

# INTRODUCTION OF TAXONOMY

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Taxonomy (Greek, **taxis** = **arrangement**, **nomous** = **law, rule**) means the "**arrangement by rules**" or "**lawful arrangement**". The botanists agreed on a nomenclature arrangement of plants into convenient groups for the proper and easy handling of vast number of plants in a suitable process following certain principles or rules. The term **Taxonomy** was first introduced in plant science by **A. P. de Candolle (1813)**, a French botanist, as the theory of plant classification. Later on and till date, it is considered as a part of plant science which includes identification, nomenclature and classification. According to G. H. M. Lawrence (1955) "Taxonomy is a science which includes identification, nomenclature and classification of objects and is usually restricted to objects of biological origin". When the taxonomy is concerned with plants, it is referred to as **systematic botany**.

In respect to plant, both the terms are considered as synonym but are not accepted by all. Both the terms are often used variously, like **chemotaxonomy** (based on chemical content), **cytotaxonomy** (based on chromosome structure and numbers), **biosystematics** (systematics of living organisms), etc.

Initially, the taxonomy was based on a few macromorphological information like habit, sex organ, etc. i.e., the **artificial system**. Later on, the classification was developed after considering many morphological characteristics, the **natural systems**. During the post-Darwinian period the taxonomy was based on evolutionary relationships i.e., the **phylogenetic systems**.

However, modern taxonomy is not restricted on morphology only. It depends on other branches of botany for good information like **anatomy, cytology, physiology, phytochemistry, genetics, embryology, ecology** etc.

The term '**taxon**' was first introduced by **Adolf Meyer (1926)**, a German biologist, for the animal groups. Later, in 1948, it was Herman J. Lam who proposed the term in plant science and it was accepted in the Seventh International Congress (1950). The term "taxon" indicates a taxonomic group like a variety, species, genus or any higher group.

## **PHASES OF TAXONOMY:**

The taxonomy includes identification, nomenclature and classification. According to Davis and Heywood (1963) the classification is achieved in **four (4)** different consecutive phases:

1. **Pioneer phase:** This is also called **exploratory phase**. In this phase, different plants of a taxon have to be collected throughout the world and identified.
2. **Consolidation phase:** In this phase, plant is studied both in field as well in the herbarium and a range of variations are evaluated. The new group or groups, if discovered, are fully described. Thus, a **monograph** is obtained.

3. **Biosystematic or experimental phase:** This phase deals with much more detailed knowledge of a taxon based on the above two phases along with the geographical variation, physiological characteristics, cytological characteristics, etc. The progress of this phase is very slow and it requires a team work rather than individual effort. The success in this phase is remarkable in some countries (U.K., U.S.A. etc.) but at and below the generic level.

4. **Encyclopaedic or holotaxonomic phase:** This phase is a coordination of the above three phases.

According to Turrill (1938) the classification is of two types:

1. **Alpha classification:** The first two phases i.e., pioneer and consolidation phases are based on gross morphological characteristics and the classifications of these phases are called **Alpha classification or Alpha taxonomy**.

2. **Omega classification:** The last two phases, i.e., biosystematic and encyclopaedic phase, are based on the data collected from fields, herbarium, laboratory and library and then properly analysed with the help of computer. The classifications of plants of these phases are called Omega classification or Omega taxonomy.