**GETTING TO KNOW PLANTS**

Plants have a huge canopy consisting of green of green leaves and that is why plants look green in colour. Plants cannot live without food, water and

Air, therefore, we can say that plants have life.

**TYPES OF PLANTS:**

1. **TREES:**
2. They have a tall, strong and woody

stem-the trunk.

1. The stem have branches in the upper

part of the plant.

**C)** They survive for a long period of time.

Eg Neem, mango,apple,banyan.

1. **SHRUBS:**
2. They do not grow tall.
3. They are bushy and have hard stems

that do not bend easily.

1. The stem branches out near the

base.

Eg. Lemon, china rose, jasmine,rose

Wheat, maize etc.

1. **HERBS:**
2. They have soft, tender and weak stem.
3. We can easily bend the stem of herbs.
4. They are short sized plants and do not grow more than a metre in height.

**d )** Although the stem of herbs are soft

and delicate but they are strong

enough to stand on their own.

**Eg** Tomato,mustard,radish , cabbage,

ginger etc **.**

There are some plants which are different from herbs, shrubs, and trees.These are called CLIMBERS and CREEPERS.

**Climbers :**

1. A plant having thin, long and weak stem which cannot stand upright but readily climbs up a neighbouring support ( like a fence) or a tree is called climber.
2. A climber plant has special organs for climbing called Tendrils (stem/leaf tendrils).

Eg. Pea plant, bitter gourd, sweet gourd,grape vine etc.

**Creepers :**

1. A plant having thin, long and week stem which cannot stand upright and spread on the ground

ground is called a creeper.

1. A creeper plant has no climbing organs like tendrils
2. A creeper grows along the ground or other surfaces by extending long shoots.

Eg. Strawberry plant

**Parts of a plant:**

A Plant is basically made up of two systems namely

1. Root system
2. Shoot system

**Root system:**

It refers to the underground portion of the plant.

**Function(s) of Roots:**

1. Roots absorb water and minerals from the soil.
2. Roots help the plant to stand erect and fix it firmly on the ground.
3. Roots prevent soil erosion as they bind and grip the soil firmly and not allowing it to loosen up. Hence, the soil is not washed and eroded away during floods or very strong winds.
4. In some cases, roots also store food.

**Eg.** Turnip, carrot, radish etc.

1. Roots like Prop roots provide extra support as these grow towards the soil and gets fixed to the soil.They are also known as hanging roots.

Eg . Roots of Banyan tree.

**Types of Root:**

**Tap Root:**

1. Tap root is a straight tapering root which grows vertically down into the soil and gives out branches (lateral roots)on all the sides.
2. Tap root is the main root and is quite thick but the lateral roots are much thinner.
3. These roots grow deep into the soil.
4. These roots cannot be separated from the soil easily.
5. They are found in the plants having Reticulate venation.

Eg. Pea plant, neem tree, mango tree, tulsi, gram. Etc

**Fibrous Root:**

1. The fibrous roots consists of many thin, fibre- like roots of a similar size.
2. They do not go much deep into the soil, as they spread out in the soil and give a firm support to the plant.
3. These roots can be separated from the soil

Easily.

1. They are found in the plants having parallel venation.

Eg. Grass, wheat, bamboo, sugarcane etc.

**SHOOT SYSTEM:**

It refers to the part of the plant which grows above the soil. It includes following parts:

1. **Stem:**
2. Main portion of the plant from the base of which the roots arise and grow underground is called the stem.
3. It gives rise to a number of branches that bear leaves.
4. Stem keeps on increasing in height / length and diameter along with the growth of the plant.
5. As the stem grows, it becomes hard and woody.
6. When the stem grows into woody, hard structure it is known as the trunk of the plant and this is covered with bark which gives protection to the trunk.
7. **Node:**

The point at which the branches come out is called

a node.

1. **Inter node:**

The portion of the stem between two nodes is called

inter node.

1. **Apical Bud:**

The apical bud is the portion of the top most point.

It increases the height of the plant at its tip only.

1. **Axillary Bud:**

The buds which are present at the point from Where the leaves arise are known as axillary buds.

**Functions of stem:**

1. The stem provides support to a plant. It is the backbone of the plant. It helps the plant to stand erect and upright.
2. The stem consists of important plant parts:
3. It bears branches, leaves, buds, flowers and fruits of the plant.
4. It supports leaves in such a way , so that they capture maximum sunlight.
5. It also places flowers and fruits in such a position, so as to maximize and help seed dispersal.
6. The stem helps in transportation of food and water.
7. It transports water, minerals and other substances from roots present in the soil to all parts of the plants. The tissue( group of cells) responsible for this is known as **Xylem**
8. With the help of **Phloem** tissue ,the stem transports food made by leaves to different parts of the plants.
9. Some stems also store food which are known as underground stems. In some plants, the stem grows underground and functions as store house of food.eg potato etc
10. Thick and fleshy stem makes food for the cactus plant. They look like thick leaves where as they are modified stems. They can store water for a long time. Green colour of the stem shows the presence of chlorophyll.
11. Some stems are modified into tendrils giving extra support. Tendrils are the small thread like structure coiling around some objects arising from the stem. Eg. Stems of cucurbit plants (Loki etc.)

