

## 19. GOSSYPIUM Linnaeus, Sp. Pl. 2: 693. 1753.

棉属 mian shu

Herbs annual or perennial, sometimes shrubs; all parts irregularly dotted with dark oil glands. Leaf blades usually palmately 3–9-lobed, rarely entire. Flowers solitary, subterminal. Pedicel not articulated, usually with glands below insertion of epicalyx lobes. Epicalyx lobes 3(–7), foliaceous, glandular, free or connate at base, entire or toothed to deeply lacinate. Calyx cup-shaped, nearly truncate to 5-lobed. Corolla white or yellow, sometimes with purple center, large; petals 5, apex rounded. Staminal column with many anthers along entire length, apex truncate. Ovary 3–5-loculed; ovules 2 to many per locule; style short, rod-shaped, stigma clavate, 5-grooved. Capsule globose or ellipsoid, loculicidally dehiscent. Seeds globose, densely white long woolly, mixed with short hairs or without short hairs.

About 20 species: tropical and subtropical regions; four species (all introduced) in China.

No wild species of *Gossypium* have been recorded from China. The genus is economically very important as the source of cotton and cotton seed oil, and all the taxa recorded from China have been very widely cultivated throughout tropical and warm temperate regions. Many taxa of cultivated cotton have been described, some from Chinese material, but these are all now included within the four species recognized below.

- 1a. Epicalyx lobes connate at base, entire or 3–7-toothed, teeth 1–2 × as long as wide or wider than long; calyx shallowly cup-shaped, entire or nearly truncate, rarely lobed; filaments ± equal in length.
  - 2a. Leaf blade palmately 3–5-lobed; epicalyx lobes longer than wide, entire or 3–4-toothed near apex; capsule conical, apex tapering ..... 1. *G. arboreum*
  - 2b. Leaf blade palmately (3 or 5)(or 7)-lobed; epicalyx lobes wider than long, 6–8-toothed near apex; capsule ovoid, apex beaked ..... 2. *G. herbaceum*
- 1b. Epicalyx lobes free at base, toothed, teeth 3–4 × as long as wide; calyx 5-toothed, sometimes lobed or truncate; filaments unequal in length, the upper ones longer.
  - 3a. Leaf blade lobes broadly triangular to ovate-orbicular; epicalyx lobes 3, margin 7–9-toothed near apex; staminal column 1–2 cm, filaments spreading; capsule ovoid; seeds with long wool and persistent short wool ..... 3. *G. hirsutum*
  - 3b. Leaf blade lobes ovate to oblong; epicalyx lobes 5 or more, margin 10–15-toothed; staminal column 3.5–4 cm, filaments erect; capsule oblong-ovoid; seeds with long wool and easily detached short wool ..... 4. *G. barbadense*

### 1. *Gossypium arboreum* Linnaeus, Sp. Pl. 2: 693. 1753.

树棉 shu mian

Subshrubs or shrubs, perennial, 2–3 m tall. Young branchlets villous. Stipules filiform, caducous; petiole 2–4 cm, puberulent and villous; leaf blade 3–5-lobed, 4–8 cm in diam., lobes oblong-lanceolate, oblong, ovate, or obovate, ca. 1/2 as long as leaf blade, abaxially stellate puberulent, villous along veins, adaxially stellate pilose. Flowers solitary, axillary. Pedicel 1.5–2.5 cm, villous. Epicalyx lobes 3, connate for basal 1/3, ovate-cordate or triangular, ca. 2.5 cm, stellate villous on veins, 3- or 4-toothed, teeth less than 3 × as long as wide. Calyx shallowly cup-shaped, nearly truncate. Corolla yellowish, often dark purple in center, campanulate; petals 3–5 cm. Staminal column 1.5–2 cm; filaments uniform in length. Capsule 3(or 4 or 5)-loculed, cone-shaped, usually pendulous, ca. 3 cm, glabrous, with numerous oily and glandular minute spots, apex tapering, beaked. Seeds 5–8 per cell, free, ovoid, 5–8 mm in diam., with white wool and moderately persistent short fuzz. Fl. Jun–Sep.

Cultivated. Guangdong, Guangxi, Sichuan, Taiwan, Yunnan [cultivated in tropical and subtropical regions of the Old World; origin in India and Sri Lanka].

