



Dr. Bhimrao Ambedkar University Agra

Department of Microbiology
School of Life Sciences, Khandari Campus

Value Added Courses

Course Name	Biofertilizer Production Technology
Course Code	MB-VAC-01
Duration & Credit	30 Hrs. & 2 Credits
Coordinator	Dr. Surabhi Mahajan, Assistant Professor
Evaluation	By the Coordinator
Organized by	Department of Microbiology, School of Life Sciences, Khandari Campus, Agra

Course Objectives

To develop an integrated organic bio-fertilizer technology that combines the utilization of adapted biofertilizer propagation (with the use of PGPB) and application practices with organic amendments to promote environmentally friendly crop production

Syllabus

UNIT I

- ✓ Brief Introduction History and Concept of Biofertilizers
- ✓ Scope and Importance of Biofertilizers (10 hrs)
- ✓ Classification of Fertilizers and Nitrogen Fixation

UNIT II

- ✓ Structure and characteristic features of Plant growth promoting rhizobacteria.
- ✓ General account of Biofertilizers (microbes) such as- *Azospirillum*, *Azotobacter*, *Bacillus*, *Pseudomonas*, *Rhizobium*, *Bradyrhizobium* and *Frankia* (10 hrs)
- ✓ Fungal biofertilizers- AM mycorrhiza and ectomycorrhiza and their influence on the growth and yield of crop plants

UNIT III

- ✓ Phosphate solubilizing microbes - Isolation, characterization, mass inoculum production, field Application (10 hrs)
- ✓ Cyanobacteria (blue-green algae), *Azolla* and *Anabaena*, *Azolla* association, nitrogen fixation.
- ✓ Factors affecting growth, blue-green algae and *Azolla* in rice cultivation.

Reference Books:

1. General Microbiology- Dubey and Maheswari
2. Subbarao, N.S. 1993. Biofertilizers in Agriculture and Forestry (Oxford and IBH Pub. Co., New Delhi)
3. Soil Microbiology Subha Rao, N.S. (2000), Oxford & IBH Publishers, New Delhi.
4. Bio-fertilizers and organic Farming Vayas, S.C, Vayas, S. and Modi, H.A. (1998) Akta Prakashan, Nadiad

Course Outcomes (COs)

- On the successful completion of the course, students will be able to-
- ✓ CO1. To Understand the role of microorganisms in improving the fertility of the soil, their isolation, and the role of various soil bacteria in bio-fertilizer production.
 - ✓ CO2. Improve professional competencies, knowledge and technical skills in biofertilizer production and restore soil fertility by performing sustainable agriculture practices via organic farming
 - ✓ CO3. Knowledge gained to generate opportunities of self-employability
 - ✓ CO4. To impart training to develop skills in both handling, cultivation and propagation of quality microbial inoculants


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