

## A TAXONOMIC STUDY OF ACACIA NILOTICA COMPLEX IN W. PAKISTAN

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### Abstract

*Acacia nilotica* complex is represented by five subspecies in W. Pakistan, including a new subspecies, *A. nilotica* ssp. *hemispherica* Ali and Faruqi, a new combination, *A. nilotica* ssp. *cupressiformis* (J.L. Stewart) Ali and Faruqi and a new record, *A. nilotica* ssp. *subalata* (Vatke) Brenan.

In almost all the works on plants of W. Pakistan (Baker 1878, Cooke 1903, Burkill 1909, Kashyap 1936, Khan *et al.* 1965, Hasanain & Rahman 1957, Stewart 1957, Khan 1958, Jafri 1966, Chaudhri & Chuttar 1966), *Acacia arabica* (Lam.) Willd. is the name adopted for the 'kikar' plant. Hill (1940) has discussed the nomenclature of this taxon in detail and has come to the conclusion that *Acacia nilotica* (Linn.) Delile is the correct specific name of this taxon. It is widely distributed in tropical and subtropical Africa and Asia as far eastwards as India (Brenan, 1959). In order to deal with different variants Hill (1940) has recognised five varieties under this species. Brenan (1957) has raised all these varieties to the subspecific level and has recognised two more subspecies, thus bringing the total number of subspecies to seven. Of these, subspecies *indica* (Benth.) Brenan, and subspecies *adansonii* (Guill. & Perr.) Brenan are reported from W. Pakistan.

Recent studies of the local material indicate that there are at least two more variants in W. Pakistan that have not been dealt with by Brenan. Evidence indicating the extent of hybridization, between some of the subspecies has been documented separately (Ali & Faruqi 1969). In the present paper an attempt has been made to deal with the taxonomy of different variants of this complex in order to facilitate their identification. In all five subspecies are recognised from W. Pakistan, including a new subspecies, *Acacia nilotica* ssp. *hemispherica* Ali & Faruqi, a new combination, *A. nilotica* ssp. *cupressiformis* (J. L. Stewart) Ali & Faruqi and a new record, *A. nilotica* ssp. *subalata* (Vatke) Brenan.

Our studies (Ali & Faruqi 1969) indicate that ssp. *hemispherica* has hybridized with ssp. *indica*, resulting in very widely distributed hybrid swarms. Subspecies *hemispherica* exists in pure form near Paradise Point, mostly along the seasonal river stream. Subspecies *subalata*, which combines the character of straight or

slightly crenate pod with the growth habit of *ssp. indica*, is confined to University Campus. We believe that at least in Pakistan, it has come into existence, as a result of hybridization between *ssp. hemispherica* and *ssp. indica*. Critical field studies in Africa are likely to yield interesting results in this connection. Subspecies *cupressiformis*, in view of its peculiar growth habit, may have originated in the north. At present it is quite widely distributed in W. Pakistan and some parts of India. Subspecies *adansonii* which is confined to Sind, may have come into existence as a result of hybridization of *ssp. indica* with *ssp. hemispherica* and *subalata*. Subspecies *indica* does not exist in pure form in W. Pakistan, but plants almost identical with it are widely distributed throughout the country. Probable causes of this pattern of distribution have been discussed separately by us (Ali & Faruqi 1969).

The following subdivisions of the area are recognised: Baluchistan, Sind, the Punjab, and N.W.F. region. The recommendations of Lanjouw and Stafleu (1964) have been followed regarding the abbreviated names of the herbaria cited with the following additions: Karachi University Herbarium (KUH) and Sind University Herbarium (SUH).

*Acacia nilotica* (L.) Delile, Fl. Aegypt. 111: 31. 1813.

*Ssp. nilotica*

Type: Egypt, Herb. Linnaeus 1228/28 (L.).

Distribution: Senegal; French Sudan; N. Nigeria; Eastern Sudan and Nile land.

