

11. SENNA Miller, Gard. Dict. Abr., ed. 4. 1754.

番泻决明属 fan xie jue ming shu

Herbs, shrubs, or small trees. Leaves abruptly pinnate; leaflets opposite; rachis and petiole with or without glands. Flowers in axillary or terminal racemes; bracteoles absent. Sepals 5. Petals 5, subequal, usually yellow. Stamens 10; filaments of all stamens straight, sometimes 10 fertile, subequal, sometimes 3 adaxial stamens staminodes, (6 or)7 fertile; anther thecae not ciliate along suture. Legume either indehiscent or inertly dehiscent through 1 or both sutures, in last case not coiling, sometimes valves breaking up into 1-seeded joints. Seeds numerous, funicle filiform.

About 260 species: pantropical; 15 species (13 introduced) in China.

- 1a. Petiole and rachis of leaves without glands.
 - 2a. Petiole and rachis of leaves with 2 longitudinal ribs, narrowly winged; legume with a membranous wing at middle downward to base of each valve 1. *S. alata*
 - 2b. Petiole and rachis of leaves without wings.
 - 3a. Leaflets abaxially densely yellowish brown velutinous; legume narrowly cylindrical 4. *S. spectabilis*
 - 3b. Leaflets abaxially glabrous and farina-white; legume flattened.
 - 4a. Leaflets 6–10 pairs; stipules linear, caducous 2. *S. siamea*
 - 4b. Leaflets 8–16 pairs; stipules ovate-cordate, tardily deciduous 3. *S. didymobotrya*
- 1b. Petiole and rachis of leaves with glands.
 - 5a. Glands on petiole only.
 - 6a. Gland on upper part of petiole, blackish brown, discoid, sessile; leaflets 8–28 pairs 8. *S. nomame*
 - 6b. Leaf with a solitary gland above base of petiole; leaflets 3–10 pairs.
 - 7a. Young branchlets, petiole, and rachis of leaves densely yellowish brown villous; leaflets villous on both surfaces; legume densely hirsute on surfaces of valves 5. *S. hirsuta*
 - 7b. Plants glabrous or subglabrous throughout; legume glabrous.
 - 8a. Petiolar gland sessile, globose or ovoid, at basal joint; legume flattened, 10–13 cm 6. *S. occidentalis*
 - 8b. Petiolar gland narrow, clavate to subulate, above basal joint; legume terete, 5–10 cm, with light-colored suture 7. *S. sophora*
 - 5b. Glands only present on rachis between leaflets.
 - 9a. Leaflets 2 pairs, obliquely ovate, very unequally sided, 4–16.5 × 2–7 cm, larger half facing leaf base 9. *S. fruticosa*
 - 9b. Leaflets 3 to more pairs, smaller than above.
 - 10a. Leaflets 10–26(–50) pairs, a conical or narrowly ovoid gland between lowermost pair of leaflets (often early caducous) 10. *S. multijuga*
 - 10b. Leaflets 3–9 pairs.
 - 11a. Fertile stamens 10.
 - 12a. Leaflets 4–6 pairs; leaves 15–30 cm; stipe of legume 10–20 mm 11. *S. sulfurea*
 - 12b. Leaflets 6–9 pairs; leaves 10–15 cm; stipe of legume 5–7 mm 12. *S. surattensis*
 - 11b. Fertile stamens 7.
 - 13a. Rachis of leaves with a gland between lowest pair of leaflets 15. *S. bicapsularis*
 - 13b. Rachis of leaves with a gland between each pair of leaflets.
 - 14a. Legume terete, 6–10 × ca. 1 cm; leaflets ovate to ovate-elliptic, apex acute to acuminate 13. *S. septemtrionalis*
 - 14b. Legume linear, terete, 10–15 × ca. 0.5 cm; leaflets obovate, apex broadly rounded 14. *S. tora*

1. *Senna alata* (Linnaeus) Roxburgh, Fl. Ind., ed. 1832, 2: 349. 1832.

翅荚决明 chi jia jue ming

Cassia alata Linnaeus, Sp. Pl. 1: 378. 1753.

