

- KURODA, T. & T. HABE (1951): Illust. Catal. Jap. Shells. 128.
 PRAVAKAR RAO, K. (1965): Record of bivalve gastropod *Berthelinia limax* (Kawaguti and Baba 1959). *Nature* 208: 404-405.
 SARMA, A.L.N. (1975): Three new species of the bivalved

- gastropods *Julia* and *Berthelinia* found in Eastern Indian Ocean. *Jap. Jl. Malac (Venus)* 34: 11-25.
 SARMA, A.L.N. & T. CHATTERJEE (1991): Occurrence of bivalved gastropods in the west coast of India, Arabian Sea. *J. Bombay nat. Hist. Soc.* 88: 130-133.

39. OCCURRENCE OF *KLEINHOVIA HOSPITA* L. (STERCULIACEAE) IN MARATHWADA REGION OF MAHARASHTRA STATE

During a floristic and ethnobotanical survey of Nanded district, Marathwada, Maharashtra State, a plant of Family Sterculiaceae *Kleinhovia hospita* L. was detected in the botanical garden of Science College, Nanded. This plant is a common cultivated avenue tree in Mumbai, mostly grown in Parsi holy places. It is a native of Moluccas Islands of eastern Malaysia. Naik (1998) in his FLORA OF MARATHWADA has reported only one specimen in Aurangabad city of Marathwada region, Maharashtra State, but the plant no longer exists in Aurangabad and the authors have confirmed it.

The present authors correctly identified and deposited the voucher specimens in the herbarium of the Postgraduate Department of Botany, Science College, Nanded. It is pertinent to note that recently (Alverson *et al.* 1999) during their cladistic studies of the core Malvales from the ndhF sequence data (ndhF is a chloroplast

gene) have confirmed the inclusion of this plant and genus *Kleinhovia*, as suggested long ago by Zebe (1915), in the tribe Byttneridideae and excluded it from Helictereeae of Family Sterculiaceae as suggested by Takhtajan (1997). Occurrence of only a single plant specimen in a 64,792 sq. km area is alarming, and deserves attention from the conservation point of view.

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REFERENCES

- ALVERSON, W.S., B.A. WHITLOCK, B.A. RETO NYFEELER, C. BAYER & DAVID A. BAUM (1999): Phylogeny of the core Malvales: Evidence from ndhF Sequence data *Am. J. Bot.* 86(10): 1474-1486.
 NAIK, V.N. (1998): Flora of Marathwada, Amrut Prakashan, Aurangabad, pp. 156-57.
 TAKHTAJAN, A. (1997): Diversity and classification of flowering plants, Columbia University Press, New York.
 ZEBE, V. (1915): Monographie der strucliacen; Gattungen *Kleinhovia*, *Helicteres*, *Reeveria*, *Ungeria* und *Pterospermum*, Ph.D. dissertation. Freidrichwillhelm University Breslau.

40. EXTERNAL MORPHOLOGY OF TESTA IN MANGO *MANGIFERA INDICA* AND ITS VALUE IN THE CULTIVAR CHARACTERISATION OF THE CROP

(With one plate)

The significance of SEM studies of testa morphology, at species level, in plant taxonomy

has been demonstrated in some angiosperms. However, its value at the level of varieties or

cultivars has not been documented in India and is presented in this communication.

Mangifera indica is an important tropical fruit crop with a large number of natural varieties, which have yet to be documented. There are also cultivated varieties of export quality that earn considerable foreign exchange. The characterisation and classification of the natural varieties are particularly important for their improvement, conservation and use in the propagation of varieties of commercial value. A study on the characterisation of mango varieties, based on testa morphology, has been undertaken in Thiruvananthapuram district, Kerala. The results of studies on three varieties are given below.

Three varieties of *Mangifera indica*, namely Moovandan, Neelum and Banglora, were selected for study. Mango fruit consists of an edible outer part (pulp) overlying the outer seed surface or testa, which is hard and encloses the cotyledons and the embryo. The testa bears conspicuous dichotomously branched veins. The outer and inner surfaces of the testa have structural differences, associated with their location and function. The outer surface is fibrous, while the inner surface is non-fibrous, but both have vicin threads, with randomly placed rounded nodules.

The SEM studies of the outer and inner surfaces of the testa are described (Plate 1, Fig. 1).

Moovandan: Outer testa (Fig. 1a) surface has a cellular base covered by a web of vicin threads carrying intermittent or crowded nodular granules. The inner testa surface (Fig. 1b) is characterised by tiers of parallel plate-like structures. These leafy plates have free tips, no web threads or nodulations.

Neelum: Outer testa surface (Fig. 1c) has a cellular base covered by small trichomes and a web of double layered vicin threads; the lower layer is close netted with dense nodules, while the upper layer is open netted with distantly

placed threads. The inner testa surface (Fig. 1d) is disrupted, the cells being saucer-shaped with sparsely nodulated fibrils without any webbing.

Banglora: Outer testa surface (Fig. 1e) has a cellular base covered by plate-like islands covered by a dense mesh of threads with nodules. The inner surface (Fig. 1f) is characterised by a multi-layered lattice pattern, each layer having depressions that are interconnected through thin spinous threads.

