AL FAATEH UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF BOTANY

FLORA OF LIBYA

60

1st August, 1978

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MIMOSACEAE

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Fl.Lib.60:1-12.1978

MIMOSACEAE

S.M.H. JAFRI

Trees or shrubs, very rarely herbs. Leaves mostly bipinnate, stipulate. Flowers small, usually actinomorphic, arranged in spikes or globose heads, bracteate, 5 (-4)-merous. Sepals imbricate or valvate, often fused together, calys (4-) 5-toothed or-lobed. Petals valvate, generally fused together, corolla (4-) 5-toothed or-lobed, hypogynous or slightly perigynous. Stamens few to many, free or monadelphous or adnate to base of corolla-tube; anthers versatile, often crowned by a deciduous gland. Ovary 1-carpellary, 1-locular, usually many ovuled on marginal placenta; style filiform with terminal stigma. Fruit usually a legume, dehiscent or indehiscent, sometimes schizocarpic; seeds mostly ovate or orbicular, rarely arillate.

About 36 genera and nearly 2800 species, mainly tropical or subtropical; known by 2 genera and 6 species in Libya in addition to a number of other, rarely cultivated or introduced plants. (See Keith, Prelim: Check List Lib. Fl. 1965). Taxa marked with an asterisk are known from cultivation here.

1. + Stamens indefinite (more than 10); anthers eglandular — 1. **Acacia**
   — Stamens as many or twice as many as petals; anthers gland-crested in early stages (glands deciduous) — 2. **Prosopis***

1. ACACIA

Mill., Gard. Dict. ed. 4. 1754.

Trees, shrubs, rarely herbs, often armed with stipular spines or prickles. Leaves bipinnate with many small leaflets or reduced to phyllodes; petiolar glands often present. Flowers small, in cylindric spikes or globose heads, 3-5-merous,

mostly bisexual, sometimes plants polygamous; peduncle solitary axillary, fasciculate or paniculate at the end of branches; bracts 2, scaly, situated at various levels on the peduncle. Calyx campanulate, dentate, lobed or polysepalous. Petals usually ± united, rarely absent. Stamens indefinite, free or shortly and irregularly connate at the base; anthers small, eglandular. Ovary 2 or more ovuled, sessile or stipitate. Fruit ovate to linear, straight to contorted, membranous to woody, rarely articulated or moniliform; seed large with filiform funicle or fleshy aril.

About 900 species, mainly tropical or subtropical, especially in Africa and Australia; represented by 5 species in Libya.

1.	+ Mature plant with leaves modified into phyllodes	5. **A. cyanophylla***
	— Mature plant with normal, bipinnate leaves	2
2.	+ Fruit contorted or spirally twisted	1. **A. tortilis**
	— Fruit not as above	3
3.	+ Fruit glabrous	4
	— Fruit pubescent	2. **A. nilotica**
4.	+ Fruit hard, woody and swollen with a curved beak-like structure at the tip	4. **A. farnesiana***
	— Fruit falcate, dehiscent	3. **A. karroo***

1. **Acacia tortilis** (Forsk.) Hayne, Darst. Beschr. Arzneyk. Gewaschse 10: t. 31. 1827; Durand & Barratte, Fl. Lib. Prodr. 91. 1910; Zohary, Fl. Palest. 2: 28, fig. 41. 1972; Ali in Nasir & Ali, Fl. W. Pak. 36: 18. 1973; Keith, Prelim. Check List Lib. Fl. 191. 1965; Tack., St. Fl. Egypt ed. 2: 289. 1974. (Fig. 1).

Mimosa tortilis Forsk., Fl. Aeg.-Arab. 176. 1775; *A. raddiana* Savi, Alc. Acacie Egiz. 1. 1830; Ozenda, Fl. Sah. 28.3.1958; Zohary, l.c. 28, fig. 40; Tack., l.c. 290, fig. 93B; *A. tortilis* ssp. **raddiana** (Savi) Brenan in Kew Bull. 87. 1957.

