

Foliar architecture of Indian Sterculiaceae and its systematic relevance [UGC –MRP: vide F. No. 40-327/2011 (SR)]

SUMMARY

Present study explored the diversity of foliar architecture of 61 species of the family Sterculiaceae out of 68 species belonging to 19 genera found in India (Malick, 1993). The rest seven species are of rare occurrence and in some cases the species are known only from their *Type* collections. Due to rarity only leaf venations have been studied in some cases.

Foliar architecture in general, in angiosperms, has been done for various families. However, for Sterculiaceae in Indian context the attempts are very few. Therefore, a thorough approach has been made to highlight the different anatomical and foliar architectural aspects of the family. Present study includes detail laminar venation, intermodal, nodal and petiolar anatomy including different kind of inclusions, stomata as well as trichome diversity.

The internodal cellular configurations are more or less the same in all the studies species. Vascular bundles are open, conjoint, collateral. Sclerenchymatous bundle cap remain at the rind of the phloem. Fibre cells often remain embedded within phloem layer in patches. The nodal configuration of entire family is highly static showing typical trilacunar three-traced condition. The petiolar vasculature has been studied in different topographical levels with number of vascular bundles varying from single to numerous and often associated with accessory vascular bundles. Venation pattern is thoroughly studied for all members and are of three types, viz. brochidodromous, actinodromous and semicraspedodromous. Marginal venation is both looped and incomplete. Free vein endings are both branched and unbranched types and usually composed of few to several spirally thickened tracheids. Vein endings often associated with parenchymatous sheath cells. Trichomes are both nonglandular and glandular. Nonglandular type includes acicular and stellate. However, scales are observed only in case of *Heritiera*. Stomatal type is of anomocytic in general, however, 13 types of stomata along with few subtypes are reported to be present in the leaves of *Pterygota alata*. Different types of crystals, viz. druses, diamond-shaped, rhomboid-shaped are seen in different studied species.

The study helps in recognition of key characters that are helpful in the identification of different taxa, particularly in their non-floriferous conditions and in fragmented or distorted materials. It also helps to find out how far the vegetative anatomy along with foliar architecture is in agreement with the taxonomic classifications. Finally the inter- and intra-generic relationships among the members of the family have been established.

In this study, based on foliar architectural features, most of the taxa show natural grouping and corroborated with the classification system of Bentham and Hooker (1862–1863). In general, majority of genera followed natural grouping reflecting their close relationship.