

156. PANICUM Linnaeus, Sp. Pl. 1: 55. 1753.

黍属 shu shu

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Annuals or perennials. Culms erect, geniculately ascending or decumbent. Leaves basal or cauline; leaf blades filiform or linear to lanceolate or ovate, usually flat. Inflorescence usually a terminal open panicle, variously condensed or occasionally spicate rarely racemose. Spikelets usually symmetrical and dorsally compressed, disarticulating below the glumes; 2-flowered, the lower floret staminate or barren, the upper bisexual. Glumes herbaceous to membranous, ovate or oblong, obtuse to acute, acuminate or cuspidate; lower usually shorter than the spikelet, rarely equal, an internode between the glumes sometimes present, upper glume as long as spikelet, or slightly shorter; lower lemma similar to upper glume, with or without a palea; upper floret coriaceous, bony or cartilaginous, the margins of the lemma inrolled and clasping the palea, apex obtuse to acute or apiculate, crested or excavated. Hilum rounded to oval. $x = 9, 10$.

About 500 species: pantropical, extending into temperate regions of North America; 21 species (four introduced) in China.

Panicum miliaceum (Proso Millet) is grown in China as a cereal crop. *Panicum coloratum* (Buffalo Grass), *P. maximum* (Guinea Grass), and *P. virgatum* (Switch Grass) have been introduced to China and are widely grown for fodder.

- 1a. Upper floret rugose 1. *P. maximum*
- 1b. Upper floret papillate or smooth.
 - 2a. Glumes or at least the lower, acuminate to cuspidate.
 - 3a. Plant perennial.
 - 4a. Panicle effuse, spikelets 3.5–4 mm 11. *P. elegantissimum*
 - 4b. Panicle moderately branched, spikelets 2–3 mm.
 - 5a. Lower glume 1/4–1/3 length of spikelet 7. *P. coloratum*
 - 5b. Lower glume 2/3–3/4 length of spikelet 13. *P. virgatum*
 - 3b. Plant annual.
 - 6a. Spikelets 1.5–2 mm 12. *P. humile*
 - 6b. Spikelets 3–5 mm.
 - 7a. Panicle dense, branches drooping; spikelets 4–5 mm; cultivated 14. *P. miliaceum*
 - 7b. Panicle open, branches spreading or ascending; spikelets 3–3.5 mm; wild 15. *P. curviflorum*
 - 2b. Glumes obtuse or acute.
 - 8a. Leaf-leaf blades ovate to lanceolate.
 - 9a. Culms herbaceous.
 - 10a. Spikelets ca. 1.3 mm 16. *P. trichoides*
 - 10b. Spikelets 1.5–2 mm 17. *P. brevifolium*
 - 9b. Culms terete, woody.
 - 11a. Lower glume separated by an internode; upper lemma glabrous at the apex 18. *P. notatum*
 - 11b. Lower glume not separated by an internode; upper lemma ciliolate at the apex.
 - 12a. Lower glume 1/4–1/3 length of spikelet 21. *P. khasianum*
 - 12b. Lower glume 1/2–3/4 length of spikelet.
 - 13a. Panicle branches not tangled 19. *P. sarmentosum*
 - 13b. Panicle branches tangled 20. *P. incomtum*
 - 8b. Leaf-leaf blades linear to narrowly lanceolate.
 - 14a. Panicle spikelike or if primary branches well developed then ascending or appressed and the secondary branches very short 10. *P. auritum*
 - 14b. Panicle open, primary branches spreading.
 - 15a. Plant annual.
 - 16a. Lower glume cufflike, 1/6–1/3 length of spikelet, obtuse to bluntly acute.
 - 17a. All panicle branches spreading 9. *P. sumatrense*
 - 17b. Secondary or tertiary panicle branches appressed, lower lemma 7–9-veined 3. *P. dichotomiflorum*
 - 16b. Lower glume ovate or oblong, acute to acuminate, 1/3–1/2 length of spikelet.
 - 18a. Lower glume not separated by an internode; spikelets in pairs and clustered toward the ends of the branches 5. *P. bisulcatum*
 - 18b. Lower glume separated by an internode; spikelets not in pairs, evenly spread throughout the panicle 8. *P. luzonense*
 - 15b. Plant perennial.
 - 19a. Lower glume acute.