A small tree, 2-4 (-6) m tall, with flat top or irregular crown; young branches and leaves often reddish, tomentose, pubescent to glabrous; stipular spines very variable, 5-60 (-100) mm long, smaller ones often curved, longer ones straight, spreading, leaves (1-) 2-4 (-4.5) cm long, bipinnate, with short, pubescent to glabrous petioles; pinnae 2-6 (-8) pairs with a small gland under each pair; leaflets (4-) 5-12

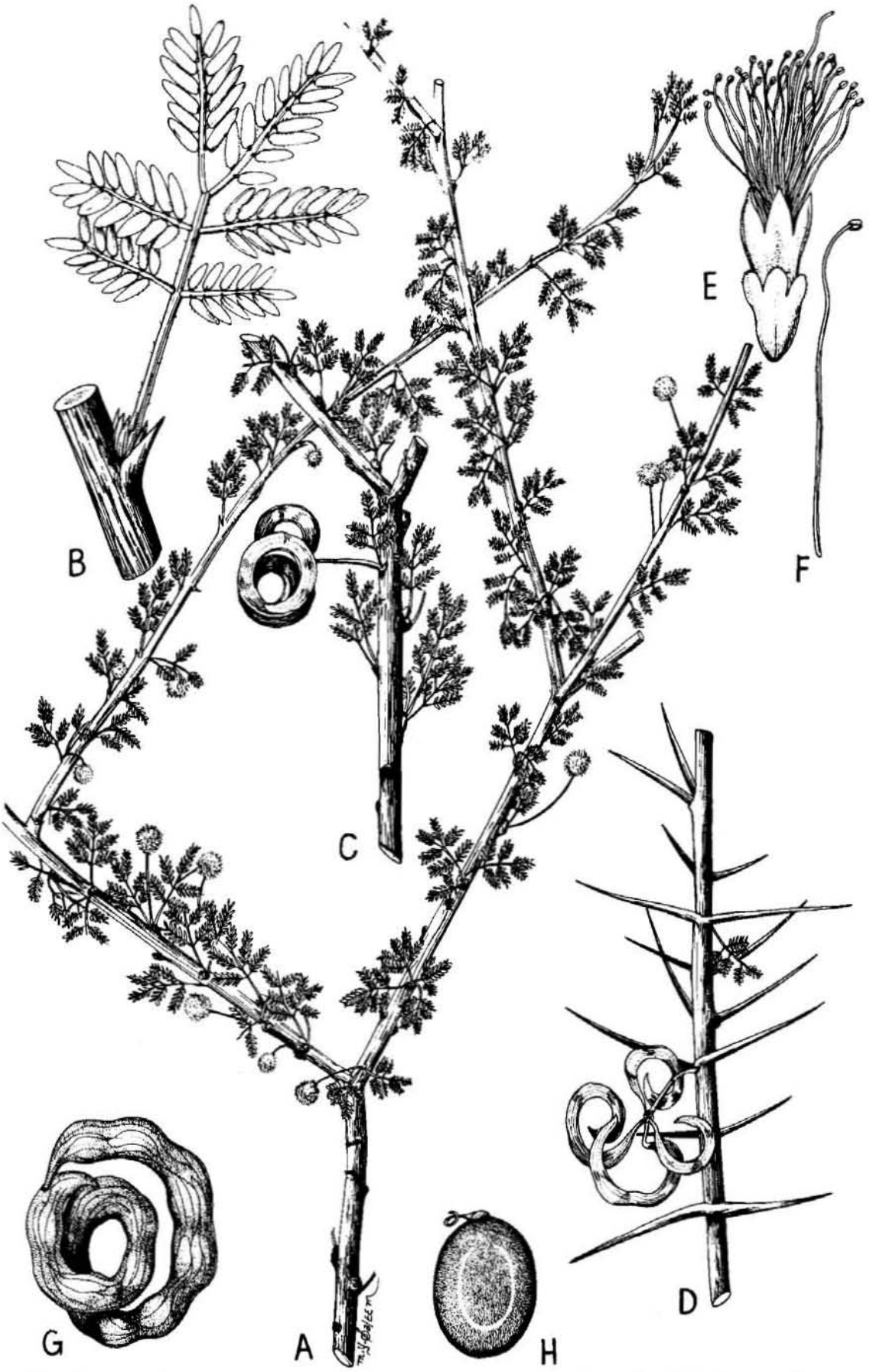


Fig. 1 **Acacia tortilis** ssp. **raddiana:** A, a flowering branch x 0.5; B, a portion of the same showing reduced spine and leaf x 3; C, a fruiting branch with almost suppressed spines x 0.5; D, a fruiting branch with conspicuous spines x 0.5; flower x 10; F, stamen x 20; G, fruit x 1; H, seed x 3.

pairs, (1-) 2-5 (-7) mm long, linear, obtuse, pubescent to glabrous. Peduncles 1-4 cm long, pubescent with a small involucel near or below the middle; flowering heads 1-5 in each axil, 4-12 mm across, yellowish or creamy. Calyx teeth short, triangular. Corolla twice as long as calyx. Pods 30-60 (-120) x 5-9 mm, leathery, compressed to subinflated, linear, ± constricted between seeds, spirally twisted in 1-3 coils, yellowish-brown, shortly pubescent to glabrous; seeds 3-6 x 2-4 mm.

Type: Arabia, 'Mons Soudan prope Has', *Forskal* (C).

A-2 Betwenn Josh and Rumia, 25.3.1975, *S.I. Ali* 2279 (ULT); **A-6** c. 5 km from Al-Abiad, erect tree, 5-6 m tall, branched from base, branches reddish, fruit spirally twisted, 20.3.1973, *S.I. Ali* 1335 (ULT); **B-4** 2 km east Bugrain, 