

## 2. Tribe DETARIEAE

甘豆族 gan dou zu

Chen Dezha (陈德昭 Chen Te-chao), Zhang Dianxiang (张奠湘); Ding Hou, Kai Larsen, Supee Saksuwan Larsen

Leaves pinnate, sometimes only with 1 pair of leaflets or a single leaflet. Bracteoles caducous, imbricate or valvate, persistent. Flowers bisexual, actinomorphic to conspicuously zygomorphic. Receptacle shallowly cup-shaped or tubular. Sepals usually 4 or 5, often enclosing petals when flowers in bud. Petals absent to 5. Perfect stamens 2–10 or numerous; anthers basifixed or dorsifixed, opening by lateral slits, sometimes with staminodes. Ovary stipitate or sessile; stipe free or adnate to receptacle.

About 80 genera and 730–770 species: distributed in tropical regions; six genera (three introduced) and ten species (two endemic, five introduced) in China.

- 1a. Bracteoles sepaloid or petaloid, enclosing flower bud before flowering; stalk of ovary adnate to hypanthium ..... 8. *Tamarindus*
- 1b. Bracteoles not sepaloid or petaloid, imbricate, often caducous; ovary inserted at center and free from hypanthium.
  - 2a. Petals absent; calyx lobes petaloid ..... 4. *Saraca*
  - 2b. Petals present.
    - 3a. Petals 3 or 5.
      - 4a. Flowers purplish red or pink; perfect stamens 2; leaves abruptly pinnate; leaflets 3–5 pairs ..... 3. *Lysidice*
      - 4b. Flowers white; perfect stamens 10; leaves with 1 pair of leaflets ..... 6. *Hymenaea*
    - 3b. Petal 1, rarely 2.
      - 5a. Petals with long claw, exceeding above sepals; legume oblong; seeds with horny aril at base ..... 5. *Azelia*
      - 5b. Petals not clawed, enclosed in uppermost calyx lobe; legume orbicular or elliptic; seeds with fleshy aril at base ..... 7. *Sindora*

## 3. LYSIDICE Hance, J. Bot. 5: 298. 1867.

仪花属 yi hua shu

Chen Dezha (陈德昭 Chen Te-chao), Zhang Dianxiang (张奠湘); Ding Hou

Shrubs or trees. Leaves abruptly pinnate; leaflets 3–5 pairs, opposite, base slightly oblique, asymmetric on two sides; petiolules short; stipules caducous or late deciduous, small, subulate or narrowly triangular. Panicles terminal. Flowers showy, purplish red or pink, with large, red or white bracts at base; bracteoles small, in pairs inserted at apex or near apex on pedicels. Calyx tubular, 4-lobed; lobes imbricate, reflexed after anthesis. Petals 5: 3 at back large, obovate, long clawed; 2 in front small, reduced, scalelike or subulate. Perfect stamens 2, free or slightly connate at base; filaments elongated, reflexed in bud; anthers elliptic, opening lengthwise; staminodes 3–8, unequal in length, subulate, without anthers or with 1–3 orbicular, small, abortive anthers. Ovary compressed, oblong, stalked, stalk adnate to calyx tube, 6–14-ovuled; style filiform, long; stigma capitate, small. Legume compressed, oblong or obovoid-oblong, thickly leathery or woody, with stipe, 2-valved, valves flat or slightly curling or spirally twisted. Seeds shiny, compressed, oblong, obliquely broadly elliptic to suborbicular, margin not thickened or conspicuously thickened into a narrowly edged ring; cotyledons flat; embryo small.

About two species: S and SW China, Vietnam; two species (one endemic) in China.

