A CONTRIBUTION TO THE TAXONOMY OF THE GENUS
SES BANIA ADANSON FROM WEST PAKISTAN

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Abstract
The taxonomy, nomenclatural position and distribution of the genus Sesbania from West Pakistan has been discussed. Four species namely, S. grandiflora (L.) Poir, S. sesban (L.) Merrill, S. bispinosa (Jacq.) Wight and S. concolor Gillett are recognised from the area under consideration.

Four varieties have been recognised under S. sesban viz. var. sesban, var. bicolor, var. concolor and var. muricata including a new variety (muricata Baquar) and a new combination (S. sesban var. concolor (W. & A.) Baquar).

The genus Sesbania Adanson belongs to the subtribe Sesbanianae of the tribe Galegaeae. It comprises of about 70 species (Hutchinson 1964) distributed in the tropics and subtropics of both hemispheres with higher frequency and greater number of species in the Old World especially in Africa. It has gained considerable importance because of its applicability in the reclamation of land and its perspective utility in the paper industry. It is being introduced in West Pakistan for cultivation in water-logged and saline areas where other crops do not grow.

Since its establishment in 1763, this genus has been reviewed and revised by a number of workers. Bentham and Hooker (1865) recognized (a) Eusesbania (b) Daubentonia and (c) Glottidium, as three distinct subgenera or sections in this genus. This division was accepted for quite some time, until Small (1903) revised this genus on the basis of fruit characters and recognised the following as independent genera: (a) Sesban (b) Agati (c) Daubentonia and (d) Glottidium.

Phillips and Hutchinson (1921) described the African species of this genus under two separate sections (a) Eusesbania including Agati and (b) Daubentonia, characterized by its four winged fruits. Regarding the position of the third section, Glottidium, they agreed with the views of Small (1903) in giving it a distinct generic status. They however disagreed on the generic status of Daubentonia, which occurs in three wide apart areas, as S. E. United States and Mexico, subtropical S. America and E. Africa. According to them such
unrelated distribution obviates a separate origin of the species of *Daubentonia* from the basal stock *Eusesbania*, species of which occur in all these areas. *Glottidium*, which is a native of Florida is distinctly differentiated from *Sesbania* on the basis of its short 2-seeded fruit and its manner of dehiscence.

Rydborg (1923, 1924) agreed in principle with the classification of Small (1903) but added one more genus, *Daubentiopsis*, thus accommodating the species previously placed in *Sesbania* under five different genera, namely, (a) *Sesban* (≡ *Sesbania*), (b) *Agati*, (c) *Daubentonia*, (d) *Glottidium* and (e) *Daubentiopsis*.

Hutchinson (1964) has placed *Sesbania* along with *Glottidium*, *Cracca*, *Poissonia* and *Neocracea* in a new tribe *Sesbanieae*, which corresponds with part of Subtribe *Rabinaeae*, tribe *Galegeae* of Bentham and Hooker (1865). Gillett (1963) and Hutchinson (1964) have accepted the genus *Sesbania* in a broader sense including all the genera kept separate by Rydborg (1923) except the genus *Glottidium*. This circumscription has also been followed by the present author.

Baker (1876) described four species: *Sesbania aegyptiaca* Poir. (= *S. sesban* (L.) Merrill); *Sesbania aculeata* (Willd.) Pers. (= *S. bispinosa* (Jacq.) Wight); *Sesbania procumbens* W. & A. and *Sesbania grandiflora* (L.) Poir., from British India, out of which the first three belong to the subgenus *Eusesbania* while the last one belongs to subgenus *Agati*. All these species are found in West Pakistan with the exception of *S. procumbens* which is said to be restricted to the plains of Western Peninsula in India (Baker 1876).

Prain (1903) reported six species: *Sesbania aegyptiaca* (= *S. sesban*); *S. aculeata* (= *S. bispinosa*); *S. grandiflora*; *S. uliginosa*; *S. paludosa* and *S. cannabina* from Bengal. Prain also recognized three varieties in *S. aegyptiaca* on the basis of flower colour. He placed the forms having uniformly yellow flowers in var. *typica* and distinguished it from those having the standard dotted with purple or red and those with uniform deep purple or red standard on the back as varieties *picta* and *bicolor* respectively. In *S. aculeata* (= *S. bispinosa*) he differentiated two forms, namely, *elatior* (having green sparingly prickly stem) and *typica* (with reddish and rather densely prickly stem) whereas Baker (1876) reported three varieties of this species namely (a) var. *paludosa*, (b) var. *sericea* and (c) var. *cannabina*.

