

3. LINUM Linnaeus, Sp. Pl. 1: 277. 1753.

亚麻属 ya ma shu

Herbs, annual, biennial, or perennial, rarely woody at base. Stems erect, with a tough cortex, glabrous or rarely pubescent. Stipules small or absent. Leaves alternate or opposite, simple, sessile, with 1 or 3(or 5) veins from base, margin entire or sometimes denticulate and sometimes apically with glandular trichomes. Inflorescences cymes or scorpioid cymes. Flowers bisexual, regular, sometimes heterostylous. Sepals 5, imbricate, persistent, margin entire and sometimes with glandular trichomes. Petals 5, red, white, blue, or yellow, fugacious, longer than sepals, contorted, base clawed. Stamens 5, alternate with sepals; filament bases connate; staminodes 5, dentiform. Ovary 5-loculed or appearing 10-loculed by intrusion of false septa, with 2 ovules per locule; styles 5, filiform; stigmas capitate. Capsule splitting into 10 segments. Seeds compressed, shiny, with mucilaginous testa.

About 180 species: temperate and subtropic regions; nine species (one introduced) in China.

The greatest species diversity is in the Mediterranean region.

- 1a. Petal margin with glandular trichomes.
 - 2a. Flowers yellow; sepals much exceeding capsule 1. *L. corymbulosum*
 - 2b. Flowers mauve, bluish purple, purplish red, or sometimes almost white; sepals clearly shorter than capsule.
 - 3a. Annuals or biennials; petals ca. 2 × as long as sepals 2. *L. stelleroides*
 - 3b. Perennials; petals 3–4 × as long as sepals 3. *L. heterosepalum*
- 1b. Petal margin without glandular trichomes.
 - 4a. Annuals, cultivated; false septa ciliate 4. *L. usitatissimum*
 - 4b. Perennials, wild; false septa not ciliate.
 - 5a. Flowers heterostylous 5. *L. perenne*
 - 5b. Flowers homostylous.
 - 6a. Leaves 1-veined; pedicels slender, decumbent or nodding.
 - 7a. Upper cauline leaves dense, margin plane; usually with long nonflowering shoots; pedicel usually decumbent 6. *L. amurense*
 - 7b. Upper cauline leaves sparse, margin revolute; nonflowering shoots rudimentary; pedicel usually nodding 7. *L. nutans*
 - 6b. Leaves 1–5-veined; pedicels erect or ascending.
 - 8a. Leaves 1- or 3-veined; sepals 3–4 mm 8. *L. pallescens*
 - 8b. Leaves 3- or 5-veined; sepals 5–7 mm 9. *L. altaicum*

1. *Linum corymbulosum* Reichenbach, Fl. Germ. Excurs. 834. 1832.

长萼亚麻 chang e ya ma

Annuals 10–30 cm tall. Taproot pale, slender. Stems simple, erect, glabrous or sparsely pubescent, corymbosely branched apically from middle or sometimes branched at base and decumbent. Leaves alternate, narrowly lanceolate, 1–1.5 cm × 1–2 mm, nearly glabrous, 1-veined from base, margin slightly denticulate, apex acuminate to obtuse. Flowers axillary or opposite a leaf, solitary or in broad cymes, homostylous. Pedicel subequalling leaves or slightly shorter, erect. Sepals lanceolate, 4–6 × 1–1.5 mm, 2 × as long as capsules, 1-veined, basal margin glandular-ciliate. Petals yellow, long obovate, 6–8 × ca. 2 mm, base gradually narrowed into claw, apex obtuse. Capsule pale yellowish brown, globose-ovoid, 2–3 × ca. 1.5 mm. Seeds pale yellowish brown, elliptic, ca. 1 mm. Fl. Jun–Aug, fr. Jul–Oct. $2n = 18$.

Sandy and gravelly floodplains, flat areas in deserts or on low mountains. Xinjiang [Afghanistan, Kazakhstan, Pakistan, Russia; N Africa, SW Asia, Europe].

2. *Linum stelleroides* Planchon, London J. Bot. 5: 178. 1848.

野亚麻 ye ya ma

Annuals or biennials, 20–90 cm tall. Stems cylindrical, erect, glabrous, woody at base, corymbosely branched above middle. Leaves alternate, linear, linear-lanceolate, or narrowly lanceolate, 1–4 cm × 1–4 mm, both surfaces glabrous, 3-veined from base, base attenuate, margin entire, apex acuminate, acute, or obtuse. Flowers solitary or numerous in broad cymes, ca. 1 cm in diam. Pedicel 0.3–1.5 cm. Sepals oblong to broadly ovate, 3–4 mm, base 3-veined, margin membranous and with black stipitate glands. Petals blue, bluish purple, or pink, obovate, to 9 mm, base gradually narrowed, apex erose. Stamens as long as styles. Styles distinct or basally connate. Capsule subglobose, 3–5 mm in diam., septicidal. Seeds oblong, 2–2.5 mm. Fl. Jun–Sep, fr. Aug–Oct. $2n = 20$.

