

1. *TILIA* Linnaeus, Sp. Pl. 1: 514. 1753.

椴树属 *duan shu shu*

Trees deciduous. Leaves alternate; stipule caducous; leaf blade base usually slightly oblique, cordate, truncate, or rounded, margin usually serrate or sometimes entire, often with hairy domatia in axils of veins. Inflorescences axillary, cymose, 3- to many-flowered. Bracts adnate to inflorescence peduncle, band-shaped, large, persistent. Flowers bisexual. Sepals 5, with adaxial nectary at base. Petals 5, white or yellow, imbricate. Stamens many, free or connate into 5 fascicles; anthers 2-locular, dorsifixed; staminodes when present petaloid, tightly enclosing style and stigma, alternating with petals. Ovary 5-loculed, ovoid, usually hairy after anthesis; ovules 2 per locule; style glabrous; stigma apparent, 5-lobed. Fruit a nut or capsule, globose, obovoid, ellipsoid, or ovoid, pericarp usually hairy, mostly woody or fragile and indehiscent, rarely leathery and dehiscent when dry. Seeds 1 or 2.

Between 23 and 40 species: primarily in temperate and subtropical regions; 19 species (15 endemic) in China.

Tilia is very distinct by its unique bracts adnate to the peduncle of the inflorescence. It is in the process of being monographed by C. D. Pigot, who has studied many populations in China, but this work is not yet available. An initial publication (Pigott, Edinburgh J. Bot. 59: 239–246. 2002) indicated that he intends to accept only 23 species in total, 13 of these occurring in China, and he intends to include many of the more recently described Chinese species within the very variable *Tilia tuan*. Chromosome numbers were given for all those taxa that he accepts. Tang and Zhuge (Acta Phytotax. Sin. 34: 254–264. 1996) recognized 14 “good” species in China, 17 in E Asia, and 25 in total, but Tang noted that more study for a taxonomic revision is needed.

Modern molecular analyses indicate that *Tilia* and *Craigia* form a very distinct lineage that could be treated as a distinct family or subfamily restricted to just these two genera plus the poorly known Central American genus *Mortoniodendron* Standley & Steyermark.

- 1a. Fruit exocarp leathery, dehiscent when dry 1. *T. endochrysea*
- 1b. Fruit exocarp woody or thickly leathery, indehiscent.
 - 2a. Exocarp thickly leathery, fragile; bract with stalk.
 - 3a. Leaf blade 4–6 cm; fruit 5-angled.
 - 4a. Cymes 5–8 cm; leaf blade apex usually 3-lobed; petaloid staminodes present; fruit obovoid 15. *T. mongolica*
 - 4b. Cymes 3–5 cm; leaf blade apex usually not lobed; staminodes absent; fruit ovoid 16. *T. amurensis*
 - 3b. Leaf blade 5–10 cm; fruit not angled or only weakly so.
 - 5a. Ovary glabrous; cymes (20–)40–100-flowered, with bracteoles 19. *T. jiaodongensis*
 - 5b. Ovary hairy; cymes 3–16-flowered, without bracteoles.
 - 6a. Leaf blade orbicular, brown when dry; fruit ovoid; sepals abaxially sparsely stellate hairy; pedicel 5–8 mm; bracts 3.5–6 cm 17. *T. japonica*
 - 6b. Leaf blade ovate or ovate-triangular, greenish when dry; fruit obovoid; sepals abaxially glabrous; pedicel 10–15 mm; bracts 5–8.5 cm 18. *T. paucicostata*
 - 2b. Exocarp woody, hard; bract sessile or with short stalk, basal 1/3–1/2 adnate to peduncle.
 - 7a. Fruit not angled, apex rounded.
 - 8a. Leaf blade margin entire or with a few teeth near apex 10. *T. tuan*
 - 8b. Leaf blade prominently serrate.
 - 9a. Bracts with stalk 5–8 cm.
 - 10a. Leaf blade broadly ovate, abaxially hairy in vein axils only 13. *T. chingiana*
 - 10b. Leaf blade ovate, suborbicular, or ovate-oblong, abaxially uniformly tomentose or puberulent.
 - 11a. Branchlets hairy; bracts 12–16 cm 10. *T. tuan*
 - 11b. Branchlets glabrous; bracts 6–9 cm 7. *T. likiangensis*
 - 9b. Bracts usually sessile.
 - 12a. Leaf blade submembranous, abaxially glabrous or hairy in axils of veins only 11. *T. membranacea*
 - 12b. Leaf blade thicker, not membranous, abaxially uniformly hairy.
 - 13a. Leaf blade marginal teeth awnlike, 1.5–5 mm; bracts 3.5–9 cm 2. *T. mandshurica*
 - 13b. Leaf blade marginal teeth smaller, not awnlike; bracts 8–12 cm.
 - 14a. Cymes 3–22-flowered; leaf blade base usually oblique 10. *T. tuan*
 - 14b. Cymes 3–12-flowered; leaf blade base symmetrically cordate 12. *T. miqeliiana*
 - 7b. Fruit prominently or weakly 5-angled, apex acute or obtuse.
 - 15a. Old leaves abaxially glabrous or hairy in axils of veins only; branchlets glabrous or rarely hairy when very young.
 - 16a. Cymes 50–200-flowered 14. *T. taishanensis*
 - 16b. Cymes 1–15-flowered.
 - 17a. Bract with stalk 0.4–2 cm.
 - 18a. Leaf blade suborbicular, marginal teeth 3–5 mm; bracts 7–10 × 1–1.3 cm 3. *T. henryana*

