5. PLAINT KINGDOM

The plant kingdom comprises multicelluar, pho-tosynthetic producers. They are primarily acqUatic red, brown and green algae and the land plants - bryophytes, ferns, gymnosperms and angio sperms.

Except algae & bryophyta all are vascular plants (Vascular system consists of xylum and phloem Xylum is water conducting tissue and phloem is the food conducting tissue of the Vascular plant)

Most vascular plants are flowering plants. They form seeds within a fruit. So, they are called angio spejms (Covered Seed). Some vascular plants produce seeds but no fruit. They are called gymnosperms (unprotected seed). Ferns pro-duce neither flowers nor seeds but only spores in sporangia on their leaves.

The body or Thallus of an algae is simple with no vascular tissue. There are different types of Algae based on nature of their photosynthetic and accessory pigments and storage material.

Green Algae are chiefly fresh water forms. They contain chlorophyll 'a' and 'b', store starch, and have cellulose cellwall like in land plants. Eg: Chamydomonas, Spirogyra.

Red Algae (Rhodophyta) mainly marine forms. Some Red alga are Coralline alga. They secrete and deposit calcium carbonate over their walls. Eg: Gracilaria.

Brown Algae (Phaeophyta). mostly marine, soma of them are world's largest sea plants. Eg: Dictyota.

Blue Green Algae - mostly marine. Eg: Nostgc, Anabaena

BRYOPHYTES (BRYON-MOSS, PHYTON-PLANT)

It comprises mosses and liver worts. These are small plants that grow densely together in moist shady places. They form green carpets on damp soils, rocks, walls and on barks of trees.

Bryophytes have no vascular tissues for conduc-tion of water and food. Due to the absense of true roots, their cells absorb moisture directly from the ground (or) the atmosphere. Transportation of materials is done from cell to cell.

They inhabit land but they need water for their sexual reproduction. They show regular hetero- morphic alteration of generations, (i.e) gametophyte (gamete bearing plants) and sporophyte (spore producing plant). Eg: Riccia, Funaria.

PTERIDOPHYTES (or) FERNS

(Pterins = fern, phyton = plant)

(Vascular plants without seeds)

Ferns are prized as ornamental piants because of their graceful and delicate leaves. The char-acteristic of fern is the coiled nature of young leaves.

These are terrestrial plants. Plant for the first time divisible into root, stem and leaf. Eg: Adiantum (walking fern), pteris.

GYMNOSPERMS (NAKED SEEDED PLANTS)

(Gymno = naked, sperms = seed) (Vascular Plants with seeds but no fruit)

There are speed plants without flowers, Gymnosperms are naked seeded plants because they are having freely exposed ovulfes (because, of absence of ovary). Hence they do not produce fruit.

Coniferous trees seen in cooler northern region of Europe, Asia and North America belong to this group.

ANGIOSPERMS (FLOWERING PUNTS)

(Angio = Enclosed, Sperm = seed)

Angiosperm means 'enclosed seed', because seeds of these plants develop in an organ called the ovary in the flower.

Plant body consists of two main systems namely Root system and shoot' system.

Root System : Usually underground, it fixes the plant in the soil. It absorbs and conducts minerals :and water.

Shoot System : it is aerial part of the plant bearing branches, leaves, buds, flowers etc.

Leaf : Vegetativ.e appendage of the stems. It prepares food materials by photosynthesis and expefe excess water by transpiration.

Bud : Undeveloped shoot consisting of highly condensed axis with many immature leaves arch-ing over its apex.

Inflorescence : A group of flowers born on a common axis.

Flower : A typical flower consists of stalk called pedicel which ends with thalamus.

The distinctive reproductive structure of the Angiosperms is the flower. Flower is basically a shoot with limited growth containing sporophylls (Spore bearing leaves). A complete flower has 4 groups of structures, one group with in the other. They are SEPALS, PETALS, STAMENS and CARPELS.

Sepals are the outer most whorl usually small and green and protect the other floral parts in bud conditions and the carpels are in the centre of a flower. Carpels bear the ovules. In Angiosperms the carpels of a flower are closed to form an ovary. With in carpels ovules are

enclosed. Ovary is extended to form style and stigma. Stigma has sticky tip which traps the pollengrains.

Stamens bear anther which form pollen. A pollen grain germinating on the stigma grows down the stigma through the ovary and into the ovule where fertilisation takes place,

After fertilisation ovule develops into seed, while the ovary forms the fruit.

The flower, with showy petals, sugar secreting nectaries is a device to attract several kinds of pollinators like insects, birds, etc.

Pollen is carried by pollinators between flowers, effecting pollination. In return they obtain food in the form of Nectar.

A few Angiosperms have leaves modified into variously shaped devices to entrap insects or other small animals. Eg: Nepanthes {pitcher plant)

Flowering plants were classified into monocotyledons and dicotyledons.

Cotyledons are nothing but embryonic storage, Monocots have single cotyledon and dicots have two cotyledons.

NOTE :

Venation : Arrangement of veins (vascular bun-dles - xylum and phloem) on the leaf.

LICHENS:

Lichens are the pioneers of vegetation. In Lichens symbiotic relationship (mutual benefit) occurs be-tween Fungi and Algae. Main body is made up of Fungus. Alga occupies inside the main body. Alga is concerned with photosynthesis, that is preparation of food material which is used by fungus. Fungus in turn gives protection to the Alga. The Algae that inhabit Lichens usually are blue green algae. (Nostoc)

PLANT PART	DICOTS (Eg: Pulses)	MONOCOTS (Eg: Grass, Sugarcane)
Leaf	Reticulate (net) venation	Parallel venation
Stem	Vascular bundles arranged in a ring	vascular bundles scattered
Root system	Tap root system	Adventitious root system
Flower parts	usually sets of 5	usually sets of 3
(sepals, petals,	5 sepajs	3 sepals
stamen and	5 petals	3 petals
carpels)	5 stamens and few carpels	3 stamens and few carpels