Shrubs, 1.5–3(–5) m tall. Branches greenish, thick, pubescent. Leaves 30–60 cm; stipules persistent, triangular, 6–10(–15) mm; petiole and rachis with 2 longitudinal ribs and narrow wings; petiolar glands absent; petiolules very short or leaflets subsessile; leaflets 6–12(–20) pairs, oblong or obovate-oblong, 6–15 × 3.5–7.5 cm, thinly leathery, glabrous, base obliquely truncate, apex obtusely rounded and cuspidate. Ra-

cemes axillary, dense, many flowered, or sometimes several racemes forming a terminal panicle, 10–50 cm; peduncles 7–14 cm; bracts caducous, strobilaceous, oblong to broadly ovate, 2–3 × 1–2 cm, at first enveloping flowers. Flowers ca. 2.5 cm in diam. Sepals orange-yellow, oblong, unequal. Petals bright yellow, tinged with conspicuous purple veins, ovate-orbicular, 16–24 × 10–15 mm, shortly clawed. Stamens 10, fertile stamens 7, opening with apical pores, lower 2 with stout filaments ca. 4 mm and larger anthers, 4 with filaments ca. 2 mm and smaller anthers, reduced stamens 3 or 4. Ovary puberulent, sessile; ovules many. Legume winged, sharply tetragonal, 10–20 × 1.5–2 cm, glabrous, with a broad, membranous wing down middle

of each valve; wings 4–8 mm wide, papery, crenulate. Seeds 50–60, compressed, deltoid. $2n = 24, 28$.

Sparse forests, dry slopes. Guangdong, ?Hainan, S Yunnan [native to tropical America; widely introduced in the tropics elsewhere].

This plant is used as a laxative.

2. *Senna siamea* (Lamarck) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 98. 1982.

铁刀木 tie dao mu

Cassia siamea Lamarck, Encycl. 1: 648. 1785.

Trees, 10–15 m tall. Bark gray, subsmooth; young branches ribbed, sparsely puberulent. Leaves 20–30 cm; stipules caducous, linear, tiny; rachis and petiole without glands, puberulent; leaflets 6–10(–15) pairs, oblong or ovate-oblong, 3–7 × 1.5–2.5 cm, leathery, abaxially finely pubescent, adaxially smooth and glabrous, base rounded, apex obtusely rounded, often emarginate, mucronate. Racemes in axils of apical leaves, often several forming a large terminal panicle on a robust peduncle 5–7 cm; bracts linear, 5–6 mm. Sepals suborbicular, unequal in size, outer smaller, inner larger, ca. 9 mm, outside hairy. Petals yellow, broadly obovate, 1.2–1.5 cm, shortly clawed. Stamens 10, among them 7 fertile, anthers opening by apical pores, 2 with filaments ca. 10 mm and anthers 6–7 mm, 4 or 5 with filaments 2–3 mm and anthers 5–6 mm, staminodes ca. 3 mm. Ovary sessile, densely white pubescent. Legume flattened, 15–30 × 1–1.5 cm, suture thick, riblike, pubescent, purplish brown when mature. Seeds 10–30, light brown, ovoid, 2–2.5 × 5–6 mm. $2n = 28$.

Cultivated in S China [native to Myanmar and Thailand, and probably also to Cambodia, Laos, and Vietnam; widely cultivated in the tropics].

This tree is planted as an ornamental in parks and gardens and is used as a wayside tree. The hard, durable wood is used for furniture.

3. *Senna didymobotrya* (Fresenius) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 467. 1982.

长穗决明 chang sui jue ming

Cassia didymobotrya Fresenius, Flora 22: 53. 1839.