- 1a. Leaf blade lobes oblong-lanceolate; epicalyx lobes triangular, ca. 2.5 cm; capsule ca. 3 cm ..... 1a. var. *arboreum*
- 1b. Leaf blade lobes ovate, obovate, or oblong; epicalyx lobes ovate-cordate, 1.5–2 cm; capsule ca. 2.5 cm ..... 1b. var. *obtusifolium*

### 1a. *Gossypium arboreum* var. *arboreum*

树棉(原变种) shu mian (yuan bian zhong)

Leaf blade lobes oblong-lanceolate. Epicalyx lobes triangular, ca. 2.5 cm. Capsule ca. 3 cm.

Widely cultivated in Chang Jiang and Huang He basins [cultivated in tropical and subtropical regions of the Old World; origin in India].

### 1b. *Gossypium arboreum* var. *obtusifolium* (Roxburgh) Roberty, Candollea 13: 38. 1950.

钝叶树棉 dun ye shu mian

*Gossypium obtusifolium* Roxburgh, Fl. Ind., ed. 1832, 3: 183. 1832; *G. anomalum* Watt (1926), not Wawra & Peyritsch (1860); *G. arboreum* var. *nanking* (Meyen) Roberty; *G. arboreum* var. *paradoxum* Prokhanov; *G. herbaceum* Linnaeus var. *obtusifolium* (Roxburgh) Masters; *G. indicum* Lamarck; *G. nanking* Meyen; *G. wattianum* S. Y. Hu.

Leaf blade lobes oblong, ovate, or obovate. Epicalyx lobes ovate-cordate, 1.5–2 cm. Capsule ca. 2.5 cm.

Cultivated. Guangdong, Guangxi, Sichuan, Taiwan, Yunnan [origin in India and Sri Lanka].

In some literature, this taxon is treated as a synonym of *Gossypium arboreum* s.s.

### 2. *Gossypium herbaceum* Linnaeus, Sp. Pl. 2: 683. 1753.

草棉 cao mian

*Gossypium zaitzevii* Prokhanov.

Herbs or subshrubs, annual, to 1.5 m tall, pilose. Stipules filiform, 5–10 mm, caducous; petiole 2.5–8 cm, villous; leaf blade usually 5-lobed, 5–10 cm in diam., usually wider than long, lobes broadly ovate, less than 1/2 as long as leaf blade, abaxially minutely puberulent and villous on veins, adaxially stellate hirsute, base cordate, apex acute. Flowers solitary, axillary. Pedicel 1–2 cm, villous. Epicalyx lobes connate at base, broadly triangular, 2–3 cm, wider than long, sparsely villous on veins, 6–8-toothed. Calyx cup-shaped, 5-lobed. Corolla yellow, purple in center, 5–7 cm in diam.; petals 2.5–3 × 3–4 cm. Filaments uniform in length. Capsule usually 3–4-celled, ovoid, ca. 3 cm, apex beaked. Seeds free, obliquely cone-shaped, ca. 10 mm, with white wool and persistent short fuzz. Fl. Jul–Sep.

Cultivated. Gansu, Guangdong, Sichuan, Xinjiang, Yunnan [cultivated in India; origin in SW Asia].

Among the races recognized by Hutchinson (Emp. Cotton Gr. Rev. 27: 12. 1950) is “*kuljianum*,” which is found in “Chinese Central Asia.”

**3. *Gossypium hirsutum* Linnaeus, Sp. Pl., ed. 2, 2: 975. 1763.**

陆地棉 lu di mian

*Gossypium hirsutum* f. *mexicanum* (Todaro) Roberty; *G. mexicanum* Todaro; *G. religiosum* Linnaeus.

Herbs, annual, 0.6–1.5 m tall. Branchlets sparsely villous. Stipules ovate-falcate, 5–8 mm, caducous; petiole 3–14 cm, pilose; leaf blade broadly ovate, 3(–5)-lobed, 5–12 cm in diam., lobes broadly triangular to ovate-orbicular, base broad, central lobe usually 1/2 as long as leaf blade, abaxially sparsely villous, adaxially nearly glabrous, scabrously hairy on veins, base cordate or cordate-truncate, apex acuminate. Flowers solitary, axillary. Pedicel usually slightly shorter than petiole. Epicalyx lobes 3, free, to 4 × 2.5 cm (including teeth), hirsute and ciliate with long hairs, base cordate, with 1 gland, 7–9-toothed near apex, teeth 3 or 4 × as long as wide. Calyx cup-shaped, 5-lobed, lobes triangular, ciliate. Corolla white or yellowish, fading to reddish or purple, funnelform; petals 4–5.5 × 3.5–4.5 cm. Staminal column 1–2 cm; filaments lax, upper ones longer. Capsule 3- or 4-celled, ovoid, 3.5–5 cm, apex beaked. Seeds free, ovoid, with white wool and gray-white moderately persistent short fuzz. Fl. summer–autumn.

