

## *ABUTILON MUTICUM* AND *ABUTILON PANNOSUM* COMPLEX\*

SULTANUL ABEDIN\*\*

*Department of Botany, University of Karachi, Karachi-32.*

### Abstract

*Abutilon muticum* (Del.ex.DC.) Sweet generally considered conspecific with either *Abutilon pannosum* (Forst.f.) Schl. or *Abutilon glaucum* (Cav.) Sweet is considered here as a distinct species. The type specimens of the important taxa have been critically examined.

### Introduction:

*Abutilon muticum* (Del.ex.DC.) Sweet is generally considered to be conspecific with either *Abutilon pannosum* (Forst.f.) Schl. (Hutchinson & Dalziel, 1958; Cufodontis, 1959; V. Tackholm, 1956, 1974; Borssum Waalkes, 1966 *in obs.*; and Zohary, 1972), or with *Abutilon glaucum* (Cav.) Sweet (Webb, 1849; Masters, 1867; Cooke, 1901; Hochreutiner, 1902; Jafri, 1966 and Stewart, 1972). Taxonomically *A. glaucum* (Cav.) Sweet is now considered synonymous with *Abutilon pannosum* (Forst.f.) Schl. Boisser (1867, 1888), Masters (1874) and Post (1932), however, adopted *Abutilon muticum* (Del. ex. DC.) Sweet and cited *Abutilon glaucum* (Cav.) Sweet under the synonymy.

Webb (1854) changed his earlier view and pointed out (*in obs.*) the differences between *Abutilon muticum* (Del.ex.DC.) Sweet and *Abutilon pannosum* (Forst.f.) Schl. Only a few workers (Webb 1854; Mattei, 1915; I. Riedl, 1976) have adopted *Abutilon muticum* (Del.ex.DC.) Sweet as a distinct species.

In order to study the variation met with in this complex 150 specimens were chosen randomly to study the following characters:

- i) Shape of stipules,
- ii) Upper surface of leaves whether scabrous or velutinous,
- iii) Number of mericarps per fruit,
- iv) Length of fruiting calyx,
- v) Length of mericarp,
- vi) Number of seeds per mericarp.

---

\*Part of thesis approved for the degree of Ph.D. by the University of Karachi.

\*\*Present address: Department of Pharmacognosy, University of Karachi, Karachi-32.

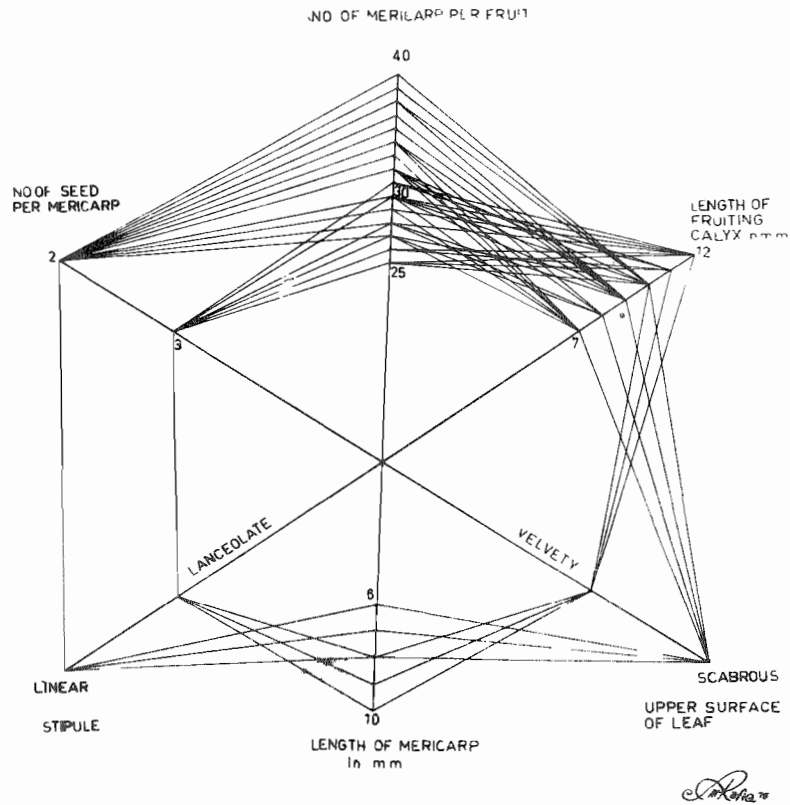


Fig. 1. Ploygraph showing various characters of *Abutilon muticum* and *Abutilon pannosum*.

