

Lecture (1)

General biology botany

Plant Kingdom

Introduction The Plant Kingdom (Kingdom Plantae) is one of the most important biological kingdoms, encompassing a wide variety of organisms that are primarily autotrophic, multicellular, and photosynthetic

Key Characteristics of the Plant Kingdom

- 1- Eukaryotic Nature
- 2- Autotrophic Mode of Nutrition
- 3- Cell Walls
- 4- Multicellular
- 5- Alternation of Generations
- 6- Non-motility
- 7- Storage

Detailed Classification of the Plant Kingdom

1. Non-Vascular Plants (Bryophytes)

- A- The simplest and most primitive plants that lack vascular tissues (xylem and phloem).
- B- Rely on water for reproduction and nutrient transport.
- C- Dominant phase: Gametophyte.

Subdivisions

1- **Mosses** (Phylum Bryophyta): Example: *Funaria*. Grow in dense green clumps; reproduce via spores.

2- **Liverworts** (Phylum Hepatophyta): Example: *Marchantia*. Flattened, ribbon-like body; found in moist areas.

3- **Hornworts** (Phylum Anthocerotophyta): Example: *Anthoceros*. Horn-like sporophytes and symbiotic relationships with cyanobacteria.

2. Vascular Plants (Tracheophytes)

Plants with vascular tissues (xylem and phloem), which allow the efficient transport of water, minerals, and nutrients. Divided into seedless plants and seed plants.

A. Seedless Vascular Plants (Pteridophytes)

First plants to evolve vascular tissues, reproduce via spores, lack seeds

Examples: Ferns (Phylum Pteridophyta) Horsetails (Phylum Equisetophyta)



B. Seed Plants

Seed plants reproduce through seeds, offering better protection and dispersal mechanisms.



i. Gymnosperms (Naked Seed Plants)

Seeds are exposed (not enclosed in fruits). mostly woody trees or shrubs. adapted to diverse climates, including arid and cold environments

ii. Angiosperms (Flowering Plants)

Most advanced and diverse plant group, seeds are enclosed within fruits, which aid in protection and dispersal. reproduce via flowers, often with specialized mechanisms involving pollinators.

Ecological and Economic Importance of Plants

- 1- Primary Producers: Plants form the base of food chains by converting solar energy into chemical energy.
- 2- Oxygen Production: Photosynthesis releases oxygen, essential for aerobic organisms.
- 3- Habitat Formation: Plants provide shelter and food for countless organisms.
- 4- Agriculture: Crops provide food, fodder, and raw materials.

5- Medicinal Uses: Many modern medicines (e.g., quinine, aspirin) are derived from plants.

6- Industries

7- Aesthetic Value: Ornamental plants beautify urban landscapes and gardens.

Factors affecting on Plant Kingdom

1- Deforestation

2- Climate Change

3- Pollution