

BACHELORS WITH BOTANY AS MAJOR (CT - I)
SEMESTER 5th

BOT522J1: BOTANY _ MYCOLOGY AND PLANT PATHOLOGY

CREDITS: THEORY: 3; PRACTICALS: 1

Objectives: To aware students about diversity, structural, functional and economic aspects of fungi and to demonstrate a working knowledge of how fungi grow and reproduce, and where and how they can be isolated and to acquaint them about the significance of plant pathology and the plant diseases caused by plant pathogens

Learning outcomes: The students will be able to learn about characteristics and identification of diverse groups of the fungi and their economic importance; will learn about the microbial pathogens and understand about etiology, epidemiology and management of selected plant diseases caused by microbial pathogens and will be able to demonstrate scientific skills in laboratory in the field of Plant Pathology

THEORY (3 CREDITS)

UNIT I (10 HOURS)

History of Mycology, General characteristics of Fungi, Thallus organization, Cell wall composition; Nutrition, Reproduction. Classification (Alexopolous et.al., 1996). General characteristics, reproduction and life cycle of Slime moulds. Chytridiomycota and Zygomycota: General Characteristics; Morphology, Reproduction and Life cycle of *Synchytrium*, *Mucor*.

Ascomycota: General Characteristics; Morphology, Reproduction and Life cycle of *Taphrina* and *Morchella*.

UNIT II: (15 HOURS)

Basidiomycota: General Characteristic; Morphology, Reproduction and Life cycle of *Ustilago*, *Puccinia* and *Pleurotus*. Deuteromycota: General Characteristic; Morphology, Reproduction of *Alternaria* and *Colletotrichum*; Conidial ontogeny Oomycota: General Characteristic; Morphology, Reproduction and Life cycle of *Phytophthora* and *Albugo*.

Introduction to Plant Pathology, terms used in Plant Pathology. Plant Pathogens (General Characteristics): Fungi, Bacteria, Nematodes, Viruses. Plant disease: Concept and classification of plant disease, Symptoms of plant disease (Fungi and Bacteria), Koch's postulates

UNIT III: (20 HOURS)

Plant Disease Management: Regulatory methods; Physical methods, Cultural methods: Chemical methods: Types of chemicals used for plant disease control. Biological control: Fungal and bacterial antagonists as bio-agents.

Plant Diseases: Symptoms, etiology and management of Powdery mildew of Cucurbits, Paddy blast, Root knot of tomato, *Alternaria* leaf blight of apple, Apple Scab. Tobacco Mosaic Virus (TMV)

PRACTICAL EXERCISES (1 CREDIT)

1. Study the microscopic features of *Rhizopus* and *Alternaria*
2. *Agaricus*: Specimens of button stage and full-grown mushroom; sectioning of gills of *Agaricus* and collection from the field and preservation.

3. *Morchella*: specimen study section cutting and collection from the field and preservation.
4. Study of growth forms of lichens (crustose, foliose and fruticose): Specimens and field collection and preservation.
5. Methods of Sterilization.
6. Preparation of culture media: PDA and Richard's medium.
7. Preparation of different stains used in Plant Pathology.
8. Techniques of inoculation.
9. Culturing of some Fungi such as *Rhizopus*, *Alternaria*, *Aspergillus*.
10. Isolation of plant pathogens from infected tissue by tissue segment method.
11. Symptoms and studies of some local diseased plant materials through temporary/permanent mounts: Late blight of potato, Apple scab, Powdery mildew of Cucurbits, Downy mildew of Onion.
12. Demonstration of Koch's postulates.

Note: Ensure field trip of students to aware them about the diversity of fungi and different kinds of local diseases and their management.

SUGGESTED READINGS

1. Introductory Mycology by Alexopoulos, C.J. and Mims, C.W. 2002. 5th edition. John Wiley and Sons, New York.
2. Plant pathology by E. J. Butler and S.G. Jones: Mac Millan & Co Ltd.
3. Plant pathology by G.N. Agrios: Elsevier.
4. Plant pathology by R.S. Singh. Oxford & IBH Publishing Co. Pvt Ltd New Delhi.
5. Plant Diseases by R.S. Singh. Oxford & IBH Publishing Co. Pvt Ltd New Delhi.
6. Plant pathology by B.P. Pandey (S. Chand).