Widely cultivated in China [probably of American origin (?Mexico), now cultivated throughout warmer parts of the world].

*Gossypium hirsutum* has replaced *G. arboreum* and *G. herbaceum* in the cotton-producing areas of China.

**4. *Gossypium barbadense* Linnaeus, Sp. Pl. 2: 693. 1753.**

海岛棉 hai dao mian

Subshrubs or shrubs, perennial, 2–3 m tall, hairy or only hairy on petiole and veins on abaxial surface. Branchlets dark purple, angular. Stipules lanceolate-falcate, ca. 10 mm, usually caducous; petiole longer than leaf blade, with black glandular spots; leaf blade 3–5-lobed, 7–12 cm in diam., lobes ovate, oblong, oblong-lanceolate, or obovate, more than 1/2 as long as

blade, central lobe longer, lateral lobes usually extending, base cordate, apex long acuminate. Flowers terminal or axillary. Pedicel usually shorter than petiole, stellate villous, with black glandular spots. Epicalyx lobes 5 or more, free, broadly ovate, 3.5–5 cm, base rounded-cordate, 10–15-toothed, teeth 3–4 × as long as wide. Calyx cup-shaped, truncate, with black glandular spots. Corolla pale yellow, purple or crimson in center, funnelform; petals 5–8 cm, stellate villous abaxially. Staminal column 3.5–4 cm, glabrous; filaments closely appressed, upper ones longer. Capsule 3(or 4)-celled, oblong to oblong-ovoid, 3–7 cm, with obvious glandular spots abaxially, base larger, apex acute to beaked. Seeds black and smooth when hair fallen, free or aggregated, ovoid, ca. 8 mm, beaked, with white wool and easily detached short fuzz on one or both tips. Fl. summer–autumn.

Cultivated; below 1500 m. Guangdong, Guangxi, Hainan, Yunnan [India; Africa (Egypt), tropical Asia, North America (United States), Pacific islands, tropical South America].

- 1a. Capsule oblong-ovoid, 3–5 cm, apex acute; seeds free from each other ..... 4a. var. *barbadense*
- 1b. Capsule oblong-ellipsoid, 5–7 cm, apex beaked; seeds aggregated into groups ..... 4b. var. *acuminatum*

**4a. *Gossypium barbadense* var. *barbadense***

海岛棉(原变种) hai dao mian (yuan bian zhong)

*Gossypium peruvianum* Cavanilles.

Leaf blade 3–5-lobed, lobes ovate or oblong. Corolla purple in center. Capsule oblong-ovoid, 3–5 cm, apex acute. Seeds free.

Cultivated in frost-free areas; below 800 m. Guangdong, Guangxi, Hainan, Yunnan [India; Africa (Egypt), tropical Asia, North America (United States), Pacific islands, tropical South America].

The origin of this variety is in South America or the West Indies.

**4b. *Gossypium barbadense* var. *acuminatum*** (Roxburgh ex G. Don) Triana & Planchon, Ann. Sci. Nat., Bot., sér. 4, 17: 171. 1862.

巴西海岛棉 ba xi hai dao mian

*Gossypium acuminatum* Roxburgh ex G. Don, Gen. Hist. 1: 487. 1831; *G. barbadense* var. *brasiliense* (Macfadyen) Mauer; *G. brasiliense* Macfadyen; *G. guyanense* Rafinesque var. *brasiliense* (Macfadyen) Rafinesque; ?*G. peruvianum* var. *brasiliense* (Macfadyen) Prokhanov.

Leaf blade 5-lobed. Corolla crimson in center, fading to pink, 6–7 cm. Capsule oblong-ellipsoid, 5–7 cm, beak to 1 cm. Seeds aggregated, shortly ciliate at apex.

Cultivated; below 1500 m. Guangdong, Hainan, Yunnan [tropical America].

The origin of this variety is in tropical America.

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