



FACULTY OF AGRICULTURAL SCIENCES AND ALLIED INDUSTRIES

INTRODUCTORY BIOLOGY UGR-121

LECTURE- 08

● PLANT SYSTEMATICS

- The term "Systematics" was proposed by **Linnaeus** in 1735.
- It includes description of external morphological characters of plants or living organisms. E.g., morphological characters of root, stem, leaves, flowers.
- This description is used to know inter-relationship among plants or living organisms.
- The term systematics, taxonomy and classification are after held as synonyms but technically they carry different meanings.
- **New systematics** or **Neo systematics** or **Biosystematics** is a new branch. Its name was given by Julian Huxley (1940).
- New systematics includes description of all the characters (internal) including morphological characters (external) of plants or living organisms. E.g., anatomical characters and cytological characters. It is used to know the inter-relationship among living organisms.
- **Carolus Linnaeus** is called father of taxonomy.
- **H. Santapau** is called the father of Indian taxonomy.
- Taxonomy is of 3 types - α , β and ω :
 - In **α (alpha) taxonomy**, only morphological characters are used for identification and classification of plants.
 - **β (Beta) taxonomy** involves genetical, anatomical, cytological, palynological, physiological and other characters.
 - Analysis and synthesis of all information and types of data to develop classification system based on phylogenetic relationship is called omega taxonomy.
- **Identification** is to determine the exact place or position of an organism in the set plan of classification. It is carried out with the help of taxonomic keys.
- **Classification** is the placing of an organism or a group of organisms in category according to a particular system and in conformity with a nomenclature system.
- New systematics is mainly based on evolutionary as well as genetic relationship (experimental taxonomy) as compared to morphological characters.
- **Cytotaxonomy** : The use of cytological characters of plants in classification or in solving taxonomic problems is called cytotaxonomy. Cytological characters constitute an important aid to plant taxonomy, especially in determining affinities at the generic and intrageneric levels.
- **Chemotaxonomy** : The use of chemical compounds present in plants for classification or in solving taxonomic problems is called chemotaxonomy or chemical taxonomy. It is based on the chemical constitution of plants. The basic chemical compounds used in chemotaxonomy are alkaloids, carotenoids, tannins, polysaccharides, nucleic acids, fatty acids, amino acids, aromatic compounds etc.
- **Karyotaxonomy** : It is based on the characters of nucleus and chromosomes. Pattern of chromosomal bands (dark bands and light bands) is most specific character for classification of organisms.
- Taxonomy is the study of principles and procedures of identification, nomenclature and classification of organisms.

FAMILY- BRASSICACEAE