Shrubs, 2.5–3 m tall. Young branches and leaves puberulent, glabrescent when old. Leaves to 35(–50) cm; stipules tardily deciduous, ovate-cordate, 6–17 mm, acuminate; petiole and rachis without glands, puberulent; petiolules very short; leaflets 8–16 pairs, abaxially farina-white, ovate-oblong or lanceolate-oblong, 3–5.5 × 1–2 cm, base rounded and oblique, apex obtuse or subacute, mucronate. Racemes in axils of leaves in upper part of branches, 10–35 cm, sometimes several arranged in a terminal leafy panicle; bracts caducous, imbricate, broadly ovate, apex subacute or acuminate. Sepals oblong-obovate. Petals yellow, oblong or obovate, shortly clawed. Stamens 10, among them functionally 2 extra large, curved, ca. 12 mm. Ovary densely yellowish or pallid pilosulose. Legume compressed, ligulate-oblong, 8–10 × 1.6–1.8 cm, leathery, bicarinate by sutures, apex with a long and slender awn, stipe 1–1.2 cm; fruiting pedicel ca. 1 cm. Seeds 9–16, obovoid-oblong, compressed. $2n = 28$.

Cultivated in Hainan, ?Yunnan [native to tropical Africa; now naturalized in India and Sri Lanka].

4. *Senna spectabilis* (Candolle) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 600. 1982.

美丽决明 mei li jue ming

Cassia spectabilis Candolle, Cat. Pl. Horti Monsp. 90. 1813.

Trees, evergreen, small, 5–7(–10) m tall, with long, spreading branches. Young branches, petioles, and rachises of leaves densely yellowish brown velutinous. Leaves 12–30 cm; rachis and petiole without glands; leaflets 8–15(–19) pairs, elliptic or oblong-lanceolate, 3–7 × 1–2 cm (lowermost pair usually much smaller and early caducous), abaxially densely yellowish brown velutinous, adaxially glabrous or puberulent, base subrounded and slightly oblique, apex acute, cuspidate. Flowers in terminal panicles or axillary racemes; peduncles and pedicels densely yellowish brown velutinous; bracts caducous, ovate, 4–5 mm. Sepals 5, orange-yellow, unequal: 2 outer smaller, ovate, 5–7 mm, pubescent; 3 inner larger, suborbicular, 8–11 mm in diam. Petals yellow, darkly brownish yellow veined, unequal in size, broadly to narrowly obovate, shortly clawed. Stamens 10, 7 of them fertile, anthers opening by apical pores, staminodes 3, smaller. Ovary linear, ca. 3 cm, recurved; style and stigma inconspicuous. Legume pendulous, black, narrowly cylindrical, slightly compressed, 25–35 × 1–1.5 cm, slightly contracted between seeds, annulate-septate, glabrous. Seeds 50–70, suborbicular, ca. 5 mm in diam.

Cultivated in Guangdong, S Yunnan [native to tropical America; cultivated throughout the tropics].

This is a rapidly growing tree, which is usually cultivated ornamentally; the flowers are fragrant.

5. *Senna hirsuta* (Linnaeus) H. S. Irwin & Barneby, Phytologia 44: 499. 1979.

毛茛决明 mao jia jue ming

Cassia hirsuta Linnaeus, Sp. Pl. 1: 378. 1753.

Herbs or shrubs, 0.6–2.5 m tall. Young branches, petioles, and rachises of leaves densely yellowish brown villous. Leaves 10–20 cm; petiole 3–6 cm, with a sessile, blackish brown, ovoid-oblong gland near insertion; rachis 7–10 cm, without glands; leaflets 3–7 pairs, ovate-oblong or oblong-lanceolate, 3–9 × 1.5–3.5 cm, papery, both surfaces villous, base subrounded, apex acuminate. Racemes axillary or several in axils of apical leaves forming a leafy panicle; peduncles and pedicels villous; bracts early caducous, subulate, hairy. Sepals 5, unequal in size, densely villous, 2 outer small, ovate to obovate, ca. 5 mm, 3 inner puberulent, similar but larger, 7–8 mm. Petals yellow, obovate, 1.4–1.8 cm, glabrous. Stamens 10, 6 or 7 of them fertile, unequal in length, anthers opening by apical pores, staminodes 3 or 4. Ovary hirsute, subsessile; style short, glabrous; stigma small. Legume long, slender, flat, 10–20 × ca. 0.5 cm, densely hirsute on surfaces of valves. Seeds numerous, flat, obovoid, 3–4 mm. $2n = 14, 28$.

Cultivated in Guangdong, Yunnan [native to tropical America; introduced in the tropics elsewhere].

6. *Senna occidentalis* (Linnaeus) Link, Handb. 2: 140. 1831.

