

Preservation of bacteria and fungus by lyophilization and their further use in ag...

[Science](#), [Biology](#)



Importance of Lyophilisation technology in biological products based on bacteria and fungus is unknown to many of us. In the last 10 years, many researches have been done on biological technology. Many words such as bacteria, fungus, plant extracts, essential oils, metabolites, alkaloids, come to know about biological technology.

Here I am providing information about the importance and use of bacteria and fungus in agriculture. When bacteria and fungus were initially invented in the field of Agriculture, it became available to the market in the talcum and liquid formulations. But due to the lack of shelf life of these products and the absence of high-tech machinery, they reduced the number of stabilization of the product due to reduced number of their results.

While many establishments lacked technology and machinery, they created simple method using secondary and weak strains and cheated farmers. Thus, the state of technology which is still a place of mediocrity in the field of medicine has become degraded in agriculture stream. By studying all these factors, research into medical sciences, which you call Lyophilisation technology, has been brought to agriculture and research on bacterial and fungus-based products carried out and there has been a new biological revolution within couple of decades. Any useful bacteria and fungus are good at temperatures of 15 to 35 degrees.

The bacteria are frozen in this Lyophilisation technology process (the temperature is reduced to $-40\text{ }^{\circ}\text{C}$ and then gradually increase the temperature to $+40\text{ }^{\circ}\text{C}$). In this process, water from the bacteria and fungus is removed and they are kept in a dormant state. The process converts liquid

formulation into direct powder form, i. e 2 liters of culture gets converted to 1 gram of powder. After this, dormant bacteria and fungus powder are mixed again in the dextrose powder and the vacuum is packed and product is sealed.

This technology uses a very powerful strain that works at least and at maximum temperature at field level. (eg, 7 to 8 types of Bacillus, 4 to 5 types of pseudomonas, 3 types of trichoderma, and many such types of bacteria and fungus can be combined to manufacture these products). So it can be done to research consortia products (combined three to four strains) that have an effective control over various fungal, bacterial diseases, insect and pest attacks.

Other Benefits biological products

1. Shelf life for at least two years maximum five years.
2. Bacteria and fungus count double than the rest of the products.
3. In this process, bacteria and fungus travels from - 40 °C to + 40 °C, so also provide effective results in low temperatures.
4. The quality of the product is stable.
5. Combination of four to five strands of more than one possible result is very effective
6. Since the count and stability are high, single bacteria and fungus products are also very effective
7. Due to nanotechnology, only 250 grams product is sufficient for 200 litres of water
8. Easy to prepare and easy to apply