27.1.1967, *L. Boulos* 1500 (ULT); 43 km from Weshka, tree, 25.3.1975, *A. Gammudi* 5 (ULT); **C-4** Between Sokna and Wadi Weshka, sandy and stony ground, common, fruits coiled, 21.2.1976, *S.M.H. Jafri* 6304 (ULT); **D-5** Al Haruj el Aswad, spiny bush, 30-175 cm tall, 14.3.1975, *M. Essghaier* s.n. (ULT); *id.*, Tree, 14.3.1975, *M. Essaghaier* s.n. (ULT); **G-8** Gebel Uweinat, 7.11.1968, *L. Boulos* 3134, 3242 and 3385 (ULT).

Distribution: N. Africa (Algeria eastwards to Egypt), southwards to S. Africa, Arabia, Palestine; introduced elsewhere.

A variable species, often split into 2 subspecies; the type subsp. having pubescent young branches, leaves and fruits, and the subsp. **raddiana** (Savi) Brenan, with glabrous fruits. Our specimens, cited above, fall under the subspecies *raddiana*. However, more spcimens and field observations are needed in our area to find the range of variation in this taxon; the spines show much variation, from almost suppressed to 6 (-10) cm long. The type subspecies probably do not occur here.

One of the few small trees or shrub common in the desert areas of Libya. Gum produced is used in the manufacture of mucilage, pharmaceuticals and medicine. A suitable tree for afforestation in the desert areas with less salinity and enough heat.

Fl. Spring and autumn *Vern.* Absor, abzec, talha.

2. **Acacia nilotica** (l.) Delile, Fl. Aegypt. Ill. 79. 1913; Keith, l.c. 188; Ali in Nasir & Ali, l.c. 9. (Fig. 2)

Mimosa nilotica L. Sp. Pl. 521. 1753; *M. arabica* Lam., Encyc. 1: 19. 1783;