#### Key to taxa

- |  |  |
|--|--|
| 1. Plant hemispherical in shape, (pod straight margined, falcate or slightly crenate)                    | 1. <i>A. nilotica</i> ssp. <i>hemispherica</i>   |
| Plant not hemispherical in shape ..  | .. .. 2  |
| 2. Plant cupressiform in appearance (pod generally narrowly and regularly constricted between the seeds) | 2. <i>A. nilotica</i> ssp. <i>cupressiformis</i> |
| Plant not cupressiform in appearance ..  | .. .. 3  |
| 3. Pod narrowly and regularly constricted between seeds  | 3. <i>A. nilotica</i> ssp. <i>indica</i>         |
| Pod not narrowly and regularly constricted between seeds .. ..   | .. .. 4  |
| 4. Pod slightly constricted between seeds  | 4. <i>A. nilotica</i> ssp. <i>adansonii</i>      |
| Margins of pod straight or slightly crenate  | 5. <i>A. nilotica</i> ssp. <i>subalata</i>       |

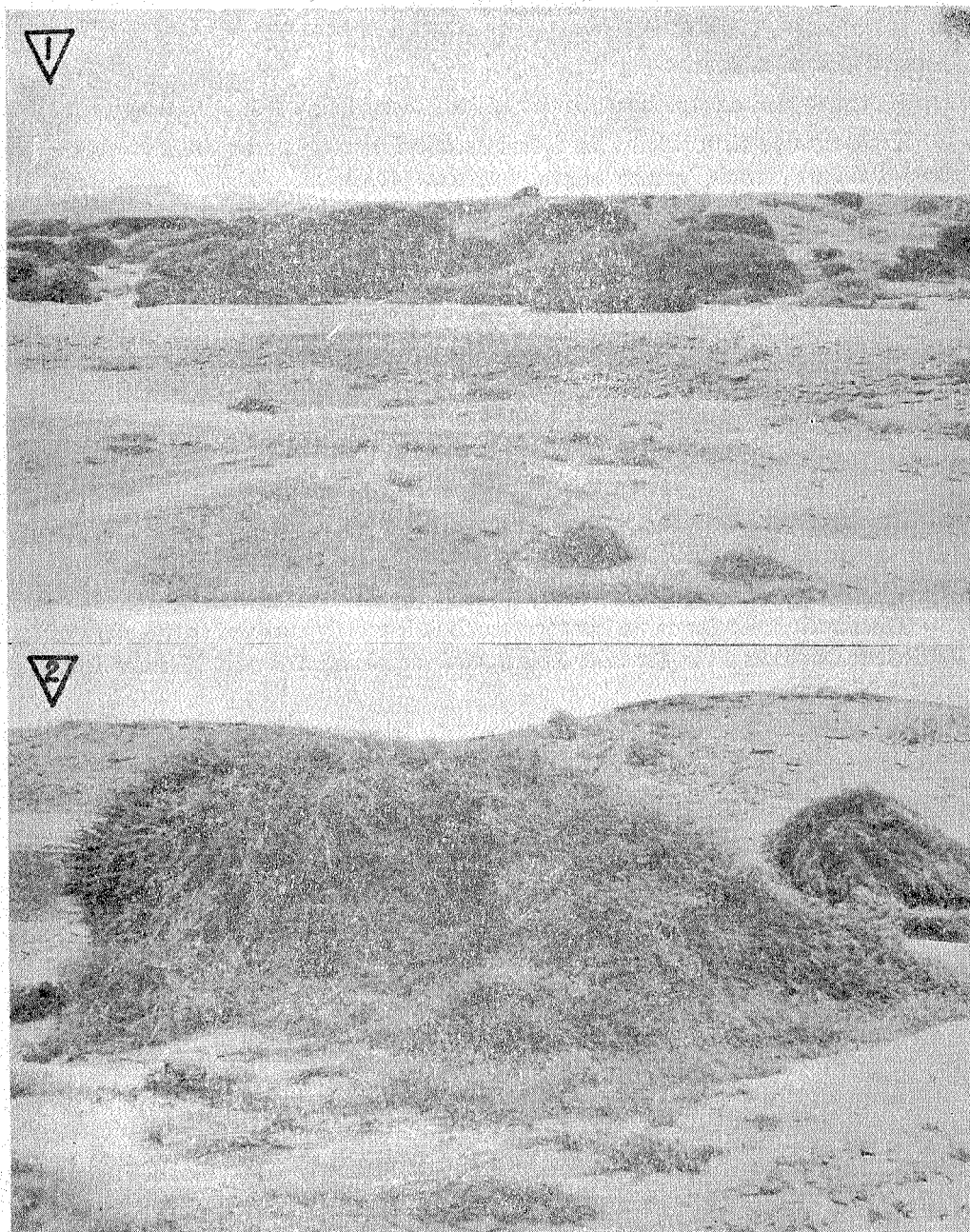


Fig. 1. *Acacia nilotica* ssp. *hemispherica* Ali & Faruqi, near Paradise Point, Karachi.

Fig. 2. Vertical sections of a plant of *Acacia nilotica* ssp. *hemispherica* Ali & Faruqi, near Paradise Point, Karachi.

**Enumeration of subspecies**

1. *Acacia nilotica* ssp. *hemispherica* Ali & Faruqi (Figs. 1 & 2) **ssp. nov.**

Herbae paene sicut 'ingloo' in forma exteriori, truncus paene totaliter obscuratus; siliqua tenuis, paene erecta, interdum constricta defectu formationis seminis.

Holotype: Plant semicircular in outline, upto 10 yards wide, c. 10 ft. tall, c. 2 miles ahead of Paradise Point, Karachi, 6.4.65, S. I. Ali (KUH), (Fig. 3).