- 20a. Culms scrambling, woody below 6. *P. amoenum*
 20b. Culms erect, herbaceous 7. *P. coloratum*
 19b. Lower glume obtuse, cufflike.
 21a. Secondary branches well developed, spreading; lower glume separated by an internode 4. *P. decompositum*
 21b. Secondary or tertiary branches short, appressed; lower glume not separated by an internode.
 22a. Plant with wiry culms 2. *P. repens*
 22b. Plant with soft, herbaceous culms 3. *P. dichotomiflorum*

1. *Panicum maximum* Jacquin, Icon. Pl. Rar. 1: 2. 1781.

大黍 da shu

Megathyrsus maximus (Jacquin) B. K. Simon & S. W. L. Jacobs; *Panicum hirsutissimum* Steudel; *P. jumentorum* Persoon; *P. maximum* var. *hirsutissimum* (Steudel) Oliver; *P. polygamum* Swartz.

Perennial, rhizomatous; rhizome stout. Culms robust, erect, 1–3 m tall, nodes glabrous or pilose. Leaves basal and cauline; leaf sheaths glabrous to hispid; leaf blades linear to narrowly lanceolate, flat, 20–60 × 1–3.5 cm, narrowed at base, glabrous or pilose, margins scabrid, apex acuminate; ligule 1–3 mm, membranous, with dense cilia dorsally. Panicle oblong or pyramidal in outline, 10–45 cm, much branched; branches spreading, lowest arranged in a whorl. Spikelets oblong, 3–4.5 mm, glabrous or pubescent, often tinged purple, obtuse or acute, occasionally overtopped by long hairs from apex of pedicel; lower glume broadly ovate, 1/3–1/2 length of spikelet, 3-veined, obtuse or acute; upper glume ovate-oblong, as long as spikelet, 5-veined, acute; lower floret staminate, lemma similar to upper glume, palea well developed; upper floret thinly coriaceous, pale yellow or green, shiny, finely transverse rugulose. Fl. and fr. Aug–Oct. $2n = 32$.

Widely cultivated for forage. Guangdong, Taiwan [native to tropical Africa and America].

2. *Panicum repens* Linnaeus, Sp. Pl., ed. 2, 1: 87. 1762.

铺地黍 pu di shu

Perennial, rhizomatous. Culms tough, erect or decumbent, 30–125 cm tall. Leaves cauline; leaf sheaths glabrous, striate, puberulous to ciliate on margins, especially toward throat; leaf blades linear, flat or convolute, often stiff and pungent, markedly distichous, ascending close to the culm, 7–25 × 0.2–0.8 cm, apex acute or acuminate; ligule 0.5–1.5 mm, a ciliolate membrane. Panicle terminal, narrowly oblong in outline, 5–20 cm, sparsely to moderately branched; branches glabrous, scabrid, ascending. Spikelets ovate, 2.5–3 mm, acute; lower glume broadly ovate, 1/3 length of spikelet, hyaline, 1(–3)-veined, clasping at the base of the spikelet, obtuse or acute; upper glume ovate, as long as spikelet, membranous, 7–9-veined, acute; lower floret staminate, lemma similar to upper glume, palea well developed; upper floret almost as long as spikelet, pale yellow, shiny. Fl. and fr. Jun–Nov. $2n = 40$.

Moist places, marine habitats, streams. Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [tropical and subtropical locations worldwide].

3. *Panicum dichotomiflorum* Michaux, Fl. Bor.-Amer. 1: 48. 1803.

洋野黍 yang ye shu

Panicum paludosum Roxburgh.

