

**109. TRITICUM** Linnaeus, Sp. Pl. 1: 85. 1753.

小麦属 xiao mai shu

*Deina* Alefeld; *Nivieria* Seringe; *Zeia* Lunell, nom. illeg. superfl.

Plants annual. Culms usually erect, rarely decumbent at base. Leaf sheath split almost to base; ligule membranous; auricles lanceolate; leaf blade usually flat. Spike linear, oblong, or ovate, distichous; rachis disarticulating or not. Spikelets 1 per node, sessile, with (2 or)3–9(–11) florets; apical floret usually sterile; rachilla without joints. Glumes ovate, oblong, or elliptic, ± leathery, 3–11(–13)-veined with 1 or 2 veins raised as keels, glabrous or hairy, smooth or very scabrous along keels, apex obliquely truncate, 1- or 2-toothed, larger tooth sometimes extending into longish awn. Lemma 7–11(–15)-veined, ± keeled, apex awned or awnless; callus very short, obtuse. Palea usually slightly shorter than lemma. Lodicules ciliate at margin. Caryopsis ovate or oblong, ± plump, deeply furrowed, apex ± hairy.  $x = 7$ .

About 25 species: distributed as cultivated plants almost throughout temperate regions of both hemispheres, also on tropical mountains; four species (all introduced) in China.

The generic name "*Gigachilon*" (Seidl in Berchtold et al., Oekon.-Techn. Fl. Böhm. 1: 425. 1836) was merely cited in synonymy (of *Triticum polonicum*) and was therefore not validly published (Saint Louis Code, Art. 34.1(c)). Under Art. 43.1, combinations in "*Gigachilon*" published by Löve (Feddes Repert. 95: 496–498. 1984) were not validly published either.

An artificial hybrid between *Aegilops tauschii* (*Triticum tauschii*) (♀) and *T. urartu* Thumanjan ex Gandilyan (♂) was described as *T. ×teres* H. R. Jiang & X. X. Kong (Acta Bot. Boreal.-Occid. Sin. 6: 206. 1986); it is not treated in this account.

In addition, the following three species have been recorded as cultivated in China (FRPS 9(3): 48–51. 1987): *Triticum carthlicum* Nevski (as *T. turgidum* Linnaeus var. *carthlicum* (Nevski) Yan ex P. C. Kuo), *T. dicoccoides* (Körnicke) Schweinfurth (as *T. turgidum* var. *dicoccoides* (Körnicke) Bowden), and *T. timopheevii* (Zhukovsky) Zhukovsky.

- 1a. Spike linear; spikelets usually with 1 fertile floret ..... 1. *T. monococcum*
- 1b. Spike cylindric, oblong or branched at base; spikelets with 2 or more fertile florets.
  - 2a. Glumes ovate or broadly so; lemma awnless to long awned ..... 4. *T. aestivum*
  - 2b. Glumes narrow, ± lanceolate; lemma long awned.
    - 3a. Spike dense, or relatively lax and then glumes 25–30 mm, herbaceous or submembranous ..... 2. *T. turgidum*
    - 3b. Spike lax; glumes 12–15 mm, papery ..... 3. *T. turanicum*

**1. Triticum monococcum** Linnaeus, Sp. Pl. 1: 86. 1753.

一粒小麦 yi li xiao mai

*Crithodium monococcum* (Linnaeus) Á. Löve; *Nivieria monococcum* (Linnaeus) Seringe; *Triticum aestivum* Linnaeus var. *monococcum* (Linnaeus) L. H. Bailey; *T. sativum* Lamarck var. *monococcum* (Linnaeus) Vilmorin; *T. vulgare* Villars var. *bidens* Alefeld.

Culms tufted, erect, 70–120 cm tall, 3- or 4-noded, pale pubescent at nodes. Leaf sheath margin ciliolate; leaf blade broadly linear, to 1 cm wide, scabrous, glabrous or adaxial surface shortly pubescent. Spike laterally compressed, 3–7 cm excluding awns, glabrous, rarely pubescent, apex with sterile spikelets; rachis compressed, easily disarticulating. Spikelets with 2 or 3 florets, usually basal floret fertile. Glumes lanceolate or subobovate, 6–8(–9) mm, slightly shorter than proximal florets, obscurely 7-veined, usually glabrous and lustrous, 2-keeled; 1 keel prominent, scabrous distally, prolonged at apex into triangular, acute tooth 0.75–1.5 mm; other keel less prominent, prolonged at apex into much smaller, subacute tooth. Lemma obscurely 9-veined; awn 5–10 cm. Palea usually longitudinally breaking at maturity. Caryopsis ca.  $7 \times 3$  mm. Fl. and fr. Jun–Jul.  $2n = 14$ .

Possibly cultivated in N China as a food plant, in experimental fields, or in fields mixed with other *Triticum* [cultivated or wild in N Africa, SW Asia, and C and SE Europe].

It is not impossible that relict cultivation of *Triticum monococcum* occurs in China, but it is most unlikely and confirming records are needed.