**Representative Specimens:**

*Sind*: c. 2 miles from Paradise Point, c. 17 miles from Karachi proper, 23.8.67, S. I. Ali & S. A. Faruqi (KUH); c. 2 miles from Paradise Point, c. 17 miles from Karachi proper, dry river edge, 23.8.67, S. I. Ali & S. A. Faruqi (KUH); c. 4 miles from Paradise Point, c. 19 miles from Karachi proper, nr. dry river bank, 23.8.67, S. I. Ali & S. A. Faruqi (KUH); c. 3 miles from Paradise Point, c. 18 miles from Karachi proper, dry river bank, 23.8.67, S. I. Ali & S. A. Faruqi (KUH); Karachi, Near Paradise Point, 26.3.66, S. I. Ali & S. A. Faruqi Ac 2, Ac 6 (KUH).

Distribution: So far as we know presently it is mostly confined to the edges of dried stream beds near Paradise Point, and adjoining areas, c. 15 miles from Karachi proper.

2. *Acacia nilotica* ssp. *cupressiformis* (J.L. Stewart) Ali & Faruqi, **Comb. et stat. nov.** (Figs. 4 & 5).

**Synonymy:**

1. *Acacia arabica* var. *cupressiformis* J. L. Stewart, Pb. Pl. : 51.1869.

**Representative Specimens:**

*Punjab*: Lyallpur, 19.4.67, S. A. Faruqi (KUH); Mandi Bahauddin, Dt. Gujrat, 7.10.67, flowers yellow, height 45 ft. M. S. Z. A. Cheema (KUH); Malloo Khokhar near Babe Dere, Gujrat, 18.4.67, S. A. Faruqi (KUH).

Distribution: W. Pakistan, Punjab, Sind; India, Deccan, Gujrat (Cooke 1903).

3. *Acacia nilotica* ssp. *indica* (Benth.) Brenan in Kew Bull. 12: 84.1957.

Lectotype: East India, Roxburgh (K).

**Synonymy:**

1. *Acacia arabica* (Lam.) Willd, var. *indica* Benth. in Hook. Lond. J. Bot. 1: 500. 1842.