Aquatic annual or rhizomatous perennial. Culms geniculately ascending, rooting at lower nodes, branching, succulent, 30–110 cm tall, upper nodes glabrous, often conspicuous. Leaves cauline; leaf sheaths striate, glabrous, lower sheaths often inflated; leaf blades linear, flat, 7–35 × 0.5–1 cm, glabrous, scabrid, base straight or subcordate, apex acute; ligule 1–2 mm, a ciliate membrane. Panicle terminal or axillary, pyramidal when fully exerted, 10–20 cm, much branched; branches glabrous, scabrid, secondary and tertiary branches often appressed. Spikelets lanceolate to narrowly ovate, 3–4 mm, glabrous, acuminate; lower glume broadly ovate, 1/6–1/3 length of spikelet, clasping at the base of the spikelet, membranous, 0–1-veined, obtuse to acute; upper glume as long as spikelet, 7–9-veined; lower lemma similar to upper glume, palea absent or present and well developed; upper floret 2/3 length of spikelet, green or pale yellow, smooth, shiny. Fl. and fr. Jun–Oct.

Shallow waters, swampy places. Fujian, Guangdong, Guangxi, Taiwan, Yunnan [India, Malaysia; tropics of the New World].

4. *Panicum decompositum* R. Brown, Prodr. 191. 1810.

多子黍 duo zi shu

Panicum proliferum Lamarck var. *decompositum* (R. Brown) Thellung.

Perennial, caespitose. Culms erect, 60–100 cm tall, nodes glabrous. Leaves basal; leaf sheaths striate, glabrous; leaf blades linear, flat, 15–30 × 0.5–0.8 cm, glabrous, tough, base straight, apex tapering to a fine point; ligule ca. 1 mm, a ciliolate membrane. Panicle broadly ovate in outline when fully exerted, terminal, 20–40 cm, much branched; branches rigid, ascending and spreading, scabrid or smooth. Spikelets elliptic, 2–3 mm, glabrous, acuminate; lower glume broadly ovate, 1/5–1/3 length of spikelet, clasping the base of the spikelet, 0–1-veined, obtuse or acute, separated by an internode; upper glume as long as spikelet, 7-veined; lower lemma similar to upper glume, palea poorly developed; upper floret slightly shorter than spikelet, pale yellow, smooth, shiny.

Taiwan [Australia, Pacific Islands].

5. *Panicum bisulcatum* Thunberg, Nova Acta Regiae Soc. Upsal. 7: 141. 1815.

糠稷 kang ji

Panicum acroanthum Steudel; *P. acroanthum* var. *brevipedicellatum* Hackel.

Annual. Culms erect or ascending, sometimes rooting at lower nodes, 30–180 cm tall, nodes glabrous. Leaves cauline; leaf sheaths striate, glabrous, ciliate on the margins, especially toward the throat; leaf blades linear, 5–20 × 0.5–1.5 cm, subglabrous, base rounded, apex acuminate; ligule ca. 0.5 mm, a ciliolate membrane. Panicle ovate or orbicular in outline, 10–40 cm, loose, much branched; branches slender, flexuous, scabrid, with the spikelets in pairs and clustered toward the ends of the branches. Spikelets elliptic, 2–2.5 mm, sparsely puberulous; lower glume ovate, 1/2 length of spikelet, 1–3-veined, acute or acuminate; upper as long as spikelet, 5-veined; lower lemma similar to upper glume, palea absent; upper floret as long as spikelet, pale yellow, smooth, shiny. Fl. and fr. Sep–Nov. $2n = 36$.

Moist places. Anhui, Fujian, Guangdong, Guizhou, Hainan, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [India, Japan, Korea, Philippines; Australia, Pacific Islands].

6. *Panicum amoenum* Balansa, J. Bot. (Morot) 4: 142. 1890.

可爱黍 ke ai shu

Perennial. Culms woody, scrambling 1–3 m long. Leaves cauline; leaf sheaths striate, glabrous, the margins ciliate toward the throat; leaf blades linear, flat, 10–28 × 0.5–1.5 cm, glabrous, scabrid or smooth, base truncate or rounded, apex acuminate; ligule ca. 0.2 mm, membranous. Panicle broadly ovate to oblong in outline, 15–40 cm, much branched; branches slender, scabrid, spreading at maturity. Spikelets elliptic-oblong, 1.2–1.5 mm, glabrous; lower glume ovate, 1/2 length of spikelet, 3-veined; upper glume as long as spikelet, 5-veined; lower lemma similar to upper glume, palea absent; upper floret coriaceous, pale yellow, smooth, shiny. Fl. and fr. Jul–Dec.

