

Department of Botany

Value Added Course on Biofertilizers and Mushroom Cultivation

Course Objectives:

- 1) To facilitate the students to understand the basics of biofertilizers and their mechanism of action in agriculture.
- 2) Ability to understand formulation, application and mass inoculum production of biofertilizers.
- 3) Enable the students to identify edible and poisonous mushrooms.
- 4) Provide hands on training for the preparation of bed for mushroom cultivation and spawn production.

Course Outcome:

- 1) Gain knowledge about the role and importance of soil microbes, learn about the impact of the soil microbes for plants growth.
- 2) Students will be acquiring the technical knowledge in Biofertilizer production technology.
- 3) Students study the morphology and identification of edible and poisonous mushrooms.
- 4) Learned the prospects, cultivation and post harvesting techniques of mushrooms.

UNIT – 1

Biofertilizers: Concept, Scope and Importance; Nitrogen fixing microbes- *Rhizobium*, *Azotobacter*, *Azospirillum*; Cyanobacterial biofertilizers –*Anabaena* and *Azolla*; Phosphate solubilizing microbes; Mycorrhizal biofertilizer.

UNIT - 2

Mass multiplication of nitrogen fixing, phosphate solubilizing microbes and Mycorrhiza; Biofertilizer inoculation techniques and field application; Advantage and disadvantage of biofertilizer application.

UNIT - 3

Introduction and Scope of mushroom cultivation, Identification of edible and poisonous mushroom in India; Nutritional and health benefits of mushrooms; Vegetative characters and life cycle of mushroom; Cultivation of mushroom, layout of mushroom shed - small scale and large-scale production unit.

UNIT – 4

Spawn preparation: Isolation and culture of spores, culture media preparation, mother spawn production, multiplication, harvest and storage methods; Paddy straw and Oysters

Mushroom Cultivation; Diseases and pests of mushroom; Mushroomsharvesting and Post-harvesting Processing.

Suggested Readings:

- 1) Subba Rao, N.S. (2006) Bio-fertilizers in Agriculture and Forestry, MEDTECH, A Division of Scientific International.
- 2) Rai, M.K. (2006) Handbook of Microbial Fertilizers by IBDC, Lucknow.
- 3) Subba Rao, N.S. (2004) Soil Microbiology Oxford & IBH, New Delhi.
- 4) Kannaiyan, S., Kumar, K.& Govindarajan, K. (2004) Biofertilizers Technology. Scientific Publ.
- 5) Dubey, R.C. (2008) A Textbook of Biotechnology. S. Chand & Co. Ltd., New Delhi.
- 6) Pathak Yadav Gour (2010) Mushroom Production and Processing Technology, Published by Agrobios (India).
- 7) Pandey, R.K. and Ghosh, S.K. (1996) A handbook of Mushroom Cultivation. Emkey Publication.
- 8) Nita, B. (2000) Handbook of Mushrooms. Vol 1 & 2. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.