

# Plant Parts and Their Functions

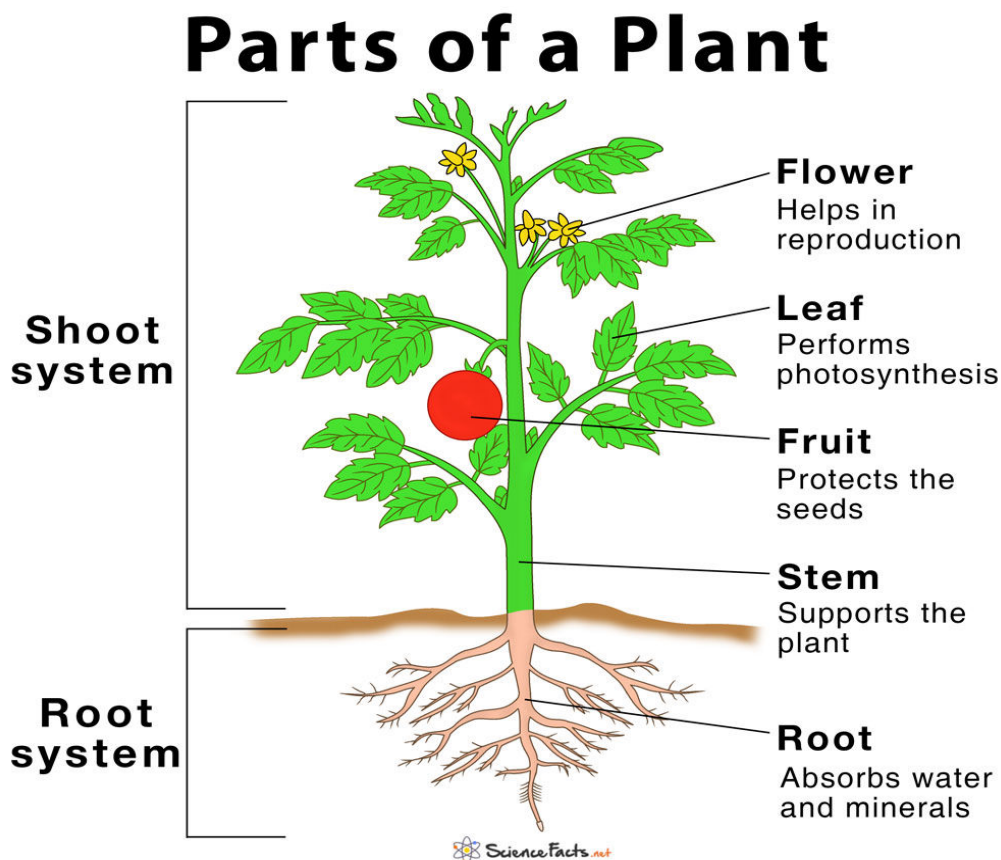
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## Definition

The plant is a living organism of the kind exemplified by trees, shrubs, herbs, grasses, ferns, and mosses, typically growing in a permanent site, absorbing water and inorganic substances through its roots, and synthesizing nutrients in its leaves by photosynthesis using the green pigment chlorophyll.

## Plant parts

A **plant** is made up of many different **parts**. The three main **parts** are: roots, leaves, and the stem..... The roots absorb water and minerals from the soil and anchor the plant in the ground. The stem supports the **plant above ground**, and carries the water and minerals to the leaves.



## The root

(In vascular plants, roots are the organs of a plant that typically lie below the surface of the soil. Roots can also be aerial or aerating, that is, growing up above the ground or especially above water. Furthermore, a stem normally

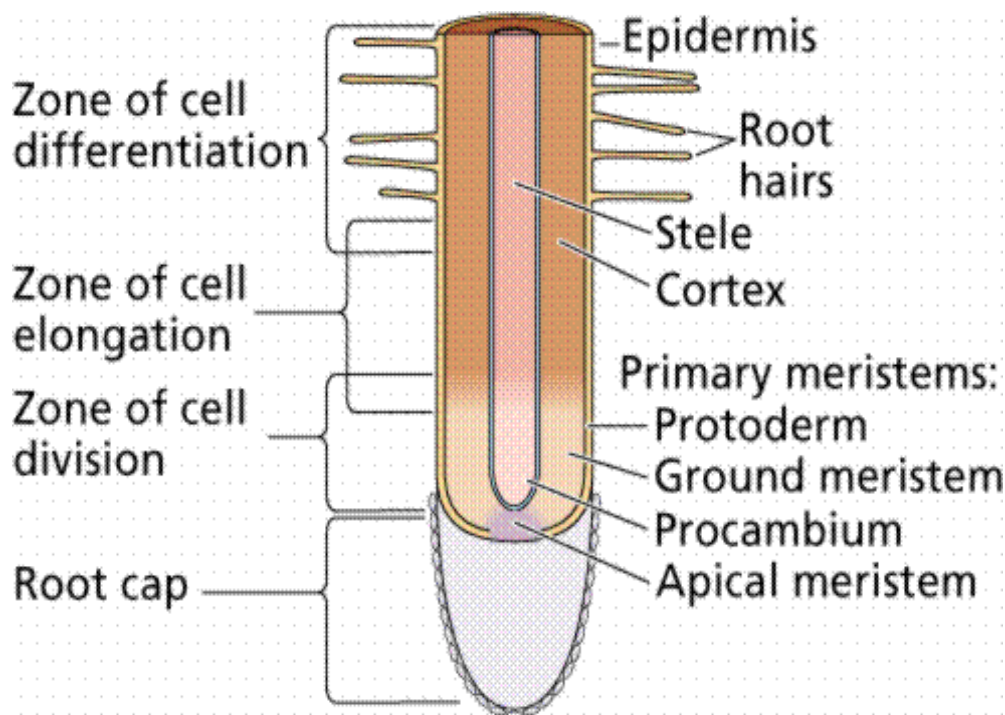
occurring below ground is not exceptional either (see rhizome). Therefore, the root is best defined as the non-leaf, non-nodes bearing parts of the plant's body. There are important internal structural differences between stems and roots.)

