

What are Biocapsules?

Beneficial microbe, *Trichoderma asperellum* is packed into gelatin capsules at high concentrations using a technique called encapsulation. The microbial encapsulation is a patented technology of ICAR-Indian Institute of Spices Research, Kozhikode. This technique involves specific formulation of the beneficial micro-organism of interest in an immobilized/inactive condition mixed with other substances that protect and maintain the encapsulated micro-organism in a gelatin capsule.

Beneficial microbe used for the technology

Trichoderma asperellum: This biological control agent was isolated from the rhizosphere of elephant foot yam plant and has antagonistic activity against organisms causing plant diseases (bio-protectant). It also promotes growth, improves root structure, enhances seed germination, viability and also increases the crop yield (bio-stimulant).

Advantages of the biocapsule

- Smart and precise microbial delivery to crops
- Maintains high microbial population (10^9 - 10^{11} CFU/g)
- High shelf life (18-24 months)
- Low production and transportation cost
- Does not require sophisticated equipment for manufacture
- Easy to deliver all agriculturally important microorganisms
- Easy to apply through drip irrigation
- Production and storage at normal temperature
- Easy to handle and store
- Green technology, totally eco-friendly and 20-25% reduction in usage of chemical pesticides/fertilizers



Application of the biocapsule

It is effective against fungal diseases of tropical tuber crops and vegetables

Method of application

Dissolve one biocapsule in one litre of water (boiled and cooled to room temperature) (Fig. 1) and keep it for 1 hour at room temperature. Dilute the solution to 100 litres with water and use it within 2 hours for seed/ corm treatment, soil drenching and seedling/planting material dip (Fig. 2 & 3).

Take care to keep the planting material completely submerged in bio-capsule solution. For seed treatment of elephant foot yam and yams, add the solution to cow dung to make slurry. Dip the seed corms/tubers in the biocapsule mixed slurry for 10 minutes. 100-125 kg corm/tuber can be treated in 100 litre solution made from one capsule.



Fig.1. Bio-capsule put in one litre of boiled and cooled water and kept for one hour before use



Fig.2. Diluted solution of biocapsule used for sett treatment, drenching the plants and dipping the seedlings before planting



Fig.3. Diluted solution of biocapsule added to cow dung slurry for treating the corms/tubers

Points to be noted

- The solution should be used in well drained soil
- Do not use along with ash, lime and chemical pesticides
- Fertilizers or alternative pesticides should be applied only after 14 days of application
- Care should be taken to use the prepared solution within the specified time

The biocapsule is available at Farmers Facilitation Centre, ICAR- CTCRI @ Rs. 100+ GST/capsule

Technical leaflet : TL-3/2024 *Trichoderma* Biocapsule

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