



PLANT MORPHOLOGY

1. MORPHOLOGY

1. INTRODUCTION

- **Plant morphology is a field of study dealing with the gross external structure of plant organs.**
- **Study external characters it is known as morphology, if we study the internal structures it is known as anatomy.**

Definition

- **Plant morphology is defined as the branch of Botany dealing with external features/characters/structures of a plant and seeds are also described in morphology.**
- **The external structures, size, and shape of a whole plant, its leaf, root, stem, flower, fruit, and even seed are studied under morphology.**
- **The habit of any plant such as an herb, shrub, climber, twiner, tree is the morphological nature of that plant.**
- **The color of the flower, fruit, and seed are also described in morphology.**

Descriptive and Interpretative Morphology

Descriptive Morphology:

- **It is the branch of biology that deals with the form and structure of organisms without consideration of function.**
- **Descriptive morphology gives a detailed description of the plant in general including its root shoot, flower, fruit, and seed. details like scales, hairs, ornamentations, spines, pigmentations, outgrowths, variation patterns, spore structure, and reproductive parts studied in descriptive morphology.**

Interpretative Morphology:

- **It is the study of morphological characters with the interpretation of origin, development, phylogeny, growth pattern, etc.**

IMPORTANCE OF MORPHOLOGY

Importance of Morphology in Identification :

- **Plant classification was based on habit and morphological characters e.g. herbs, undershrubs, shrubs, and trees.**
- **Some taxonomists used morphology - flowers, fruits, and seeds to classify plants.**
- **Used in the system of classification, (artificial, natural, phylogenetic, modern, or ultra-modern).**
- **The most commonly used morphological characters are**
- **(i) Plant height, (ii) Habit, (iii) Root, (iv) Stem bark, (v) Branching (vi) Phyllotaxy, (vii) Size and shape of the leaves, types, its margin types of venation, apex, (viii) Inflorescence, (ix) Flower, calyx, corolla, androecium, gynoecium, (x) Pollen grains, (xi) Fruit, (xii) Seed.**

Importance of Morphology in Nomenclature

- **Nomenclature means naming the plant.**
- **In taxonomy, binomial nomenclature is followed for naming the plant.**
- **In the genus *Polyalthia*, the leaves are long, hence the name species is *Polyalthia longifolia*.**
- **Like leaf morphology, fruit morphology is also used in naming plants, e.g. *Cassia*, the fruits (pods) are just like a long pipe, hence the name of the species is *Cassia fistula*.**
- **The naming of plants is according to the rules of ICBN (International Code of Botanical Nomenclature).**

Importance of Morphology in Classification

- **Linnaeus (1707 - 1778) known as the "Father of Taxonomy or "Father of Modern Botany" proposed an artificial sexual system of classification, based on morphological characters of plants.**
- **The best natural system of classification of plants proposed by Bentham and Hooker (1800 - 1884) is also based on comparative morphology, which is very important to decide the forms and relationships existing among plants in nature.**
- **Natural system of classification of plants is the most practical and highly useful in nature for the classification of plants.**

- **Engler and Prantl's (1844 - 1930) system of classification (Phylogenetic system) has also given due importance to morphology along with anatomy embryology etc.**
- **Morphological characters (vegetative and reproductive) are helpful for the rapid identification and categorization of plants.**

Importance of Morphology in Phylogeny

- **An evolutionary sequence, origin, and interrelationship between different plant groups are often interpreted as phylogenetic relationships in them.**

THANK YOU...