It is demonstrated by the study that for each variety of mango tested, the specific characteristics of the outer and inner surfaces of the testa can help to identify a variety. No clear common character can be assigned to the two surfaces except for the vicin threads. The structural differences in the surfaces of the testa could be used in taxonomic studies. The morphology of the outer and inner surfaces of the testa reflect their functions. The outer testa surface holds the pulp, while the inner surface is free and protects the cotyledons and embryo. The degree of needs for such protection is reflected in the structure. The plates had strong fibres in Moovandan, but cellular in Neelum and Banglora.

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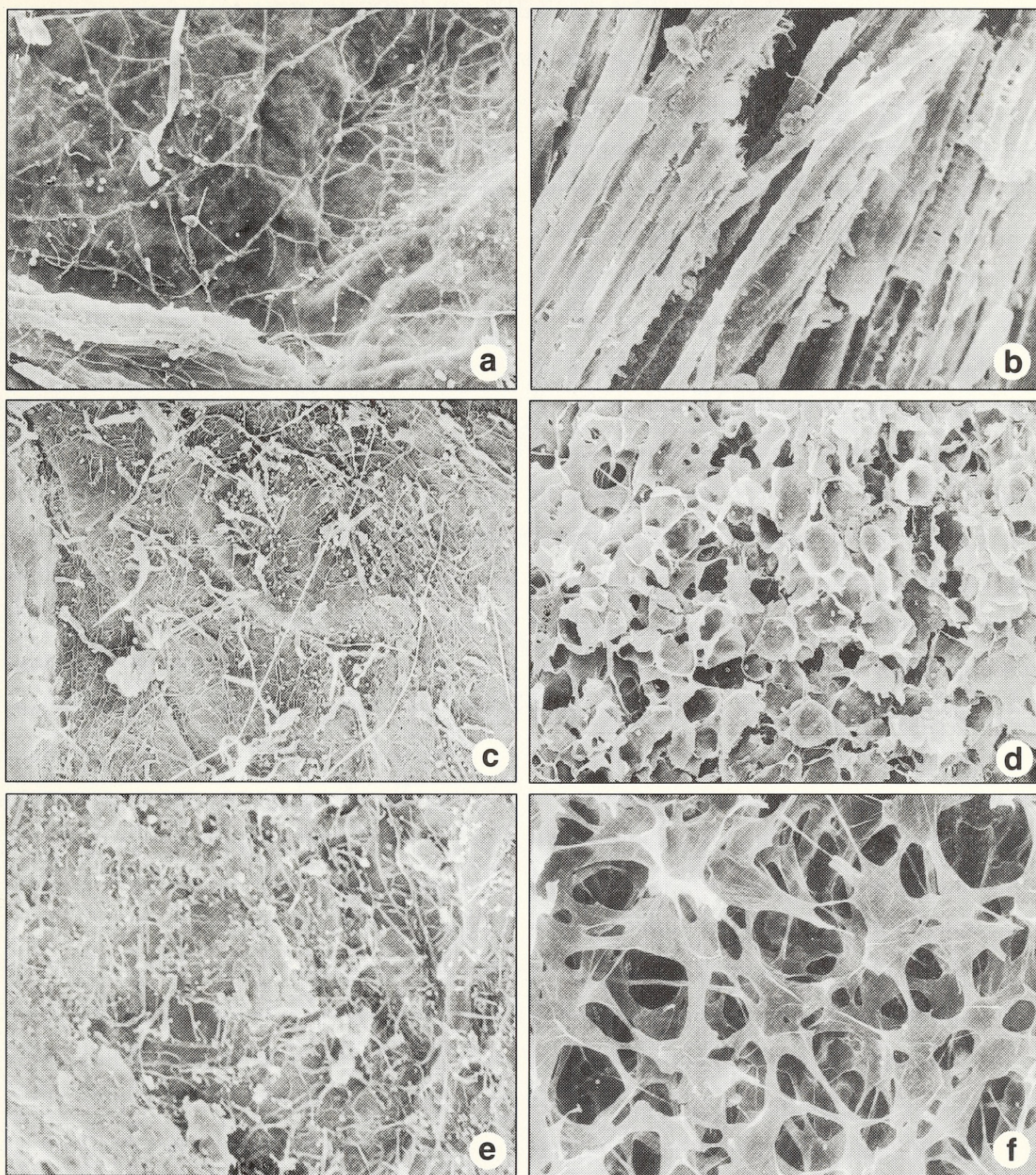


Fig. 1: *Mangifera indica* var Moovandan a. outer testa, b. inner testa;
Mangifera indica var Neelum c. outer testa, d. inner testa;
Mangifera indica var Banglora e. outer testa; f. inner testa



Prakashkumar, R. and Suresh, S. 2002. "External Morphology of Testa in Mango *Mangifera Indica* and Its Value in the Cultivar Characterisation of the Crop." *The journal of the Bombay Natural History Society* 99, 359–362.

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