**2. Triticum turgidum** Linnaeus, Sp. Pl. 1: 86. 1753.

圆锥小麦 yuan zhui xiao mai

Culms erect, 60–180 cm tall, 4- or 5-noded, smooth, glabrous. Leaf blade erect or nodding, green or greenish, broadly linear, pubescent or glabrous. Spike simple or branched at base, dense or relatively lax, pubescent or glabrous; rachis tough, margin very slightly ciliolate. Spikelets with 2–7 florets (perfect florets 3–5), sometimes densely pubescent at base. Glumes broadly lanceolate or oblong-lanceolate, 10–30 mm, shorter to longer than lemma, herbaceous, submembranous, leathery, or papery, very prominently keeled, rough or prickly along keel, apex usually long awned, rarely awnless; keel crested, prolonged at apex into triangular, acute tooth. First lemma awn 12–19 cm or longer, stiff to relatively slender; more distal lemmas sometimes with apical point or awnless. Palea shorter than or equaling lemma. Caryopsis usually free from lemma and palea, plump or hard and vitreous. Fl. and fr. Jun–Aug.

Frequently cultivated for food. Beijing, Gansu, Henan, Shaanxi, Sichuan, Xinjiang, Xizang, Yunnan [cultivated in E and N Africa, C and SW Asia, S Europe, the Mediterranean region, and South America (Argentina)].

- 1a. Glumes 25–30 mm, longer than lemma,

herbaceous or submembranous, keeled;  
spike relatively lax ..... 2c. subsp. *polonicum*

1b. Glumes 10–12 mm, shorter than or  
equaling lemma, papery or leathery,  
keeled or winged; spike dense, simple  
or branched at base.

2a. Spike usually branched at base;  
glumes obviously shorter than  
lemma, papery, keeled ..... 2a. subsp. *turgidum*

2b. Spike simple, never branched at  
base; glumes slightly shorter than  
or equaling lemma, leathery,  
winged ..... 2b. subsp. *durum*

**2a. *Triticum turgidum* subsp. *turgidum***

圆锥小麦(原亚种) yuan zhui xiao mai (yuan ya zhong)

*Triticum aestivum* Linnaeus subsp. *turgidum* (Linnaeus) Domin; *T. aestivum* var. *turgidum* (Linnaeus) Fiori; *T. compositum* Linnaeus; *T. sativum* Lamarck var. *compositum* (Linnaeus) Alph. Wood; *T. sativum* Lamarck var. *turgidum* (Linnaeus) Hackel; *T. turgidum* var. *compositum* (Linnaeus) Gaudin; *T. vulgare* Villars var. *turgidum* (Linnaeus) Alefeld.

Spike usually branched at base, dense. Glumes obviously shorter than lemma, papery, keeled. Fl. and fr. Jun–Jul.  $2n = 28$ .

Frequently cultivated for food. Beijing, Gansu, Henan, Shaanxi, Sichuan, Xinjiang, Xizang, Yunnan; probably other provinces [cultivated in C and SW Asia and S Europe].

**2b. *Triticum turgidum* subsp. *durum*** (Desfontaines) Husnot, Graminées, 80. 1899.

硬粒小麦 ying li xiao mai

*Triticum durum* Desfontaines, Fl. Atlant. 1: 114. 1798; *T. aestivum* subsp. *durum* (Desfontaines) Thellung; *T. aestivum* var. *durum* (Desfontaines) Fiori; *T. pyramidale* Percival; *T. sativum* subsp. *durum* (Desfontaines) K. Richter; *T. turgidum* convar. *durum* (Desfontaines) Bowden; *T. vulgare* var. *durum* (Desfontaines) Alefeld.

Spike simple, never branched at base, dense. Glumes 10–12 mm, slightly shorter than or equaling lemma, leathery, winged. Fl. and fr. Jun–Jul.  $2n = 28$ .

Frequently cultivated for food in China [cultivated in E Africa, C and SW Asia, S Europe, and the Mediterranean region].

**2c. *Triticum turgidum* subsp. *polonicum*** (Linnaeus) Thellung, Naturwiss. Wochenschr., n.s., 17: 470. 1918.

波兰小麦 bo lan xiao mai

*Triticum polonicum* Linnaeus, Sp. Pl., ed. 2, 1: 127. 1762; *Deina polonica* (Linnaeus) Alefeld; *T. aestivum* var. *polonicum* (Linnaeus) L. H. Bailey; *T. petropavlovskyi* Udachin & Migushova; *T. polonicum* var. *tibeticum* Udachin; *T. turgidum* convar. *polonicum* (Linnaeus) Mackey; *T. turgidum* var. *polonicum* (Linnaeus) Yan ex P. C. Kuo.

Spike relatively lax. Glumes 25–30 mm, longer than lem-

ma, herbaceous or submembranous, keeled. Fl. and fr. Jun–Aug.  $2n = 28$ .

Frequently cultivated for food in China [cultivated in E and N Africa, C and SW Asia, S Europe, and South America (Argentina)].