Mountain slopes, along trails, wastelands; 600–2800 m. Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan [Japan, Korea, Kyrgyzstan, Russia (Far East), Tajikistan, Turkmenistan, Uzbekistan].

3. *Linum heterosepalum* Regel, Trudy Imp. S.-Peterburgsk. Bot. Sada 2(2): 433. 1873.

异萼亚麻 *yi e ya ma*

Perennials 20–50 cm tall. Root woody, sturdy. Stems several, erect, glabrous or with grayish yellow to almost white scalelike trichomes. Leaves alternate, dense, linear-lanceolate to narrowly lanceolate, 1.5–3 cm × 2–5 mm, glabrous, 3- or 5-veined from base, base rounded, margin apically with reddish brown glandular trichomes, apex obtuse to acute. Inflorescences terminal, cymose, with 4–8 flowers. Flowers heterostylous. Pedicel ± as long as sepals, erect, sturdy. Sepals 5–8 mm; outer sepals lanceolate to ovate-lanceolate, herbaceous, margin glandular-ciliate, apex acute; inner sepals broadly ovate to rotund-ovate, at least 1 with margin glandular-ciliate. Petals blue to purple, long obovate, 3–4 × as long as sepals, base gradually narrowed into a claw, apically with a clear limb. Capsule yellowish brown, globose to oblate, 0.8–1.2 cm. Seeds pale yellowish brown, flattened ellipsoid, ca. 5 × 1.5 mm. Fl. Jun–Jul, fr. Jul–Aug.

Flat areas on mountains, xeric thickets. Xinjiang [Kazakhstan, Kyrgyzstan].

This species is grown as an ornamental.

4. *Linum usitatissimum* Linnaeus, Sp. Pl. 1: 277. 1753.

亚麻 *ya ma*

Linum humile Miller.

Annuals 30–120 cm tall. Stems simple, cylindric, erect, woody at base, apically corymbosely branched. Leaves alternate, linear, linear-lanceolate, or lanceolate, 2–4 cm × 1–5 mm, 3(or 5)-veined from base, base attenuate, apex acute. Flowers axillary, solitary or in broad cymes, 15–20 mm in diam. Pedicel 1–3 cm, erect. Sepals ovate to ovate-lanceolate, 5–8 mm, 3(or 5)-veined from base, nonglandular, margin entire or ciliate, apex acute to acuminate. Petals blue, rarely white or red, obovate, 0.8–1.2 cm. Styles distinct; stigma linear-clavate. Capsule globose, 6–9 mm in diam., septicidal, with 10 seeds. Seeds brown, oblong, flattened, 3.5–4 mm. Fl. Jun–Aug, fr. Jul–Oct. $2n = 30$.

Cultivated throughout China except Hainan and Taiwan, sometimes naturalized [origin uncertain but possibly the Mediterranean region and/or parts of W Asia and W Europe, widely cultivated].

This species is used for fiber and oil.

5. *Linum perenne* Linnaeus, Sp. Pl. 1: 277. 1753.

宿根亚麻 *su gen ya ma*

Linum sibiricum Candolle.

Perennials 20–90 cm tall. Taproot sturdy. Stems erect or ascendant, branched from base, woody at base. Leaves alternate, linear to linear-lanceolate, 2–4 cm × 1–5 mm, 1(or 3)-veined from base, base attenuate, apex acute. Flowers numerous, in racemose cymes, ca. 2 cm in diam., heterostylous. Pedicel 1–2.5 cm, erect or slightly excurved. Sepals ovate, 3.5–5 mm, 5- or 7-veined, margin entire; outer 3 sepals with apex acute; inner 2 sepals with apex obtuse. Petals blue to bluish purple, obovate, 1–1.8 cm. Styles distinct; stigma capitate. Capsule subglobose, 3.5–8 mm in diam., septicidal. Seeds

brown, elliptic, flattened, 3.5–4 × ca. 2 mm. Fl. Jun–Aug, fr. Jul–Sep. $2n = 18$.

Dry mountain slopes, sparse thickets, grasslands, dry plains, sandy and gravelly floodplains; below 4100 m. Gansu, Hebei, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [Mongolia, Russia; W Asia, Europe].

6. *Linum amurense* F. G. C. Alefeld, Bot. Zeitung (Berlin) 25: 251. 1867.