- 18b. Leaf blade broadly ovate, marginal teeth small and dense; bracts
6–6.5 × 1.5–1.8 cm 8. *T. callidonta*
- 17b. Bract sessile.
- 19a. Leaf blade (5.5–)10–14(–17) cm; fruit weakly 5-angled 9. *T. nobilis*
- 19b. Leaf blade 5–10 cm; fruit prominently 5-angled 4. *T. chinensis*
- 15b. Old leaves abaxially uniformly densely hairy; branchlets hairy or not.
- 20a. Branchlets hairy.
- 21a. Leaf blade marginal teeth less than 1.5 mm, lateral veins 7–9 pairs; fruit
ovoid-globose 4. *T. chinensis*
- 21b. Leaf blade marginal teeth 1.5–5 mm, lateral veins 5–7 pairs; fruit globose or obovoid.
- 22a. Branchlets and leaves yellow stellate tomentose; leaf blade orbicular, marginal
teeth with long mucros 3–5 mm 3. *T. henryana*
- 22b. Branchlets and leaves gray stellate tomentose; leaf blade ovate-orbicular,
marginal teeth triangular 2. *T. mandshurica*
- 20b. Branchlets glabrous.
- 23a. Leaf blade marginal teeth 3–5 mm; bract stalk 0.7–2 cm 3. *T. henryana*
- 23b. Leaf blade marginal teeth less than 2 mm; bract stalk usually less than 5 mm.
- 24a. Leaf blade broadly elliptic, abaxially tomentose; bracts sessile or subsessile.
- 25a. Cymes 1–3-flowered; petals 8–9 mm 4. *T. chinensis*
- 25b. Cymes 7–20-flowered; petals 6–7 mm 5. *T. oliveri*
- 24b. Leaf blade ovate-oblong or obliquely ovate, abaxially puberulent or puberulent;
bracts stalked.
- 26a. Petiole glabrous, leaf margin deeply serrate, teeth extending into awns
..... 6. *T. kweichouensis*
- 26b. Petiole stellate pubescent, leaf margin serrulate 7. *T. likiangensis*

1. *Tilia endochrysea* Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 63: 9. 1926.

白毛榉 bai mao duan

Tilia begoniifolia Chun & H. D. Wong (1935), not Steven (1846); *T. croizatii* Chun & H. D. Wong; *T. hypoglauca* Rehder; *T. lepidota* Rehder; *T. leptocarya* Rehder; *T. leptocarya* var. *triloba* Rehder; *T. scalenophylla* Ling; *T. vitifolia* Hu & F. H. Chen (1951), not Host (1831).

Trees to 20 m tall. Bark gray with longitudinal dark gray fissures; branchlets bright green when young, glabrous or minutely hairy; buds 3–3.5 mm, glabrous. Stipules oblong, 7–10 mm; petiole 3–7 cm, nearly glabrous; leaf blade dark brown when dry, broadly to narrowly ovate or almost triangular, sometimes apically 3–5-lobed, 7–16 × 5–13 cm, abaxially gray-white stellate tomentose, sometimes glabrescent, adaxially glabrous, base obliquely cordate or truncate, margin sparsely denticulate, teeth 5–12 mm apart, apex acuminate or acute. Cymes 9–16 cm, 8–32-flowered; peduncle 3.5–9 cm, nearly glabrous. Bracts narrowly oblong, 6–13 × 1.5–3 cm, adnate to peduncle for 1–1.5 cm, abaxially gray-white stellate puberulent, adaxially glabrous or sparsely hairy, base cuneate to cordate, apex rounded; stalk 1–3 cm. Pedicel 2–15 mm, stellate pilose. Sepals narrowly ovate, 6–8 mm, gray-brown puberulent. Petals 0.9–1.2 cm. Stamens ca. 40, as long as sepals; staminodes slightly shorter than petals. Ovary hairy; style 4–5 mm, glabrous; stigma 5-lobed. Fruit globose, leathery, dehiscent into 5-valves. Fl. Jul–Aug. $2n = 82^*$.

• Species-rich mixed evergreen and deciduous woodlands, often on steep sides of narrow valleys and along rivers on well-drained brown soils; 600–1200 m. S Anhui, Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang.

Pigott (Bot. Mag. 23: 56–61. 2006) gave a discussion of the taxonomy and ecology of *Tilia endochrysea*.

2. *Tilia mandshurica* Ruprecht & Maximowicz, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15: 124. 1856.

糠榉 kang duan

Trees to 20 m tall, to 0.5(–0.7) m d.b.h. Bark dark gray, longitudinally fissured when old; branchlets gray-white stellate tomentose when young; buds tomentose. Petiole robust, 2–5 cm, stellate tomentose, glabrescent; leaf blade ovate-orbicular, 8–10 × 7–9 cm, abaxially densely gray stellate tomentose, adaxially glabrous, lateral veins 5–7 pairs, base obliquely cordate or truncate, margin dentate, teeth triangular, 1.5–5 mm, with or without awns, 4–7 mm apart, apex acute. Cymes 6–12(–20)-flowered, 6–9 cm; peduncle hairy. Bracts narrowly oblong or narrowly oblanceolate, 5–9 × 1–2.4 cm, adnate to peduncle for 1/3–1/2 of length, abaxially stellate puberulent, adaxially glabrous, base obtuse, apex rounded; stalk 4–5 mm. Pedicel 4–6 mm, hairy. Sepals ca. 5 mm, abaxially stellate puberulent, silky, adaxially villous. Petals 7–8 mm. Stamens as long as sepals; staminodes slightly smaller than petals. Ovary stellate tomentose; style 4–5 mm, glabrous. Fruit globose, ovoid or obovoid, weakly to prominently 5-angled, 7–9 mm, sometimes tuberculate; exocarp woody, indehiscent. Fr. Jul, fr. Sep. $2n = 82$.

Hebei, Heilongjiang, N Jiangsu, Jilin, Liaoning, Nei Mongol, Shandong [Japan, Korea, Russia (Siberia)].

- 1a. Fruit obovoid or obovoid-cylindrical,
prominently 5-angled 2d. var. *megaphylla*
- 1b. Fruit globose or ovoid, rarely obscurely
angled.
- 2a. Fruit prominently tuberculate 2b. var. *tuberculata*

- 2b. Fruit not tuberculate.
 3a. Fruit globose, weakly
 5-angled 2a. var. *mandshurica*
 3b. Fruit ovoid, rarely obscurely
 angled 2c. var. *ovalis*

2a. *Tilia mandshurica* var. *mandshurica*

糠椴(原变种) kang duan (yuan bian zhong)

Tilia pekingensis Ruprecht ex Maximowicz.

Leaf blade marginal teeth with awns. Bracts 5–9 × 1–2.4 cm. Fruit globose, weakly 5-angled, not tuberculate.

Hebei, Heilongjiang, N Jiangsu, Jilin, Liaoning, Nei Mongol, Shandong [Japan, Korea, Russia (Siberia)].

2b. *Tilia mandshurica* var. *tuberculata* Liou & Li, Ill. Man. Woody Pl. N.-E. Prov. 565. 1955.

