Production of Biofertilizers and Organic Farming
Food & Agriculture
Introduction

Bio-fertilizers are being essential component of organic farming are the preparations containing live or latent cells of efficient strains of nitrogen fixing, phosphate solubilizing or cellulolytic micro-organisms used for application to seed, soil or composting areas with the objective of increasing number of such micro-organisms and accelerate those microbial processes which augment the availability of nutrients that can be easily assimilated by plants. Biofertilizers play a very significant role in improving soil fertility by fixing atmospheric nitrogen, both, in association with plant roots and without it, solubilise insoluble soil phosphates and produces plant growth substances in the soil.
Use of biofertilizers is one of the important components of integrated nutrient management, as they are cost effective and renewable source of plant nutrients to supplement the chemical fertilizers for sustainable agriculture. Several microorganisms and their association with crop plants are being exploited in the production of biofertilizers.

**Types of Biofertilizers:**
- Rhizobium
- Azotobacter
- Azospirillum
- Cyanobacteria
- Azolla
- Phosphate solubilizing microorganisms (PSM)
Benefits of Bio-Fertilizer:

- These are means of fixing the nutrient availability in the soil.

- Since a bio-fertilizer is technically living, it can symbiotically associate with plant roots. Involved microorganisms could readily and safely convert complex organic material into simple compounds, so that they are easily taken up by the plants. Microorganism function is in long duration, causing improvement of the soil fertility. It maintains the natural habitat of the soil. It increases crop yield by 20-30%, replaces chemical nitrogen and phosphorus by 25%, and stimulates plant growth. It can also provide protection against drought and some soil-borne diseases.

- Bio-fertilizers are cost-effective relative to chemical fertilizers. They have lower manufacturing costs, especially regarding nitrogen and phosphorus use.
The increasing demands for the biofertilizers and the awareness among farmers and planters in the use of biofertilizers have paved way for the fertilizer manufactures and new entrepreneurs to get into biofertilizer production. Bio-fertilizers Demand is much higher than the availability. It is estimated that by 2020, to achieve the targeted production of 321 million tonnes of food grain.
Organic farming system is not new in India and is being followed from ancient time. It is a method of farming system which primarily aimed at cultivating that land and raising crops in such a way as to keep the soil alive and in good health by use of organic wastes (crop, animal and farm waste, aquatic waste) and other biological material along with beneficial microbes (biofertilisers) to release nutrients to crops for increased sustainable production in an eco-friendly, pollution-free environment.
Benefits of Organic Farming

- Helps in maintaining environment health by reducing the level of pollution
- Reduces human & animal hazards by reducing the level of residue in the product
- Increases the agricultural products and makes it sustainable
- Ensures the optimum utilization of natural resources for short-term benefit and helps in conserving them for future generation.
- Saves energy for both animal and machine and reduces the risk of crop failure
- Improves the physical and chemical properties of soil.
India is an agro based country. So organic farming plays an important role in agro field. The popularity of organic farming is gradually increasing and now organic agriculture is practiced in almost all countries of the world, and its share of agricultural land and farms is growing. As the organic food market continues to expand, so do the opportunities for small farmers.

It is believed by many that organic farming is the much healthier and sustainable option. Although the health benefits of organic food are yet to be proven fully, consumers are willing to pay a higher premium for organic crops. Many farmers in India are shifting to organic farming due to the domestic and international demand for organic food.
Organic foods are produced through systematic farming methods that do not involve any usage of pesticides and harmful chemicals for production. India has around 4.2 Million hectares of land which is certified for organic farming. The emergence of organic farming is also creating a wide array of job opportunities. Increasing awareness towards nutritious and healthy food and changing lifestyle are surging the demand for organic food, particularly across the metro cities.

There is a good chance that India’s organic opportunity could scale from $500 million to about $2 billion — approx $1 billion catering to the domestic market and $1 billion for export markets — by 2020.
The major contents of this book is crop response to biofertilizers, nitrogen fixation, phosphate solubilising microorganisms, application and evaluation techniques, Bio Gas production, pest and disease management system in agriculture, production, promotion, quality control, marketing, future research planning, photographs and details of machineries, list of manufacturers and suppliers of biofertilizers and organic farming in directory section.

This book will be of use and interest to consultants, researchers, libraries, entrepreneurs, manufacturers of biofertilizer and for those who wants to venture in to this field.
1. INTRODUCTION TO BIOFERTILIZERS

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Integrated Plant Nutrient Management (IPNM)
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Biofertilizers
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DIRECTORY SECTION

MANUFACTURERS OF BIO-FERTILISERS AND ORGANIC FARMING
Niir Project Consultancy Services (NPCS) can provide Process Technology Book on The Complete Technology Book on Biofertilizer and Organic Farming

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Niir Project Consultancy Services
106-E, Kamla Nagar, Opp. Spark Mall,
New Delhi-110007, India.
Email: npcs.ei@gmail.com, info@entrepreneurindia.co
Tel: +91-11-23843955, 23845654, 23845886, 8800733955
Mobile: +91-9811043595
Fax: +91-11-23841561
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Contact us

Niir Project Consultancy Services
106-E, Kamla Nagar, Opp. Spark Mall,
New Delhi-110007, India.

Email: npcs.ei@gmail.com, info@entrepreneurindia.co

Tel: +91-11-23843955, 23845654, 23845886, 8800733955

Mobile: +91-9811043595

Fax: +91-11-23841561

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