These characters were plotted graphically (Fig. 1). The polygraph shows slight overlapping in the length of fruiting calyx and mericarp and little more in the number of mericarps per fruit. It is, however, clear from the graph that longer fruiting calyx and mericarps are correlated with velvety leaves, lanceolate stipules and 3-seeded mericarps. The number of mericarp in this group ranges from 25 to 31. While shorter fruiting calyx and mericarps are correlated with scabrous leaves, linear stipules and 2 seeded mericarps. The number of mericarps ranges from 27 to 39. It is concluded from the polygraph that there are two distinct taxa which may be discriminated easily on the basis of the combination of these characters.

Further, the two taxa can also be differentiated on the basis of the length of corolla particularly in relation to the length of calyx, and the diameter of the corolla. These characters were not shown graphically because of the absence of flowers in most of the herbarium sheets. In one taxon the corolla is 3 times the length of calyx and 3-4.5 cm in diameter while in the other the corolla is 2-2.5 times the length of calyx, and 2-2.5 cm in diameter.

Field observations indicate that the two taxa may also be differentiated phenologically. In one, flowers open at 5 P.M. while in the other at about 1 P.M. The time may fluctuate in cloudy weather

#### Key to the Species

1. +Mericarps 28-39, each 2-seeded (or 1 by abortion). Leaf scabrous above; stipules linear. Flowers axillary, solitary or in fascicles of 2-4. Corolla 2-2.5 cm across; petals 2-2.5 times the length of calyx. Fruiting calyx 7-10 mm long.

1. *A. muticum*

Mericarps 25-31 each 3-seeded. Leaf almost velvety above; stipules lanceolate. Flowers in pseudoracemes or panicles. Corolla 3-4.5 cm across; petals 3 times the length of calyx. Fruiting calyx 10-17 mm long.

2. *A. pannosum*

1. *Abutilon muticum* (Del.ex.DC.) Sweet, Hort. ed. 2. 65. 1830; Webb, Fragm. Fl. Aethiop-Aegypt. 51. 1854. I. Riedl, Fl. Iran. 120:7. 1976.

*Sida mutica* Del. (Illustr. Fl. Aegypt. 20. n. 633. 1813. *nom. und.*) ex.DC., Prodr. 1:470. 1824; Del., Cent. Itin. Caill. 60 n. 45. 1826.

Holotype: Egypt, *Cocuebert* s.n. (G-DC!).

*Abutilon asiaticum* Guill. & Perr. in Guill. et al. Fl. Senegamb. Tent. 67. 1831 (non *Sida asiatica* Linn.)

Holotype: Senegal, Dagana, Walo, *Leprieur* s.n. (P!);

Isotype: (P!).

*Abutilon malirianum* Hus. & Baq. in Phytion 15 (3-4): 222. 1974.

Holotype: Karachi, P.C.S.I.R. *S.A. Husain* s.n. (KUH!).

Distribution. Tropical Africa, Arabia, India and Pakistan.

It occurs in plains throughout Pakistan, more common in Sind.

It is worthwhile to note that in Index Kewensis and in many floristic works the page number of Delile's reference of *Sida mutica* Del. is erroneously mentioned. The correct reference is *Sida mutica* Del., Ill. Fl. Egypt 20. n. 633. 1813. The figures "60. n. 45"

mentioned in Index Kewensis belong to his later work "Cent. Pl. Itin Caill. 60. n. 45. 1826".

*Abutilon asiaticum* Guill. & Perr. is entirely different from Linnaeus' species *Sida asiatica* Linn. The type specimen matches very well with *Abutilon muticum* (Del. ex.DC.) Sweet in its linear stipules, scabrous leaves, 2-seeded, 27-39 mericarps. and in general appearance.

