Biology Plant Tissues Notes - Class 9

Plant tissues

Plants can't move, i.e. they are stationary.

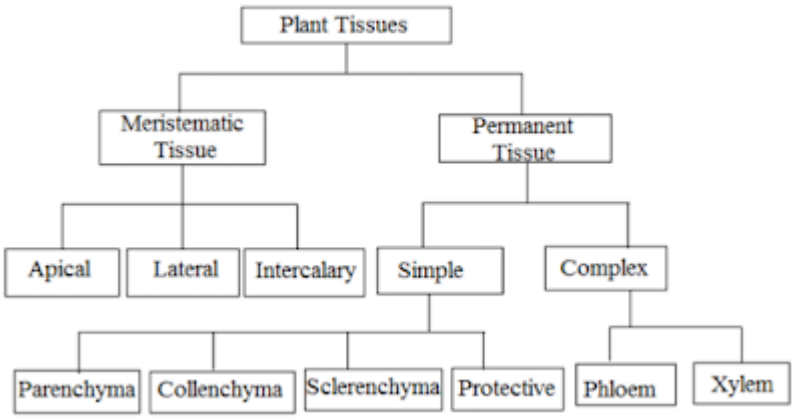
Most of the tissues that plants have are supportive, which provides them structural strength.

Most of these tissues are dead, as they can provide better mechanical strength than the live ones, and need less maintenance.

Some of the plant tissues keep on dividing throughout the plant life. These tissues are localised in certain regions.

Types of Plant Tissues:

Based on the dividing capacity of the tissues, various plant tissues can be classified as growing or meristematic tissue and permanent tissue which have further sub-divisions as explained below:



A. Meristematic Tissue

Meristematic tissues are responsible for growth in plants. Cells in these tissues can divide and form new cells.

Meristematic tissues types:

(i) Apical Meristem: It is present at the growing tip of the stem and roots and increases the length.

(ii) Lateral Meristem (cambium): It is present beneath the bark. It is responsible for growth in girth of trunk.

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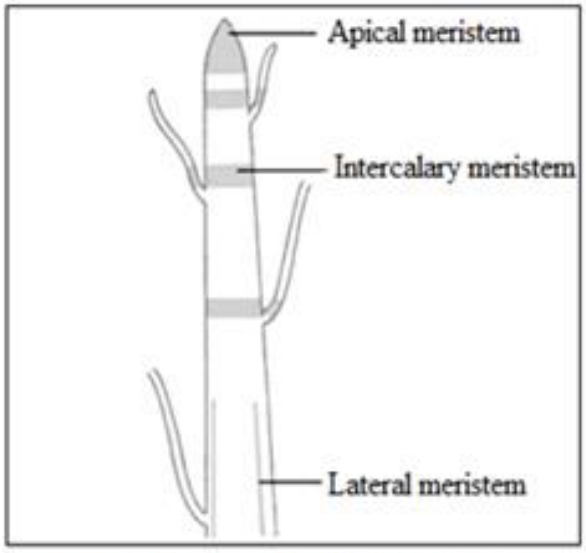
(iii) Intercalary Meristem: It is present at internodes or base of the leaves and increases the length between the nodes.



Location of meristematic tissue in plant body

B. Permanent Tissue

Cells of meristematic tissues change their shape & size to get specialised in performing other functions in plants body. This process is called Differentiation.

Once the cells of meristematic tissue divide to a certain extent, they become specialized for a particular function.

Permanent tissues types:

Simple tissues and Complex tissues

i) Simple Tissues

This type of tissue is composed of same type of cells.

Types of Simple Tissues

(a) Parenchyma simple tissues: Cells of parenchyma tissues are live. They are oval, elongated and loosely packed with large inter-cellular space, forming basic packing of tissue and are found throughout the plant body.

Functions of parenchyma:

They provide mechanical support to the plant body.

They store food and nutrients in vacuoles.

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Chlorenchyma: Parenchyma with chlorophyll which performs photosynthesis is called as chlorenchyma.

Aerenchyma: In aquatic plants, cells of parenchyma have large air cavities to give buoyancy to the plant and is called aerenchyma .

(b) Collenchyma simple Tissues: Cells of collenchyma are live. They are oval and elongated and tightly packed with no inter-cellular spaces. They are found below epidermis in leaves and stem.

Functions of collenchyma tissues:

They provide mechanical support to plant.

They also provide flexibility to plants so that they can bend without breaking.

(c) Sclerenchyma Simple Tissues: Cells of sclerenchyma are dead. They are narrow and elongated. The cell wall in sclerenchyma is composed of lignin which makes it hard. Sclerenchyma are found around vascular bundles, veins of leaves in hard covering of seeds and nuts. For example: Sclerenchyma tissues are found in coconut husk.

Functions of sclerenchyma:

They help to makes parts of plant hard and stiff.

Also provides mechanical strength.

ii) **Complex Tissues**

Made by combination of different types of cells. These cells work together to perform a specific task.

Types of Complex Tissues

Phloem
Phloem is made up of the following components – sieve tubes, companion cells, phloem parenchyma and phloem fibres. Phloem conducts food in both directions. Among all the components, phloem fibres are the only dead cells.

Xylem
Xylem is made up of the following components. The vessels and tracheids – help in conduction of water and minerals from the soil. Xylem parenchyma helps in food storage and the xylem fibres provide mechanical support.

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