PLANT KINGDOM

INTRODUCTION

❖ The estimated number of plant species on the earth is 8.7 million (1 million = 10 lakhs). Among them 6.5 million species are living on land and 2.2 million species are living in the ocean. Out of them 4,00,000 species are flowering plants.

❖ In traditional system of classification, plant kingdom is divided into two sub-kingdoms called,

- **Non flowering plants (Cryptogams) and**
- **Flowering plants (Phenerogams).**

❖ Thalophyta, bryophyte and pteridophyte are non flowering plants.

❖ In this lesson, we will study about non flowering and flowering plants and classification of plants.

ALGAE

➢ Algae is a Latin word (Algae - Sea weeds).

➢ They are chlorophyll bearing, simple andprimitive plants.

➢ These plants are autotrophs.

➢ Algae belong to thallophyta and the plant body of algae is called thallus. i.e. the plant body is not differentiated into root, stem and leaf.

HABITAT OF ALGAE

➢ Most of the algae are living in aquatic Most of the algae are living in aquatic region. It may be fresh water or marine water.

➢ Very few algae can survive in wet soil.

➢ Some algae are very minute and float on the surface of the water. These algae are called **phytoplankton**.

➢ Some of the algae are **symbionts** (Algae) living with fungi and they both are mutually benefitted). E.g. Lichen.

➢ A few species of algae are **epiphytes.**

➢ The branch of study of algae is called **phycology or algalogy**.

REPRODUCTION OF ALGAE

Algae reproduces by three methods. They are:

• Vegetative reproduction takes place by **fragmentation.** E.g. *Spirogyra.*

• Asexual reproduction takes place by **spore formation**. E.g. Chlamydomonos.

• Sexual reproduction takes place by means of **fusion of gametes**. E.g. Spirog*yra, Chara.*

CLASSIFICATION OF ALGAE

Algae are classified into different classes based on the pigments.

Class	Example	Types of Pigments	Reserve food material
Bluegreen algae (Cyanophyceae)	*Ocillatoria*	Phycocyanin	Cyanophycean Starch
Green algae (Chlorophyceae)	*Chylamydomonas*	Chlorophyll	Starch
Brown algae (Phaeophyceae)	*Laminaria*	Fucoxanthin	Laminarian starch and Manitol
Red algae (Rhodophyceae)	*Polysiphonia*	Phycoerythirin	Floridian Starch

ECONOMIC IMPORTANCE OF ALGAE

FOOD

- Algae are consumed as food by people in Japan,England and also in India. E.g. *Ulva, Spirulina, Chlorella*etc.
- Some algae are used as food for domestic animals.E.g. *Laminaria, Ascophyllum.*

AGRICULTURE

- Some of the blue green algae are essential for the fixing of atmospheric nitrogen into the soil, which increases the fertility of the soil. E.g. *Nostoc, Anabaena.*

AGAR AGAR

- Agar agar is extracted from some red algae, namely *Gelidium*and *Gracillaria*. It is used to prepare growth medium in laboratories.

IODINE

- Iodine is obtained from brown algae like*Laminaria*.

Reserve food material

SPACE TRAVEL

- *Chlorella pyrenoidosa*is used in space travelto get rid of CO2 and to decompose humanwastes.

SINGLE CELL PROTEIN (SCP)

- Some of the single cell algae and blue greenalgae are used to produce protein. E.g. *Chlorella,*

FUNGI

- Fungi (Singular – Fungus)belongs to thallophyta.
- Its plant body is not differentiated into root, stem, and leaves.
- The plant body of fungus consists of filament like structures called **hyphae**. Several hyphae

are arranged in the form of network called **mycelium**.