- 1a. Bracts and bracteoles pink; calyx tube 1.2–1.5 cm, longer than lobes; seeds marginally not thickened, testa thin, inside without gelatin; shrubs or small trees ..... 1. *L. rhodostegia*
- 1b. Bracts and bracteoles white; calyx tube 3–9 mm, shorter than lobes; seeds marginally conspicuously thickened into a narrowly edged ring, testa thicker, inside with a layer of spongy gelatin; trees ..... 2. *L. brevicalyx*

### 1. *Lysidice rhodostegia* Hance, J. Bot. 5: 299. 1867.

仪花 yi hua

Shrubs or small trees, 2–5 m tall, rarely more than 10 m tall. Petiolules short, 2–3 mm; leaflets oblong or ovate-lanceolate, 5–16 × 2–6.5 cm, papery, lateral veins subparallel, slender, evident on both surfaces, base rounded, apex caudate-acuminate. Panicles 20–40 cm; rachis, bracts, and bracteoles sparsely puberulent; bracts and bracteoles pink, ovate-oblong or elliptic, bracts 1.2–2.8 × 0.5–1.4 cm, bracteoles small, 2–5 mm. Calyx tube 1.2–1.5 cm, much longer than lobes (8–10 mm); lobes dark purplish red, oblong. Petals purplish red, broadly obovate, ca. 1.2 cm including claw, apex rounded, emarginate. Anthers ca. 4 mm; staminodes usually 4, subulate. Ovary hairy,

6–9-ovuled; style slender, hairy. Legume obovoid-oblong, 12–20 cm, sutures unequal in length, ventral suture longer and curved, dehiscent; valves often spirally twisted. Seeds 2–7, brownish red, oblong, 2.2–2.5 × 1.2–1.5 cm, margin not thickened; testa thinner and fragile, surface slightly wrinkled, inside without gelatin. Fl. Jun–Aug, fr. Sep–Nov.  $2n = 24^*$ .

Mountain slopes, jungles, among bushes, near roads, along valleys by streams; below 500 m. Guangdong, Guangxi (Longzhou), Guizhou, Yunnan [Vietnam; introduced in tropical Africa, the Caribbean, Central America, and United States (Florida)].

The roots, stems, and leaves are somewhat toxic. They are used medicinally to relieve pain from rheumatism and arthritis and for detumescence.

**2. *Lysidice brevicalyx*** C. F. Wei, Guihaia 3: 12. 1983.短萼仪花 *duan e yi hua*

Trees, 10–20 m tall. Trunk 20–30 cm d.b.h. Leaflets oblong, obovate-oblong, or ovate-lanceolate, 6–12 × 2–5.5 cm, subleathery, base cuneate or obtuse, apex obtuse or caudate-acuminate. Panicle spreading, 13–20 cm; bracts and bracteoles white, broadly ovate, ovate-oblong, or oblong, bracts 1.5–3.1 cm, bracteoles 0.5–1.5 cm. Calyx tube short, 3–9 mm; lobes oblong to broadly oblong, longer than calyx tube. Petals purple, obovate, 1.6–1.9 cm including claw, apex subtruncate, emarginate. Anthers 3–4 mm; margin of cells purplish red; stami-

nodes 8, or 5 or 6, unequal in length. Ovary villous along sutures, 9–14-ovuled. Legume oblong or obovoid-oblong, 15–26 × 3.5–5 cm, base rounded, dorsal and ventral sutures equal or subequal in length, dehiscent; valves flat or slightly twisted. Seeds 7–10, chestnut-brown or grayish green, shiny, oblong or obliquely broadly oblong to subglobose, 2–2.8 × 1.5–2.2 cm, margin thickened into a narrowly edged ring; testa crustaceous, inside with a layer of white spongy gelatin, ferruginous red when dry. Fl. Apr–May, fr. Aug–Sep.  $2n = 24^*$ .

• Sparse or dense forests, along valleys, by streams; 500–1000 m. Guangdong, Guangxi, Guizhou, Yunnan.

