
CHAPTER : I
INTRODUCTION

Introduction :

The leaves are the organs specialized for the function of photosynthesis. Photosynthesis is the most important plant functions, since all other functions depend upon it either directly or indirectly. The roots and stems which perform the function of absorption and conduction supply the leaf with materials used in photosynthesis, and remove the products formed. All the vascular plant groups, bear these leaves in such relation to light that photosynthesis can go on advantageously. The plants are dependent directly or indirectly for their food supply on leaves and hence they are exceedingly important organ.

The morphology of the leaves varies with different major plant groups. In general the lower vascular plants i.e. Psilotales, Lycopods and Sphenopsids are characterized by microphylls with a single vascular trace without lateral branches. This vascular trace does not form a leaf gap in the main vascular cylinder of the stem. They vary in size from scale like leaves of Lycopodiales to large grass like leaves of Lepidodendrales. All the higher vascular plants are characterized by megaphylls with lamina having much divided vascular trace and varying in size from scale like to large branch like with expanded lamina.

In Pteridophytes the plant body consists of root, shoot, leaves and sporangia as reproductive bodies. The shoot system with few exceptions like Cyatheaceae is usually underground, rhizomatous and the plant body mainly consists of the tuft of leaves or pinnae borne either spirally or in two rows on the upper surface of the rhizome. The leaves vary in size from small scale like to large pinnate fronds resembling a branch.

The pteridophytes in general are shade and moisture loving plants. But among them also are found differences in the degree of exposure to sunlight and the moisture content of the surrounding atmosphere and soil. Some are terrestrial while other prefer epiphytic habit. Some ferns even grow as member of halophytes also (Acrostichum aureum, Pteridium aquilinum). According to their ecological preferences the pteridophytes are placed under different types which are discussed in detail in Chapter-II.

Collections were made from different localities in Western Ghats. Many of them were collected from district Sindhudurg, particularly from a village Kesari. The details about the collection of plants for anatomical studies of pinnae are discussed in Chapter-III.

The methodology used for anatomical studies of pinnae is also discussed in Chapter-III.

Chapter-IV gives the review of anatomical work done on Indian ferns.

The fronds of pteridophytes, as they form the main part of the plant body any adaptation to the surrounding environment are expected to be seen in morphology and anatomy of the pinnae. The observations made on such morphological and particularly pinnae laminar anatomy are described in detail in Chapter-V. While describing the pinnae anatomy particular trace is given on leaf lamina which is the main photosynthetic tissue of the plant.

Chapter-VI describes the probable relation of the anatomical observations with the different physiological functions going on in the plant body.

Chapter-VII summarise observations made for the present piece of work.

The references cited are listed at the end in Chapter-VIII.