2. *A. nilotica* var. *indica* (Benth.) A.F. Hill, in Bot. Mus. Leaflet, Harvard Univ. 8: 99. 1940.

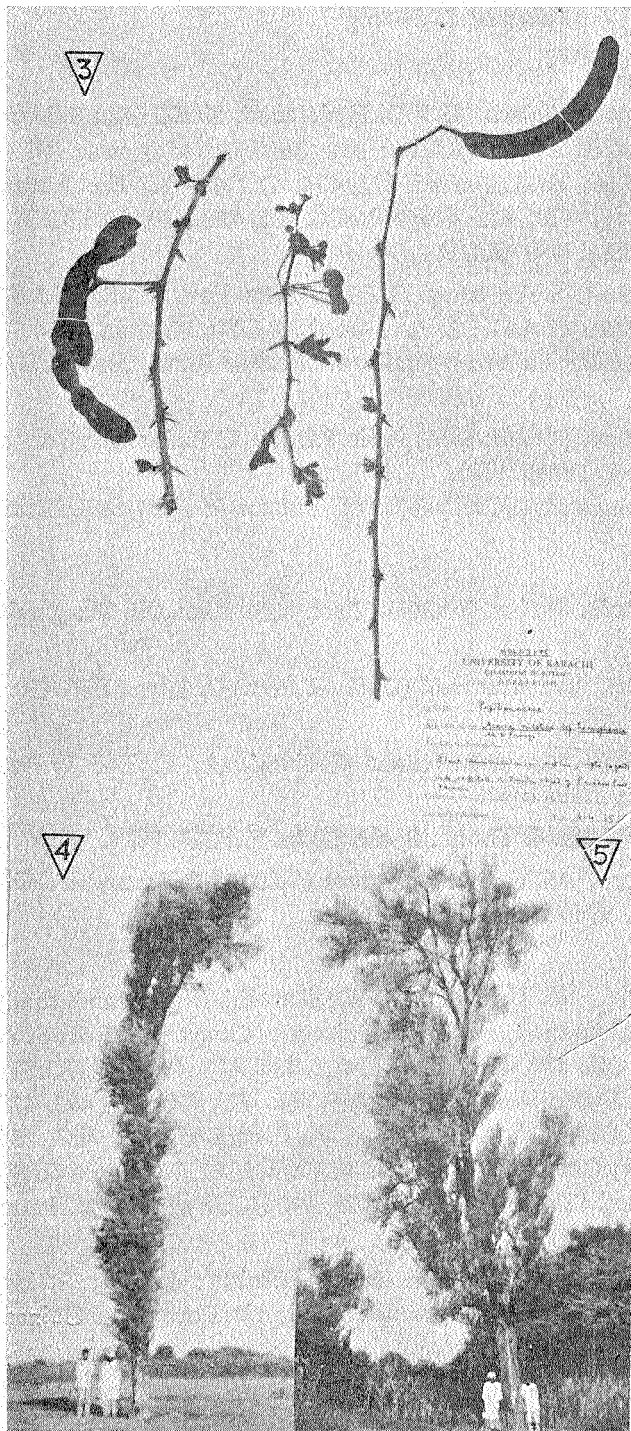


Fig. 3. Holotype of *Acacia nilotica* ssp. *hemispherica* Ali & Faruqi.

Fig. 4. *A. nilotica* ssp. *cupressiformis* (J. L. Stewart) Ali & Faruqi (Mandi Bahauddin, Dist. Gujrat).

Fig. 5. *A. nilotica* ssp. *cupressiformis* (J. L. Stewart) Ali & Faruqi (Mandi Bahauddin, Dist. Gujrat).