**4. SARACA** Linnaeus, Syst. Nat., ed. 12, 2: 469; Mant. Pl. 1: 13, 98. 1767.无忧花属 *wu you hua shu*Chen Dezhaoh (陈德昭 *Chen Te-chao*), Zhang Dianxiang (张奠湘); Ding Hou

Trees. Leaves abruptly pinnate, with few pairs of leaflets, leathery; stipules 2, usually united to a conical sheath, caducous; petiole robust, with glandular nodes. Corymbose panicles axillary or terminal; involucre caducous; bract 1, deciduous or persistent, smaller or larger than bracteoles, hairy or glabrous; bracteoles 2, usually persistent, subopposite, colored. Flowers bisexual or unisexual, yellowish to deep red, with short pedicels. Calyx tubular; tube elongated, slightly inflated in upper part, with a disk at apex; lobes 4, rarely 5 or 6, petaloid, ovate-oblong, slightly unequal in size, imbricate. Petals absent. Stamens 4–10, all perfect or 1 or 2 reduced, inserted in disk on throat of calyx tube; filaments free, elongated, often reflexed in bud; anthers oblong or suborbicular, dorsifixed, cells opening lengthwise. Ovary compressed, oblong, hairy or glabrous, shortly stalked, stalk adnate to calyx tube; ovules few to more than 10; style filiform; stigma terminal, capitate. Legume compressed, oblong, slightly curved and oblique, leathery to rather woody, 2-valved. Seeds 1–8, compressed, elliptic to ovoid; testa thin, crustaceous; radicle small, straight.

About 20 species: tropical Asia; two species in China.

- 1a. Perfect stamens 4; bracts and bracteoles small, equal in size, not longer than 5 mm, persistent; pedicels articulate ..... 1. *S. griffithiana*  
 1b. Stamens 8–10 including 1 or 2 reduced; bracts and bracteoles larger, usually longer than 1 cm, bracts much larger than bracteoles, deciduous or nearly persistent; pedicels not articulate ..... 2. *S. dives*

**1. *Saraca griffithiana*** Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 491. 1897.

云南无忧花 *yun nan wu you hua*

Trees, to 18 m tall. Petiolules robust, compressed, 4–6 mm; leaflets 4–6 pairs, oblong or obovate-oblong, 23–36 × 6.5–10 cm, papery, midvein robust, raised on both surfaces, lateral veins 11 or 12 pairs, base rounded or cuneate, apex rounded. Inflorescence axillary, with crowded, short branches, forming nearly a sphere ca. 13 cm in diam. at anthesis; peduncles and rachis yellowish green puberulent; bracts and bracteoles persistent, ovate, equal in size, ca. 3 mm, ciliate, bracts spreading, bracteoles straight, enclosing pedicels. Flowers numerous, crowded, with long pedicels, articulate between calyx and apex of pedicels. Calyx tube shorter than pedicels, 1.5–1.8 cm; lobes ovate, ca. 1 cm, apex obtuse or slightly acute. Perfect stamens 4, ca. 3 mm; anthers subovoid, small, 1.5–1.8 mm. Ovary compressed, ca. 7 mm, thin, densely yellowish green puberulent; style ca. 2.8 cm; stigma small. Fruit not seen.

Dense or sparse forests, mountain slopes, along valleys, by streams; 300–1200 m. W Yunnan (Yingjiang) [Myanmar].

**2. *Saraca dives*** Pierre, Fl. Forest. Cochinch. t. 386B. 1899.

中国无忧花 *zhong guo wu you hua**Saraca chinensis* Merrill & Chun.

Trees, 5–20 m tall. Trunk ca. 25 cm d.b.h. Petiolules 7–12 mm; leaflets 5 or 6 pairs, slightly purplish red when young, pendulous, narrowly elliptic, ovate-lanceolate, or narrowly obovate, 15–35 × 5–12 cm, subleathery, lateral veins 8–11 pairs, lowest pair often smaller, base cuneate, apex acuminate, acute, or obtuse. Inflorescence axillary, larger; rachis hairy or glabrous; involucre caducous, broadly ovate, large, hairy; bracts caducous or late deciduous, ovate, lanceolate, or oblong, 1.5–5 × 0.6–2 cm, lowest one largest, gradually smaller upward, hairy or glabrous; bracteoles equal to bracts in shape but much smaller. Flowers bisexual or unisexual, yellow, base of calyx lobes, disk, stamens, and style becoming red; pedicels shorter than calyx tube, not articulate. Calyx tube 1.5–3 cm; lobes 4(–6), oblong, ciliate. Stamens 8–10 including 1 or 2 often reduced to subulate; filaments exerted; anthers oblong, 3–4 mm. Ovary slightly curved, glabrous or hairy along sutures and stalk. Legume brownish, compressed, 22–30 × 5–7 cm, valves twisted. Seeds 5–9, unequal in shape, shallowly depressed sulcate at middle of both surfaces. Fl. Apr–May, fr. Jul–Oct.

