

94. CAJANUS Adanson, Fam. Pl. 2: 326, 529. 1763 [“Cajan”], nom. cons.

木豆属 mu dou shu

Sa Ren (萨仁); Michael G. Gilbert

Erect shrubs, subshrubs, or woody or herbaceous vines. Leaves pinnately or sometimes digitately 3-foliolate; stipules and stipels small or absent; leaflets usually with sessile glands abaxially. Inflorescence axillary or terminal, racemose. Bracts deciduous; bracteoles absent. Calyx campanulate, 5-lobed; lobes short, upper 2 connate or slightly lobed at apex. Standard almost circular, obovate or obovate-elliptic, base clawed, with inflexed auricles; wings narrowly to broadly elliptic, auriculate; keels obliquely circular, apex obtuse. Stamens diadelphous; vexillary stamen free; anthers uniform. Ovary almost sessile; ovules 2–6; styles long, linear, apex curved, upper part glabrous or slightly hairy; stigma terminal, small, capitate. Legume linear-oblong, dehiscent, compressed. Seeds 2–10, reniform to almost orbicular, colorful or blotched; strophiole obvious or absent.

About 30 species: tropical Asia, Madagascar, Oceania; seven species in China.

See Maesen, Wageningen Agric. Univ. Pap. 85(4): 1–225. 1985.

1a. Erect shrubs or subshrubs.

2a. Leaflets lanceolate to elliptic, 2.8–10 cm, apex acute or acuminate; mature seed without strophiole 1. *C. cajan*

2b. Leaflets obovate, 2.5–3.8 cm, apex rounded or acute; mature seed with conspicuous strophiole 2. *C. niveus*

1b. Climbing or twining vines.

3a. Legume 1.5–2.5 cm 7. *C. scarabaeoides*

3b. Legume more than 3 cm.

4a. Flowers 2.5–3 cm; calyx with bulbous-based hairs 6. *C. grandiflorus*

4b. Flowers 1.5–2.8 cm; calyx without bulbous-based hairs.

5a. Terminal leaflet ovate to ovate-elliptic; calyx densely yellow hirsute 3. *C. goensis*

5b. Terminal leaflet rhomboid-ovate, rhomboid, or obovate-rhomboid; calyx pubescent or glandular hairy.

6a. Leaflets leathery, terminal leaflet broader than long; legume 4–6-seeded 4. *C. volubilis*

6b. Leaflets papery or thickly papery, terminal leaflet longer than broad; legume 8–10-seeded 5. *C. mollis*

1. *Cajanus cajan* (Linnaeus) Huth, Helios 11: 133. 1893.

木豆 mu dou

Cytisus cajan Linnaeus, Sp. Pl. 2: 739. 1753; *Cajanus bicolor* Candolle; *C. cajan* var. *bicolor* (Candolle) Purseglove; *C. cajan* var. *flavus* (Candolle) Purseglove; *C. flavus* Candolle; *C. indicus* Sprengel; *C. indicus* var. *bicolor* (Candolle) Kuntze; *C. indicus* var. *flavus* (Candolle) Kuntze; *C. indicus* var. *maculatus* Kuntze.

Shrubs, erect, 1–3 m tall. Branchlets gray pubescent. Leaves pinnately 3-foliolate; stipules small, ovate-lanceolate, 0.2–3 mm; petiole 1.5–5 cm, sparsely pubescent; stipels extremely small; petiolules 1–5 mm, hairy; leaflets lanceolate to elliptic, 2.8–10 × 0.5–3.5 cm, papery, abaxial surface densely pubescent and with inconspicuous yellow glands, adaxial surface pubescent, apex acute or acuminate, usually mucronate. Raceme 3–7 cm; peduncle 2–4 cm; few flowers terminal or almost terminal; bracts ovate-elliptic. Calyx campanulate, 5–7 mm; lobes triangular or lanceolate, pubescent. Corolla yellow, ca. 3 × calyx in length; standard suborbicular, with inflexed auricle; wings slightly obovate, with short auricle; keel apex obtuse, slightly inflexed. Ovary hairy; ovules several; style long, linear, glabrous; stigma capitate. Legume linear-oblong, ± inflated, 4–8.5 × 0.6–1.2 cm, dull pubescent, apex beaked, acuminate, long mucronate. Seeds 3–6, gray, sometimes with brown spots, subspherical, ca. 5 mm in diam., slightly compressed; strophiole absent. Fl. and fr. Jan–Nov. 2n = 22.