瘤果糠椴 liu guo kang duan

Leaf blade marginal teeth with awns. Bracts 3.5–5.5 cm. Fruit globose, prominently tuberculate.

• Liaoning.

2c. *Tilia mandshurica* var. *ovalis* (Nakai) Liou & Li, Ill. Man. Woody Pl. N.-E. Prov. 565. 1955.

卵果糠椴 luan guo kang duan

Tilia ovalis Nakai, Bot. Mag. (Tokyo) 35: 15. 1921.

Leaf blade smaller, marginal teeth without awns. Bract 5–9 cm. Fruit ovoid, rarely obscurely 5-angled, not tuberculate.

Jilin [Japan].

2d. *Tilia mandshurica* var. *megaphylla* (Nakai) Liou & Li, Ill. Man. Woody Pl. N.-E. Prov. 418. 1955.

椴果辽椴 leng guo liao duan

Tilia megaphylla Nakai, Bot. Mag. (Tokyo) 27: 130. 1913.

Leaf blade larger, marginal teeth with awns. Bract 5–9 cm. Fruit obovoid or obovoid-cylindrical, prominently 5-angled, densely stellate hairy, not tuberculate.

Heilongjiang [Korea].

3. *Tilia henryana* Szyszłowicz, Hooker's Icon. Pl. 20: t. 1927. 1890.

毛糯米椴 mao nuo mi duan

Trees to 25 m. Bark pale gray, fissured; branchlets and buds yellow stellate tomentose or glabrous. Petiole 3–5 cm, yellow tomentose; leaf blade orbicular, 6–10 × 6–10 cm, abaxially densely yellow stellate tomentose or hairy only in vein axils, adaxially glabrous, lateral veins 5–6 pairs, extending into 3–5 mm awns, base cordate, sometimes oblique, margin serrate, apex broadly rounded, shortly caudate. Cymes 30–100-flowered, 10–12 cm; peduncle stellate puberulent. Bracts narrowly oblanceolate, 7–10 × 1–1.3 cm, adnate to peduncle for 3–5 cm, abaxially yellow stellate puberulent, adaxially sometimes glabrous, base narrow, apex obtuse; stalk 0.7–2 cm. Pedicel 7–9

mm, hairy. Sepals narrowly ovate, 4–5 mm, abaxially hairy. Petals 6–7 mm. Stamens as long as sepals; staminodes shorter than petals. Ovary hairy; style ca. 4 mm. Fruit obovoid, 5-angled, 7–9 mm, stellate hairy; exocarp woody, hard, indehiscent. Fl. Jun. $2n = 164^*$.

• Anhui, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Zhejiang.

- 1a. Branchlets yellow stellate tomentose;
 leaf blade abaxially densely yellow
 stellate tomentose 3a. var. *henryana*
 1b. Branchlets glabrous or nearly so; leaf
 blade abaxially hairy in vein axils,
 otherwise glabrous 3b. var. *subglabra*

3a. *Tilia henryana* var. *henryana*

毛糯米椴(原变种) mao nuo mi duan (yuan bian zhong)

Branchlets yellow stellate tomentose. Leaf blade abaxially densely yellow stellate tomentose. Bracts adaxially yellow stellate puberulent.

• Anhui, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Zhejiang.

3b. *Tilia henryana* var. *subglabra* V. Engler, Monogr. *Tilia*, 125. 1909.

糯米椴 nuo mi duan

Branchlets and bud glabrous or nearly so. Leaf blade abaxially hairy in vein axils only, marginal teeth 3–5 mm. Bracts adaxially glabrous.

• Anhui, Jiangsu, Jiangxi, Zhejiang.

4. *Tilia chinensis* Maximowicz, Trudy Imp. S.-Peterburgsk. Bot. Sada 11: 83. 1890.

华椴 hua duan

Trees to 30 m tall. Branchlets usually brown when dry, glabrous, rarely sparsely pilose or densely tomentose; winter buds big, bud scale glabrous. Petiole 3–8 cm, usually sparsely pilose; leaf blade broadly elliptic or orbicular to ovate-orbicular, (5–)7–13 × (4.5–)6–9 cm, papery, abaxially densely stellate tomentose, adaxially glabrous, basal veins 5–7, lateral veins 7–9 pairs, base usually oblique, cordate, truncate, or rounded, margin serrate, apex acuminate or shortly acuminate. Cymes 1–3-flowered, usually not exceeding bract, shorter than leaves; peduncle hairy. Bracts long band-shaped, 4–9(–12) × 1–2 cm, adnate to peduncle for 2/5–1/2 of length, abaxially hairy, adaxially glabrous, sessile or with stalk to 0.5 cm. Sepals narrowly ovate, 6–7 mm, abaxially stellate hairy, adaxially stellate tomentose or glabrous at central part, margin densely hairy. Petals 8–9 mm, glabrous. Stamens 30–45, in 5 fascicles; staminodes 5, smaller than petals. Ovary 5-angled, gray-yellow tomentose; style glabrous; stigma peltate or capitate. Fruit ellipsoid or globose, prominently 5-angled, 10–14 × 8–9 mm, gray-yellow tomentose; exocarp woody, hard, indehiscent. Fl. Jun–Jul, fr. Aug–Oct. $2n = 164^*$.

• Forests; 1800–3100(–3900) m. Gansu, Henan, Hubei, Shaanxi, Sichuan, Xizang, Yunnan.

- 1a. Old leaves abaxially subglabrous and hairy in axils of veins only 4b. var. *investita*
 1b. Old leaves abaxially densely hairy.
 2a. Branchlets glabrous 4a. var. *chinensis*
 2b. Branchlets hairy 4c. var. *intonsa*

4a. *Tilia chinensis* var. *chinensis*

华榭(原变种) hua duan (yuan bian zhong)

Tilia baroniana Diels; *T. laetevirens* Rehder & E. H. Wilson; *T. yunnanensis* Hu.

Branchlets glabrous or rarely hairy when very young. Leaf blade 7–13 × 6–9 cm, abaxially densely stellate tomentose when old, marginal awns 3–5 mm. Fruit ellipsoid or globose.

• Forests; 1800–3100(–3900) m. Gansu, Henan, Hubei, Shaanxi, Sichuan, Xizang, Yunnan.