**Leaf**

**Common features of all leaves:**

1. Green in colour
2. Flat

**Parts of a leaf :**

1. Leaf Base : the point from where the leaf arises.
2. Petiole : The stalk of the leaf with the help of which it is joined to the stem.
3. Leaf lamina**:** The flat green portion of the leaf. It shows midrib.
4. Midrib: The structure that runs almost through the middle of the leaf.
5. Veins**:** These are the network of small, narrow tube like structure on both sides of the midrib.
6. Apex : The tip of the leaf is known as the apex.
7. Venation: The design made by the veins in a leaf is called leaf venation.

**Types of leaf venation:**

1. Reticulate venation: When the design/pattern on both sides of the midrib of a leaf is **net like,** it is called reticulate venation.

Eg : Pipal, mint, tulsi , rose, neem etc.

1. Parallel venation: When the veins on either sides of the midrib are **parallel to one another,** it is called parallel venation.

Eg. Grass, sugarcane, maize, wheat, rice etc.

**Functions of leaf:**

1. **Transpiration:** The evaporation of water from the leaves of a plant is called transpiration.

Activity 1.

Aim: To show water vapours come out from the leaf.

Procedure : Take a healthy and cover I leafy branch of the plant with a transparent polythene bag and tie its mouth. Keep this set up in the sun for sometime.

Observation: Small droplets of water on the inner surface of the polythene bag.

Conclusion: This shows that plants release a lot of water into the atmosphere through leaves by the process of transpiration.

1. **Preparation of Food : Photosynthesis:**

* Leaves make food for the plant. This process is known as photosynthesis.
* Leaves are green in colour because of a green pigment- chlorophyll
* Chemical Equation:

Leaves + water + carbon dioxide Glucose + water + oxygen

**Activity**

Aim: To show that starch is present in the leaves. Leaves carry out photosynthesis.

Procedure:

Take a healthy plant (exposed to sun for about 8 hrs)

Bleach it ( Bleach= Boiling of leaf in water and soaking it in alcohol/spirit

Put the colourless leaf on a white plate/ tile and pour few drops of Iodine soln.

Observation:

We observe blue black colour on the leaf.

Conclusion: Blue colour is indicative of presence of **Starch**

**Activity:**

Aim: To show that sunlight is essential to make food.

Procedure:

Healthy plant

Keep in dark for 24 hrs

cover one leaf with strip of black chart paper

Put the plant back in sunlight

Remove the covered leaf and ne more leaf

Perform the test for iodine

Observation: Uncovered leaf shows presence of starch.

Conclusion: Sunlight is important for preparation of food

**FLOWER**

Flower is an important organ of a plant as it is the main organ of reproduction and secondly a plant can be recognized with help of the colour, scent and shape of the flower.

**Parts of a flower**:

1. Pedicel: Pedicel is the stalk of the flower which joins it

with the branch. It has a flat structure on the other end and this called the Thalamus.

1. Sepals: On the thalamus, these are the small green leaf like structure.

They protect the flower especially in the bud condition. Sepals may either be separate from one another or joined together.

1. Petals: Petals are brightly coloured leaf like structure present inside the sepals.

Different flowers have petals of different colour.

The colour and scent of the petals attract the insects to the flower and this helps in reproduction.

Petals can be either fused (datura, marigold) or separated (mustard, china rose)

1. Within the petals, there are long needle like structure is called the **stamen**- the male reproductive organ of the flower.

It has two parts :

1. Anther:

* The swollen tip of each stamen is called anther.
* It encloses in it a small powdery substances called ‘pollen grains’.
* Pollen grains are the male cells of the flower.

1. Filament:

The stalk like structure that joins anther to the

thalamus is known as filament.

1. Pistil:

The pistil is a flask shaped organ in the centre of the flower. It is also known as carpel.

It consists of three parts

1. Style: It is along tube like structure which is swollen at the base.
2. Stigma: It is a small, round and sticky part of the pistil located at the top of the style.Its function is to trap the pollen grains that falls on it.
3. Ovary: Ovary is the swollen part of the pistil. It has a number of small structures called ovules.

Ovules are the female cells of the flower.

Ovules become the seeds and the ovary becomes the fruit after pollination( transfer of pollen grains from anther to stigma is known as pollination).

**Functions of a flower**:

* Flowers are the main reproductive organ of a plant
* Flower like rose and jasmine are important ingredients of perfumes or scent.
* Flowers with their variety of colours are used to decorate houses parks etc.