

Plant Taxonomy

The term Taxonomy derived from two Greek words 'Taxis' and 'Nomous'. Taxis means arrangement and Nomous means name. So, the subject Plant Taxonomy means naming and arrangement of plants. It may be defined as the study of principles and practices of classification of plants and their relationship. It is the branch of Botany which finds, identifies, describes, classifies, and naming of plants.

Branches of Taxonomy

i) **Alpha taxonomy:** It refers to the more traditional methods of classification especially on the basis of morphological characters. The term "**alpha taxonomy**" is primarily used today to refer to the discipline of finding, describing, and naming of Taxa, particularly species. In earlier literature, the term had a different meaning, referring to morphological taxonomy, and the products of research through the end of the 19th century.

William Bertram Turrill introduced the term "alpha taxonomy" in a series of papers published in 1935 and 1937 in which he discussed the philosophy and possible future directions of the discipline of taxonomy.

ii) **Beta Taxonomy:** It deals with more recent experimental methods, the arrangement of species into hierarchical systems of higher categories or Taxa. In this process of arranging Taxa into higher categories which reflect the evolutionary history of a group of organisms.

iii) **Omega Taxonomy:** analysis and synthesis of all information and types of data to develop classification systems based on phylogenetic relationships (Turrill, 1938). The level of taxonomy which deals with the intra specific variations and evolutionary sequence and also a causal interpretation of organic diversity.

iv) **E-Taxonomy ;** The term "e-taxonomy" may be defined as the development of a web-based alpha-taxonomy which provides the full information and content of a taxonomy in the flowering plants. E-taxonomy offers a realistic way to empower a larger global community, not only to identify the organisms that interest them, but to contribute directly to taxonomic science as a mass activity and hence to a major advance in biodiversity knowledge (Mayo et al., 2008).

Principles of Plant Taxonomy

Plant Taxonomy deals with the following five steps:

- i) Collection and preservation of plant specimens
- ii) Description of plant specimen
- iii) Identification of plant specimen
- iv) Nomenclature of plant specimen
- v) Classification of plant

Objectives of Plant Taxonomy

- ❖ To inventory of world's flora
- ❖ To provide a method for identification and communication
- ❖ To provide a coherent and universal system of classification
- ❖ To demonstrate the evolutionary implications of plant diversity
- ❖ To use the scientific name (Latin name) for every group of plants

Plant Systematics

Plant systematic is the broad field concerned with the study of the Plant Taxonomy, diversity of plants and their identification, naming, classification, and evolution. It is closely allied to plant taxonomy, and there is no sharp boundary between the two subjects. Plant Systematics today is a vigorous and exciting field that has been given great impetus by the discoveries of molecular biologists.

The Main Features of Plant Systematics

- ❖ It is the discipline by which plant scientists identify, describe, name, distinguish, relate, classify and organize the vast diversity of plants on this planet in an effort to know and use them scientifically through understanding their similarity-dissimilarity and evolutionary relationships.
- ❖ It borrows data from other fields, very much a multidisciplinary, or 'hybrid'.
- ❖ Supplies evidence to evolutionary biology, ecology and other fields fundamental to all other scientific endeavors.

Major Parts & Functions of Modern Plant Systematics

Differences between Taxonomy and Systematics

Plant Taxonomy	Plant Systematics
Deals with plant classification	Deals with classification and its related subjects
Refer specifically to the methods and the principles of classification	Plant Systematics is a descriptive science - traditional approach, similar to anatomy, physiology etc.
Deals with naming and describing of plants	Used in a broader sense to include (1) taxonomy (naming, describing, identifying, classifying); (2) studies of evolutionary processes (such as hybridization, sources of variability, degree of variation in populations, reproductive isolation, origin of species); and (3) studies of phylogeny (the evolutionary relationships between groups).