4b. *Tilia chinensis* var. *investita* (V. Engler) Rehder, J. Arnold Arbor. 12: 75. 1931.

秃华榭 tu hua duan

Tilia baroniana var. *investita* V. Engler, Monogr. *Tilia*, 132. 1909.

Branchlets glabrous or very nearly so. Leaf blade 5–10 × 4.5–9 cm, abaxially subglabrous and hairy in vein axils only when old. Fruit ellipsoid or globose.

• Hubei, Shaanxi, Sichuan, ?Xizang, Yunnan.

4c. *Tilia chinensis* var. *intonsa* (E. H. Wilson) Y. C. Hsu & R. Zhuge, J. SouthW. Forest. Coll. 11(1): 3. 1991.

多毛榭 duo mao duan

Tilia intonsa E. H. Wilson in Sargent, Pl. Wilson. 2: 365. 1915; *T. fulvosa* Hung T. Chang.

Branchlets densely tomentose. Leaf blade marginal teeth shorter than 1.5 mm. Fruit ovoid-globose.

• Sichuan.

5. *Tilia oliveri* Szyszłowicz, Hooker's Icon. Pl. 20: sub t. 1927. 1890.

鄂榭 e duan

Trees 6–26 m tall. Bark dark gray, smooth with shallow furrows and rounded ridges; branchlets glabrous; winter buds big, glabrous or hairy. Petiole 1.5–5 cm, glabrous or rarely pilose; leaf blade broadly elliptic, ovate-orbicular, or triangular-ovate, 6–14 × 4.5–10 cm, abaxially densely gray-white stellate tomentose, adaxially glabrous, lateral veins 5–6 pairs, base shallowly cordate to obliquely truncate, margin serrate to serrulate, teeth often awned, apex shortly acuminate. Cymes 7–20-flowered, as long as or shorter than bracts. Bracts band-shaped, sometimes broader distally, 5–8 × 1–2.5 cm, adnate to peduncle for 2/5 of length, sessile. Sepals triangular-ovate, 5–6 mm, abaxially densely stellate puberulent, adaxially densely tomentose. Petals 5, 6–7 mm, glabrous. Stamens 45, in 5 fascicles, glabrous; staminodes smaller than petals, glabrous, stalked. Ovary densely stellate tomentose; style glabrous. Fruit obovoid,

globose, or ellipsoid, 7–10 mm, gray-white tomentose and verrucose; exocarp woody, hard, indehiscent. Fl. Jun–Aug, fr. Aug–Sep. $2n = 82^*$.

• Evergreen or mixed evergreen and deciduous forests; 1300–2300 m. Gansu, Hubei, Hunan, Shaanxi, Sichuan.

- 1a. Leaf blade abaxially gray-white tomentose, marginal teeth often extending into distinct awn 5a. var. *oliveri*
 1b. Leaf blade abaxially loosely yellow-brown or gray stellate tomentose to pubescent, marginal teeth short and broad 5b. var. *cinerascens*

5a. *Tilia oliveri* var. *oliveri*

鄂榭(原变种) e duan (yuan bian zhong)

Tilia pendula V. Engler ex C. K. Schneider.

Petiole 1.5–5 cm; leaf blade 6–10 cm, broadly elliptic, ovate-orbicular, or triangular-ovate, abaxially gray-white tomentose, adaxially glabrous, marginal teeth often prominently awned.

• Evergreen or mixed evergreen and deciduous forests; 1300–2300 m. Gansu, Hubei, Hunan, Shaanxi, Sichuan.

5b. *Tilia oliveri* var. *cinerascens* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 367. 1915.

灰背榭 hui bei duan

Tilia populifolia Hung T. Chang (1982), not Lesquereux [fossil].

Petiole 3–5 cm; leaf blade to 14 cm, abaxially loosely yellow-brown or gray stellate tomentose to pubescent, marginal teeth short and broad.

• Forests; 1600–2300 m. Hubei.

6. *Tilia kweichouensis* Hu, Acta Phytotax. Sin. 8: 198. 1963.

黔榭 qian duan

Tilia nanchuanensis Hung T. Chang.

Trees to 10 m tall. Branchlets and terminal bud glabrous. Petiole 2–3 cm, glabrous; leaf blade obliquely ovate, 9.5–13.5 × 5–7.5 cm, papery, abaxially sparsely stellate puberulent, adaxially glabrous, lateral veins 6 pairs, base cordate or truncate, margin deeply serrate, teeth extended into awns, apex acute. Bracts narrowly oblong, shorter than infructescence stalk, 6.5–8 × 1–1.2 cm, adnate to peduncle for 1/2 of length, base narrowed, apex obtuse; stalk short. Flowers unknown. Infructescence stalk and stipe terete, slender, glabrous. Fruit globose, obscurely ridged, ca. 8 mm in diam., densely appressed hairy, verruculose, apex acute; exocarp woody, hard, indehiscent. Fr. Aug–Sep.

• Chongqing, N Guizhou, ?Yunnan.

7. *Tilia likiangensis* Hung T. Chang, Acta Phytotax. Sin. 20: 171. 1982.

丽江榭 li jiang duan

Trees. Branchlets and terminal bud gray stellate or glabrescent. Petiole slender, 2–3.5 cm, stellate pubescent; leaf blade ovate-oblong, 9–12 × 4–6 cm, papery, abaxially gray appressed-pubescent, adaxially glabrous, lateral veins 6–7 pairs, base oblique, cordate or truncate, margin serrulate, apex acuminate. Cymes 6–16-flowered, 7–11 cm; peduncle glabrous. Bracts narrowly oblanceolate, 6–9 × 1–1.5 cm, abaxially gray stellate pilose, adaxially glabrous, basal 1/2 tapering, decurrent, apex obtuse; stalk 0.5–0.7 cm. Pedicel grooved, 7–9 mm, gray hairy. Sepals narrowly ovate, 4–5 mm, abaxially gray hairy. Petals ovate, 6–7 mm. Stamens 35, 3–4 mm; staminodes ca. 5 mm; stalk ca. 1.5 mm. Ovary tomentose; style 3–4 mm. Fruit with exocarp woody, hard, indehiscent.

- Forests; ca. 2300 m. NW Yunnan.

8. *Tilia callidonta* Hung T. Chang, Acta Phytotax. Sin. 20: 171. 1982.