*Abutilon malirianum* Hus. & Baq. has recently been described by Hussain & Baqar (1974). The type specimens of this species and that of *Abutilon muticum* (Del. ex. DC.) Sweet match very well with each other. Hence *Abutilon malirianum* Hus. & Baq. is reduced to the synonymy under *Abutilon muticum* (Del. ex. DC.) Sweet.

Riedl (fide S. Abedin) has cited *Abutilon lanatum* Hus. & Baq. under the synonymy of *Abutilon malirianum* Hus. & Baq. But she has not given any reference of Abedin. It may be mentioned here that Abedin (1975) reduced *Abutilon lanatum* Hus. & Baq., because of its being a later homonym, to the synonymy under *Abutilon alii* Abedin.

2. *Abutilon pannosum* (Forst.f.) Schlecht., Bot. Zeit. 9: 928. 1851; Webb, Fragm. Fl. Aethiop.-Aegypt. 52. 1854 (*in obs.*).

*Sida pannosa* Forst. f. in Comment. Soc. Reg. Sci. Gotting. ser. 2.9. 1787.

Holotype: Cap Verde Islands, Insula Sancti Jacobi, *G. Forster* s.n. (BM!).

*Sida glauca* Cav., Ic. 1: 8.t.11.1791.

Holotype: Described from Senegal (MA Photograph!).

*Abutilon glaucum* (Cav.) Sweet, Hort. Brit. 54. 1826; Stewart in Nasir & Ali, Ann. Cat. Vasc. pl. W.Pak. Kash. 476. 1972; Hus. & Baq. in Phytion, 15 (3-4). 233. 1974.

*Distribution:* Tropical Africa, Pakistan and India. In Pakistan it is confined to Sind.

This species was first described by G. Forster (1787) as *Sida pannosa* Forst. f. Later this was transferred to *Abutilon* by Schlechtend (1851) as *Abutilon pannosum* (Forst.f.) Schl. Webb (1854 *in obs.*) clearly distinguished this from *Abutilon muticum* (Del. ex. DC.) Sweet. He, *in obs.*, cited the reference in which *Sida pannosa* Forst. f. was transferred to *Abutilon* by Schlechtend. But some workers have attributed *Abutilon pannosum* (Forst.f.) Schl. to Webb (Masters, 1867; Mattei, 1915; and Cufodontis, 1959).

It appears from the literature that the present species has not been generally adopted in its original concept as indicated by the citation of *Abutilon muticum* (Del.

ex.DC.) Sweet under the synonymy (Hutchinson & Dalziel 1958, Cufodontis 1959, Tackholm 1956, 74, Borssum Waalkes 1966 *in notes*, and Zohary 1972) which is a distinct species.

Cavanilles (1791) described *Sida glauca* Cav. which is conspecific with the present species (*Abutilon pannosum* (Forst.f.) Schl.) He probably erroneously described 2-alternate bracteoles in his species. The bracteoles are also very prominently drawn in the plate. It is very doubtful that such bracteoles are found in any species of *Sida* or *Abutilon*. I have seen the photograph of the type specimen of Cavanilles' species in which the bracteoles are lacking and the general habit of the plant matches with the present species.

This species is related to *Abutilon alii* S. Abedin in the vegetative parts. It, however, differs from the latter by having mostly short pedicels, and a densely hairy fruit which is shorter than the calyx.

#### Acknowledgements

I wish to express my deep sense of gratitude to Professor Dr. S.I. Ali, Department of Botany, University of Karachi, whose guidance, criticism and encouragement have helped me to complete the present work. I am thankful to Professor Dr. Rafiq Ahmad, Department of Botany, University of Karachi for his help, and granting the leave to go abroad. Thanks are also due to United States Department of Agriculture for financing this research under P.L. 480. I am highly indebted to the Directors and Librarians of the following herbaria for extending necessary facilities:-

Karachi University Herbarium, Karachi; National (Previously Stewarts) Herbarium, Rawalpindi; Medicinal Botany Herbarium, Pakistan Forest Institute, Peshawar; Agricultural University Herbarium, Lyallpur; Punjab University Herbarium, Lahore; PCSIR Laboratories Herbarium, Karachi; Naturhistorisches Museum, Wien; The Herbarium, Royal Botanic Gardens, Kew; British Museum (Natural History), London; The Linnean Society, London; Botanisches Museum, Berlin-Dahlem; Botanical Museum and Herbarium, Copenhagen; Museum National d' Histoire Naturelle, Laboratoire de Phanerogamie, Paris; Conservatoire et Jardin Botaniques, Geneva and Department of Botany, University of Cairo, Cairo.