望江南 wang jiang nan

Cassia occidentalis Linnaeus, Sp. Pl. 1: 377. 1753.

Subshrubs or shrubs, erect, 0.8–1.5 m tall, glabrous, few branched. Branches herbaceous, ribbed; roots blackish. Leaves ca. 20 cm; stipules caducous, triangular to lanceolate, 1–2 cm, membranous; petiole 3–4 cm, with a large, brown, ovoid gland near base; petiolule 1–2 mm, with a rotten smell when kneaded; leaflets 3–5 (or 6) pairs, ovate to ovate-oblong, 4–10 × 2–3.5 cm, membranous, base rounded, apex acuminate. Corymbose racemes few flowered, axillary or terminal, ca. 5 cm; bracts caducous, linear-lanceolate. Flowers ca. 2 cm. Sepals unequal, outer ones suborbicular, ca. 6 mm in diam., inner ones ovate, 8–9 mm. Petals yellow, purplish veined, 2 outer slightly larger, shortly clawed. Fertile stamens 7, anthers opening by apical pores, reduced stamens 3, without anthers or with tiny anthers. Ovary tomentose; style glabrous. Legume brown, with pale thick margins, strap-shaped, falcate, flattened, 10–13 × ca. 1 cm, with septa between seeds. Seeds 30–40, flat, orbicular, 3–4 mm in diam. $2n = 24, 26^*, 28^*, 56^*$.

Among shrubs on riverbanks, wilderness tracts, hills, sparse forests, wastelands near villages. S regions of China [native to tropical America; widely introduced in the tropics and subtropics elsewhere].

7. *Senna sophera* (Linnaeus) Roxburgh, Fl. Ind., ed. 1832, 2: 347. 1832.

槐叶决明 huai ye jue ming

Cassia sophera Linnaeus, Sp. Pl. 1: 379. 1753; *Senna occidentalis* (Linnaeus) Link var. *sophera* (Linnaeus) X. Y. Zhu.

Shrubs, 1–2(–3) m tall, glabrous. Leaves 7–18(–21) cm; petiole 3–5 cm, with a subulate or narrow clavate gland 5–10 mm above petiole joint; petiolules ca. 2 mm; leaflets 4–10 pairs, lanceolate or elliptic-lanceolate, 1.7–4.2 × 0.7–2 cm, base rounded, apex acute to shortly acuminate. Corymbs axillary, few flowered; peduncles 1–2 cm; bracts ovate, ca. 5 mm; pedicels 1–1.5 cm. Sepals ovate-orbicular, ca. 5 mm. Petals yellow, obovate, shortly clawed. Stamens 10, 6 or 7 fertile, 2 longer; anthers opening by apical pores; staminodes 3 or 4, ca. 2 mm. Ovary finely pubescent. Legume straight, 5–10 × 0.5–1 cm, flattened and slightly thick at first, subcylindric, ± swollen when ripe. Seeds 30–40, ovoid, compressed. $2n = 28$.

Mountain slopes, roadsides. C and S China [native to tropical Asia; widely introduced in the tropics and subtropics elsewhere].

The young leaves and legumes are edible. The seeds are used medicinally for fever reduction.

8. *Senna nomame* (Makino) T. C. Chen, **comb. nov.**

豆茶决明 dou cha jue ming

Basionym: *Cassia mimosoides* Linnaeus var. *nomame* Makino, J. Jap. Bot. 1(5): 17. 1917; *C. nomame* (Makino) Kitagawa; *Chamaecrista nomame* (Makino) H. Ohashi, nom. superfl.

Herbs, annual, 30–60 cm tall, slightly hairy, branched or not. Leaves 4–8 cm, with a blackish brown, discoid, sessile

gland in upper part of petioles; leaflets 8–28 pairs, ligulate-lanceolate, 5–9 mm, slightly asymmetric. Flowers inserted in axils of leaves, with pedicels, solitary or 2 to several in short racemes. Sepals 5, free, outside sparsely pubescent. Petals 5, yellow. Stamens 4, sometimes 5. Ovary densely puberulent. Legume compressed, dehiscent, 3–8 × ca. 0.5 cm, hairy, 6–12-seeded. Seeds compressed, subrhomboid, smooth.