美齿椴 mei chi duan

Trees to 10 m tall. Branchlets and terminal bud pilose. Petiole 3–4.5 cm, nearly glabrous; leaf blade broadly ovate, 6–9 × 5–7 cm, abaxially yellowish green, glabrescent, hairy only in vein axils, adaxially glabrous, lateral veins 5–6 pairs, base symmetrical or oblique, cordate, sometimes truncate, margin regularly serrulate, apex acute. Cymes 9–12-flowered, 5–8 cm; peduncle slender, 5–7 cm, hairy. Bracts narrowly oblong, 6–6.5 × 1.5–1.8 cm, proximal 1.5–2.5 cm adnate to peduncle, luminous adaxially, stellate pilose abaxially, base cuneate, apex obtuse; stalk 1–1.5 cm. Flowers not seen. Fruiting pedicel 7–15 mm, hairy. Fruit narrowly obovoid, prominently 5-angled, 10–12 × ca. 5 mm, tomentose, apex pointed; exocarp woody, hard, indehiscent.

- NW Yunnan.

9. *Tilia nobilis* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 363. 1915.

大叶椴 da ye duan

Trees 4–12 m tall. Branchlets glabrous; terminal bud glabrous or sparsely pilose. Petiole 4–10 cm, glabrous; leaf blade nearly orbicular, (5.5–)10–14(–17) × (5–)7–8(–13) cm, papery, abaxially glabrous or fascicled hairy in vein axils only, adaxially glabrous, basal veins 5, lateral veins 6–8 pairs, minor veinlets prominently raised abaxially, base oblique, cordate, truncate, or rounded, margin serrate, apex acuminate or shortly caudate. Cymes 3–16-flowered, usually longer than or equaling bracts; peduncle adnate to bract for 2/5–1/2 length. Bracts broadly oblanceolate or narrowly oblong, 8–16 × 1.5–2.5 cm, abaxially nearly glabrous or sparsely pilose, adaxially glabrous; stalk to 0.5 cm. Sepals abaxially subglabrous or sparsely pilose, adaxially villous at base, margin densely hairy. Petals oblanceolate, glabrous, shortly stalked. Stamens 30–45; staminodes spatulate, long stalked. Ovary tomentose or nearly glabrous in bud; style glabrous; stigma prominently swollen, 2-lobed. Fruit nearly globose, sometimes prominently 5-angled, ca. 10 mm in diam., yellowish tomentose; exocarp woody, hard, indehiscent. Fl. Jun–Jul, fr. Aug–Oct. $2n = ca. 328^*$.

- Forests; 1800–2500 m. ?Henan, Sichuan, Yunnan.

10. *Tilia tuan* Szyszylowicz, Hooker's Icon. Pl. 20: t. 1926. 1890.

椴树 duan shu

Trees 10–20 m tall. Bark gray, longitudinally exfoliate; branchlets glabrous or tomentose; terminal bud glabrous or hairy. Petiole 1–6 cm, glabrous or tomentose; leaf blade narrowly ovate or ovate-oblong to ovate-orbicular, 6.5–17 × 3.5–11 cm, abaxially glabrous to densely shortly gray-white or brown tomentose, adaxially glabrous, lateral veins 3–11 pairs, base oblique, rounded, truncate, or cordate, margin entire or with a few minute teeth near apex or prominently dentate, apex acuminate or acute. Cymes 3–22-flowered, 5–14 cm, glabrous or hairy. Bracts band-shaped to oblanceolate, 6–16 × 1–3 cm, adnate to peduncle for ca. 1/2 of length, stellate pilose or tomentose to glabrous, base cuneate to rounded, apex obtuse to acuminate, sessile or stalk 0.5–0.8 cm. Pedicel 4–9 mm, glabrous or tomentose. Sepals ovate to ovate-lanceolate, 4–6 mm, abaxially puberulent, adaxially villous at base, margin densely hairy. Petals 6–8 mm, glabrous, shortly clawed. Stamens 35–50, in 5 fascicles, glabrous; staminodes 5, oblanceolate, prominently keeled. Ovary ovoid, densely gray-white stellate tomentose; style 3–4 mm, glabrous. Fruit globose or obovoid-globose, not ridged, 7–11 × 7–9 mm, brown or gray hairy, verrucose; exocarp woody, hard, indehiscent. Fl. Jun–Jul, fr. Jul–Nov. $n = 82^*$.

- Forests; 1200–2400 m. Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang.

Tilia tuan has long been recognized as the most variable *Tilia* within China (e.g., by Rehder and Wilson in Sargent, Pl. Wilson. 2: 368. 1915). Pigott (Edinburgh J. Bot. 59: 239–246. 2002) indicated that he believes that a number of the more local species in China should be included within *T. tuan*, a view that has been at least partially followed in this account.

- 1a. Leaf blade entire or with a few teeth near apex 10a. var. *tuan*
- 1b. Leaf blade prominently dentate.
 - 2a. Cymes 16–22-flowered; bracts 8–12 cm, usually sessile 10b. var. *chinensis*
 - 2b. Cymes 3–6-flowered; bracts 12–16 cm, stalk 5–8 mm 10c. var. *chenmoui*

10a. *Tilia tuan* var. *tuan*

椴树(原变种) duan shu (yuan bian zhong)

Tilia angustibracteata Hung T. Chang; *T. gracilis* Hung T. Chang; *T. hupehensis* W. C. Cheng ex Hung T. Chang; *T. integrissima* Hung T. Chang; *T. mesembrinos* Merrill; *T. mofungensis* Chun & H. D. Wong; *T. oblongifolia* Rehder; *T. obscura* Handel-Mazzetti; *T. omeiensis* Fang; *T. tristis* Chun ex Hung T. Chang; *T. tuan* var. *cavaleriei* Engler & H. Léveillé; *T. tuan* f. *divaricata* V. Engler; *T. tuan* var. *pruinosa* V. Engler.

Branchlets glabrous or tomentose. Leaf blade narrowly ovate or ovate-oblong to ovate-orbicular, 6.5–17 × 3.5–11 cm, abaxially glabrous to densely shortly gray-white or brown tomentose, adaxially glabrous, lateral veins 3–11 pairs, base oblique, rounded, truncate, or cordate, margin entire or with a few minute teeth near apex. Cymes 3–22-flowered. Bracts 6–16

× 1–3 cm, sessile or stalk 0.5–0.8 cm.