Roadsides, hills; 100–900 m. Fujian, Guangdong, Guangxi, Gui-

zhou, Hainan, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [probably originally from tropical Asia, now cultivated worldwide].

Cajanus cajan is used for food (“Pigeon Pea”), herbage, green fertilizer, and medicine. It is particularly valued in areas of low erratic rainfall.

2. *Cajanus niveus* (Wallich ex Benth) Maesen, Wageningen Agric. Univ. Pap. 85(4): 157. 1985.

白虫豆 bai chong dou

Atylosia nivea Wallich ex Benth in Miquel, Pl. Jungh. 243. 1852; *Cantharospermum niveum* (Wallich ex Benth) Raizada.

Subshrubs, erect, ca. 1 m tall. Stems pubescent. Leaves pinnately 3-foliolate; stipules small, deciduous; petiole 1.5–3 cm, densely tomentose; stipels absent; petiolules 2–5 mm, densely tomentose; leaflets leathery, with glandular spot below; terminal leaflet obovate, 2.5–3.8 cm, adaxial surface pubescent, basal veins 3, lateral veins 3–5 on each side, slightly obvious on both surfaces; lateral leaflets slightly smaller, obliquely elliptic, with black spot after drying adaxially, with fine downy hairs on abaxial surface. Raceme axillary, 3–6 cm, with a few flowers; peduncle 0.6–1.2 cm; bracts ovate. Calyx campanulate; lobes triangular, shorter than tube. Corolla yellow, 4–5 × as long as calyx; standard obovate, base auriculate; wings auriculate; keels with auricles, apex slightly inflexed. Ovary densely hairy. Legume obovate-elliptic, compressed, 3–4.5 cm, to 1.5 cm wide near top, densely pubescent, legume valve with obvious transverse constriction between seeds, apex with curved beak. Seeds

4–8, with light gray spot, ellipsoidal, ca. 5×4 mm, apex rounded; strophiole succulent at base. Fl. and fr. Aug–Oct.

Sunny slopes of rocky mountains; 400–1200 m. Yunnan [Myanmar].

3. *Cajanus goensis* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 264. 1850.

硬毛虫豆 ying mao chong dou

Atylosia barbata (Benth) Baker; *A. calycina* (Miquel) Kurz; *A. goensis* (Dalzell) Dalzell; *A. siamensis* Craib; *Cantharospermum barbatum* (Benth) Koorders; *Dunbaria barbata* Benth; *D. calycina* Miquel; *D. stipulata* Thuan; *D. thorelii* Gagnepain; *Endomallus pellitus* Gagnepain; *E. spirei* Gagnepain.

Vines, woody, twining, to several meters tall, yellow-brown villous except for corolla. Stems densely hairy when young, later glabrescent, to dark brown. Leaves pinnately 3-foliolate; stipules ovate-lanceolate, 7–12 mm, persistent; petiole 3–7 cm; terminal leaflet ovate to ovate-elliptic, $5-10 \times 3-5.5$ cm, densely villous when young, later glabrescent, base rounded, apex acuminate with hard mucro. Peduncle a few centimeters; bracts ovate, densely villous. Flowers ca. 3 cm; pedicels slender, 11–15 mm. Calyx campanulate; lobes linear-lanceolate, lowest longest, ca. $2 \times$ as long as tube. Corolla yellow; standard obovate-elliptic, ca. 2.8 cm, base with an inflexed auricle on each side, apex slightly emarginate; wings broadly elliptic, base with auricle on one side; keels sickleform, slightly shorter than wings, clawed, without auricle. Ovary linear, densely villous; style long, curved, glabrous; stigma capitate. Legume long elliptic, $4-6 \times$ ca. 1 cm, straight, densely villous, apex beaked. Seeds 5–7, brown, subspherical, ca. 4 mm in diam., wider than long; strophiole acute and white, succulent. Fl. Jan–Feb, fr. Feb–Jul.

