

Plant Tissues

Plant Tissues are categorized broadly into three tissue systems: the epidermis, ground tissue and the vascular tissue.

This article will give further details about the basis of classification of plant tissues and other facts within the context of the IAS Exam.

Criteria for Classification of Plant Tissues

The 2 Major Criteria for the Classification of plant tissues are given below.

1. Based on part of the plant, they are present in.
2. Based on the kind of cells they contain.

Classification of Plant Tissues - Based on its location in the Plant

1. Epidermal tissues - It covers the outside of a plant in a single layer of cells.
2. Ground tissues - It covers the interiors of a plant.
3. Vascular tissues - Transports water and dissolved substances inside the plant.

Classification of Plant Tissues - Based on the kind of cells they contain.

1. Meristematic - There are 3 major types in this.
2. Permanent - There are 2 major types under this named as Simple and Complex. Simple is further subdivided into 3 types named parenchyma, collenchyma, and sclerenchyma. The complex is further subdivided into 2 types named Xylem and Phloem.

What are Meristematic Tissues?

Meristematic tissue consists of actively dividing cells and leads to increase in length and thickness of the plant. The primary growth of a plant occurs only in certain, specific regions, such as in the tips of stems or roots. It is in these regions that meristematic tissues are present. Cells in these tissues are roughly spherical or polyhedral, rectangular in shape, and have thin cell walls.

The growth in length and diameter of plants is carried out by this tissue. They are broadly classified as follows:

1. Apical Meristem - It is present at the apical portion of stems and roots. It is responsible for the growth in the length of the plants.
2. Lateral Meristem - It is present at the radial portion of the stems and roots. It is responsible for the growth in the thickness of the plants.
3. Intercalary Meristem - It is present at the internodes or the base of the leaves.

What are Permanent Tissues?

Permanent tissues are a group of living or dead cells made by meristematic tissue that have lost their ability to divide and permanently have been placed at fixed positions in the plant body.

Meristematic tissues which have a specific role lose their ability to divide. This process is called a cellular differentiation where a tissue takes up a permanent shape, size and function

There are 3 types of permanent tissues:

1. Simple permanent tissues
2. Complex permanent tissues
3. Special or secretory tissues (glandular).

Simple Permanent tissues

A group of cells which are similar in origin; similar in structure and similar in function are called simple permanent tissue. They are of three types:

1. Parenchyma
2. Collenchyma
3. Sclerenchyma

Is Xylem a Tissue?

Xylem is a plant vascular tissue that transports water and dissolved minerals from the roots to the rest of the plants and also provides physical support. Xylem tissues contain tracheary elements which are known as water-conducting cells. Xylem tissue contains fibre cells for support and parenchyma for the storage of various substances.

Is Blood a Tissue?

Yes, blood is fluid but can be considered as a tissue also since it is a compilation of cells that are specialized in serving unique functions. These cells are suspended in a liquid matrix (plasma), which makes the blood fluid.

Aspirants can find the complete UPSC Syllabus through the linked article. More exam-related preparation materials will be found through the links given below