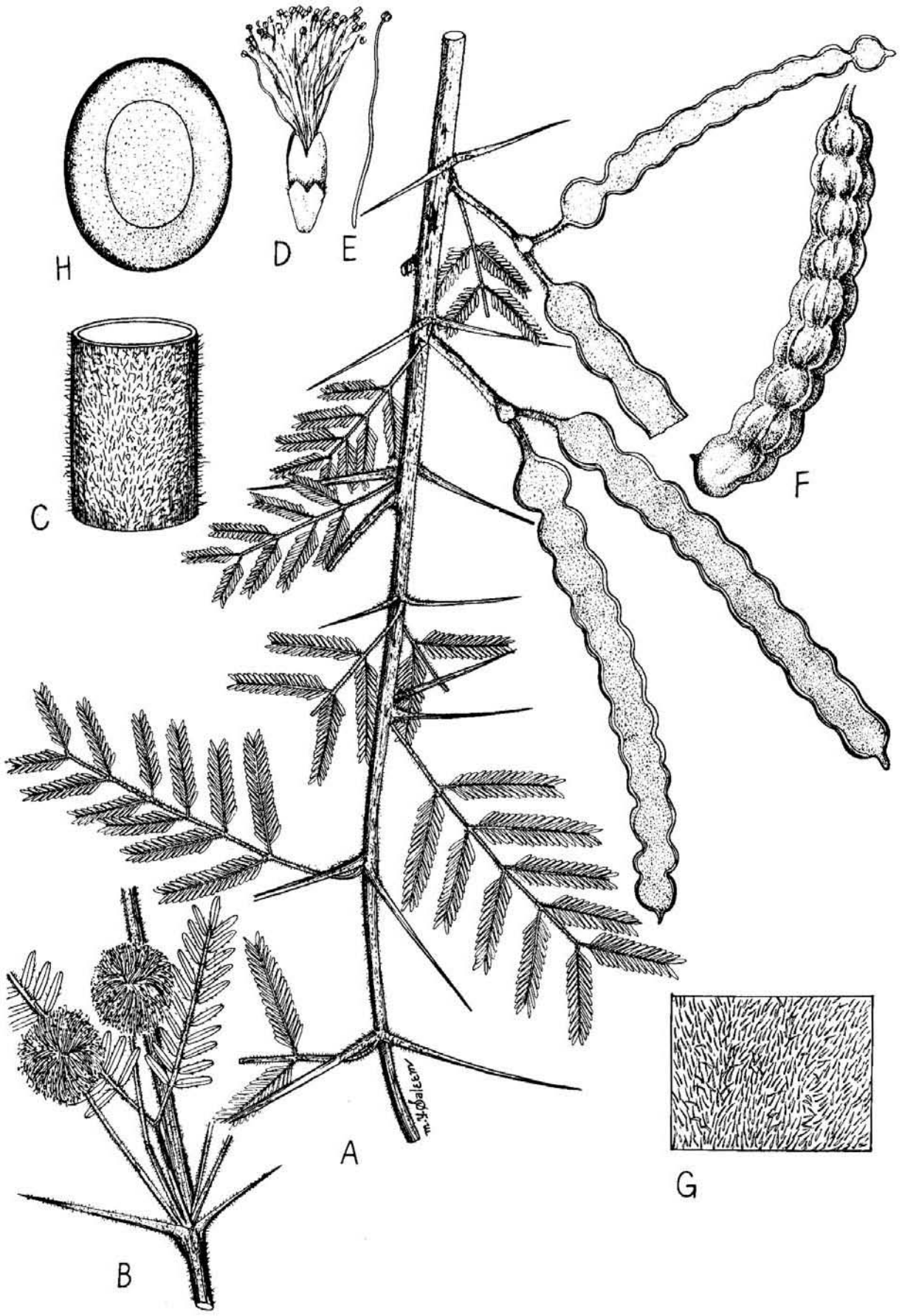


Fig. 2 **Acacia nilotica** ssp. **astringens:** A, a fruiting branch x 0.5; B, a portion of flowering branch x 1; C, a portion of young branch x 5; D, flower x 5; E, stamen x 5; F, fruit x 0.5; G, a portion of fruit showing hairs x 25; H, seed x 4.