### What are the main parts of a plant root system?

(A typical diagram of a root system broadly shows four distinct regions or zones, the **i) region of root cap**, **ii) region of cell division or meristematic region** **iii) region of elongation**, and **iv) region of maturation or differentiation**, with each region performing distinct functions to complete the root system in plants. Except for the root cap, the other three zones are collectively known as the 'region of root tip'.)

### What are the major structures of a root?

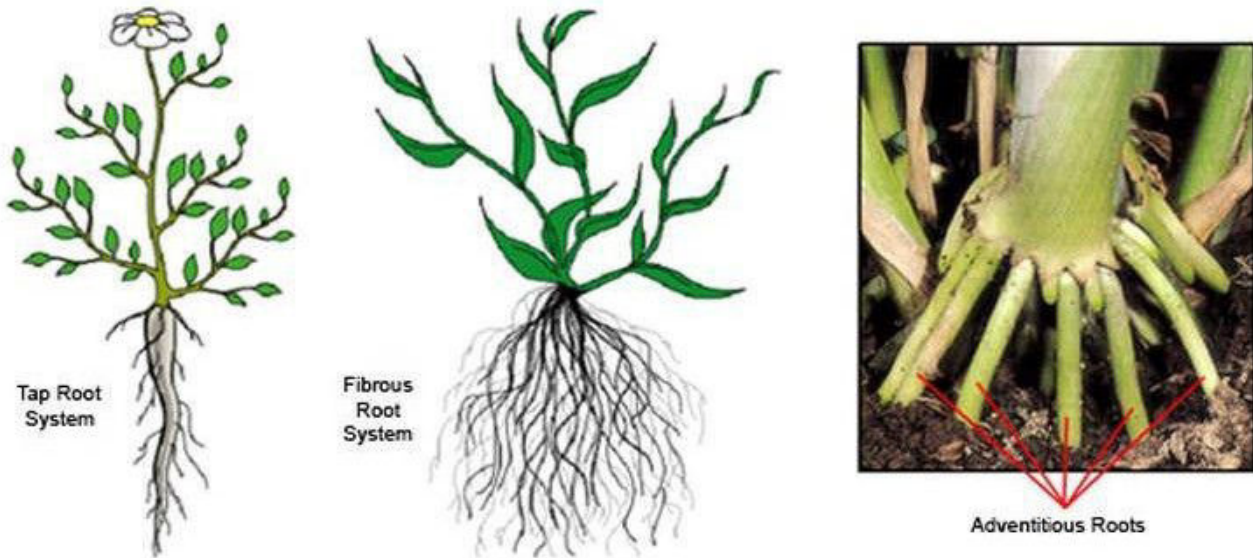
The structure of the root consists of the root cap, apical meristem, **epidermis**, root **hairs**, vascular cylinder, cortex, endodermis, and pericycle.



### What are the different forms of a root?

- In majority of the dicotyledonous plants. The primary roots and its branches constitute the **tap root system**, as seen in the mustard plant.

- In monocotyledonous plants, the primary root is short lived and is replaced by a large number of roots. These roots originate from the base of the stem and constitute the **fibrous root system**, as seen in the wheat plant.
- In some plants, like grass, Monstera and the banyan tree, roots arise from parts of the plant other than the radicle and are called **adventitious roots**.



- Tap roots of carrot, turnip and adventitious roots of sweet potato get swollen and store food.
- Hanging structures that support a banyan tree are called **prop roots**. Similarly, the stems of **maize** and **sugarcane** have supporting roots coming out of the lower nodes of the stem. These are called **stilt roots**.
- In some plants such as Rhizophora growing in swampy areas, many roots come out of the ground and grow vertically upwards. Such roots, called **pneumatophores**, help to get oxygen for respiration.

### **Function: what do root plant do?**

(Roots act like straws absorbing water and minerals from the soil. Tiny root hairs stick out of the root, helping in the absorption. Roots help to anchor the plant in the soil so it does not fall over. Roots also store extra food for future use.)