

BIO - CAPSULES: A REVOLUTIONARY TECHNOLOGY AMONG FARMERS

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WHAT IS BIO- CAPSULE?

Bio capsule is a preparation that normalizes gut organisms/flora.



DEFINITION OF BIO CAPSULE: -

The capsule contains the micro-organisms in an immobilized / in active condition and cells can be activated by dissolving the capsule in water.

INTRODUCTION: -

This technology involves encapsulation of the micro-organisms of interest in a gelatine capsule for delivery to agricultural crops for enhancing soil nutrient solubilization, enhanced growth, yield.

Bio-capsules were developed by three scientists — Anand Raj, R. Dinesh and Y.K. Bini. The technology involves micro-organisms that are collected and compressed in a capsule, which can be used as substitute for fertilisers in agriculture. Scientists have developed in the technology to pack bio fertilizers in tiny capsules. It is being called the one-gram capsule, which has many advantages one-gram capsules.

“One-gram capsules are very efficient as it contains the microbial population equivalent to what is present in a one kg pack of powder based biofertilizers or a one litre bottle”



MAIN PURPOSE OF THIS TECHNOLOGY:

The use of bio-capsules, a bio-fertilizer technology developed by the Indian Institute of Spices Research (IISR), is picking up among farmers in place of traditional fertilizers. Scientists with the IISR here attest that the sale of this new product has been on the rise since the lockdown days which witnessed the entry of many young entrepreneurs into the organic-farming sector.

PRESENT SCENARIO:

A report released by the IISR on Thursday confirms that the total number of bio-capsules sold to small-scale and large-scale farmers in May 2020 alone is 4,000. Between May and August, 6,000 tablets were sold to farmers in States like Kerala, Karnataka, Tamil Nadu and Andhra Pradesh. There are also farmers from Telangana, Maharashtra, Madhya Pradesh, Gujarat, Uttar Pradesh, Himachal Pradesh and other north Indian States who have started using it.

PATENT RIGHTS OF BIO CAPSULE: -

INDIAN INSTITUTE OF SPICES RESEARCH
Indian Council of Agricultural Research
Kozhikode (Calicut), Kerala, India



The Indian Institute of Spices Research (IISR) has received a patent for novel method of storing and delivering microbes through bio capsules. The institute submitted an application seeking a patent for this in 2013. The patent was issued for the method after detailed examination and analysis of the technology developed by the IISR scientists.

ADVANTAGES OF OVER TALC:

- Smart and precise microbial delivery to crops.
- Maintains high microbial population, green technology low production cost.
- Easy to handle and store.
- High shelf life.
- Production and storage at normal temperature.
- Does not require sophisticated equipment for manufacture.
- Can be used to deliver all agriculturally important microorganism.

PROBLEMS IDENTIFIED

Farmers are spending huge money on fertilizers. It is of great concern that each farmer is spending about 60-70 % of cost of production only on fertilizers and pesticides. KVK has conducted a survey in all districts in Kerala revealed that farmers are applying fertilizers and Pesticides indiscriminately. Majority of farmers are not aware of recommended dosage of fertilizers. The role of PGPR was known to very few farmers.

IMPORTANT FEATURES:

- The total weight of the bio capsule is 1gram.
- The process is simple and only basic laboratory facilities required.
- The formulations maintain viability for longer times and it can be stored in room temperature.



METHOD OF APPLICATION:

The capsule is activated by dissolving one capsule in 1000 ml and incubation overnight at room temperature with intermittent mixing or shaking. It can be diluted to 200L prior to use. After dilution, the seeds or seedlings or rhizomes are soaked in the suspension for 30 min before sowing/ transplanting in to the main field. The remaining suspension can be used as soil drench.

PRODUCTION COST:

- Rs 10 Lakh for establishing microbial lab.
- The recommended role of application is 6-10 capsules per ha in case of black pepper, turmeric, ginger.



NPK CAP

BIO CAPSULES ARE AVAILABLE IN MARKET:

- Tricho caps
- Power caps
- Azoss caps
- Aceto caps
- NPK grow caps
- Zinc grow caps

Recommended regions and crops: -
All the states of India and all crops as many microbes can be encapsulated.

IMPACT:

The company has already sold more than 15000 capsules worth of Rs. 15.00 lakhs in one year. Technology has spread to Karnataka, Arunachal Pradesh, Andhra Pradesh, Tamil Nādu, Kerala, Maharashtra, Tripura, Assam, Sikkim.

CONCLUSION:

ISR PGPR technology, released by IISR, Kozhikode, has proved to be a real boon for the farmers in terms of increased yield, better soil fertility status and more spike yield in black pepper. It is indeed a cost-effective technology to the farming community to enhance their production potential if used in appropriate time as recommended.

WAY FORWARD

Witnessing the extent of adoption IISR PGPR technology among the farmers, all states have a plan to educate the farmers of the regarding this technology and motivate them to take up the technology for increasing the yield.