Grasslands. S Yunnan [Borneo, NE India, Malaysia, Myanmar, Thailand, Vietnam].

7. *Panicum coloratum* Linnaeus, Mant. Pl. 1: 30. 1767.

光头黍 guang tou shu

Perennial, tufted. Culms erect or ascending from a knotty base, 15–100 cm tall. Leaves basal and cauline; leaf sheaths glabrous, pilose or hispid; ligule 0.5–1 mm, a ciliolate membrane; leaf blades linear, flat, 7–30 × 0.5–1 cm, glabrous or pilose, base straight to amplexicaul, apex acute or acuminate. Panicle ovate in outline, 4–30 cm, much branched; branches ascending or spreading, the spikelets evenly spread or clustered on the branches. Spikelets ovate-elliptic, 2–3 mm, glabrous, acute; lower glume broadly ovate, 1/4–1/3 length of spikelet, 1–3-veined, acute to acuminate; upper glume ovate, as long as spikelet, 7–9-veined, acute; lower floret staminate, lemma similar to upper glume, palea well developed; upper floret pale yellow or brown, smooth, shiny.

Introduced for pasture [native to tropical and subtropical Africa; introduced elsewhere].

8. *Panicum luzonense* J. Presl in C. Presl, Reliq. Haenk. 1: 308. 1830.

大罗湾草 da luo wan cao

Panicum cambogiense Balansa; *P. cruciabile* Chase.

Annual, tufted, hispid. Culms erect or geniculately ascending, 30–150 cm tall, nodes bearded. Leaves cauline; leaf sheaths loose; leaf blades linear to linear-lanceolate, flat, 5–20(–40) × 0.5–1.5 cm, base cordate, margins scabrid, apex acute; ligule ciliate. Panicles terminal and axillary, ovate to oblong in outline, 10–30(–50) cm, moderately branched with the spikelets evenly spread throughout the panicle, branches scabrid. Spikelets elliptic to obovate, somewhat plump, 2–2.5 mm, glabrous; lower glume broadly ovate, 1/3–1/2 length of spikelet, 5–7-veined, acute, separated by an internode; upper glume ovate, as long as spikelet, 9–11-veined, transverse veins present, acute; lower lemma similar to upper glume, palea well developed but floret barren; upper floret elliptic, yellow, smooth, shiny. Fl. and fr. Aug–Oct. $2n = 18$.

Fields, forest margins. Guangdong, Guangxi, Hainan, Taiwan, Yunnan [India, Indonesia, Myanmar, Philippines, Sri Lanka; Australia].

9. *Panicum sumatrense* Roth ex Roemer & Schultes, Syst. Veg. 2: 434. 1817.

细柄黍 xi bing shu

Panicum flexuosum Retzius; *P. psilopodium* Trinius; *P. psilopodium* var. *coloratum* J. D. Hooker; *P. psilopodium* var. *epaleatum* Keng ex S. L. Chen, T. D. Zhuang & X. L. Yang.

Annual. Culms erect or decumbent, 20–60(–150) cm tall, nodes dark in color, glabrous. Leaves cauline; leaf sheaths loose, glabrous; leaf blades linear, flat, 8–40 × 0.4–0.8 cm, glabrous, base cordate to straight, apex acute or tapering; ligule ca. 1 mm, a ciliolate membrane. Panicle terminal, oblong or ovate in outline, 10–40 cm, densely branched and drooping or sparsely branched and erect; branches slender, scaberulous. Spikelets oblong in outline, 2.5–3.5 mm, glabrous; lower glume broadly ovate or cufflike, 1/4–1/3 length of spikelet, 3-veined, bluntly acute; upper glume as long as spikelet, 9–13-veined; lower lemma similar to upper glume, palea present or absent; upper floret brown or yellow, smooth, shiny. Fl. and fr. Jul–Oct. $2n = 54$.

Rather dry situations. Guizhou, Taiwan, Xizang, Yunnan [India, Malaysia, Philippines, Sri Lanka].