Dense or sparse forests, riversides, along valleys, by streams; 200–1000 m. Guangdong, SE and SW Guangxi, SE Yunnan [Laos, Vietnam].

This is a fine parasitifer plant, which can be used for breeding lac insects. The bark is used medicinally for relieving rheumatism and menorrhagia. The flowers are large and showy, and the trees are often cultivated ornamentally.

**5. AFZELIA** Smith, Trans. Linn. Soc. London 4: 221. 1798, nom. cons.,  
not J. F. Gmelin (1792).

缅茄属 mian qie shu

Chen Dezha (陈德昭 Chen Te-chao), Zhang Dianxiang (张奠湘); Ding Hou

*Pahudia* Miquel.

Trees. Leaves abruptly pinnate; stipules caducous, minute; leaflets in few pairs. Panicles terminal; bracts and bracteoles deciduous or ± persistent, ovate, slightly thick, not colored. Flowers bisexual, pedicellate. Calyx tubular, with a disk in throat; lobes 4, slightly unequal in size, leathery, imbricate. Petal 1, suborbicular or reniform, clawed, others rudimentary or absent. Stamens 7 or 8; filaments elongated, base partly united or free; anthers ovoid or oblong, opening lengthwise; staminodes 2, very small. Ovary stalked, stalk adnate to calyx tube; ovules few to numerous; style filiform; stigma subcapitate, small. Legume slightly compressed, oblong or obliquely oblong, woody, thick, 2-valved, transversely septate between seeds. Seeds ovoid or oblong, with horny, hard, ariloid funicle at base, without endosperm; cotyledons fleshy, ± flat; embryo straight.

About 14 species: tropical Asia and Africa; one species (introduced) in China.

**1. Afzelia xylocarpa** (Kurz) Craib, Bull. Misc. Inform. Kew 1912: 267. 1912.

缅茄 mian qie

*Pahudia xylocarpa* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 45: 290. 1877; *Afzelia cochinchinensis* (Pierre) J. Léonard; *P. cochinchinensis* Pierre.

Trees, 15–25 m tall, sometimes to 40 m tall. Trunk ca. 90 cm d.b.h. Bark brown. Petiolules short, less than 5 mm; leaflets 3–5 pairs, opposite, ovate or broadly elliptic to suborbicular, 4–14 × 3.5–6 cm, papery, base rounded and slightly oblique, apex rounded or emarginate. Inflorescence densely grayish yellow-green or grayish white puberulent; bracts and bracteoles per-

sistent, ovate or triangular-ovate, equal in size, ca. 6 mm. Calyx tube 1–1.3 cm; lobes elliptic, 1–1.5 cm, apex rounded. Petal pale purple, obovate to suborbicular; claw white villous. Stamens 7, united at base; filaments exerted, 3–3.5 cm, pubescent in lower part. Ovary narrowly oblong, hairy; style elongated and exerted. Legume blackish brown, compressed, oblong, 11–17 × 7–8.5 cm, hard. Seeds 2–5, deep brownish red, shiny, slightly compressed, ovoid or suborbicular, ca. 2 cm. Fl. Apr–May, fr. Nov–Dec.

Cultivated. Guangdong (Maoming, Xuwen), Guangxi (Hepu, Nanning), Hainan, Yunnan (Shiping, Xishuangbanna) [native to Cambodia, Laos, Myanmar, Thailand, and Vietnam].

The seeds are used for carving; the plant is also used medicinally for relieving toothaches and eye diseases.

**6. HYMENAEA** Linnaeus, Sp. Pl. 2: 1192. 1753.

李叶豆属 luan ye dou shu

Chen Dezha (陈德昭 Chen Te-chao), Zhang Dianxiang (张奠湘); Kai Larsen, Supee Saksuwan Larsen

*Trachylobium* Hayne.

