

165. BRACHIARIA (Trinius) Grisebach, Ledebour, Fl. Ross. 4: 469. 1853.

臂形草属 *bi xing cao shu*

Chen Shouliang (陈守良); Sylvia M. Phillips

Panicum sect. *Brachiaria* Trinius, Gram. Panic. 51, 125. 1826.

Annual or perennial. Leaf blades linear to lanceolate, often with cartilaginous margins. Inflorescence composed of racemes along a central axis; raceme rachis triquetrous or flattened, sometimes winged; spikelets sessile or pedicelled, single or paired, rarely in fascicles or on secondary racemelets. Spikelets plump, usually elliptic, florets 2; lower glume adaxial, varying in length from very small and veinless to many-veined and subequaling spikelet, base sheathing, sometimes extended downward as a short stipe; upper glume and lower lemma similar, as long as spikelet, membranous or cartilaginous; upper lemma coriaceous, smooth, striate or rugose, margins inrolled, apex obtuse to acute, occasionally minutely mucronate; upper palea apex tucked within lemma. $x = 7, 9$.

About 100 species: tropics and subtropics mainly of the Old World, especially Africa; nine species (one endemic) in China.

Brachiaria is sometimes included within *Urochloa*, but usually they can be distinguished without difficulty.

- 1a. Culms robust, up to 2 m tall; inflorescence with 10–20 racemes 1. *B. mutica*
1b. Culms slender, up to 60 cm tall; inflorescence with less than 10 racemes.
2a. Inflorescence with erect appressed racemes; fertile floret smooth and shiny, obtuse, readily falling from spikelet 2. *B. eruciformis*
2b. Inflorescence with spreading racemes; fertile floret rugulose, acute to mucronate, persistent within the spikelet.
3a. Spikelets 1.5–2.7 mm; leaf blades broadly lanceolate, 1–4 cm long.
4a. Spikelets elliptic, 2–2.7 mm 3. *B. villosa*
4b. Spikelets ovate, gibbous, 1.5–2 mm 4. *B. semiundulata*
3b. Spikelets 2.5–4 mm; leaf blades lanceolate or linear-lanceolate, 4–15 cm long.
5a. Spikelets paired, one sessile and one pedicelled 5. *B. ramosa*
5b. Spikelets single (except sometimes at raceme base).
6a. Rachis of racemes triquetrous, 0.2–0.4 mm wide; spikelets herbaceous, pubescent or glabrous.
7a. Spikelets contiguous, 3.8–4 mm, pubescent 6. *B. fusiformis*
7b. Spikelets distant, 2.5–3.5 mm, glabrous 7. *B. kurzii*
6b. Rachis of racemes flat on back, 0.4–0.5 mm wide; spikelets cartilaginous, glabrous or almost so.
8a. Lower glume 1/3–1/2 spikelet length, separated from upper glume by a short internode; upper lemma subacute 8. *B. subquadripara*
8b. Lower glume 1/2–3/5 spikelet length, not separated from upper glume; upper lemma mucronate 9. *B. urochlooides*

1. *Brachiaria mutica* (Forsskål) Stapf in Prain, Fl. Trop. Africa 9: 526. 1919.

巴拉草 *ba la cao*

Panicum muticum Forsskål, Fl. Aegypt.-Arab. 20. 1775; *Brachiaria purpurascens* (Raddi) Henrard; *P. barbinode* Trinius; *P. purpurascens* Raddi; *Urochloa mutica* (Forsskål) T. G. Nguyen.

Robust perennial. Culms stout, trailing and rooting freely from lower nodes, ascending to 2 m, 5–8 mm in diam., nodes densely villous. Leaf sheaths villous or glabrous; leaf blades broadly linear, 10–30 × 1–2 cm, thinly pilose or subglabrous; ligule membranous, 1–1.3 mm. Inflorescence axis 7–20 cm; racemes 10–20, 5–15 cm, single, paired or grouped; rachis narrow, winged, scabrous; spikelets paired or single in upper part of raceme, in untidy rows or sometimes on short secondary branchlets in lower part of raceme; pedicels usually setose. Spikelets elliptic, green or purplish, 2.5–3.5 mm, glabrous, acute; lower glume triangular, 1/4–1/3 spikelet length, 1-veined; upper glume 5-veined; upper lemma rugulose, apex obtuse. Fl. and fr. Aug–Nov.