MIMOSACEAE

A. arabica (Lam.) Willd., Sp. Pl. 4: 1085. 1806; Durand & Barratte, l.c. 92; *A. adansonii* Guill. & Perr. in Guill. et al, Fl. Senegamb. Tent. 249. 1832; *A. nilotica* ssp. *adansonii* (Guill. & Peor.) Brenan in Kew Bull. 12: 85. 1957; *M. astringens* Schum. & Thonn., Beskr. Guin. Pl. 327. 1827; **A. nilotica** ssp. **astringens** (Schum. & Thonn.) Roberty in Candollea 11: 150. 1948.

Trees, (1-) 4-18 m tall, variable in shape, bark rough, fissured blackish, grey or brown; young parts glabrous to subtomentose; stipules spiny, up to 8 cm long; leaves often with 1-2, petiolar glands and others between 2-11 upper pairs of pinnae; leaflets 7-25 pairs, 1.5-7 x 0.5-1.5 mm, glabrous to pubescent. Axillary pedunculate flowering heads 6-15 mm across, bright yellow; involucel from near base to half way up the peduncle. Calyx 1-2 mm long, pubescent to glabrous. Corolla 2.5-3.5 mm long, glabrous to slightly pubescent outside. Fruit very variable, 4-22 x 1.2-2.2 cm. Straight or curved, conspicuously constricted between the seeds to almost entire, glabrous to velvety pubescent, indehiscent; seeds blackish brown, smooth, 7-9 x 6-7 mm, sub-circular, compressed with 6-7 x 4-5 mm areole.

Type: Egypt, Herb. Linn. 1228/28 (LINN).

C-4 c. 1-2 km before Sokna, erect tree, c. 5 m tall, (fruits blackish-brown, velvety, slightly constricted between seeds) 1.4.1973, *S.I. Ali* 1539 (ULT); **D-3** Between Sebha and Germa, 23.3.1973, *S.I. Ali* 1341, 1342 & 1343 (ULT); **E-3** Tajirhi, c. 40 km from Wegh, tree up to 15 m tall, 26.3.1973, *S.I. Ali* 1365 (ULT); **G-1** Ghat El Birkit, tree c. 5 m. tall, not common, fls. yellow, 24.2.1976, *S.M.H. Jafri* 6329 (ULT); **G-8** Gebel Uweinat, 7.11.1968, *L. Boulos* 3171, 3202, 3218, 3238, 3244 and 3247 (ULT).

Distribution: Afro-Asian species, widely introduced and cultivated.

A very variable species in habit and pods etc., often split into a number of subspecies and varieties. Further studies with more material is needed in our area. The specimens, cited above, fall under the subsp. **astringens** (Schum. & Thonn.) Roberty (=*A. nilotica* ssp. *adansonii* (Guill. & Perr.) Brenan). The pods in the type subspecies show conspicuous constrictions between the seeds, while the subspecies *astringens* has mostly slight constrictions between the seeds with thickish walls.

The pod is used for tanning leather and is sold in market, especially in Ghat and Kufra; gum (samash) is also obtained from it. Another species which can be used for afforestation purposes in low rainfall areas in Libya (Keith, l.c.).

Fl. June-December *Vern.* Gharad, Tamat.

3. ***Acacia Karroo** Hayne, Darst. Beschr. Arzneyk. Gewasche 10. t. 33. 1827; Keith, l.c. 185; Meikle, Fl. Cyprus 1: 601. 1977. (Fig. 3).

A small, subglabrous or glabrous hardy tree, up to 7 (-10) m high, often planted closely as hedges or wind breaks along the borders of cultivated fields in our area. Branches brown, longitudinally striated, often distinctly lenticellate. Stipular spines short to long (longest on the older twigs and up to 10 (-15) cm long), solid, white; pinnae (2-) 3-4 (-6) pairs, 2-4 cm long; leaflets 5-20 pairs, up to c. 10 x 1.5-3 (-5) mm, oblong with rounded apex. Flowering heads globose, 10-15 mm across, fragrant, yellow. Pods (6-) 8-12 (-15) x 0.5-0.7 cm, linear, variously curved, compressed, dehiscent, ± torulose, 8-12-seeded; seed c. 6 (-8) x 4 mm, oblong, compressed.