Trees. Leaves with 1 pair of leaflets; stipules caducous; leaflets paired, thickly leathery, entire, often translucent glandular punctate, with short petiolules or subsessile. Flowers white, in terminal panicles or corymbose panicles; bracts and bracteoles caducous, ovate or orbicular, concave. Calyx tubular, solid in lower part, expanded and campanulate or turbinate in upper part; lobes 4, thickly leathery, imbricate. Petals 3 or 5, clawed or sessile, subequal in size or lower 2 small and squamose. Stamens 10, all perfect, free; filaments glabrous or hairy at base; anthers oblong, dorsifixed, cells opening lengthwise. Ovary shortly stalked, stalk adnate to calyx tube, glabrous or hairy, few ovuled; style filiform; stigma terminal, small. Legume drupelike, obliquely obovoid or oblong, thickly leathery or woody, rough and tuberculate, not dehiscent. Seeds few, of various shapes; testa hard, bony, without endosperm and aril; cotyledons thickened, fleshy; radicle short, straight.

About 26 species: tropical America and Africa; two species (both introduced) in China.

- 1a. Petals narrowly ovate, sessile or subsessile, subequal in size; legume rough, without tubercles on surface; petiolules obscure ..... 1. *H. courbaril*  
1b. Petals suborbicular, clawed, unequal (2 petals smaller, squamose) or subequal in size; legume tuberculate on surface; petiolules conspicuous, ca. 3 mm ..... 2. *H. verrucosa*

**1. Hymenaea courbaril** Linnaeus, Sp. Pl. 2: 1192. 1753.

李叶豆 luan ye dou

Trees, evergreen, 5–10 m tall. Branchlets grayish green, with numerous brown, small lenticels and adpressed puberu-

lent. Leaves alternate; petiolules obscure; leaflets ovate or ovate-oblong, slightly incurved, 5–10 × 2.5–4 cm, abaxially adpressed shortly pubescent on veins, adaxially glabrous or sparsely puberulent, base obliquely rounded, asymmetric, apex acute. Inflorescences corymbose panicles. Flowers large, 2.5–3

cm; pedicels articulate, adpressed densely puberulent. Calyx tube 1.3–1.5 cm, expanded and campanulate in upper part; lobes broadly ovate or suborbicular, ca. as long as calyx tube, outside densely adpressed puberulent, inside densely silky at middle part. Petals 5, ovate or narrowly ovate, subequal in size, ca. as long as calyx lobes, clawed or subsessile. Stamens exserted; filaments 2.5–3 cm. Ovary compressed, glabrous; style elongated, curved in upper part; stigma capitate. Legume reddish brown, oblong or obovoid-oblong, 5–10.5 × 2.5–5 cm, woody, rough and not tuberculate; stipe short, ca. 5 mm. Fl. Aug–Oct, fr. next May–Jun.

Cultivated. Guangdong, Taiwan [native to Central America and Mexico].

The wood is hard and is used for shipbuilding and making furniture. It also yields a gum-resin (copal). The pulp is edible.

**2. *Hymenaea verrucosa*** Gaertner, Fruct. Sem. Pl. 2: 306. 1791.

疣果李叶豆 you guo luan ye dou

*Trachylobium verrucosum* (Gaertner) Oliver.

Trees, 6–24 m tall. Branchlets grayish white. Petiolules ca. 3 mm; leaflets ovate-oblong, asymmetric, 5–8(–12) × 2.5–5 cm, both surfaces glabrous, base obliquely rounded, apex acute. Inflorescences panicles; bracts and bracteoles deciduous, ovate or orbicular. Flowers small. Calyx tube expanded and turbinate in upper part; lobes 7–11 mm, outside densely adpressed puberulent, inside densely white silky. Petals unequal in size, uppermost inner 3 larger, suborbicular, clawed, other 2 small, scaly, or sometimes 5 subequal and all clawed. Ovary shortly stalked, densely strigose at base. Legume blackish brown, slightly compressed, obovoid, 3–4.2 cm, tuberculate. Fl. Sep–Nov, fr. next May–Jun.

