

UNIT - I

Q.2-

Classification of plant is a very ancient topics . First plant classification reported in Vedas around 2000 BC. Classification means the division of something by the basis of some properties.

Plant systematic is the branch of botany that is concerned with the naming, identification, evolution and classification of plants .The basis of grouping is very simple. Aristotle and others grouped plants and trees, shrub herbs on the basis of their habits. During the period of Greeks to the middle of century, the crude methods were used and the basis of classification was habit / habitat and a few structural features.

Due to the above facts the classification of this periods was unreliable and arbitrary .There are three different types of classification which have been proposed so far by different taxonomists. These are as follows

- 1 Artificial system of classification
2. Natural system of classification
3. Phylogenetic system of classification

NATURAL SYSTEM OF CLASSIFICATION –Natural system of classification is based on characters of similarities which indicate natural relationship. In this system more number of characters rather than a single character are used for determining the similarities. In natural classification the main basis is on the relationships having all the information available at the time of classification. The characters taken for identifying similarities are homologous , in other words relationship of comparable structures in different organisms. The natural systems of classification remain dominant before the idea of evolution was accepted .The natural system of classification of the plant kingdom was proposed by George Bentham (1800-1884) and Joseph Dalton Hooker (1817-1911).

Zoologists and Botanists differ in their interpretation of the implications of this system of classification .According to zoologists the natural system of classification includes the phylogenetic and evolutionary trends which are evident in the word "natural " . Botanists hold the opinion that the natural

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- vi. Linnaeus (1753) published *Species Plantarum* and introduced Binomial nomenclature which is a mile stone of plant taxonomy.
- vii. The system of classification introduced by Linnaeus.
- B. The phase is marked by publication of a number of monumental works on plant classification
- i. De Candolle (1778-1841) modified Linnaeus system
 - ii. Bentham and Hooker (1864) published *Genera Plantarum* where they have given natural system of classification which is of great practical use even now.
 - iii. Charles Darwin (1859) published *On the Origin of Species*, where in suggested the principle of natural selection and evolution of species.

iv. Dobzhansky (1937) published "Biological Species Concept". Biological concept defined species as **"a group of interbreeding population reproductively isolated from any other such group of population."**

C. Biosystematic Phase:

(i) The last fifty years have seen a qualitative improvement in the area of taxonomic concept and application by advancement of Biosystematics.

(ii) The "New systematics" is aimed at achieving the goal of "holotaxonomy".

(iii) Huxley (1940) proposed the term "New systematics."

(iv) Camp and Gilly (1943) proposed the term "Biosystematics" to new systematics.

(v) The number, size and shape of chromosomes were considered by cytotaxonomists as very reliable taxa.

gathered, analysed, and a meaningful inference is drawn for understanding phylogeny:

i. Collection of data, analysis and synthesis are the jobs of an independent discipline of taxonomy, i.e., Numerical Taxonomy.

ii. Numerical Taxonomy or quantitative taxonomy is based on numerical evaluation of the similarity between groups of organisms and the ordering of these groups into higher ranking taxa on the basis of these similarities.

Exploratory and Consolidation phase are considered as Alpha taxonomy while Biosystematic and Encyclopaedic phase are considered as Omega Taxonomy.

Taxonomists realised that species are dynamic and:

(a) All populations tend to vary and no two species are ever alike

(b) Some of these variations are adaptive and are of survival value.

(c) Forces of nature result in the extinction of some individual while others survive the same force.

(d) Some variations shown by individual within a population must be hereditary.

(e) The environments of individuals are not static.

i. Phylogenetic classification was based on the ideas of evolution. It started with Endichler (1804-1849), Eichler (1837-1887).

ii. Engler and Prantl (1887-1915) suggested semiphyl-