Special forms of this variable species have been selected for cultivation. Plants with a denser and more profuse panicle, which droops at maturity under the weight of the spikelets, are grown as a cereal crop. Wild plants with more lightly branched, erect panicles and sparse spikelets may be distinguished as *Panicum psilopodium*. Although the cultivated types are readily identifiable, there are sufficient intermediates to make a clear boundary with the wild types impossible to define.

Panicum cristatellum Keng (Sinensia 11: 412. 1940), described from Jiangsu (Jiangyin), may be referable to *P. sumatrense*.

10. *Panicum auritum* J. Presl ex Nees, Fl. Bras. Enum. Pl. 2: 176. 1829.

紧序黍 jin xu shu

Hymenachne aurita (J. Presl ex Nees) Balansa; *H. insulicola* (Steudel) L. Liu; *Panicum insulicola* Steudel; *Sacciolepis*

insulicola (Steudel) Ohwi.

Perennial, rhizomatous. Culms geniculately ascending, branched, up to 4 m long, nodes glabrous. Leaves cauline; leaf sheaths shorter than internodes, glabrous, sometimes ciliate on margins and at throat, striate; leaf blades linear, 10–60 × 0.5–2.5(–3.5) cm, glabrous, base cordate, apex acuminate; ligule short, membranous, ca. 0.5 mm. Panicle contracted to spikelet, 10–45 cm; branches appressed, glabrous, scabrid. Spikelets lanceolate or elliptic, 2–3 mm, glabrous, acute; lower glume ovate, 1/3 length of spikelet, membranous, 3-veined; upper glume as long as spikelet, 5–7-veined; lower lemma similar to upper glume, palea poorly developed; upper floret as long as spikelet, pale yellow, smooth, shiny. Fl. and fr. Aug–Oct.

Streams, lakesides, forest margins. Fujian, Guangdong, Hainan, Yunnan [Bhutan, India, Indonesia, Malaysia, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam].

Panicum auritum may be confused with *Hymenachne amplexicaulis*, since both species have a similarly contracted panicle. The *Hymenachne* may be distinguished by the membranous upper lemma, which clasps the palea only at the base, leaving it free at the apex, and by the larger spikelets 4.5–6 mm.

11. *Panicum elegantissimum* J. D. Hooker, Fl. Brit. India 7: 52. 1896 [“1897”].

旱黍草 han shu cao

Panicum curviflorum Hornemann var. *suishaense* (Hayata) Veldkamp; *P. suishaense* Hayata; *P. trypheron* Schultes var. *suishaense* (Hayata) C. C. Hsu.

Perennial, tufted. Culms erect, 25–60 cm tall, nodes glabrous. Leaves mostly basal; leaf sheaths pilose to hispid; leaf blades linear, flat, 12–50 × 0.3–0.8 cm, pilose, base narrowed, apex acuminate; ligule a ciliate collar. Panicle oblong in outline, 10–30 cm, moderately branched; pedicels pilose. Spikelets ovate, 3–4 mm, glabrous, acuminate, upper glume and lower lemma divergent at maturity; lower glume ovate, 1/2–2/3 length of spikelet, 3–5-veined, acuminate, separated by an internode; upper glume ovate, as long as spikelet, 7-veined, acuminate; lower floret barren, lemma similar to upper glume, palea poorly developed; upper floret pale yellow, rarely black, smooth, shiny. Fl. and fr. May–Oct. $2n = 36$.

Dry grasslands, mountain slopes. Guangdong, Guangxi, Taiwan, Xizang [Borneo, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

12. *Panicum humile* Nees ex Steudel, Syn. Pl. Glumac. 1: 84. 1854.

南亚稷 nan ya ji

Panicum austroasiaticum Ohwi; *P. watense* Mez; *P. vesicum* R. R. Stewart, nom. illeg. superfl.