Bor (1953) reported the occurrence of *S. cannabina* in Bengal, besides *S. grandiflora*; *S. sesban* and *S. bispinosa* and made no mention of *S. procumbens*.

With regards to the varieties of *S. sesban* he agreed with Prain (1903).

Gillett (1963) described 33 species from Africa (excluding Madagascar) and Southern Arabia, including four species which are also found in W. Pakistan.
Under *S. sesban* he mentioned two sub-species viz. (a) *sesban* and (b) *punctata*, the former having four varieties viz. (i) *sesban*, (ii) *bicolor*, (iii) *nubica* and (iv) *zambesiaca*. In *S. bispinosa* he reported only two varieties (i) *bispinosa* and (ii) *micrantha*. The latter variety differs from the former in having 1-2 flowered racemes and small flowers with filament sheath 8 mm instead of 9-13 mm long.

He has very ably discussed the question of binomials and priority in this genus and has pointed out that "Scopoli did not propose a new name but merely introduced a variant of Adanson's name more conformable to the Latin usage." Adanson's name is conserved in the variant form proposed by Scopoli, with the result that "binomials in *Sesban* are treated as though they were binomials in *Sesbania*". Thus *S. grandiflora* and several other names are to be attributed to Poiret (1806) who published them as *Sesban* and not to Persoon (1807).


Type species: *S. sesban* (Linn.) Merrill

**Key to Specific and infra specific Taxa**

1. Flowers large (5-10 cm long), buds falcately recurved.
   - Tree with white to reddish flowers

2. Perennial, pods twisted, vexillar appendages free.
   - Plant not aculeate

3. Plant aculeate, minute prickles on the stem

4. Vexillum uniformly yellow
   - S. sesban var. *sesban*
   - S. sesban var. *concolor*
   - S. sesban var. *bicolor*

2. Annual, pods not twisted, vexillar appendages cuneate.

5. Pods more or less straight, torulose, not pendulous. Leaves less than 10 cm long. Stem glabrous
   - S. *concolor*

5. Pods slightly curved, not torulose, pendulous; leaves 20-30 cm long.
   - Stems having minute, weak prickles
   - S. *bispinosa*
Abbreviations: KUH: Karachi University Herbarium, Karachi
RAW: Gordon College Herbarium, Rawalpindi
HJ: Herbarium of Dr. S. M. H. Jafri
CLH: Central Laboratories Herbarium, PCSIR, Karachi
EA: East African Herbarium
○ Collector’s name not known


Type: India Herb. Linn. No. 922 (Linn.)

Synonymy:

*Agati grandiflora* (L.) Desv. in J. de Bot. Desv. II. 1: 120 (1813).

Representative specimens: Karachi, 8.11.61, O 3777 (HJ); Karachi, Malir. 12.1.58, Mushtaq Husain (KUH); Karachi Univ. Road, 13.2.67. Baquar (CLH); Karachi-Nazimabad, 23.12.67. Baquar (CLH); Karachi, Poshnagar, 16.2.68, Baquar (CLH).

Distribution: Mauritius to N. Australia and Philippines but often cultivated (Baker 1876). Gillett (1963) considers it to have its native home in Indonesia. Burbidge (1965) suggested that the N. Australian specimens previously referred to “*S. grandiflora*” should be called as *S. formosa* (F. Mueller) Burbidge, instead of *S. grandiflora*. Apart from some marked morphological variation within the two species she says “the decision to maintain the Australian material as distinct from *S. grandiflora* is to some extent supported by the fact that the distribution is mainly western”. She further remarked “*S. formosa* is evidently related to *S. grandiflora* Poir, rather than to the other Australian species, and its distribution history may also differ from theirs”.


(a) var. sesban


Holotype: Egypt, Hasselquist (Linnean Herbarium No. 922.12 (Linn). Gillett (1963) reported Linn sheet 922.13 as holotype but according to W.T. Stern (personal correspondence) "this specimen cannot be possibly accepted as the type specimen as this Keenig specimen of 1777 did not come into Linnaeus's possession until many years after his publication of the name *Aeschynomene sesban*. He further says "there is good reason to believe the type is the specimen 922.12, which bears the Species Plantarum first edition number 5 indicating that it came into Linnaeus's hands either before or immediately after publication of Species Plantarum in 1753".

Synonymy:


*Sesban aegypticus* Poir. in Lam., Encycl. 7 - 128 (1806).