Forming a dense cover along streams and in other wet places, sometimes forming floating rafts. Fujian, Hong Kong, cultivated in Taiwan [tropical Africa and America].

This is a forage grass (Para Grass) widely cultivated in tropical regions of the world and often found as a naturalized escape. Its country of origin is unknown.

2. *Brachiaria eruciformis* (Smith) Grisebach, Fl. Ross. 4: 469. 1853.

臂形草 *bi xing cao*

Panicum eruciforme Smith in Sibthorp & Smith, Fl. Graeca 1: 44, t. 59. 1806; *Brachiaria isachne* (Roth ex Roemer & Schultes) Stapf; *Echinochloa eruciformis* (Smith) Koch; *Moorochloa eruciformis* (Smith) Veldkamp; *P. caucasicum* Trinius; *P. isachne* Roth ex Roemer & Schultes.

Annual. Culms loosely tufted, slender, much branched, geniculate ascending, 30–40 cm tall, nodes softly hairy. Leaf sheaths glabrous or loosely tuberculate-hairy; leaf blades linear-lanceolate, 1.5–10.5 × 0.3–0.6 cm, glabrous or pilose; ligule ciliate. Inflorescence axis 3–6 cm; racemes 4–10, 1–3 cm, erect or narrowly ascending; rachis narrow, triquetrous, ciliate or scab-

rous; spikelets single, in 2 rows, overlapping. Spikelets elliptic, 1.8–3 mm, pilose, subacute; lower glume 0.2–0.3 mm, membranous, glabrous; upper glume and lower lemma as long as spikelet, 5-veined; upper floret readily deciduous, oblong, ca. 1.5 mm, thinly crustaceous, smooth, glossy, apex obtuse. Fl. and fr. summer–autumn. $2n = 18$.

Open and disturbed situations on hill slopes and in dry fields as an arable weed. Fujian, Guizhou, Yunnan [India, Malaysia, Thailand; N Africa, Mediterranean region].

This is the only species of *Brachiaria* occurring in China with a fertile floret which is shed from the mature spikelet. The fertile floret is also distinctive due to its smooth, glossy texture and obtuse apex.

This species and two close relatives in Africa have been placed in the separate genus *Moorochloa* Veldkamp.

3. *Brachiaria villosa* (Lamarck) A. Camus in Lecomte, Fl. Indo-Chine 7: 433. 1922.

毛臂形草 mao bi xing cao

Annual. Culms loosely tufted, slender, usually decumbent and branching below, 10–40(–50) cm tall. Leaf sheaths glabrous or pubescent, especially along margins and mouth; leaf blades broadly lanceolate, 1–4 × 0.3–1 cm, both surfaces glabrous to densely pubescent, base rounded or subcordate, margins cartilaginous, scabrous, apex acute; ligule ciliate. Inflorescence axis 3–7 cm; racemes 4–8, (1–)3–6 cm, secund, ascending; rachis triquetrous, ± villous; spikelets mostly single. Spikelets elliptic, 2–2.7 mm, without a stipe, glabrous or pubescent, sometimes transversely bearded below apex, acute or subacute; lower glume 1/3–1/2 spikelet length, clasping, 3-veined, acute; upper glume separated from lower by a slight internode, 5-veined; upper lemma striate and transversely rugulose, apex acute to minutely mucronate. Fl. and fr. Jul–Oct. $2n = 36$.

Mountain or hill slopes, fields, roadsides, other weedy or grassy places. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Myanmar, Nepal, Philippines, Thailand, Vietnam; Africa].

This is a weedy species recognizable by its short, broad, usually softly hairy leaf blades and secund racemes of rather small spikelets.

- 1a. Leaves, culms and spikelets pubescent 3a. var. *villosa*
 1b. Leaves, culms and spikelets glabrous
 except sheath margins 3b. var. *glabrata*

3a. *Brachiaria villosa* var. *villosa*

毛臂形草(原变种) mao bi xing cao (yuan bian zhong)

Panicum villosum Lamarck, Tab. Encycl. Méth. Bot. 1: 173. 1791; *Brachiaria villosa* var. *barbata* Bor; *P. coccospermum* Steudel; *Urochloa coccosperma* (Steudel) Stapf ex Reeder; *U. villosa* (Lamarck) T. Q. Nguyen.

