B.Sc. II Year

Semester – IV

BBO-S401
SEC-2 Biofertilizers

MM : 100
Time : 3 hrs

Sessional : 30
ESE : 70
Pass Marks : 40

Learning objective:

- To understand the microbes used as biofertilizers, inoculum preparation, maintenance and multiplication
- To acquire basic information on Cyanobacterja, mycorrhiza, and VAM fungi.
- To acquire an overall knowledge on organic farming and vermicomposting.
- To become familiar with general techniques used in commercial production biofertilizers, types biofertilizers used in agriculture.

Learning outcomes:

At the end of course student will be able

- The student will be able to familiar with the microbes used as biofertilizers, isolation, identification, mass multiplication, carrier based inoculants.
- The student will be able to understand the crop response to biofertilizers inoculums, maintenance and mass multiplication of microbes used as biofertilizers.
- The student will be to understand the symbiotic association of Cyanobacterial and Mycorrhizalassociation with various crops and plants.
- The student will be able take the decisions for carrier point of views in research, industries and academia entrepreneurships etc.

Unit 1: Introduction:

(8 Lectures)

General account about the microbes used as biofertilizer; *Rhizobium*, isolation, identification, mass multiplication, carrier based inoculants, actinorrhizal symbiosis.

Unit 2: Inoculum Preparation, Maintenance and Multiplication

(16 Lectures)

Azospirillum: isolation and mass multiplication – carrier based inoculant, associative effect of different microorganisms. *Azotobacter*: classification, characteristics – crop response to *Azotobacter* inoculum, maintenance and mass multiplication.

Unit 3: Cyanobacteria

(8 Lectures)

Cyanobacteria (blue green algae), *Azolla*and *Anabaena* association, nitrogen fixation, factors affecting growth, and *Azolla* in rice cultivation.

Unit 4: Mycorrhizal and VAM Fungi

(16 Lectures)

Mycorrhizal association, types of mycorrhizal association, taxonomy, occurrence and distribution, phosphorus nutrition, growth and yield – colonization of VAM – isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.

Unit 5: Organic Farming and Vermicomposting

(12 Lectures)

Green manuring and organic fertilizers, agricultural and industrial wastes: bio-compost making methods, types and method of vermicomposting – field Application.

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