Roadsides, river valleys; 1000–1300 m. Yunnan [Bangladesh, India, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam].

4. *Cajanus volubilis* (Blanco) Blanco, Fl. Filip., ed. 2, 417. 1845.

虫豆 chong dou

Cytisus volubilis Blanco, Fl. Filip. 599. 1837; *Atylosia crassa* Prain ex King; *A. volubilis* (Blanco) Gamble; *Cajanus crassus* (Prain ex King) Maesen; *Cantharospermum volubile* (Blanco) Merrill.

Vines, twining. Stems robust, brown villous when young. Leaves pinnately 3-foliolate; stipules small, ovate, 2–3 mm, deciduous; petiole 2–8 cm; stipels linear, ca. 2 mm; petiolules extremely short; leaflets leathery, both surfaces pubescent, abaxial surface with sessile glands; terminal leaflet rhomboid to rhomboid-ovate, $2-9.5 \times 2.7-9$ cm, base rounded or shallowly cordate, apex obtuse; basal veins 3; lateral leaflets slightly smaller, obliquely ovate, $3.5-6 \times 3-5$ cm. Raceme axillary, robust, 3.5–6 cm, densely gray villous, each node with 1 or 2 flowers; bracts large, ovate, to 1.7 cm, membranous, minutely villous, deciduous; pedicels 3–7 mm, hairy. Calyx campanulate, 5-lobed; lobes triangular, unequal, upper 2 nearly connate, sparsely shortly villous. Corolla yellow, ca. 1.5 cm; standard

obovate-orbicular, base auriculate at both sides; wings oblong, slightly shorter than standard; keels subequal to wings, with auricles, apex curved. Ovary pubescent; style filiform, long and curved, hairy adaxially. Legume oblong, inflated, $3-5 \times 0.8-1$ cm, hairy, transversely constricted between seeds. Seeds 4–6, black, usually subspherical, rarely hemispherical, 3–5 mm wide; strophiole thick and succulent. Fl. Dec–Mar, fr. Feb–Apr.

Forests. Guangxi, Hainan, Yunnan [India, Indonesia, Laos, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam].

5. *Cajanus mollis* (Benth) Maesen, Wageningen Agric. Univ. Pap. 85(4): 154. 1985.

长叶虫豆 chang ye chong dou

Atylosia mollis Benth in Miquel, Pl. Jungh. 243. 1852; *Cantharospermum molle* (Benth) Taubert.

Vines, woody, twining, densely villous. Stems longitudinally ribbed. Leaves pinnately 3-foliolate; stipules lanceolate, 2–3 mm, deciduous; petiole 1–2.5(–5) cm; petiolules extremely short; leaflets papery to thickly papery, both surfaces pubescent, denser abaxially and with rosinlike glands; terminal leaflet obovate-rhomboid, $4-7 \times 2-4.5$ cm, base rounded to obtuse, apex acuminate; basal veins 3; lateral leaflets slightly smaller, obliquely ovate, $4-7 \times 2-4.5$ cm. Raceme axillary, robust, 3.5–6 cm; bracts large, ovate, to 1.7 cm, membranous, exterior with several longitudinal striae and rosinlike glands, clothed with micro-villous hairs, deciduous; pedicels 3–7 mm, hairy. Calyx campanulate, 5-lobed; lobes lanceolate, unequal, upper 2 nearly connate, sparsely pubescent. Corolla yellow, ca. 1.5 cm, persistent; standard obovate-circular, with inflexed auricles on each side; wings oblong, slightly shorter than standard; keels subequal to wings, with auricles, apex curved. Ovary densely pubescent; style filiform, apex curved. Legume oblong, inflated, $4-7 \times 0.8-1$ cm, hairy, transversely constricted between seeds. Seeds 8–10, ellipsoidal to oblong, ca. 3 mm in diam.; strophiole thick and succulent. Fl. Sep–Nov, fr. Nov.

Forests. Yunnan [Bhutan, India, Nepal, Pakistan].

6. *Cajanus grandiflorus* (Benth ex Baker) Maesen, Wageningen Agric. Univ. Pap. 85(4): 125. 1985.