## Representative Specimens:

*Sind*: Hala forest, Ghotana-Salaro, D.F.O. Hyderabad, Sind 2 (K); Sukkur, riverine forest, 22.4.67, S. A. Faruqi (KUH); Jamshoro, Javed Anwar (SUH 16537); Ghulamullah, 4.4.66, S. A. Faruqi 472, 474, 477, 480 (KUH); Pattan, Thatta, 30.3.66, S. A. Faruqi 420, 425, 426, 433, 434, 435, 438, 439, 440 (KUH); Gharo, 30.3.66, S. A. Faruqi 450 (KUH).

*Punjab*: Lyallpur, 19.4.67, S. A. Faruqi (KUH); Bara Fort Road, 15.5.67, S. A. Faruqi (KUH); Jhelum 17.4.67, S. A. Faruqi (KUH); Gujrat, 18.4.67, roadside, S. A. Faruqi (KUH); Lahore, 6-9 miles on Multan Road, 20.4.67, S. A. Faruqi (KUH).

Distribution: W. Pakistan, Punjab, Sind; India, Punjab, U.P., Bengal; Central Province, Madras, Bombay; Tanganyika.

4. *Acacia nilotica* ssp. *adansonii* (Guill. & Perr.) Brenan in Kew Bull. 12:85. 1957.

## Synonymy:

1. *Acacia adansonii* Guill. & Perr. in Guill., Perr. et A. Rich., Fl. Senegamb. Tent. 249:1832.

2. *A. nilotica* (L.) Del. var. *adansonii* (Guill. & Perr.) O. Ktze., Rev. Gen. Pl. 1: 156. 1891.

3. *A. nilotica* (L.) Del. var. *adansoniana* (Dubard) A. F. Hill in Bot. Mus. Leaflet. Harvard Univ. 8:99. 1940.

4. *Mimosa astringens* Schum. & Thonn. Beskr. Guin. Pl.: 327. 1827.

5. *Acacia arabica* (Lam.) Willd. var. *astringens* (Schum. & Thonn.) E. G. Baker, Legum. Trop. Afr. 3: 849. 1930.

## Representative Specimens:

*Sind*: Kotri, 17.12.1916, H. H. Rich 428 (K); Karachi, Malir, sand, sandy loamy soil, 15.6.61, Wahid Hasan (K); Karachi University Campus, 26.3.66, S. A. Faruqi 401, 403, 406, 407, 408, 409, 410, 413, 414, 415, 416, 417, 418, 419 (KUH); Ghulamullah, 4.4.66, S. A. Faruqi 462, 463, 464, 465, 466, 469, 470, 471, 473, 475, 478, 479, 480, 481, 482 (KUH); Gharo, 30.3.66, S. A. Faruqi 451, 452, 453, 454, 457, 458 (KUH); University Campus, 19.2.66, S. A. Faruqi 101, 104, 108 (KUH); Thatta, 30.3.66, S. A. Faruqi 421, 424, 427, 428, 429, 430 (KUH); Pattan, Thatta, 30.3.66, S. A. Faruqi 432 (KUH).

Distribution: W. Pakistan, Sind; India, Berar, Bombay; Arabia; Sudan; Somaliland; Senegal; Gambia; Ghana; Togoland; N. Nigeria; Portuguese Guinea.

5. *Acacia nilotica* ssp. *subalata* (Vatke) Bernan in Kew Bull. 85. 1957.

Holotype: Kenya, Teita District, Ndi, Hilderbrandt 2589 (B?).

Synonymy:

1. *Acacia subalata* Vatke in Oesterr. Bot. Zeitschr. **30**: 276, 1880.

Representative Specimens:

*Sind*: Karachi University Campus, N.W. of Business Administration Building, pure *Acacia* formation 26.3.66, S. A. Faruqi 402, 404, 411, 412 (KUH); Karachi University Campus, N.W. of Business Administration Building, pure *Acacia* formation 19.2.66, S. A. Faruqi 102, 103, 105, 106, 107, 109, 110, 111, 112, 113 (KUH).

Distribution: W. Pakistan, Sind; Uganda, Kenya, Tanganyika, doubtfully also in Sudan (Brenan 1959).

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