Mountain slopes, open grassy fields. Anhui, Hebei, Heilongjiang, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea].

9. *Senna fruticosa* (Miller) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 121. 1982.

大叶决明 da ye jue ming

Cassia fruticosa Miller, Gard. Dict., ed. 8, *Cassia* no. 10. 1768.

Shrubs or small trees, ca. 3 m tall. Branches grayish white, glabrous. Leaves 12–18 cm, with an oblong, convex gland on rachis between lower pair of leaflets; stipules early caducous, linear, 3–4 mm; petiolules 3–4 mm; leaflets 2 pairs, obliquely oblong-ovate, 4–16.5 × 2–7 cm, membranous, both surfaces pubescent when young, abaxially puberulent when old, base obliquely cuneate, very unequally sided, midvein near upper side, apex acute to acuminate. Racemes short, densely flowered, to 6 cm, in axils of apical leaves, several racemes forming a leafy panicle; bracts early caducous, narrowly lanceolate. Sepals yellowish green, often tinged with red, oblong-obovate, outside puberulent. Petals orange-yellow, broadly obovate to orbicular, 2–2.5 cm, both sides pubescent. Fertile stamens 6 or 7, opening by apical pores, upper 3 stamens usually absent. Ovary linear, densely appressed whitish pubescent. Legume pendulous on a short stout stipe, terete, 15–25 × 1–1.5 cm, slightly annulate, with a beak ca. 1 cm on top. Seeds 80–100, dark brown, compressed, ovoid, 5–6 mm, embedded in a foetid, black pulp. $2n = 28$.

Cultivated in Guangdong [native to tropical America].

10. *Senna multijuga* (Richard) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 492. 1982.

密叶决明 mi ye jue ming

Cassia multijuga Richard, Actes Soc. Hist. Nat. Paris 1: 108. 1782.

Shrubs, small trees, or trees, 7–20(–40) m tall. Young parts generally puberulent; branchlets reddish brown when dry. Leaves 12–20 cm; stipules early caducous, linear; rachis and petiole puberulent, with a long, ovoid gland on rachis between lowest pair of leaflets (often early caducous); leaflets 10–26(–50) pairs, linear-oblong or oblong, 1.2–4 × 0.6–0.8 cm, both surfaces puberulent or adaxially glabrous, apex obtusely rounded, mucronate, slightly oblique. Racemes several, arranged in a terminal, leafy panicle 10–20(–40) cm; peduncle and pedicels puberulent. Flowers 2.5–4 cm in diam.; bracts ovate, ca. 2 mm, tomentose. Sepals greenish yellow when mature, slightly unequal, 5–6 mm. Petals yellow, ovate-oblong, 1–2(–3) cm, glabrous. Fertile stamens 7, 3 larger, with filament ca. 10 mm and anthers 6–7 mm, staminodes 3, tiny. Ovary linear,

glabrous. Legume dark brown, flat, broadly linear, obtuse. Seeds 30–60, flattened, ca. 6 mm.

Cultivated in Guangdong (Guangzhou) [native to tropical America; widely cultivated in the tropics].

11. *Senna sulfurea* (Colladon) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 78. 1982.

粉叶决明 fen ye jue ming

Cassia sulfurea Colladon, Hist. Nat. Méd. Casses, 84. 1816; *C. glauca* Lamarck; *C. surattensis* N. L. Burman subsp. *glauca* (Lamarck) K. Larsen & S. S. Larsen; *Senna surattensis* (N. L. Burman) H. S. Irwin & Barneby subsp. *glauca* (Lamarck) X. Y. Zhu.