Type: Described from S. Africa.

A-3 Tripoli, University Campus, trees 3-4 m tall, hedges around the cult. field, cultivated, 16.3.1978, *Fathi, B.R.* 150 (ULT); *id.*, near orange orchard, planted, 29.6.1978, *M.A. Siddiqi* 326 (ULT), **A-7** Taknes, 17.6.1972, *S.I. Ali* 548. (ULT).

Distribution: A native of S. Africa, widely cultivated almost throughout Africa.

A species which can be used for afforestation purposes on the light sandy soil in the coastal areas but do not thrive on heavier terra rosa soil; wood provides good charcoal, bark tanin and yields gum.

Fl. May-June *Vern.* Sunt shawki, Talha (?).

4. ***Acacia farnesiana** (L.) Willd., Sp. Pl. 4: 1083. 1806; Durand & Barratte, lc. 92; Keith, l.c. 184; Ali in Nasir & Ali, l.c. 13.

Mimosa farnesiana L., Sp. Pl. 521. 1753.

A much branched shrub, attaining the size of a small tree, up to 3 m tall, with slightly zigzag branches marked with grey pale-brown dots; younger parts glabrescent; stipular spines up to 18 mm long, straight. Leaf rachis 1-5 cm long, pilose; petiole with a small gland about the middle; pinnae 2-8 pairs, 1.2-2.5 cm long; leaflets 10-20 pairs, sessile, 2.5-5.5 x 1-1.5 mm, linear-oblong, acute, oblique at base,



Fig. 3 **Acacia karroo:** A, a flowering branch x 0.5; B, a portion of the same with longer spines x 0.5; C, flower x 8; D, V.S. flower x 8; E, bract-like structures subtending flowers x 15; F, fruit x 1; seed x 4.

glabrous or subglabrous. Flowering heads deep yellow, fragrant, on 1-2.5 cm long slender pubescent axillary fascicled, peduncles; bracts whorled at or near the apex of the peduncle. Calyx c. 1.5 mm long; corolla c. 2.5 mm long. Pods 4.5-7.5 x 1.2 cm, slightly curved, dark-brown, turgid with pulpy mesocarp; seed many, biseriate.

Type: 'Habitat in Domingo'.

Reported to be cultivated in Tripoli and Benghazi etc. by Durand & Barratte (l.c.) and Keith (l.c.)

Distribution: A native of America, introduced and almost cosmopolitan in the tropics.

Easily recognized by its broader, turgid fruits with pulpy merocarp. Sometimes planted as an ornamental in our gardens, beacuse of its flowering in late autumn and winter with sweet scent.

Vern. Sweet Acacia, ban, talha (?).

5. ***Acacia cyanophylla** Lindley, Bot. Reg., Misc. 45. 1839; Keith, l.c. 182. (Fig. 4).

A shrub or small tree, up to 5 m tall with leaves modified into phyllodes, stoloniferous with shallow, widely spreading root system; branches drooping; phyllodes (10-) 15-30 x 1-3 (-4) cm, linear-oblong to lanceolate-falcate, much narrow towards the base, glabrous and often glaucous. Peduncles 6-12 mm; flowering heads usually c. 10 mm across, golden-yellow. Pods contracted between the seeds.

Type: Described from Australia, Swan River, from a seed cultivated and collected by *Smart.*

A-13 Tripoli, University Campus, common on sandy soil, tree 3-4 m high, flowers yellow, 10.3.1978, *Fathi, B.R.* 149 (ULT); *id.*, 21.3.1972, *S.I. Ali* 17 (ULT); near Tripoli Airport, sandy plain, shrub, flowers yellow, planted, 6.4.1970, *P.H. Davis* 50596 (ULT); **A-6** Al Abiad, 20.3.1973, *S.I. Ali* 1333 (ULT).

Distribution: A native of Australia, introduced and now widely established along the coastal areas on fixed sand dunes.



