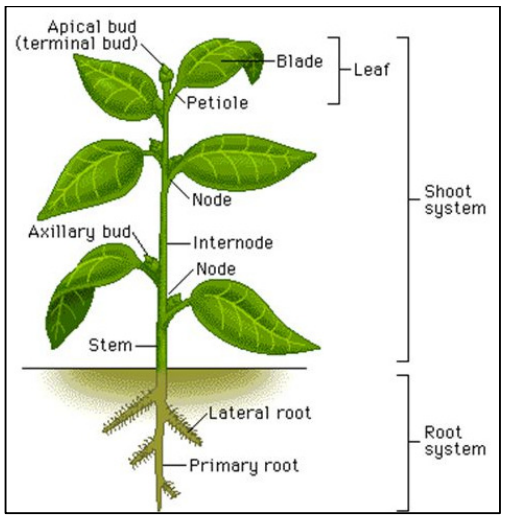
6th – Getting to know Plants I

Parts of a plant: A typical plant has different parts in its body. The parts of a plant are divided into two main parts:

1. The Root system
2. The shoot system



Different parts of the plant are the roots, stem, leaves, flowers and fruits. The parts which are present underground are the roots. Parts which are present above the ground are stem, leaves, buds, flowers, fruits and seeds.

The Root System: the part of the plant that grows under the ground is called the root system. It always grows towards the gravity and moisture, away from the light. The roots of a plant are mostly seen underground and look brown in colour. The tiny thread-like structures over the roots are the root hairs. The tip of the root is covered by root cap which is preventive in function. Root and the root hairs form the root system. Features of root:

- Root grows towards the soil and away from the light. Hence, it is called as geotropic structure.
- Root does not possess green colour pigment, the chlorophyll. It cannot produce food.
- Root does not bear leaves, buds or flowers.
- Roots along with their root hairs absorb water and minerals from the soil.

Functions of root:

- They hold the plant firmly in the soil, thereby serving as an anchor to the plant.
- They absorb water and nutrients from the soil required for the growth of the plant.
- Some roots also store starch and sugars in them.
- Some roots also help in respiration. They possess special structures called as pneumatophores.
- Some roots have useful bacteria in them to increase the soil fertility with nitrogen content.

Types of roots: there are two main types of root systems:

1. Tap root: Tap root is a primary root that grows more or less straight down into the soil and is tapered towards the end. It is found in many of the plants. It is also called as true root. Smaller roots that branch out from the tap root are called as lateral roots. Examples of plants with tap roots are hibiscus, carrot, turnip and sunflower.
2. Fibrous root: Fibrous roots are a group of lateral roots arising at the base of the stem. In the plants bearing fibrous roots, tap root slowly weakens and replaced by bunch of roots arising from the base of the stem. This bunches of roots form the fibrous roots. Examples of plants with fibrous roots are banana, grass and onion.

Functions and Modifications of roots: Roots in many plants are modified to perform additional functions by some modifications:

1. **Storage roots** are the roots modified to store food in them. e.g. Carrot, turnip, radish, sweet potato etc.
2. **Respiratory roots** are the roots modified for respiration. The plants in mangroves have roots with special structures called as pneumatothodes to obtain more oxygen.
3. **Parasitic roots** are the roots which arise from the stem and absorb nourishment from the host plant. e.g: Cuscuta.
4. **Climbing roots** are the roots which help the plant to climb and cling on to the support. e.g. Money plant, betel.
5. **Reproductive roots** are the roots which help in the process of producing the offspring.

Shoot System: The part of the plant mainly stem, leaves, flowers and fruits that remain above the ground, buds, form the shoot system.

Stem: The stem is the part of the plant seen above the ground. It bears the leaves, flowers and fruits of a plant. It is almost green or woody. It grows towards the sunlight. It moves away from the ground. The stem of the tree is known as the trunk. Most of the trunks are covered with tough outer layer called bark. The small outgrowths on the stem of a plant are called buds.

Buds are of two types: apical bud and axillary bud. Apical bud or terminal bud is present at the top of the shoot. It is responsible for the upward growth of the plant. Axillary buds are found between the stem and leaf stalk. Features of stem:

- They support the entire plant to stand as a whole.
- They are always phototrophic. i.e. they grow towards light.
- The part of a stem where a leaf arises is called node. The region of the stem between the two adjacent nodes is called internode. Stem bears branches, leaves, flowers and fruits.

Functions of stem:

- Stem helps in transportation of absorbed water and nutrients through vascular tissue from roots to leaves
- Stem also transports food from the leaves to different storage organs.
- Stem exposes leaves to light and help them in performing the process of photosynthesis.
- The stem bearing leaves helps in the process of transpiration. Transpiration is the process by which plants release excess water in the form of water vapour through minute openings in the leaves called as stomata.
- It bears flowers, buds, leaves and fruits.

Stem modifications:

- **Storage of food**: In some plants, underground stem is modified to store food in the form of starch. Three types of underground modifications of stem are tubers (e.g. Potato), rhizome (e.g. Ginger) and bulb (e.g. Onion).
- **Protective structures**: In some plants like rose, stems are modified into thorns to protect the plant from being eaten by animals.
- **Supportive structures**: In climbing plants, stems are modified sometimes into structures which twine around the support.
- **Storage of water**: In some plants like cactus and jade, stems become fleshy and succulent to store water

Leaves: Leaves are the structures which develop on branches. These are green coloured structures rich in chloroplasts. As they have chlorophyll in them, they are considered to be food factories of the plant. They are also referred to as "kitchen of the plant". Photosynthesis occurs in the leaves

ABHYAS Academy, Behind Pragat Shiv Mandir, Near Govt. College, Nishat Cinema Road, Ambala Cantt.
Ph No. +91-171-2631595, 9416541198, e-Mail: anusethi1968@yahoo.com Website: www. abhyasonline.in