黑水亚麻 *hei shui ya ma*

Perennials 25–60 cm tall. Roots with a taproot. Stems several, erect, base woody, branched apically from middle, with long nonflowering shoots. Leaves alternate, linear to linear-lanceolate, 1.5–2 cm × ca. 2 mm, 1-veined from base, margin plane, apex acute. Flowers in sparse cymes, numerous. Pedicel slender, excurved in fruit. Sepals ovate to elliptic, 4–5 mm, base 5-veined, apex with a mucro. Petals bluish purple, obovate, 1.2–1.5 × 0.4–0.5 cm, base cuneate, apex rounded. Filaments auriculate at base. Styles connate at base. Capsule subglobose, ca. 7 mm in diam., septicidal. Seeds brown, ellipsoid, flattened. Fl. Jun–Jul, fr. Aug.

Grasslands, sandy and gravelly floodplains, dry mountain slopes; 600–4000 m. Gansu, Heilongjiang, Jilin, Nei Mongol, Ningxia, Shaanxi [Russia (Far East)].

7. *Linum nutans* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 26: 430. 1880.

垂果亚麻 *chui guo ya ma*

Linum baicalense Juzepczuk.

Perennials 20–40 cm tall. Roots with a taproot. Stems several, erect, base woody and with scalelike leaves, branched above middle, nonflowering shoots rudimentary. Cauline leaves alternate, linear to linear-lanceolate, 1–2.5 cm × 1–3 mm, glabrous, 1-veined from base, margin slightly revolute. Flowers numerous in cymes, ca. 2 cm in diam. Pedicel slender, nodding in fruit. Sepals ovate, 3–5 × 2–3 mm, base 5-veined, margin membranous, apex acute. Petals blue to bluish purple, obovate, ca. 1 cm, base cuneate, apex rounded. Stamens ± as long as styles. Styles distinct. Capsule subglobose, 6–7 mm in diam., septicidal. Seeds oblong, ca. 4 × 2 mm. Fl. Jun–Jul, fr. Jul–Aug.

Fl. China 11: 35–37. 2008.

Sandy grasslands, dry mountain slopes; 600–4000 m. Gansu, Heilongjiang, Jilin, Nei Mongol, Ningxia, Shaanxi, S Xizang (Yadong) [India (Sikkim), N Mongolia, Russia (E Siberia)].

8. *Linum pallescens* Bunge in Ledebour, Fl. Altaic. 1: 438. 1829.

短柱亚麻 duan zhu ya ma

Perennials 10–30 cm tall. Taproot sturdy. Stems several, erect or basally decumbent, simple or apically branched, base woody and with scalelike leaves, nonflowering shoots usually present and with dense narrow leaves. Cauline leaves alternate, linear, 0.7–1.5 cm × 0.5–1.5 mm, 1- or 3-veined from base, base attenuate, margin revolute, apex acute. Flowers solitary or in cymes, ca. 7 mm in diam. Sepals ovate, ca. 3.5 × 2 mm, apex obtuse and with a mucro; outer 3 sepals 1- or 3(or 5)-veined. Petals white to blue, obovate, ca. 2 × as long as sepals, base cuneate, apex rounded and retuse. Stamens ± as long as styles. Capsule subglobose, ca. 4 mm in diam., septicidal. Seeds brown, elliptic, flattened, ca. 4 × 2 mm. Fl. Jun–Aug, fr. Jul–Sep.

Dry mountain slopes, sandy and gravelly floodplains, wastelands; 500–1200 m. Gansu, Qinghai, Shaanxi, Xinjiang, Xizang [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan].

9. *Linum altaicum* Ledebour ex Juzepczuk, Fl. URSS 14: 113. 1949.

阿尔泰亚麻 a er tai ya ma

Perennials 30–60 cm tall. Roots sturdy. Stems several, caespitose, erect, glabrous, branched above middle, base woody. Leaves densely alternate, linear to narrowly lanceolate, 2–2.5 cm × 2–2.5 mm, glabrous, 3- or 5-veined from base, apex acuminate to acute. Flowers several in sparse cymes. Pedicel longer than leaves, erect. Outer sepals broadly ovate to elliptic-ovate, 5–7 × ca. 2 mm, apex acute; inner sepals with margin membranous, apex obtuse. Petals blue to bluish purple, obovate, ca. 3 × as long as sepals, base attenuate into a claw, apex rounded to retuse. Stamens ± as long as styles. Capsule yellowish brown, subglobose, 6–7 × 4–5 mm. Seeds oblong, ca. 4 × 3 mm. Fl. Jun–Jul, fr. Jul–Aug.

Mountain meadows, flat or sparse thickets; 600–4000 m. Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia (W Siberia), Tajikistan].

Fl. China 11: 35–37. 2008.