• Forests; 1200–2000 m. Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang.

10b. *Tilia tuan* var. *chinensis* (Szyszylowicz) Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 369. 1915.

毛芽椴 mao ya duan

Tilia miqueliana Maximowicz var. *chinensis* Szyszylowicz, Hooker's Icon. Pl. 20: sub t. 1927. 1890; *T. oblongifolia* var. *sangzhiensis* B. R. Liao & W. X. Wang.

Branchlets and terminal buds tomentose. Leaf blade broadly ovate, 10–12 × 7–10 cm, abaxially gray stellate tomentose, base usually oblique, margin prominently dentate. Cymes 16–22-flowered. Bracts 8–12 cm, sessile.

• Guizhou, Hubei, Hunan, Jiangsu, Sichuan, Zhejiang.

10c. *Tilia tuan* var. *chenmoui* (W. C. Cheng) Y. Tang, **comb. et stat. nov.**

长苞椴 chang bao duan

Basionym: *Tilia chenmoui* W. C. Cheng, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 10: 170. 1936.

Branchlets densely yellowish stellate tomentose. Leaf blade abaxially tomentose, margin prominently dentate. Cymes 3–6-flowered. Bracts 12–16 cm; stalk 5–8 mm.

• Forests on streamsides; 2100–2400 m. W Yunnan (Binchuan).

11. *Tilia membranacea* Hung T. Chang, Acta Phytotax. Sin. 20: 173. 1982.

膜叶椴 mo ye duan

Trees to 10 m tall. Bark smooth; branchlets glabrous. Petiole slender, 2–3.5 cm, glabrous; leaf blade ovate, 6–10 × 4–6 cm, nearly membranous, both surfaces glabrous or abaxially hairy on veins only, lateral veins 6–8 pairs, prominent on both surfaces, base cordate, margin serrulate, teeth 1–1.5 mm, apex acute. Bracts subsessile, 6–8 × 1.5–1.8 cm, adnate to peduncle for 2–2.5 cm, abaxially sparsely pilose, adaxially glabrous, base rounded, apex obtuse. Flowers unknown. Inflorescences 6–7 cm, with 2–3 capsules, slightly shorter than bracts; peduncle 4–5 cm; stipe 0.8–1 cm. Fruit subglobose, not ridged, 6–7 mm, hairy; exocarp woody, hard, indehiscent.

• Hunan, Jiangxi.

12. *Tilia miqueliana* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 26: 434. 1880.

南京椴 nan jing duan

Tilia franchetiana C. K. Schneider; *T. kinashii* H. Léveillé & Vaniot; *T. kwangtungensis* Chun & H. D. Wong; *T. miqueliana* var. *longipes* P. C. Chiu.

Trees to 10(–20) m tall. Bark gray-white; branchlets yellow-brown tomentose; terminal bud ovoid, yellow-brown tomentose. Petiole terete, 3–4 cm, stellate tomentose; leaf blade ovate-orbicular, (5–)9–12 × (4–)7–9.5 cm, abaxially gray or gray-yellow stellate tomentose, adaxially glabrous, lateral veins 6–8 pairs, base cordate, rarely oblique, margin serrate, apex acute. Cymes 3–12-flowered, 6–8 cm; peduncle gray tomen-

tose. Bracts on 2–3 mm stalk, sometimes sessile, narrowly oblanceolate, 8–12 × 1.5–2.5 cm, adnate to peduncle for 4–6 cm, both surfaces stellate puberulent, base narrowly cuneate, apex obtuse. Pedicel 8–12 mm. Sepals 5–6 mm, gray hairy. Petals slightly longer than sepals. Stamens slightly shorter than sepals; staminodes 5, smaller. Ovary hairy; style as long as petals. Fruit globose, not angled, stellate puberulent, verrucose; exocarp woody, hard, indehiscent. Fl. Jul. $2n = 164$.

Anhui, Guangdong, Jiangsu, Jiangxi, Zhejiang [Japan].

13. *Tilia chingiana* Hu & W. C. Cheng, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 10: 79. 1935.

短毛椴 duan mao duan

Tilia brevibradiata (Rehder) Hu & W. C. Cheng, nom. superfl.; *T. oocryptica* Croizat; *T. tuan* Szyszylowicz var. *brevibradiata* Rehder.

Trees to 15 m tall. Bark gray, smooth; branchlets glabrous or at first minutely hairy; terminal bud sparsely puberulent. Petiole 2.5–4 cm, hairy, glabrescent; leaf blade broadly ovate, 5–10 × 4–9 cm, abaxially usually glabrescent, hairy in vein axils, adaxially glabrous, lateral veins 6–7 pairs, base oblique, truncate or cordate, margin serrate, apex acuminate or acute. Cymes 4–10-flowered, 5–8 cm; peduncle stellate puberulent. Bracts on 5–8 mm stalk, narrowly oblanceolate, 7–9 cm, adnate to peduncle for 1/2 of length, hairy, more densely so abaxially, base cuneate, apex obtuse. Pedicel 7–9 mm. Sepals lanceolate, ca. 5 mm, abaxially stellate puberulent. Petals ca. 7 × 3 mm. Stamens ca. 4 mm; staminodes 5, shorter than petals. Ovary hairy; style glabrous. Fruit globose, stellate puberulent, verrucose; exocarp woody, hard, indehiscent. Fl. Jun–Jul. $2n = 82^*$.

• Anhui, Jiangsu, Jiangxi, Zhejiang.

14. *Tilia taishanensis* S. B. Liang, Bull. Bot. Res., Harbin 5(1): 146. 1985.

泰山椴 tai shan duan

Trees. Branchlets and bud glabrous. Petiole 3–7 cm, glabrous; leaf blade suborbicular or broadly ovate, 5–8 × 5–7 cm, abaxially hairy only in axils of veins, glabrous adaxially, lateral veins 7–8 pairs, base shallowly cordate or obliquely truncate, margin serrulate, apex acute. Cymes 50–200-flowered, 8–13 cm. Bracts sessile, narrowly oblong, 5–8 × 1–1.2 cm, glabrous, base rounded, apex obtuse. Sepals narrowly ovate, 4–5 mm, both surfaces puberulent. Petals oblong, 7–8 mm. Stamines present. Ovary ovoid, densely gray tomentose. Fruit obovoid, prominently 5-angled, 5–8 × 3–5 mm, densely brown puberulent; exocarp woody, hard, indehiscent.

