

**PLANT BIODIVERSITY-I: ALGAE, FUNGI, LICHENS AND BRYOPHYTES**

**Unit-I: ALGAE**

General trends and criteria for Algal classification (Bold and Wynne, 1978). Salient features of major classes: Prochlorophyta, Chlorophyta, Charophyta, Xanthophyta, Phaeophyta and Rhodophyta. Ultrastructure of Prokaryotic and Eukaryotic algal cells and their components - cell wall, protoplasm, flagella, eye spots, chloroplast, pyrenoid, nucleus, pigments and reserve foods. Economic importance of algae - Food and feed - Single cell protein - Industrial products (Agar-Agar, Carrageenan, Iodine, Vitamins) - In Medicine and Diatomaceous earth.

**Unit-II: ALGAE**

Range of thallus structure, origin and evolution of sex in algae, phylogeny and interrelationships of algae. Lifecycle patterns in algae and alternation of generations, Fossil algae.

Ecology of Algae: Freshwater algae, marine algae, soil algae, symbiotic algae and parasitic algae. Algae as pollution indicators, algal blooms, algicides culture and cultivation of fresh water and marine algae - Knop's solution and Chu-10 medium (1972).

**Unit-III: FUNGI**

General features, occurrence and distribution. Mode of nutrition in fungi, culture of fungi. Classification of fungi (Alexopoulos and Mims, 1979), recent trends in the classification of fungi. General characters of major classes: Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina and Deuteromycotina. Thallus organization, cell structure and fruit bodies. Phylogeny and interrelationships of major groups of fungi. Economic importance of fungi, in medicine and in industries.

**Unit-IV: FUNGI**

Homothallism and Heterothallism in fungi. Homokaryon and Heterokaryon, Hormonal control in sex organ development in fungi. Physiological specialization and physiological races in fungi. Reproduction, life cycle types, parasexual cycles, reduction in sexuality in fungi. Spore dispersal mechanisms and fungal genetics, Fossil fungi.

**LICHENS:** General features, classification (Miller, 1984), Distribution, thallus organisation, vegetative and sexual reproduction, lichens as indicators of pollution and economic importance.

**Unit-V: BRYOPHYTES**

General features, distribution, classification (Watson, 1955), General characters of major groups. Marchantiales, Jungermanniales, Anthocerotales, Sphagnales, Funariales and Polytrichales. Range of vegetative structure, Evolution of gametophytes and sporophytes. Reproduction - Vegetative and sexual, spore dispersal mechanisms in bryophytes, spore germination patterns in bryophytes. Ecological and economic importance of bryophytes. Origin and interrelationships, Fossil bryophytes.

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### **Bryophytes**

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