Representative specimens: Rawalpindi, 23-3-62, Siddiqui 26 (RAW); Walton, 24-11-34, Stewart 14722 (RAW); Zafarwal, 29-12-16, Stewart 659 (RAW); Kahuta, S. Singh (RAW); Lyallpur, 17-3-17, RRS 1490 (RAW); Jhelum, 18-12-16, RRS 577 (RAW); Sambrial, 19-12-16, RRS 580 (RAW); Khairpur, 14-3-56, O 1254 (KUH); Karachi, Lalukhet, 4-5-56, O 120 (KUH); Karachi, Nazimabad, 28-2-57, O 1400 (KUH), Karachi University, 5-8-57, Anwar Iqbal (KUH); Karachi University, 1962 Shafia Bano (KUH); Karachi University, 9-11-63, Rafia Majeed (KUH); Karachi University, 10-2-64, Zakia Bilgrami (KUH); Karachi, Paposhinagar, 6-11-66, Baqur (CLH); Karachi, North Nazimabad, 3-12-66, Baqur (CLH); Karachi, PCSIR Campus, 16-9-67, Baqur (CLH); Karachi, North Nazimabad, 13-11-67, Baqur (CLH); Karachi, Monghopir, 23-11-67, Baqur (CLH).

Distribution: Cosmopolitan in tropics of the Old World; common throughout W. Pakistan.

Flowering Period: Aug. to Feb.

(b) var. *concolor* (W. & A.) Baqur com. nov.
Pakistan J. Botany

Basionym:

Synonymy:
*Aeschynomene picta* Cav. l.c. 4: 7 (1797).
*S. aegypitaca* var. *picta* Prain in J. As. Soc. Bengal 66; 367 (1897).

Representative specimens: Karachi, North Nazimabad, 3-12-66, Baquar, (CLH); Karachi, Husain D'Silva Silva Town, 13-9-67, Baquar (CLH); Karachi, PCSIR Campus, 16-9-67, Baquar (CLH); Karachi, PCSIR Campus, 13-10-67, Baquar (CLH); Jamshoro, 23-2-67. Baquar (CLH).


Basionym:

Synonymy:

Type: India, Wight 906 (K) (Gillett 1963).

Representative specimens: Khairpur, 7-3-56, Jafri 1212 (HJ); Rawalpindi, 6-1-66, Baquar (CLH); Rawalpindi, 23-10-67, Baquar (CLH).

Distribution: India, Senegal, Sudan, sometimes cultivated in other tropical regions (Gillett 1963), throughout West Pakistan (but not so common as other two varieties mentioned above).


(d) var. *muricata*, Baquar var. *novo*.

A var. *sesban* caulibus, racibus foliorum aculeatis differt.

Description: An erect perennial shrub or under tree with minute prickles on the younger stem and leaf rachis. Raceme 8-9 flowered of which only 2-3 appear to be fertilized to form the fruit. Leaves 6-12 cm with 9-17 pair of leaflets, Leaflets 1-2 cm long and 3-4 mm broad. Flowers yellow with purple or dark red dots at the back of the vexillum. Vexillum 2 cm broad and 1.7 cm long with a notch at the back. Claw of the vexillum is less than half as long as the blade. Keel 1.5 cm long, claw as long as the blade. Wing 2 cm long. Claw half as long...
as the blade. *Calyx cup* 7 mm broad and 4 mm long. Fruits pendulous, twisted, slightly curved 9-19 cm long.

**Holotype**: Bhambhor, 30-1-68. Baquar (CLH).

**Representative specimens**: Bhambhor, Baquar. 30-1-68. (4 sheets CLH): Karachi, North Nazimabad, 16-2-68, Baquar (11 sheets CLH); Karachi, Memongoth, 18-2-68, Baquar (2 sheets CLH).

**Distribution**: Presently known only from Karachi.

**Flowering Period**: Nov.-Feb.


**Type**: Illustration of a plant of unknown (probably Asiatic) origin, cultivated in Vienna before 1788, in Jacq., Ic. Pl. Rar., t. 564 (Gillett 1963).

**Synonymy**:
- *Sesban aculeatus* (Willd.) Poir. in Lam., Encycl. 7: 128 (1806) *nom. illegit.*


*Sesbania bispinosa* Steud. Nom. nud. 2. 2: 572 (1841).