Shrubs, large, or small trees. Young shoots pilose, later glabrescent. Leaves 15–30 cm, with a clavate gland 1–2 mm on rachis between each of lowest 2 pairs of leaflets; stipules caducous, linear; petiole 3.5–6.5 cm; petiolules ca. 3 mm; leaflets 4–6 pairs, usually 5 pairs, abaxially farina-white, adaxially greenish, ovate or elliptic, 3.5–10 × 2.5–4 cm, base broadly cuneate or subrounded, apex obtusely rounded or inconspicuously emarginate. Racemes in axils of leaves in upper part of branches; peduncles 3–10 cm; rachis 1–6 cm; bracts ovate, 3–8 mm, apex acute, finally reflexed. Pedicels 1–3 cm. Sepals green to reddish brown, unequal, outer 2 suborbicular, ca. 3 mm in diam., inner 3 obovate, 6–9 mm. Petals bright yellow (drying orange or pinkish brown), ovate or obovate, 1.5–2.5 cm, 5-veined, clawed. Stamens 10, all fertile, with short, thick filaments, lowest 2 with longer filaments; anthers subequal, opening by short, apical slits. Ovary hairy; style glabrous. Legume glossy, flat, straight, strap-shaped, dehiscent, 12–20 × 1.2–1.8 cm, with long, slender beak on top, valves papery. Seeds 20–30, oblong-elliptic, ca. 7 × 4 mm.

Cultivated in Fujian, Guangdong, ?Guizhou, Yunnan [native to India, Laos, Malaysia (Peninsular), Sri Lanka, Thailand, Vietnam; Australia, Pacific islands (Polynesia); now naturalized in the neotropics].

12. *Senna surattensis* (N. L. Burman) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 81. 1982.

黄槐决明 huang huai jue ming

Cassia surattensis N. L. Burman, Fl. Indica, 97. 1768.

Shrubs or small trees, 5–7 m tall. Bark grayish brown, smooth; young branches, petioles, and rachises of leaves puberulent. Leaves 10–15 cm, with 2 or 3 clavate, long glands 1–2 mm on rachis between lowest 2 or 3 pairs of leaflets and in upper part of petiole; stipules subpersistent, linear, 5–10 mm; leaflets 6–9 pairs, abaxially farina-white, ovate to ovate-oblong, 2–5 × 1–1.7 cm, abaxially sparsely pubescent, adaxially glabrous, base rounded, apex rounded, slightly emarginate. Racemes in axils of apical leaves, 3–6 cm, 10–15-flowered; peduncles 2.5–5 cm; bracts ovate-oblong, 5–8 mm, outside puberulent, finally reflexed. Pedicels 1–2 cm. Sepals unequal, 2 outer suborbicular, ca. 3 mm in diam., 3 inner obovate, to 7 mm. Petals bright yellow to deep yellow, subequal, ovate to obovate, 1.5–2 cm, with long claw 1–1.5 mm. Stamens 10, all fertile, with short, thick filaments, lowest 2 filaments longer; anthers oblong, subequal, 5–7 mm, opening by apical slits. Ovary pu-

berulent; style glabrous. Legume flat, strap-shaped, dehiscent, 7–10 × 0.8–1.5 cm, long slender beaked, valves papery. Seeds 10–25, glossy, flattened. $2n = 48, 56$.

Cultivated in Fujian, Guangdong, Guangxi, ?Hainan, Taiwan, ?Yunnan, ?Zhejiang [native to India; widely introduced and cultivated elsewhere].

13. *Senna septemtrionalis* (Viviani) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 365. 1982.

光叶决明 guang ye jue ming

Cassia septemtrionalis Viviani, Elench. Pl. 14. 1802; *C. laevigata* Willdenow.

Shrubs or small trees, 1–4 m tall. Young branches green, smooth, glabrous. Leaves ca. 15 cm; rachis 6–12 cm, with a clavate or conical gland between all except upper pair of leaflets; stipules early caducous, linear; leaflets 3 or 4 pairs, abaxially farina-white, ovate to ovate-lanceolate, 5–11 × 2–3.5 cm, both surfaces glabrous, base cuneate or narrowly cuneate, sometimes oblique, apex acute to acuminate. Racemes axillary or terminal, 4–10-flowered, 5–10 cm including peduncle 2.5–5 cm; bracts caducous, linear-lanceolate, 2–5 mm. Pedicels 1.5–2.5 cm. Sepals yellowish green, ovate-elliptic, unequal, inner 8–10 mm, outer shorter. Petals bright yellow, ovate-orbicular, 1–1.5(–2) cm, shortly clawed. Fertile stamens 7, unequal, anthers opening by apical pores; 3 staminodes with anthers flat, suborbicular, non-functional. Ovary glabrous; style linear. Legume terete, 6–10 × ca. 1 cm, slightly subquadrangular when fully mature, valves subleathery, tardily dehiscent. Seeds 50–70, olive-colored, glossy, obovoid, flat, 5–6 mm.