#### References

- Abedin, S. 1975. A new name for *Abutilon lanatum* Hus. & Baq. and its relationship with *A. pannosum* (Forst.f.) Schl. Pak. J. Bot. 7(2): 193-195.
- Boissier, L. 1867. Flora Orientalis. I: Genevae.
- Boissier, L. 1888. Flora Orientalis, Supplementum. Genevae.
- Borssum Waalkes, J. van 1966. Malesian Malvaceae revised. Blumea 14(1): 1-213.
- Cavanilles, A.J. 1791-1801. Icones et Descriptiones Plantarum. Madrid.

- Cooke, T. 1901. The Flora of the Presidency of Bombay. 1: Calcutta.
- Cufodontis, von G. 1959. Numeratio Plantarum Aethiopiae spermatophyta. Bull. Jard. Bot. Etat Brux. 29(Suppl.): 533-575.
- De Candolle, Augs. P. 1824. Prodrômus Systematis Naturalis Regni Vegetabilis...1: Paris.
- Delile, M.R. 1813. Flora aegyptiaca illustratio. Paris.
- Delile, M.R. 1826. De Plantes D' Afrique. Paris.
- Forster, J.G.A. 1787. Fasciculus plantarum magellanicarum et plantae allanticae, ex insulis Madeira, St. Jacobi, Adscensionis, St. Helena et Fayal reportatae. Comment. Soc. R. Eg. Sci. Gotting. ser. 2, 9: 13-75.
- Guillemin, A. and Perrottet, G.S. 1831. In; Guillemin, A., Perrottet, G.S. and Richard, A. Florae Senegambiae tentamen 1: Paris.
- Hochreutiner, B.P.G. 1902. Malvaceae Novae Ann. Cons. Jard. Bot. Geneva 6: 10-59.
- Husain, S.A. and Baquar, S.R. 1974. Biosystematic Studies in the Genus *Abutilon* from Paksitan. 1. Taxonomy. Phytion 15(3-4): 219-234.
- Hutchinson, J. & Dalziel, J.M. 1958. Flora of West Tropical Africa. Ed. 2. 1: London.
- Linnaeus, C. 1753. Species Plantarum. Stockholm.
- Masters, M.T. 1968. In: D. Oliver, Flora of Tropical Africa 1: London.
- Masters, M.T. 1872-5. In: J.D. Hooker, Flora of British India. 1: London.
- Mattei, G.E. 1915. Studi sugli *Abutilon* dell' Africa Orientale. Boll. R. Orto Bot. Paler. 71-102.
- Post, G.E. 1932. Flora of Syria, Palestine and Sinai 1: Beirut.
- Riedl, I. 1976. Malvaceae, Flora Iranica, 120.
- Schlechtendal, D.F.L. von 1851. Ein Beitrag zur Flora der Inseln des grünen Vorgebirges, Bot. Zeit. 9: 825-831, 841-846, 857-864, 873-880.
- Sweet, R. 1826-27. Hortus britannicus. London.
- Stewart, R.R. 1972. In: Nasir & Ali. Ann Annotated Catalogue of Vascular Plants of West Pakistan and Kashmir.
- Tackholm, V. 1956. Students' Flora of Egypt. Beirut.
- Tackholm, V. 1974. Students' Flora of Egypt. Ed. 2. Beirut.
- Webb, P.B. 1849. In: Hooker, W.J. Niger Flora., London.
- Webb, P.B. 1854. Fragmenta Florulae Aethiopico-Aegyptiaca. Paris.
- Zohary, M. 1972. Flora of Palaestine. 2: Jerusalem.