Culms to 40 cm but often shorter. Leaf sheaths and blades ± pubescent. Spikelets puberulous or pubescent, upper glume and lower lemma sometimes with a subapical transverse white fringe.

Hill slopes, fields. Anhui, Fujian, Gansu, Guangdong, Guangxi,

Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Myanmar, Nepal, Philippines, Thailand, Vietnam; Africa].

Forms with bearded spikelets have been separated as var. *barbata*, but as the type of *Panicum villosum* itself has bearded spikelets, the autonymic variety (var. *villosa*) is clearly synonymous and has statutory priority.

3b. *Brachiaria villosa* var. *glabrata* S. L. Chen & Y. X. Jin, Acta Phytotax. Sin. 22(6): 472. 1984.

无毛臂形草 wu mao bi xing cao

Culms ca. 50 cm. Leaf sheaths and blades glabrous except for ciliolate sheath margins. Spikelets glabrous, apex without white beard (but pedicels loosely hirsute).

- Roadsides, grassy places; ca. 800 m. Yunnan.

4. *Brachiaria semiundulata* (Hochstetter) Stapf in Prain, Fl. Trop. Africa 9: 556. 1919.

短颖臂形草 duan ying bi xing cao

Panicum semiundulatum Hochstetter ex A. Richard, Tent. Fl. Abyss. 2: 364. 1851.

Annual. Culms loosely tufted, slender, decumbent at base, rooting at lower nodes, 20–50 cm tall. Leaf sheaths pubescent; leaf blades ovate-lanceolate, 1–3 × 0.1–0.8 cm, both surfaces densely pubescent, margins cartilaginous, crinkled-serrate; ligule ciliate. Inflorescence axis 2–7 cm; racemes 5–8, 0.5–2 cm, ascending; rachis triquetrous, setose; spikelets single, in neat 2 rows, overlapping. Spikelets ovate, plump, strongly gibbous on abaxial side, flat on adaxial side, 1.5–2 mm, glabrous to pubescent, subacute; lower glume 1/3–2/5 spikelet length, 3-veined; upper glume 4/5 spikelet length, 5-veined; upper lemma swollen, striate, transversely rugulose, apex acute. Fl. and fr. Jul–Oct.

Mountain slopes, fields. Hainan, Yunnan [tropical Africa, S Asia].

5. *Brachiaria ramosa* (Linnaeus) Stapf in Prain, Fl. Trop. Africa 9: 542. 1919.

多枝臂形草 duo zhi bi xing cao

Panicum ramosum Linnaeus, Mant. Pl. 1: 29. 1767; *P. brachylachnum* Steudel; *P. canescens* Roth ex Roemer & Schultes; *Urochloa ramosa* (Linnaeus) T. Q. Nguyen.

Annual. Culms tufted, loosely ascending, 30–60 cm tall. Leaf sheaths glabrous to pubescent; leaf blades narrowly lanceolate, 4–12 × 0.4–0.8 cm, velvety-pubescent, margins thickened and slightly wavy, scaberulous, apex acuminate; ligule short, ciliate. Inflorescence axis 6–13 cm; racemes 3–6, 2–5 cm, loosely erect to ascending; rachis triquetrous, hispid; spikelets mostly borne in loosely contiguous pairs, one spikelet subsessile, the other shortly pedicelled, single toward raceme apex, lightly appressed to axis. Spikelets elliptic, 2.5–3.5 mm, with a 0.1–0.5 mm basal stipe, glabrous, pubescent or hispidulous, acute to cuspidate; lower glume broadly ovate, 1/3–1/2 spikelet length, 5-veined; upper glume 5–7-veined; upper lemma distinctly rugose, apex acute. Fl. and fr. summer–autumn. $2n = 32, 36$.

Grasslands, hill slopes, weedy places. Hainan, Yunnan [Bhutan, Cambodia, India, Malaysia, Nepal, Pakistan, Thailand, Vietnam; Africa].