Annual, slender. Culms erect, branched, 20–70 cm tall. Leaves mostly cauline; leaf sheaths glabrous, occasionally ciliate on the margins; leaf blades linear, flat, 7–20 × 0.2–0.6 cm, glabrous, base tapering, apex acute or acuminate; ligule ca. 1 mm, a ciliate membrane. Panicles axillary or terminal, ovate or oblong in outline, usually scarcely exerted from the uppermost sheath, 5–15 cm, moderately branched. Spikelets ovate,

1.5–2 mm, glabrous, upper glume and lower lemma divergent at maturity; lower glume ovate, 1/2–3/4 length of spikelet, 3-veined, acuminate or cuspidate; upper glume ovate, as long as spikelet, 3–5-veined acuminate; lower floret barren, lemma similar to upper glume, palea present; upper floret pale yellow, smooth, shiny. Fl. and fr. Aug–Dec. $2n = 18$.

Fields on rather dry soils, mountain slopes. Guangdong, Guangxi, Hainan, Taiwan, Xizang [India, Malaysia, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa].

13. *Panicum virgatum* Linnaeus, Sp. Pl. 1: 59. 1753.

柳枝稷 liu zhi ji

Chasea virgata (Linnaeus) Nieuwland; *Milium virgatum* (Linnaeus) Lunell; *Panicum giganteum* Scheele; *P. glaberrimum* Steudel; *P. purinisum* Bernhardt ex Trinius.

Perennial with scaly rhizomes. Culms tough, erect, 60–200 cm tall, usually unbranched, nodes glabrous or pubescent. Leaves basal and cauline; leaf sheaths rounded, glabrous; leaf blades linear, flat, 20–40 × 0.3–1.5 cm, glabrous, apex acuminate; ligule 1.5–7 mm, a ciliate fringe, membranous at the base. Panicle open, oblong or rhomboid in outline, 15–55 cm, the spikelets often clustered on the secondary branches. Spikelets ovate, 3–5 mm, glabrous; glumes ovate, acuminate; lower glume 2/3–3/4 length of spikelet, 5-veined; upper glume as long as spikelet, 5-veined; lower floret staminate, lemma similar to upper glume, 5–7-veined, palea well developed; upper floret pale, shiny. Fl. and fr. Jul–Oct. $2n = 21, 25, 30, 32, 36, 72$.

Commonly cultivated for forage [native to North America].

14. *Panicum miliaceum* Linnaeus, Sp. Pl. 1: 58. 1753.

稷 ji

Annual. Culms robust, 20–150 cm tall, glabrous or lower nodes and internodes pubescent or hispid. Leaves cauline; leaf sheaths hispid; leaf blades linear or narrowly lanceolate, 15–40 × 1–2.5 cm, glabrous to pilose or hispid, base cordate to amplexicaul, apex finely tapering; ligule 1.5–3 mm, a fringe of hairs from a membranous base. Panicle oblong to ovate in outline, 15–35 cm, drooping at maturity with the weight of the dense spikelets which are clustered toward the ends of the branches. Spikelets ovate to ovate-oblong, 4–5 mm, glabrous, acute to acuminate; lower glume ovate, 1/2–3/4 length of spikelet, 5-veined, acute or acuminate, separated by a short internode; upper glume equal to spikelet, 9–13-veined, acute or acuminate; lower floret barren, lemma similar to upper glume, palea reduced or absent; upper floret orange or yellow, smooth, shiny, usually persistent. Fl. and fr. Jul–Oct. $2n = 36, 40$.

Commonly cultivated, especially in mountainous regions [cultivated in Bhutan, India, Japan, and widely elsewhere].

15. *Panicum curviflorum* Hornemann, Hort. Bot. Hafn., Suppl. 116. 1819.

弯花黍 wan hua shu

Panicum trypheron Schultes.

Annual, loosely tufted. Culms erect or geniculately ascending, (15–)30–90 cm tall, nodes glabrous. Leaves mostly basal; leaf sheaths striate, hispid with tubercle-based hairs; leaf blades linear or lanceolate, flat, 7–30 × 0.2–0.9 cm, hispid, base

straight, apex acute or acuminate; ligule 0.3–1 mm, a fringe of hairs. Panicle open, oblong in outline, 10–35 cm, axis smooth, moderately branched; branches ascending or spreading, scabrid. Spikelets lanceolate, 3–3.5 mm, glabrous, acuminate; glumes broadly ovate, scaberulous on veins, acuminate to cuspidate; lower glume 1/2–2/3 length of spikelet, 5-veined, clasping at the base, separated by an internode; upper glume as long as spikelet, 7–9-veined; lower floret barren, lemma similar to upper glume, finely acute, palea poorly developed; upper floret oblong, 3/4 length of spikelet, pale yellow or olive green, shiny, obtuse.