Cultivated in Guangdong, Guangxi [native to tropical America; widely cultivated in the tropics].

14. *Senna tora* (Linnaeus) Roxburgh, Fl. Ind., ed. 1832, 2: 340. 1832.

决明 jue ming

Cassia tora Linnaeus, Sp. Pl. 1: 376. 1753.

Herbs, suffrutescent, annual, erect, 1–2 m tall. Leaves 4–8 cm; stipules caducous, linear, 10–15 mm; petiole without glands; rachis with a club-shaped gland between leaflets; petiolules 1.5–2 mm; leaflets 3 pairs, obovate or obovate-oblong, 2–6 × 1.5–2.5 cm, membranous, abaxially pubescent, adaxially sparsely pubescent, base cuneate to rounded and oblique, apex rounded, cuspidate. Racemes axillary, short, 1- or 2(or 3)-flowered; peduncles 6–10 mm; bracts linear, acute. Pedicels 1–1.5 cm. Sepals ovate or ovate-oblong, 5–8 mm, membranous, outside pubescent. Petals yellow, unequal, obovate, lower 2 slightly longer, 12–15 × 5–7 mm, shortly clawed. Fertile stamens 7, nearly equal, filaments 1.5–2 mm, anthers opening by apical pores, ca. 4 mm, 3 larger, 4 smaller, staminodes absent. Ovary sessile, densely white pubescent; style glabrous. Legume terete, subtetragonous, slender, 10–15 × 0.3–0.5 cm, both ends acuminate, valves membranous. Seeds 20–30, glossy, rhomboid, ca. 5 × 3 mm, with an areole. $2n = 26^*, 28^*, 56^*$.

Mountain slopes, wastelands, riverbank sand. Widespread to S of

the Chang Jiang [native to tropical America; widely cultivated in the tropics and subtropics].

The seeds known as “jue ming zi” (决明子) are used medicinally as a diuretic and purgative.

In addition, X. Y. Zhu et al. (Legumes China, 32. 2007) recorded *Senna obtusifolia* (Linnaeus) H. S. Irwin & Barneby as widely cultivated in China (as *S. tora* var. *obtusifolia* (Linnaeus) X. Y. Zhu).

15. *Senna bicapsularis* (Linnaeus) Roxburgh, Fl. Ind., ed. 1832, 2: 342. 1832.

双荚决明 shuang jia jue ming

Cassia bicapsularis Linnaeus, Sp. Pl. 1: 376. 1753.

Shrubs, erect, to 3 m tall, much branched. Crown spreading, with pendent or sometimes climbing twigs. Leaves 7–12 cm, with 3 or 4 pairs of leaflets; stipules caducous, narrowly lanceolate, subulate, 1–3 mm; petiole 2.5–4 cm, slender; rachis with a blackish brown, clavate to ovoid gland between lowest pair of leaflets; leaflets obovate or obovate-oblong, 1.5–4 × 1–2.5 cm, membranous, glabrous, base obliquely cuneate, apex obtusely rounded. Racemes lax, in axils of apical leaves, 5–15 cm, slender; bracts early caducous. Sepals yellowish to reddish brown, ovate, 5–10 mm. Petals yellow, obovate, 1.1–1.5 cm, very shortly clawed. Stamens 10, 7 fertile: 3 lower with unequal filaments 2–10 mm, anthers large, curved, ca. 1 mm; 4

short with filaments ca. 1 mm and anthers 4–5 mm; 3 stamens with minute anthers. Ovary with glabrous stalk and style. Legume brown, terete, straight or slightly curved, 9–17 × 1–1.5 cm, tardily dehiscent, valves membranous. Seeds 50–60, olive-green, ovoid, flattened, 5–7 mm.

Cultivated in Guangdong, Guangxi, Hainan [native to tropical America; widely cultivated in the tropics].