**3. *Triticum turanicum*** Jakubziner, Selektiv. Semenov. (Moscow) 14(5): 46. 1947.

杂生小麦 za sheng xiao mai

*Triticum orientale* Percival, Wheat Pl. Monogr. 155, 204. 1921, not M. Bieberstein (1808); *T. durum* Desfontaines subsp. *turanicum* (Jakubziner) L. B. Cai; *T. percivalianum* Parodi, nom. illeg. superfl.; *T. turgidum* Linnaeus convar. *turanicum* (Jakubziner) Mackey; *T. turgidum* subsp. *turanicum* (Jakubziner) A. Löve & D. Löve.

Culms 120–130 cm tall; upper internodes solid. Leaf blade nodding, long, puberulent. Spike lax, 9–15 × ca. 1 cm; rachis tough, margin ciliate; internodes 5–6.5 mm. Spikelets 16–20 mm, with 3–5 florets (perfect florets 3 or 4). Glumes narrow, 12–15 × ca. 4 mm, keel distinct, puberulent, apex acute, tooth very short. Lemma awn nearly black, 14–16 mm, scabrous. Palea equaling lemma. Caryopsis usually free from lemma and palea, 10–12 × ca. 3 mm, vitreous. Fl. and fr. Jun–Jul.  $2n = 28$ .

Usually in fields mixed with other *Triticum*, rarely cultivated for food in China. Xinjiang [Kazakhstan, Kyrgyzstan, Russia, Turkmenistan, Uzbekistan; SW Asia (Iran)].

**4. *Triticum aestivum*** Linnaeus, Sp. Pl. 1: 85. 1753, nom. cons.

小麦 xiao mai

Culms hollow, 60–130(–150) cm tall, ca. 5-noded; nodes glabrous. Leaf blade flat, 10–24 × 0.4–1.5 cm, usually glabrous. Spike lax or dense, usually narrowed distally, square or sub-square in cross section, 5–18 cm, with up to 29 spikelets; rachis disarticulating or tough and not disarticulating, margin ciliate; internodes 3–4 mm. Spikelets with 4–9 florets (distal florets sterile). Glumes laxly appressed or adnate to floret, ovate or elliptic, sometimes very hard, distinctly or indistinctly to obscurely keeled, pubescent or glabrous; keel sometimes prolonged at apex into shortish tooth; tooth apex subobtuse, acute, or tapering into short awn. Lemma oblong-lanceolate, pubescent or glabrous, awnless to long awned; awn usually divergent. Palea subequaling lemma. Anthers yellow or purplish. Caryopsis usually free from lemma and palea. Fl. and fr. Apr–Aug.

Commonly cultivated, e.g., in fields of *Hordeum* and *Triticum*; below 3500 m. Throughout China [cultivated worldwide].

1a. Glumes obscurely keeled proximally, indistinctly so distally; spike rachis usually tough and not disarticulating ..... 4a. subsp. *aestivum*

1b. Glumes distinctly keeled; spike rachis disarticulating.

2a. Glumes adnate to floret, very hard ..... 4b. subsp. *yunnanense*

2b. Glumes laxly appressed to floret ..... 4c. subsp. *tibeticum*

**4a. *Triticum aestivum* subsp. *aestivum***

小麦(原亚种) xiao mai (yuan ya zhong)

*Triticum aestivum* var. *hybernum* (Linnaeus) Fiori, nom. rej.; *T. compactum* Host; *T. hybernum* Linnaeus, nom. rej.; *T. sativum* Lamarck, nom. illeg. superfl.; *T. sativum* var. *aestivum* (Linnaeus) Alph. Wood; *T. sativum* var. *vulgare* Hackel, nom. illeg. superfl.; *T. segetale* Salisbury, nom. illeg. superfl.; *T. vulgare* Villars (1787), nom. illeg. superfl., not (Linnaeus) Salisbury (1796); *T. vulgare* var. *aestivum* (Linnaeus) Spenner; *Zeia vulgaris* Lunell, nom. illeg. superfl.; *Z. vulgaris* var. *aestiva* (Linnaeus) Lunell.

Spike rachis usually tough and not disarticulating. Glumes obscurely keeled proximally, indistinctly so distally; keel prolonged at apex into shortish tooth; tooth apex subobtusely acute, or tapering into short awn. Fl. and fr. Jun–Aug.  $2n = 42^*$ .

Commonly cultivated throughout China [cultivated worldwide].

**4b. *Triticum aestivum* subsp. *yunnanense*** King ex S. L. Chen, *Novon* 7: 230. 1997.

云南小麦 yun nan xiao mai

Spike rachis easily disarticulating. Glumes adnate to floret, very hard, distinctly keeled. Fl. and fr. Apr–Aug.  $2n = 42^*$ .

- Cultivated for food in SW Yunnan; 1500–3000 m.

**4c. *Triticum aestivum* subsp. *tibeticum*** J. Z. Shao, *Acta Genet. Sin.* 7(2): 155. 1980.

西藏小麦 xi zang xiao mai

Spike rachis disarticulating. Glumes laxly appressed to floret, distinctly keeled.  $2n = 42^*$ .

- Fields of *Hordeum* and *Triticum*; 1700–3500 m. Xizang.

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