Representative specimens: Mirpur, 1-1-1908, Jan Mohammad 20, KUH; Hyderabad, 12-9-56 Aziz Ahmed Khan (HJ); Tandojam, 9-9-56, A. Jalis (RAW); Mirpur, 1-1-56, J. Mohd. (RAW); Khanna, Sept. 28. Stewart 10117 (RAW); Sakesar, 29-9-51. A. Rahman (RAW); Rawalpindi, 10-4-31, W. Singh (RAW); Sialkot, Oct. Stewart (RAW); Chakwal, 30-7-39, S. Sarup. (RAW); Karachi Univ. Road, 6-6-67. Baquar (CLH); Karachi, PCSIR Campus, 13-6-67, Baquar (LCH); Karachi Univ. Road, near exhibition, 29-6-67, Baquar (CLH); Karachi, near Abdullah College, 9-7-67, Baquar (CLH); Karachi, PCSIR Campus, 16-6-67, Baquar (CLH); Karachi, Husain D'Silva Town, 6-7-67. Baquar (CLH); Karachi, PCSIR Campus, 23-7-67, Baquar (CLH); Karachi, PCSIR Campus, 16-8-67, Baquar (CLH); Karachi, Husain D'Silva Town, 13-8-67 (CLH); Karachi, PCSIR campus, 13-10-67, Baquar (CLH); Karachi, PCSIR Campus, 13-11-67 Baquar (CLH); Karachi, North Nazimabad, 10-12-67, Baquar (CLH).

Distribution: Cosmopolitan in tropics of the Old World (Baker 1876).

Flowering Period: June-Sept.


Description: Annual unarmed shrub reaching 1-2 m. Stem reddish. Leaf paripinnate compound, 10-25 cm long. Leaflet: 1-3 cm x 3-8 mm, 13-23 pairs, oblong. Inflorescences few flowered subsessile. Flowers dull yellow with blackish dots, 1 cm long, pedicellate, pedicel 1-2 mm. Calyx 3-4 mm long, teeth c.1 mm, hairy. Corolla papilionaceous. Vexillum yellow with minute blackish dots. 7 mm broad, claw c. 2.5 mm, half as long as the limb. Wing as long as the vexillum (2.5 mm broad), claw shorter than the limb. Keel as long as the vexillum (2.5 mm broad), claw longer than the limb. Style glabrous, ovary with few (3-4) ciliary hairs. Pod 7-13 cm long and 3-4 mm broad, older ones typically constricted pointed at the apex, more or less straight non pendent. Seed oblong 3 mm x 1.5 mm, blackish or dark brown.


Representative specimens: India: Gujrat Ahmadabad, Wadaj Road, 27-9-14, W. T. Saxton 452 (K). W. Pakistan Montgomery, 27-11-33, a weed of cultivation, R. N. Parker 3293 (K); Karachi C.L. Campus, 19-8-67 Baquar 13853 (EA); Karachi, PCSIR Campus, 2-9-67, Baquar (CLH); Karachi, Off Univ. Road near PCSIR Campus, 2-7-67, Baquar (CLH); Karachi, PCSIR Campus, 2-6-67, Baquar (CLH); Karachi, PCSIR Campus, 9-6-67, Baquar (CLH); Karachi,
Off Univ. Road. 9-6-67, Baquar (CLH); Karachi, PCSIR, 3-7-67, Baquar (CLH); Karachi, PCSIR, 3-7-67, Baquar (CLH); Karachi, PCSIR, 18-8-67, Baquar (CLH); Karachi, PCSIR, 19-8-67, Baquar (CLH); Gharo, 3-6-67, Baquar (CLH); Thatta, 3-6-67, Baquar (CLH).

Distribution: Arabia; W. Pakistan; India.

Flowering Period: June - Sept.

Acknowledgment

The author wishes to thank Mr. J. B. Gillett, of East African Herbarium, Nairobi for the identification of the specimens of *Sesbania concolor*.

References


Fig. 1. Showing comparative size and form of the fruit and seeds. (A) Sesbania sesban, (B) S. bispinosa and (C) S. concolor.

Fig. 2. S. concolor.
<table>
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<tr>
<th>Deciduous</th>
<th>Shrub, either deciduous or evergreen, bushy, or small tree.</th>
<th>Rose, white, pink, red, or orange.</th>
<th>Leaves</th>
<th>Flowers</th>
<th>Inflorescence</th>
<th>Sepals</th>
<th>Petals</th>
<th>Stamens</th>
<th>Pistils</th>
<th>Fruits</th>
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**TABLE I**

**Comparative description of some species of Sedum**