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Study of Biosystematics, its aims and Methods in the study of biosystematics

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Introduction : Biosystematics may be defined as *'taxonomy of living populations'* Taxonomy is mainly concerned with the observation of similarities and differences that exist in the morphology of a vast number of plants. But it has now been accepted that in general, morphological characters alone are not the criteria for distinguishing and classifying plants from one another. One has to take into consideration, the characteristics and differences from other disciplines of science such as cytology, genetics, physiology, ecology, phytogeography, phytochemistry, numerical taxonomy, molecular biology, breeding systems and any other available sources for classification.

Key Words : Taxonomy, phytogeography, molecular biology, Biosystematics

In the present day classification of plants, species is taken as basic unit and it is the local breeding population. Numerous disciplines of science thus provide innumerable number of datas of all the characters of the individual or a species. This helps to clear problems concerning those plants that differ in their interrelationship, classification and evolution. It provides sufficient genetic variations that warrants separation so as to recognise them as a separate taxon based on their evolutionary progress.

Variations in a species may be due to several factors such as genetic, ecological, physiological, population dynamic study and many other factors. All the evidences provided by the biosystematist are taken for analysis and considered by the

classical taxonomist in order to arrive at any controversial problems that may arise during their phylogenetic classification based on their evolution of species under study.

Aims of biosystematics

Camp and Gily 1943, coined the term 'biosystematics'. The aims of biosystematics are as follows.

i) To delimit the naturally occurring biotic community of plant species.

ii) To recognise the various groups as separate biosystematic categories such as ecotypes, ecospecies, cenospecies and comparium.

Methods in the study of biosystematics

Three important methods are as follows.

i) It involves thorough sampling analysis of the taxonomic species under study. Its population, cultivation, geographical range, cytology, anatomy, palynology, phytochemistry, chromosomal number and behaviour are keenly observed and studied for finding any genetic differences that may arise among different populations.

ii) It includes determination of ability of different populations to interbreed among one another to form a variant species with its vigor and fertility. This will reveal the presence or absence of breeding barriers between taxa at various levels.

iii) It involves the study of similarity of chromosomes in the hybrids during meiosis.

The informations obtained from the above mentioned studies were compared with the data obtained through comparative morphology and geographical distributions resulted in the recognition and identification of a total variety or species. To conclude, biosystematic study in the contemporary and modern taxonomy plays a

vital role in separating and solving some of the problems that may develop in the identification of plants at the level of species. Biosystematist provides all the necessary data in solving the real position of species that was in controversy.

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