Fig. 4 **Acacia cyanophylla:** A, a flowering branch x 0.5; B, flowering head x 2; C, flower x 10; D, corolla spread open x 10; E, stamen x 15; F, gynoecium x 10; G, fruit x 1; H, seed x 3.

Some of the forms reach very close to *A. retinodes* Schlecht., in narrower phyllode but flowering heads not 3-5 mm in diam. Similarly sometimes may be confused with **A. saligna** (Labil.) Wendl., but phyllodes never blunt at apices, although sometimes almost straight and narrower.

Fl. March-April *Vern.* Sunt, sent.

A number of other species of Acacia are recorded by Keith (l.c.), introduced or cultivated on trial basis mostly in Sidi El Misri Agriculture Farm, but hardly any of these form any vegetational part of Libya.

2. **PROSOPIS***

L., Mant. 1: 10. 1767

Similar to **Acacia** but usually a straggling shrub with 1-2 pairs of pinnae on leaves and pendulous spikes, stamens usually 10, anther gland-crested in early stages, fruit linear, thick and compressed, indehiscent, straight or falcate, with spongy mesocarp.

About 45 species, distributed in tropical and subtropical regions; represented by the following cultivated species here.

***Prosopis juliflora** (Swartz) DC., Prodr. 2: 447. 1825; Keith, l.c. 799.

Mimosa juliflora Swartz, Prodr. Veg. Ind. Occ. 85. 1788; *Acacia juliflora* (Swartz) Willd., Sp. Pl. 4: 1076. 1806.

A straggling shrub sometimes attaining the size of a small tree, up to 5 m tall, generally armed with paired stipular spines, up to 1 cm long. Leaflets 10-20 pairs, 7-17 x 2-3 mm, oblong, obtuse, sometimes mucronate. Flowers greenish-yellow, on 4-8 cm long, pedunculate axillary spikes; pedicel 1 mm long. Calyx c. 1 mm long, cup-shaped, 5-toothed. Petals 5, free, c. 3 mm long, with hairy tip and margins. Stamens 10, free, exserted, c. 4 mm long; anthers tipped with deciduous glands. Pods shortly pedicellate, 16-23 x 1-1.2 cm, almost straight to semi-circular, light yellow, glabrous; seeds 10-18, oblong.

Type: Described from W. Indies.

MIMOSACEAE

Distribution: A W. Indian and Mexican species, widely introduced and sometimes naturalized in tropical and subtropical regions.

Reported to be cultivated at Tripoli and Zaviet, Misrata by Keith (l.c.).

In addition a number of other genera have been reported from cultivation here by Keith (l.c.). Among these mention may be made of the following:

Albizzia julibrissin Durazz., *A. lebbeck* (L.) Benth, *A. lophantha* (Willd.) Benth., *Huberia semiserrata* DC., *Leucaena latisiliqua* (L.) Gillis, etc.

INDEX TO MIMOSACEAE

Acacia Mill. 1
A. adansonii Guill. & Perr. 6
A. arabica (Lam.) Willd. 6
A. cyanophylla Lindley 9
A. farnesiana (L.) Will. 7
A. juliflora (Swartz) Willd. 11
A. karoo Hayne 7
A. nilotica (L.) Delile 4
ssp. *adonsonii* (Guill. & Perr.) Brenan 6
ssp. **astringens** (Schum. & Thonn.) Roberty 6
A. raddiana Savi 2
A. tortilis (Forsk.) Heyne 2
ssp. **raddiana** (Savi) Brenan 2
Albizzia julibrissin Durazz 12
A. lebbeck (L.) Benth. 12
A. lophantha (Willd.) Benth. 12
Huberia semiserrata DC. 12
Leucaena latisiliqua (L.) Gillis 12
Mimosa arabica Lam. 4
M. astringens Schum. & Thonn. 6
M. farnesiana L. 7
M. juliflora Swartz 11
M. nilotica L. 4
M. tortilis Forsk 2
Prosopis L. 11
P. juliflora (Swartz) DC. 11