



SEEDLING MORPHOLOGY AND ITS POTENTIAL IN TAXONOMIC STUDIES IN INDIAN FLORA*

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Investigations on seedling morphology in the context of taxonomy have emerged as a new discipline, particularly with reference to Indian Botany. Juvenile characters of flowering plants have largely been ignored in taxonomic studies, although these are of potential value as marker characters for identification of plants at seedling stage, i.e. much before flowering and fruiting. There are recognised terms and terminology in this regard which can be used to facilitate seedling morphological research. There are considerable developments on seedling studies at the international level, but the national scenario is comparatively poor. In the present paper, different aspects of seedling morphological studies related to taxonomy have been presented. In addition, the utility of seedling studies in conservation, forestry research, reintroduction programmes, and weed control have been emphasized. Seedling data also assist in drawing phylogenetic interpretation.

Key words: Conservation, Flowering plants, Identification key, Seedling morphology, Seedling terminology

The investigations on seedling morphology, particularly of angiosperms, have emerged as a taxonomic tool for floristic studies. The morphology of seedling plants is characterized by some primary genetic characters which can be used in taxonomic consideration as that of floral features. There are well-defined terminology and glossary for describing morphology of seedlings. The seedling characters can also be used to develop artificial key for the identification of taxa at juvenile stage, i.e. much before flowering and fruiting. Based on the seedling features, interrelationships between taxa and phylogenetic interpretations can also be made. With such importance of seedling morphological features in taxonomy and phylogeny, considerable work have been done in different countries abroad, but little investigation have been carried out in India, in spite of the rich plant biodiversity resources of the subcontinent. In addition, the knowledge of seedling morphology assists in conservation work, forestry research, weed control, reintroduction of plants for management of phytodiversity relating to Indian flora.

Seedling may be defined as “a young plant raised from seed in distinction to a plant propagated artificially” (Jackson 1928). The term 'seedling' designates a young plant which has, besides the seed leaves, at least one, preferably two ordinary leaves (Muller 1978).

In literature, the term seedling is used for woody plants from the beginning of germination up to a stage where it is 25-30 cm high. When it is over about one meter high, then it is called a sapling (deVogel 1980). Seedling is “an early developmental stage that contains at least some still functioning structures produced from the initial seed reserves and initial morphology to indicate the form of the seedling at the time the first entirely photosynthetic organs have fully expanded” (Garwood 1996). Thus, diverse opinions exist regarding definition of seedling. However, there is a general understanding that seedling is the juvenile stage of a plant after germination from seed. Evidently, the seedling stage is the most striking and vulnerable phase in a plant's life cycle.

There are some limitations regarding the study of seedlings of flowering plants. These are small enough to escape our attention in the natural habitats and are destroyed due to anthropogenic disturbances. These are rarely preserved as permanent specimens, hence are unavailable for taxonomic studies in herbaria. Moreover, at regional basis particular taxonomic literature on seedlings are not available also. Therefore, overall collection, preservation and documentation of seedlings are very much difficult for the plant researchers.