fermentor systems. Large scale production requires skilled man power.

Business and commercial potential

The technology can be commercialized in vegetable growing areas of India.

Financial requirement

The approximate cost of the product is Rs. 150-160/kg.



Effect of *Bacillus megaterium* NBAII EXB 53 on plant growth promotion of Vegetable crops

Target Market/Customer

For commercial biocontrol agent producers for targeting vegetable nurseries and farmers

Social impact of the technology

- The present technology is an eco-friendly strategy of obtaining healthy and robust vegetable seedlings which can reduce the usage of chemical fungicides for vegetable seed treatment and thereby minimise the risks associated fungicides on environment and non-target organisms including human beings.

Toxicological data

- *Bacillus megaterium* NBAII EXB53 act as a growth promoter in this technology so toxicology data will not be required.