• About 600 m. Shandong.

The prominently 5-angled fruits and serrulate leaf margins of *Tilia taishanensis* suggest that this might be a form of *T. chinensis* with abnormally large inflorescences.

15. *Tilia mongolica* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 26: 433. 1880.

蒙椴 meng duan

Trees to 10 m. Bark grayish, exfoliating irregularly; branchlets glabrous; winter buds ovoid, glabrous. Petiole slen-

der, 2–3.5 cm, glabrous; leaf blade broadly ovate or orbicular, 4–6 × 3.5–5.5 cm, abaxially hairy only in axils of veins, adaxially glabrous, lateral veins 4–5 pairs, base slightly cordate or obliquely truncate, margin coarsely serrate, apex acuminate, usually 3-lobed. Cymes 6–12-flowered, 5–8 cm; peduncle glabrous. Pedicel slender, 5–8 mm. Bracts on ca. 10 mm stalk, narrowly oblong, 3.5–6 × 0.6–1 cm, adnate to peduncle for 1/2 of length, both surfaces glabrous, base obtuse, apex obtuse. Sepals lanceolate, 4–5 mm, abaxially subglabrous. Petals 6–7 mm. Stamens as long as sepals; staminodes slightly smaller. Ovary hairy; style glabrous. Fruit obovoid, 5-angled or obscurely angled, 6–8 mm; exocarp thickly leathery, fragile, hairy, indehiscent. Fl. Jul. $2n = 164^*$.

- Hebei, Henan, W Liaoning, Nei Mongol, Shanxi.

16. *Tilia amurensis* Ruprecht, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 15(2) [Fl. Caucasi]: 253. 1869–1870.

紫椴 zi duan

Trees to 25 m tall, 1 m d.b.h. Bark dark gray, exfoliating; branchlets white or reddish stellate pubescent, glabrescent; terminal bud glabrous, bud scales 3. Petiole slender, 2–3.5 cm, glabrous; leaf blade broadly ovate or ovate-orbicular, 4.5–6 × 4–5.5 cm, abaxially greenish, hairy only in vein axils, adaxially glabrous, lateral veins 4–5 pairs, base cordate or rarely obliquely truncate, margin serrate, teeth ca. 1 mm, pointed, apex acute, acuminate, truncate or slightly emarginate or 3-lobed. Cymes 3–20-flowered, slender, 3–5 cm, glabrous. Bracts on 1–3.5 cm stalk, narrowly band-shaped, 3–7 × 0.5–0.8 cm, adnate to peduncle for 1/3–1/2 of length, both surfaces glabrous. Pedicel 7–10 mm. Sepals broadly lanceolate, 5–6 mm, abaxially stellate puberulent. Petals 6–7 mm. Stamens 20, 5–6 mm; staminodes absent. Ovary canescent-tomentose; style ca. 5 mm, glabrous. Fruit ovoid-globose, 5-angled or obscurely angled, 5–8 mm, stellate tomentose; exocarp thickly leathery, fragile, indehiscent. Fl. Jul. $2n = 82$.

Mixed *Abies* and *Picea* forests; 1300–1400 m. Heilongjiang, Jilin, Liaoning [Korea, Russia].

Tilia amurensis is similar to *T. japonica* but differs in having smaller leaves and bracts and a shorter cyme.

- 1a. Leaf base truncate or slightly cordate; branchlets reddish stellate pilose 16c. var. *taquetii*
- 1b. Leaf base cordate; branchlets white stellate pubescent.
 - 2a. Leaf blade 4.5–6 × 4–4.5 cm, hairy only in vein axils on abaxial surface 16a. var. *amurensis*
 - 2b. Leaf blade 3–4.5 × 2.5–4.5 cm, densely hairy on abaxial surface .. 16b. var. *araneosa*

16a. *Tilia amurensis* var. *amurensis*

紫椴(原变种) zi duan (yuan bian zhong)

Tilia amurensis var. *tricuspидata* Liou & Li.

Branchlets white stellate pubescent, glabrescent. Leaf blade 4.5–6 × 4–4.5 cm, hairy only in vein axils on abaxial surface, base cordate, apex acute or acuminate, sometimes 3-lobed. Bract stalk 1–3.5 cm. $2n = 82$.

Heilongjiang, Jilin, Liaoning [Korea, Russia].

Plants with 3-lobed leaf tips have been placed in var. *tricuspидata*.

16b. *Tilia amurensis* var. *araneosa* C. Wang & S. D. Zhao, Bull. Bot. Res., Harbin 1(4): 135. 1981.

毛紫椴 mao zi duan

Branchlets white stellate pubescent. Petiole ca. 1 cm, hairy; leaf blade 3–4.5 × 2.5–4.5 cm, abaxially greenish, densely hairy, base cordate, apex caudate.

- Mixed *Abies* and *Picea* forests; 1300–1400 m. Jilin.

16c. *Tilia amurensis* var. *taquetii* (C. K. Schneider) Liou & Li, Woody Fl. N.E. China, 420. 1955.

小叶紫椴 xiao ye zi duan

Tilia taquetii C. K. Schneider, Repert. Spec. Nov. Regni Veg. 7: 200. 1909; *T. amurensis* subsp. *taquetii* (C. K. Schneider) Pigott; *T. koreana* Nakai.

Branchlets and cymes reddish stellate pilose. Leaf blade base usually truncate or slightly cordate. Bract stalk 1–1.5 cm. $2n = 82$.

Heilongjiang, Jilin, Liaoning [Korea, Russia].

17. *Tilia japonica* (Miquel) Simonkai, Math. Term. Kōzlem. 22: 326. 1888.

华东椴 hua dong duan

Tilia cordata Miller var. *japonica* Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 18. 1867; *T. eurosinica* Croizat; *T. ulmifolia* Scopoli var. *japonica* (Miquel) O. H. Sargent ex Mayr.