Grasslands, disturbed places. Yunnan [India, Indonesia, New Guinea, Pakistan, Sri Lanka, Thailand].

16. *Panicum trichoides* O. Swartz, Prodr. 24. 1788.

发枝稷 fa zhi ji

Annual, delicate. Culms geniculately ascending, rooting from lower nodes, 10–80 cm tall, branched, nodes puberulous. Leaves cauline; leaf sheaths striate, pilose or hispid; leaf blades lanceolate, membranous, 3–8 × 0.5–2 cm, pilose, base asymmetrically cordate or narrowed, apex acuminate; ligule ca. 0.2 mm, a ciliate membrane. Panicle ovate or oblong in outline, 4–20 cm, much branched; branches fine and bearing the spikelets on long pedicels. Spikelets asymmetrically ovate, 1–1.5 mm, pubescent; lower glume ovate, 1/2 length of spikelet, 1–3-veined, separated by an internode; upper glume as long as spikelet, 3–5-veined; lower lemma similar to upper glume, palea 1/2 as long as lemma; upper floret as long as spikelet, thinly coriaceous, glabrous, white, granulose. Fl. and fr. Sep–Dec. $2n = 18$.

Roadsides, waste places. Guangdong, Hainan [tropical America; introduced in tropical Africa and Asia].

17. *Panicum brevifolium* Linnaeus, Sp. Pl. 1: 59. 1753.

短叶黍 duan ye shu

Panicum arborescens Linnaeus; *P. brevifolium* var. *hirtifolium* (Ridley) Jansen; *P. hirtifolium* Ridley; *P. longiglume* H. Peng & L. H. Zhou; *P. ovalifolium* Poiret.

Annual. Culms rambling, often rooting at lower nodes, 15–100 cm tall, nodes glabrous or pubescent. Leaves cauline; leaf sheaths puberulous or glabrous, ciliate on margins; ligule ca. 0.2 mm, a ciliate membrane; leaf blades narrowly ovate to ovate, 5–10 × 1–3 cm, membranous, glabrous or pilose, cross veins present, base amplexicaul, apex finely acute to acuminate. Panicle oblong or ovate in outline, 5–15 cm, much branched; branches delicate, often tangled, glabrous or pilose, glandular patches present. Spikelets asymmetrically borne on the pedicels, ovate or elliptic in outline, 1.5–2 mm, sparsely puberulous to pilose; lower glume ovate, as long as spikelet, hyaline, 1–3-veined, separated by an internode; upper glume as long as spikelet, 5-veined; lower lemma similar to upper glume, palea well developed; upper floret white, scaberulous, shiny. Fl. and fr. May–Dec. $2n = 36$.

Humid places, forest margins. Fujian, Guangdong, Guangxi, Guizhou, Jiangxi, Taiwan, Yunnan [Bhutan, India, Indonesia, Malaysia,

Myanmar, Sri Lanka, Thailand, Vietnam; tropical Africa].

18. *Panicum notatum* Retzius, Observ. Bot. 4: 18. 1786.

心叶稷 xin ye ji

Panicum montanum Roxburgh.

Perennial. Culms scrambling, often rooting at lower nodes, 1–2 m long, branched, terete, glabrous, nodes glabrous to puberulous. Leaves cauline; leaf sheaths striate, puberulous to subglabrous, ciliolate on margins toward throat; leaf blades lanceolate, 5–20 × 1–3 cm, subglabrous to pubescent, cross veins present, margins scabrid, base cordate, apex finely pointed to acuminate; ligule scarcely developed, ca. 0.5 mm, a ciliate membrane. Panicle broadly ovate in outline, 10–40 cm, much branched; branches slender, spreading, glabrous, smooth or scabrid, bearing spikelets toward the extremities. Spikelets elliptic, 2–2.5 mm, puberulous; lower glume ovate or oblong, 3/4 as long to equaling the spikelet, 3–5-veined, separated by an internode; upper glume as long as spikelet, 3–5-veined; lower lemma similar to upper glume, palea absent; upper floret as long as spikelet, pale yellow or green, smooth, shiny. Fl. and fr. May–Nov. $2n = 36$.

