**ATOMIC ENERGY EDUCATION SOCIETY**

**CLASS: VI E-LEARNING MATERIAL SUB: SCIENCE**

**LESSON: 7, GETTING TO KNOW PLANTS (MODULE – 1/1)**

**HANDOUT**

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**IMPORTANCE OF PLANTS:**

* Plants are the only source of oxygen on the earth.
* They are the major source of the food that we eat.
* They maintain soil fertility.
* They prevent soil erosion.
* They help in bringing about rain.
* They regulate the temperature of the earth.
* Many microbes, animals, insects and birds take shelter in trees and plants.

**CLASSIFICATION OF PLANTS:**

We can broadly classify plants into three categories, on the basis of the thickness of their stem and the place of origin of their branches:

**Herb:**

* These are plants that have green and frail stems.
* These are small plants and may not have many branches.
* **For example**: Basil, Coriander, Mint, Oregano, Thyme, Parsley, Rosemary etc.,

**Shrubs:**

* These are plants with hard, but not exactly thick stems.
* Their branches generally originate from the base of their stems.
* These are much taller than herbs but usually shorter than trees.
* **For example**: Aloe Vera, Rose plant, Jasmine plant, Blackberry plant etc.,

**Trees:**

* These are plants which are very tall and have a thick and hard stem.
* The branches originate from the upper part of the tree and are very high above the ground.
* **For example**: Neem, peepal, coconut tree, mango tree etc..

**There are two other kinds of plants which are:**

**Creepers:**

* These are plants which have soft, weak and green stems; hence they cannot stand straight. Instead, they spread themselves on the ground.
* **For example**: Sweet potato, watermelon, pumpkin etc.

**Climbers:**

* These are also plants with soft and weak stems; but instead of spreading on the ground, they take support with a nearby object to climb up.
* **For example**: Cucumber, bean, grapevine, money-plant etc.

**PARTS OF A PLANT:**

A typical plant consists of following parts: Root, stem, branches, leaves, bud, flower, and fruit.

## ****STEM****

* The Stem is that part of a plant which is responsible for supplying water to all parts of the plant.
* It is the stem which bears branches, flowers, leaves, fruits and buds.
* The root absorbs water and minerals from the soil and it is the stem’s function to push this water upwards to other parts of the plant.
* It is responsible for supplying **water and minerals** from roots to all parts of the plant (i.e. **upward movement**).
* It also helps in transporting **food** prepared by leaves to different parts of the plant, including roots (i.e. **downward movement**).
* Thus, the stem is also regarded as a **street with two-way traffic**.

## ****LEAF****

### **Parts of a Leaf:**

**Petiole:** This is the stalk via which the leaf is joined to the plant. Some leaves do not have a petiole, they are directly joined to the stem.

**Lamina:** This is the expanded part or the green portion of any leaf which is responsible for photosynthesis.

**Veins:** The many lines that run through the surface of the leaf are called veins and the design made by them is called leaf venation. They transport water and minerals.

**Midrib:** This is the central, prominent thick structure right in the middle of the leaf which helps support the leaf and prevents it from breaking.

**Leaf venation:** The design made by veins on the surface of a leaf is known as leaf venation.

There are two major types of leaf venation.

**Reticulate venation:**

* It is said to exist when the veins form a net-like shape on either side of the mid-rib.
* **Example:** This type of venation is seen to exist in plants like guava and mango.

**Parallel venation:**

* It is said to exist when the veins run parallel to one another.
* **Example:** This type of venation is seen to exist in plants like banana, wheat, coconut etc.,

## Functions of leaf:

The leaves of plants are majorly responsible for performing two essential functions for the plant’s survival and growth. These two functions are called **transpiration** and **photosynthesis**.

**Transpiration:**

* Transpiration is the process through which plants release the excess amount of water in the air.
* When the water travels via the stem to the leaves, some of it gets used up to prepare food, while the excess water is converted into water vapour, due to the presence of the sun.
* Transpiration is important for the plants as it helps the plants to cool down.
* In the absence of transpiration, the temperature of the leaf becomes unregulated. This may lead to the eventual death of the plant.

**Photosynthesis:**

* Photosynthesis is defined as the process which helps the leaves prepare food for the plant with the help of carbon-di-oxide and water.
* Photosynthesis occurs in the presence of the sun and is aided by the presence of a green pigment in leaves called chlorophyll.
* Plants also release oxygen in the process.
* The food prepared is stored in various parts of the plant in the form of starch.
* In the absence of photosynthesis, the plant is unable to utilise the water and minerals to prepare food for its nourishment and it gradually dies.

## ****ROOT****

## ****Types of roots**: There are two major types of roots that exist in plants; these are:**

## ****Tap Roots:****

## In this type of root system, there is a prominent and long root and a bunch of smaller roots which grow from this main root called lateral roots.

## It is hard to pull out plants with tap roots as these go deep into the soil.

## This root system is seen to exist in plants with leaves displaying reticulate venation.

## Examples of plants with tap roots: Carrots, turnip, gram, China rose etc.

## Fibrous Roots:

## In this type of root system, a group of similar-sized roots emerge from the base of the plant. They do not have a main root.

## These plants are relatively easier to pull out as the roots don’t go very deep into the soil.

## This root system is seen to exist in plants with leaves displaying parallel venation.

## Examples of plants with fibrous roots: Banana, wheat, maize, onion, bamboo etc.

**Functions of roots:**

* Roots are responsible for absorbing minerals and water from the soil and transferring them to the stem.
* Another important function of roots is to firmly anchor the plant in the ground. This is essential to support the upright position of the plants.
* Roots also perform the function of storing important nutrients and food for growth.

## ****FLOWERS****

## Flowers are the colourful, seed-bearing parts of a plant which grows at the end of the stem. A typical flower exhibits the following parts:

## Receptacle: It is the base of a flower to which all the parts of a flower are attached.

**Sepal:**

* This is the green, leaf-like structure of the flower that encloses the petals.
* Taken together, sepals are called Calyx.
* The calyx is responsible for protecting the flower when it is in its bud form and for supporting it when it is in its bloom stage.

**Petals:**

* These are bright, colourful and broad parts of the flower.
* Taken together, the petals of the flower form what is called a Corolla.
* They attract insects for pollination and protect the reproductive organs of the flower.

**Stamen:**

* These are the long and slender parts of a flower which become visible upon removing the petals and sepals of a flower.
* Typically, a stamen consists of an anther i.e. the head of the stamen and a filament i.e. the long cream-colored stick.
* The anther contains pollen and the filament supports the anther.
* The stamen is also known as the **male reproductive part** of the plant.

**Pistil:**

* This is the innermost part of the flower, typically consisting of a stigma i.e. the head of the pistil, a style, which is the long sticky part which attaches the stigma to the ovary i.e. the small and swollen sphere at the base of the pistil.
* Pistil is the **female reproductive part** of a flower.
* The ovary contains small bead-like structures which are called ovules.

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