- The cells of fungi are multicellular and eukaryotic.
- Some species of fungi like yeast are unicellular and eukaryotic.
- Cell wall of fungi is made up of a chemical substance called chitin.The reserve food materials of fungi are glycogen and oil.
- The branch of study of fungus is called **mycology**

HABITAT OF FUNGI

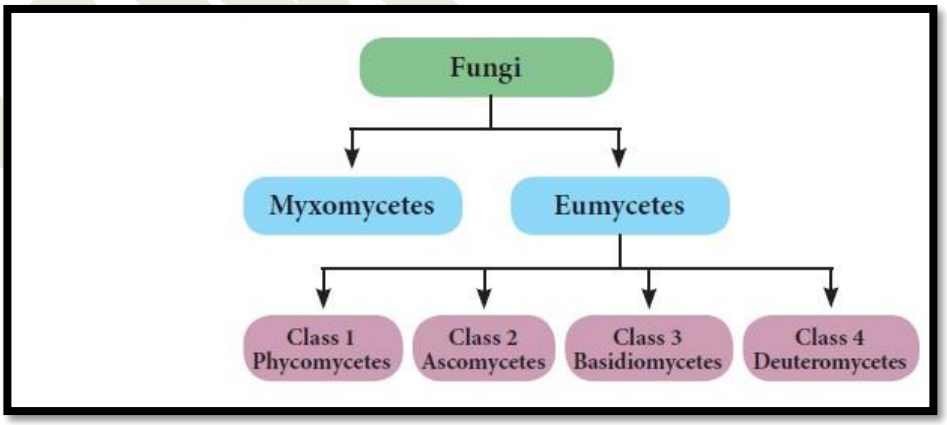
They have no starch because they have no chlorophyll pigments. So, they are heterotrophs.

- Heterotrophs are of three types namely, parasites, saprophytes and symbionts.
- Some species of fungus live as parasites.
- They absorb food from the living organisms with the help of special root called haustoria.

  E.g. *Cercospora personata*. It affects groundnut plants and cause Tikka disease.

- Some species of fungi live as saprophytes.They grow upon the dead and decaying organic matters and get food from them. E.g. *Rhizopus.*
- Some species of fungi are living with algae and mutually benefitted. E.g. *Lichen.* Some of them live symbiotically with higher plants in their roots called *Mycorrhizae*

CLASSIFICATION OF FUNGI



ECONOMIC IMPORTANCE OF FUNGI

- Fungi are useful to us in many ways. The importance of fungi are given below.

ANTIBIOTIC

- Penicillin *(Penicillium notatum)* and cephalosporin which cure different diseases are obtained from fungi.

FOOD

- Mushroom contains rich protein and minerals. The most common edible mushroom is *Agaricus* (Button mushroom).

VITAMINS

- Fungus like *Ashbyagospii* and *Eremotheciumgoshbyii)* are used to produce vitamin B2(riboflavin).

ALCOHOL

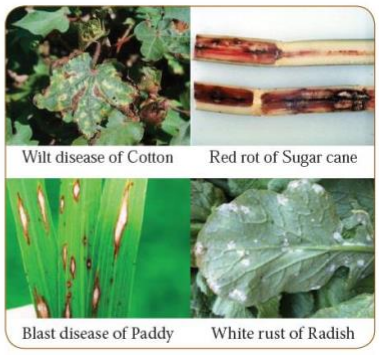
- Fungus like yeast contain enzymes invertase and zymase, which ferment the sugar molasses into alcohol.

HARMFUL EFFECTS OF FUNGI

- Fungi cause various diseases in plants and animals. They are given in the tables below.

DISEASES CAUSED BY FUNGI IN PLANTS

Pathogen	Name of the Disease
Fusarium oxysporum	Wilt disease in cotton
Cercospora personata	Tikka disease in ground nut
Colletotrichum falcatum	Red rot in sugar cane
Pyricularia oryzae	Blast disease in paddy
Albugo candida	White rust in radish



Diseases caused by fungi in Man

Name of the Fungi	Name of the Disease
Trichophyton sp.	Ring worm (Circular rash on the skin)
Microsporum furfur	Dandruff
Tinea pedis	Athletes foot

DIFFERENCES BETWEEN ALGAE AND FUNGI

Algae	Fungi
Algae are autotrophs.	Fungi are heterotrophs.
They have pigments.	They have no pigments
Reserve food material is starch.	Reserve food materials are glycogen and oil.
Some algae are prokaryotic in nature E.g: *Cyanobacteria (Nostac, Anabenae)*	All are eukaryotic nature. E.g: *Agaricus*