Forest margins. Fujian, Guangdong, Guangxi, Taiwan, Xizang, Yunnan [Bhutan, Borneo, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam].

19. *Panicum sarmentosum* Roxburgh, Fl. Ind. 1: 311. 1820.

卵花黍 luan hua shu

Perennial. Culms rambling or climbing, up to 15 m long, branched, glabrous to puberulous or hispid, terete, solid. Leaves cauline; leaf sheaths striate, puberulous; ligule ca. 0.5 mm, a ciliate membrane; leaf blades narrowly lanceolate, 10–35 × 1–3 cm, puberulous, margins scabrid, base abruptly narrowed, apex acuminate. Panicle oblong to ovate in outline, 15–30 cm, axis glabrous or pilose, much branched; branches viscid or smooth. Spikelets ovate, 1.5–2 mm, sparsely puberulous to glabrous; lower glume ovate, 2/3–3/4 length of spikelet, 3–5-veined; upper glume as long as spikelet, 5-veined; lower lemma similar to upper glume, palea well developed; upper floret as long as spikelet, pale brown, smooth, shiny, apex apiculate.

Forest shade. Hainan, Taiwan [India, Indonesia, Malaysia, Myanmar, New Guinea, Philippines, Thailand; Australia].

20. *Panicum incomtum* Trinius, Gram. Panic. 200. 1826.

藤竹草 teng zhu cao

Panicum submontanum Hayata.

Perennial. Culms rambling, often rooting at lower nodes, 1–2 m long, branched, terete, subglabrous to puberulous, nodes glabrous or puberulous. Leaves cauline; leaf sheaths loose, striate, puberulous; leaf blades narrowly lanceolate, 10–25 × 1–2 cm, pilose, base abruptly narrowed, apex acuminate; ligule ca. 1 mm, ciliate. Panicle oblong to ovate in outline, 10–23 cm, the axis puberulous, much branched; branches tangled, viscid. Spikelets ovate, 1.5–2 mm, sparsely puberulous to glabrous; lower glume ovate, 2/3–3/4 length of spikelet, 3–5-veined; upper glume as long as spikelet, 5-veined; lower lemma similar

to upper glume, palea well developed; upper floret as long as spikelet, pale brown, smooth, shiny. Fl. and fr. Jul–Mar. $2n = 36$.

Forest shade. Fujian, Guangdong, Guangxi, Jiangxi, Taiwan, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, New Guinea, Philippines, Thailand, Vietnam; Australia].

21. *Panicum khasianum* Munro ex J. D. Hooker, Fl. Brit. India 7: 54. 1896 [“1897”].

滇西黍 dian xi shu

Perennial. Culms rambling, often rooting at lower nodes, 1–2 m long, branched, terete, nodes glabrous. Leaves cauline; leaf sheaths striate, loose, glabrous, hispid or sparsely ciliate on margins and toward throat; leaf blades narrowly lanceolate, 10–30 × 1–3 cm, subglabrous to pilose or hispid, base abruptly narrowed, apex acuminate; ligule 0.5–1 mm, a ciliate membrane. Panicle broadly oblong to orbicular in outline, 15–35 cm, much branched; branches spreading, scabrid, bearing spikelets mostly in the upper half. Spikelets elliptic-oblong, glabrous; lower glume ovate, 1/4–1/3 length of spikelet, 0–5-veined, acute or obtuse, not separated by an internode; upper glume as long as spikelet, 5-veined; lower lemma similar to upper glume, palea

absent; upper floret as long as spikelet, pale yellow, smooth, shiny, minutely ciliate at the apex. Fl. and fr. Jul–Dec.

Humid grasslands, valley slopes; 1000–2500 m. W Yunnan [Bhutan, NE India].

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