Cultivated. Taiwan [native to Madagascar; cultivated in Indonesia (Java), Pacific islands (Hawaii), Singapore, and Sri Lanka].

## 7. *SINDORA* Miquel, Fl. Ned. Ind., Suppl. 1: 287. 1861.

油楠属 you nan shu

Chen Dezha (陈德昭 Chen Te-chao), Zhang Dianxiang (张奠湘); Ding Hou

Trees. Leaves abruptly pinnate; stipules leaflike; leaflets 2–10 pairs, leathery. Flowers bisexual, in terminal panicles or racemes; bracts and bracteoles caducous, ovate. Calyx tube very short, with disk at base; lobes 4, valvate or margin narrowly imbricate, ± with soft bristles. Petal 1, rarely 2. Stamens 10: 9 shortly united into an oblique tube, upper stamen free and reduced to an antherless, slightly short staminode; anthers oblong, dorsifixed, opening lengthwise. Ovary 2–5-ovuled, shortly stalked; style filiform, circinate; stigma small. Legume compressed, usually orbicular or oblong, ± oblique, large, dehiscent, often shortly prickly on surface of valves, rarely without prickles. Seeds 1 or 2, black, shiny, with a large fleshy aril at base.

Between 18 and 20 species: WC Africa (Gabon) and mostly in SE Asia; two species (one endemic, one introduced) in China.

1a. Calyx lobes outside with soft bristles; legume with dispersed, hard, straight prickles ..... 1. *S. glabra*  
1b. Calyx lobes without bristles; legume smooth, without prickles ..... 2. *S. tonkinensis*

**1. *Sindora glabra*** Merrill ex de Wit, Bull. Jard. Bot. Buitenzorg, sér. 3, 18: 46. 1949.

油楠 you nan

Trees, 8–20 m tall. Trunk 30–60 cm d.b.h. Leaves 10–20 cm; petiolules ca. 5 mm; leaflets 2–4 pairs, opposite, elliptic-oblong, rarely ovate, 5–10 × 2.5–5 cm, lateral veins slender, together with reticulate veinlets obscure, base rounded, slightly oblique, apex obtusely acute or shortly acuminate. Panicles in axils of apical leaves, 15–20 cm, densely yellowish pubescent; bracts ovate, leaflike, 5–7 mm. Pedicels 2–4 mm, with 1 or 2 bracteoles from middle upward; bracteoles linear-lanceolate, 5–6 mm; bracts, pedicels, and bracteoles densely yellowish pubescent. Calyx lobes yellowish pubescent on both surfaces, dimorphic, uppermost one broadly ovate, ca. 5.5 × 5 mm, back arcuate, with 21–23 soft bristles, other 3 elliptic-lanceolate, with 6–10 soft bristles. Petal 1, enclosed in uppermost calyx lobe, oblong-orbicular, ca. 5 × 2–6 mm, outside densely pubescent, inside glabrous, base subtruncate, obscurely clawed, margin ciliate, apex rounded. Fertile stamens 9, staminal tube ca. 2 mm, both sides adpressed brown strigose, especially inside; anthers subequal in size, 2–3 mm, apex emarginate, sometimes cuspidate. Ovary ca. 3 mm, densely strigose, 4- or 5-ovuled; stalk ca. 0.8 mm; style convolute, glabrous. Legume orbicular or elliptic,

5–8 × ca. 5 cm, with dispersed, hard, straight prickles; valves often shedding glue when cut. Seed solitary, blackish, spheroidal, ca. 1.8 cm in diam. Fl. Apr–May, fr. Jun–Aug.

• Mixed forests, mountain slopes, riverbanks; near sea level to 800 m. Fujian, Guangdong, Hainan, Yunnan.

The wood has good qualities and is used for building houses and making furniture.