Trees. Branchlets villous, soon glabrescent; terminal bud ovoid, glabrous. Petiole slender, 3–4.5 cm, glabrous; leaf blade brown when dry, orbicular or nearly so, 5–10 × 4–9 cm, leathery, abaxially hairy only in vein axils, adaxially glabrous, lateral veins 6–7 pairs, base cordate or rarely truncate, margin sharply serrulate, apex acute. Cymes 6–16-flowered, 5–7 cm; peduncle with proximal bract. Bracts on 1–1.5 cm stalk, narrowly oblanceolate or narrowly oblong, 3.5–6 × 1–1.5 cm, adnate to peduncle for 1/2 of length, glabrous. Pedicel 5–8 mm. Sepals narrowly oblong, 4–4.5 mm, sparsely stellate puberulent. Petals 6–7 mm. Stamens ca. 5 mm; staminodes slightly shorter than petals. Ovary hairy; style 3–4 mm. Fruit ovoid, not angled, stellate hairy; exocarp thickly leathery, fragile, indehiscent. $2n = 164$.

Anhui, Jiangsu, Shandong, Zhejiang [Japan].

18. *Tilia paucicostata* Maximowicz, Trudy Imp. S.-Peterburgsk. Bot. Sada 11: 82. 1890.

少脉椴 shao mai duan

Trees 10–15 m tall. Branchlets usually yellow-brown when dry, slender, glabrous; terminal buds minute, glabrous or slightly hairy at tip. Petiole slender, 2–5 cm, glabrous; leaf blade ovate-orbicular or ovate-triangular, (3–)6–10 × 2.5–6 cm, thinly leathery, both surfaces glabrous or abaxially sparsely tomentose in vein axils, lateral veins 5–6 pairs, basal pair usually

1/2 or more as long as blade, veinlets prominent, base truncate or obliquely cordate, rarely rounded, margin serrate or sparsely dentate, apex caudate-acuminate or acuminate. Cymes 3–10-flowered, usually shorter or rarely longer than bract; peduncle adnate with proximal 1/2 bract. Bracts on slender 0.5–2 cm stalk, oblanceolate, 4–6 cm, glabrous. Sepals 4–5 mm, abaxially glabrous, adaxially villous on proximal half. Petals ca. 4 mm, glabrous. Stamens 25–35, in 5 fascicles, glabrous; staminodes 5, linear-oblanceolate, distal 1/2 slightly wider, 1/2 as long as petals. Ovary ovoid, densely stellate puberulent; style glabrous. Fruit obovoid, 6–7 mm, apex usually beaked; exocarp thickly leathery, fragile, indehiscent. Fl. Jun–Aug, fr. Sep–Oct. $2n = 164^*$.

• Forests; 1300–2400 m. Gansu, Hebei, Henan, Hubei, Hunan, Shaanxi, Sichuan, Yunnan.

- 1a. Branchlets puberulent; leaf blade abaxially gray stellate puberulent 18b. var. *yunnanensis*
 1b. Branchlets and leaf blade abaxially glabrous.
 2a. Leaf blade 6–10 × 3–6 cm, margin serrate 18a. var. *paucicostata*
 2b. Leaf blade 3.5–5.5 × 2.5–4 cm, margin sparsely dentate 18c. var. *dictyoneura*

18a. *Tilia paucicostata* var. *paucicostata*

少脉槲(原变种) shao mai duan (yuan bian zhong)

Tilia paucicostata var. *firma* V. Engler; *T. paucicostata* var. *tenuis* V. Engler.

Branchlets glabrous. Leaf blade 6–10 × 3–6 cm, abaxially glabrous, margin serrate. Fruit obovoid, 6–7 mm.

• Forests; 1300–2400 m. Gansu, Henan, Hubei, Hunan, Shaanxi, Sichuan, Yunnan.

18b. *Tilia paucicostata* var. *yunnanensis* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 285. 1912.

毛少脉槲 mao shao mai duan

Tilia paucicostata var. *ningshanensis* P. H. Yang.

Branchlets and terminal buds puberulent. Leaf blade abaxially gray stellate puberulent, adaxially glabrous. Fruit unknown.

• Forests; 2000–2400 m. Gansu, Sichuan, Yunnan.

18c. *Tilia paucicostata* var. *dictyoneura* (V. Engler ex C. K. Schneider) Hung T. Chang & E. W. Miao, Fl. Reipubl. Popularis Sin. 49(1): 72. 1989.

红皮槲 hong pi duan

Tilia dictyoneura V. Engler ex C. K. Schneider, Ill. Handb. Laubholz. 2: 369. 1909.

Branchlets glabrous. Leaf blade triangular-ovate, 3.5–5.5

× 2.5–4 cm, abaxially glabrous, margin sparsely denticulate. Bracts with stalk. Fruit 5–6 mm, without ridges.

• Forests. Gansu, Hebei, Henan, Hunan, Shaanxi.

19. *Tilia jiaodongensis* S. B. Liang, Bull. Bot. Res., Harbin 5(1): 145. 1985.

胶东槲 jiao dong duan

Trees. Branchlets and buds glabrous. Petiole 3–5 cm, glabrous; leaf blade ovate-orbicular, 5–8 × 5–7 cm, abaxially hairy only in axils of veins, adaxially glabrous, lateral veins 6–7 pairs, base cordate or shallowly cordate, margin serrulate, teeth 2–3 mm, apex acute. Cymes (20–)40–100-flowered, 6–13 cm, glabrous. Bracts on 1–2 cm stalk, oblanceolate, 5–9 × 0.8–1.5 cm, glabrous, base obliquely cuneate, apex obtuse; bracteoles 3–4-verticillate at bases of pedicels, present at each branching of inflorescence, ovate-lanceolate or elliptic-lanceolate, 0.3–3 × 0.2–1 cm, densely brown stellate tomentose. Pedicel 3–7 mm. Sepals narrowly ovate, 4–5 mm, abaxially stellate hairy, adaxially sparsely stellate at apex and densely villous at base. Petals obovate, 4–5 mm, glabrous. Stamines shorter than petals. Ovary ovoid, prominently 5-angled; style short. Fruit subglobose, minutely 5-angled, ca. 5 mm in diam., thickly leathery, fragile, densely brown puberulent, indehiscent.

• Sunny slopes; ca. 600 m. Shandong.

The very large bracteolate inflorescence of *Tilia jiaodongensis* is unusual and is probably aberrant. The species was not accepted by Pigott. It was originally compared to *T. mongolica* from which it was distinguished by the acute leaf apex and glabrous ovary. The nature of the ovary requires clarification as the fruit is described as hairy.