大花虫豆 da hua chong dou

Atylosia grandiflora Benth ex Baker in J. D. Hooker, Fl. Brit. India 2: 214. 1876; *Dunbaria pulchra* Baker; *Pueraria seguinii* H. Léveillé.

Vines, woody, twining. Stems cylindrical, pubescent. Leaves pinnately 3-foliolate, deciduous; petiole 3–8 cm, villous; stipels small, linear; petiolules 2–3 mm, densely pubescent; leaflets papery, with glands at adaxial surface; terminal leaflet ovate-rhomboid or rhomboid, $6-10 \times 4-7$ cm, pubescent, especially dense on veins abaxially, basal veins 3(or 5), base rounded, broadly cuneate to slightly cordate, apex acute and mucronate; lateral leaflets obliquely ovate. Raceme axillary, robust, to 20 cm; bracts large, ovate-elliptic, ca. 2×1 cm, membranous, de-

ciduous. Flower 2.5–3 cm; pedicel ca. 8 mm. Calyx with bulbous-based hairs; lobes lanceolate. Corolla yellow, glabrous; standard obovate or nearly circular, with inflexed auricles on each side and with 2 inconspicuous callosities; wings oblong, shorter than standard; keels inflexed. Ovary linear, densely yellow-brown villous. Legume oblong, 3.5–5 × ca. 1 cm, densely villous, transversely constricted between seeds. Seeds 4–7, black to pitch-black, almost spherical, ca. 3 mm wide; strophiole thick and succulent. Fl. Aug–Nov, fr. Oct–Dec.

Forest margins, roadsides; 1000–2500 m. Yunnan, Zhejiang [Bhutan, India, Myanmar].

7. *Cajanus scarabaeoides* (Linnaeus) Thouars, Dict. Sci. Nat. 6: 617. 1817.

蔓草虫豆 man cao chong dou

Dolichos scarabaeoides Linnaeus, Sp. Pl. 2: 720. 1753; *Atylosia pauciflora* (Wight & Arnott) Druce; *A. scarabaeoides* (Linnaeus) Bentham; *A. scarabaeoides* var. *argyrophyllus* Y. T. Wei & S. K. Lee; *Cajanus scarabaeoides* var. *argyrophyllus* (Y. T. Wei & S. K. Lee) Y. T. Wei & S. K. Lee; *Cantharospermum pauciflorum* Wight & Arnott; *C. scarabaeoides* (Linnaeus) Baillon; *Dolichos medicagineus* Roxburgh; *D. minutus* Wight & Arnott; *Rhynchosia biflora* Candolle; *R. scarabaeoides* (Linnaeus) Candolle; *Stizolobium scarabaeoides* (Linnaeus) Sprengel.

Vines, woody, twining or trailing, to 2 m. Stems slender, ± pubescent. Leaves pinnately 3-foliolate; stipules small, ovate, hairy, usually deciduous; petiole 1–2 cm; stipels absent; petioles extremely short; leaflets papery or nearly leathery, with glandular spots, sparsely pubescent on both surfaces, denser abaxially, basal veins 3, obviously convex below; terminal leaflet elliptic or obovate-elliptic to obovate, 1.2–4 × 0.8–1.5(–3) cm, apex obtuse or rounded; lateral leaflets smaller, obliquely elliptic to obliquely obovate. Raceme axillary, usually less than 2 cm, 1–5-flowered; peduncle 2–5 mm, densely brown to dull brown villous. Calyx campanulate, 5-lobed, or 4-lobed with upper 2 incompletely connate; lobes linear-lanceolate. Corolla yellow, ca. 1 cm, usually deciduous; standard obovate, with emarginate auricle and claw at base; wings narrowly elliptic, slightly curved, base auriculate; keels curved at apex, densely very pale brown villous. Ovules several. Legume oblong, 1.5–2.5 × 0.4–0.6 cm, leathery, densely villous, transversely constricted between seeds. Seeds 2–7, dark brown, ellipsoidal, ca. 4 mm; strophiole convex. Fl. Sep–Nov, fr. Oct–Dec.

Fields, roadsides, grassy slopes, seashores; below 100–1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Taiwan, Yunnan [Bangladesh, Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam; Africa, Oceania].

The roots of *Cajanus scarabaeoides* are used medicinally.