**2. *Sindora tonkinensis*** A. Chevalier ex K. Larsen & S. S. Larsen, Fl. Cambodge, Laos & Vietnam 18: 122. 1980.

东京油楠 dong jing you nan

Trees, to 15 m tall. Branches glabrous. Leaves 10–20 cm, glabrous; stipules caducous; petiolules ca. 5 mm; leaflets 4 or 5 pairs, ovate, narrowly ovate, or elliptic-lanceolate, 6–12 × 3.5–6 cm, glabrous, asymmetric, upper side narrower than lower side, base rounded or broadly cuneate, margin entire, apex acuminate or shortly acuminate. Panicles in axils of apical leaves, 15–20(–30) cm, together with bracteoles, calyx, petal, and ovary densely yellowish pubescent; bracts triangular, 5–10 mm. Pedicels 2–4 mm, with 1 or 2 bracteoles from middle upward; bracteoles elliptic-lanceolate, ca. 5 mm. Calyx lobes 4, outside with bristles, inside densely yellowish hirsute. Petal thick, ca. 8

mm. Filaments filiform, 1–1.5 cm, densely yellowish pubescent at base; anthers 3–4 mm. Ovary shortly stalked, without prickles; style convolute, 1–1.5 cm, glabrous. Legume suborbicular or elliptic, 7–10 × 4–6 cm, apex beaked, smooth,

without prickles. Seeds 2–5, blackish, spheroidal. Fl. May–Jun, fr. Aug–Sep.

Cultivated. Guangdong (Guangzhou) [native to ?Cambodia and Vietnam].

## 8. TAMARINDUS Linnaeus, Sp. Pl. 1: 34. 1753.

酸豆属 suan dou shu

Chen Dezhaoh (陈德昭 Chen Te-chao), Zhang Dianxiang (张奠湘); Kai Larsen

Trees. Leaves abruptly pinnate, alternate; stipules caducous, small; leaflets 10 to numerous paired. Racemes or racemes arranged in panicles at ends of shoots; bracts and bracteoles often caducous, colored, ovate-oblong. Calyx tube narrowly turbinate; segments 4, imbricate. Petals: only upper 3 developed, subequal in length, lower 2 reduced, scalelike, concealed at base of staminal tube. Perfect stamens 3, connate into an ascending, curved tube or sheath from middle downward; filaments short; anthers dorsifixed; staminodes few, minute, at apex of sheath. Ovary stalked, stalk adnate to calyx tube; ovules numerous; style elongated; stigma capitate. Legume narrowly terete, indehiscent; epicarp thin, crustaceous; mesocarp thick and pulpy; endocarp membranous, septate between seeds. Seeds compressed, obliquely oblong or obliquely ovoid-orbicular; cotyledons thick, fleshy; embryo erect.

One species: native to Africa, widely introduced and cultivated in the tropics including China.

### 1. *Tamarindus indica* Linnaeus, Sp. Pl. 1: 34. 1753.

酸豆 suan dou

Trees, 10–15(–25) m tall. Trunk 30–50(–90) cm d.b.h. Bark dark ashy, irregularly longitudinally splitting. Leaflets oblong, small, 1.3–2.8 cm × 5–9 mm, glabrous, base obliquely rounded, apex rounded or emarginate. Flowers few, yellowish tinged with purplish red stripes; peduncles and pedicels yellowish green puberulent; bracteoles 2, ca. 1 cm, enclosing flower bud before anthesis. Calyx tube ca. 7 mm; lobes lanceolate-oblong, ca. 1.2 cm, reflexed after anthesis. Petals obovate, subequal to calyx lobes, margin repand, curled. Stamens 1.2–1.5

cm, pubescent near base, free parts of filaments ca. 7 mm; anthers elliptic, ca. 2.5 mm. Ovary slightly incurved, terete, ca. 8 mm, hairy. Legume brownish, straight or arcuate, terete-oblong, turgid, 5–14 cm, often irregularly constricted. Seeds 3–14, brownish, shiny. Fl. May–Aug, fr. Dec–May.  $2n = 24, 26, 28^*$ .

Cultivated. Fujian, Guangdong, Guangxi, ?Hainan, Yunnan (Jinsha Jiang valley) [native to Africa; widely cultivated in the tropics].

The pulp of the fruit and the seed oil are edible. The fruit can be used medicinally for relieving fever and constipation and as an antiscorbutic. The hard, heavy wood is used for building houses and making farm tools and furniture. The trunk is robust, with wind-resistant strength, and is suitable for planting on seashores.