6. *Brachiaria fusiformis* Reeder, J. Arnold Arbor. 29: 274. 1948.

细毛臂形草 xi mao bi xing cao

Brachiaria subquadriflora var. *setulosa* S. L. Chen & Y. X. Jin; *Urochloa fusiformis* (Reeder) Veldkamp.

Annual. Culms loosely tufted, branching, 30–50 cm tall, basal internodes purplish, pubescent, upper internodes glabrescent. Leaf sheaths densely pilose; leaf blades lanceolate, 4–5.5 × 0.7–0.9 cm, densely pilose, base rounded, margins cartilaginous, scaberulous and spinulose, apex acute; ligule 0.5–1.5 mm. Inflorescence axis 6–8 cm, pubescent; racemes 4–5, 3–5 cm, narrowly ascending to suberect, lowermost with basal racemelets; rachis triquetrous, 0.3–0.4 mm wide; spikelets single, their own length apart or overlapping; pedicels setose. Spikelets narrowly elliptic, 3.8–4 mm, with a 0.3–0.5 mm basal stipe, herbaceous, softly pubescent, strongly veined, apex sharply contracted, shortly acuminate; lower glume 1/2 spikelet length, clasping, 3–5-veined, obtuse; upper glume as long as spikelet, 5-veined, cross veinlets toward apex; lower lemma similar to upper glume, back flat to slightly sulcate; upper lemma shorter than spikelet, inconspicuously punctate-rugulose, apex acute, minutely scabrous-pubescent, slightly crested.

Mountain slopes. Yunnan (Yongsheng) [Indonesia, New Guinea, Philippines].

The Chinese population of this little-known species has larger spikelets than specimens from tropical SE Asia, but is otherwise typical. In the Philippines the spikelets have an apical fringe of longer hairs, but other *Brachiaria* species are also variable in this character. The very slender, triquetrous rachis and contracted, acuminate spikelet apex are unusual in the genus.

7. *Brachiaria kurzii* (J. D. Hooker) A. Camus in Lecomte, Fl. Indo-Chine 7: 438. 1922.

无名臂形草 wu ming bi xing cao

Panicum kurzii J. D. Hooker, Fl. Brit. India 7: 38. 1896 [“1897”]; *Urochloa kurzii* (J. D. Hooker) T. Q. Nguyen.

Annual. Culms decumbent or shortly stoloniferous, rooting at lower nodes, 15–60 cm long, nodes pubescent. Leaf sheaths glabrous, outer margin ciliate; leaf blades lanceolate, 5–8 × 0.8–1.8 cm, sparsely pilose, base cordate, margins thickened, setose near base, apex acuminate. Inflorescence axis 5–8 cm; racemes 3–7, 5–7.5 cm, divergent, the lower with short racemelets bearing 2 (or infrequently more) spikelets; rachis triquetrous, 0.2–0.4 mm wide, with scattered bristles; spikelets single, distant; pedicels scabrid. Spikelets elliptic, 2.5–3.5 mm, glabrous, apex acute; lower glume ovate, 1/3 spikelet length, clasping, 3–5-veined, obtuse; upper glume 1/2 spikelet length, 7-veined, acuminate; lower lemma similar to upper glume, as long as spikelet, 5–7-veined, acute; upper lemma shorter than spikelet, rugose, apex briefly apiculate.

Thickets; ca. 1400 m. Yunnan (Jianshui) [India, Indonesia, Thailand; Australia (Queensland)].

8. *Brachiaria subquadriflora* (Trinius) Hitchcock, Lingnan Sci. J. 7: 214. 1931 [“1929”].

四生臂形草 si sheng bi xing cao

Annual or short-lived perennial. Culms slender, straggling, rooting at lower nodes, 20–60 cm tall, nodes pubescent. Leaf sheaths loose, glabrous or with tubercle-based hairs or ciliate margins; leaf blades lanceolate or linear-lanceolate, 4–15 × 0.4–1 cm, glabrous or pubescent, base subrounded, margins thicker and scabrous, apex acute or acuminate. Inflorescence axis 3–10 cm; racemes 3–6, 2–4 cm, divergent to reflexed; rachis flat, 0.7–1 mm wide, narrowly winged, nearly glabrous; spikelets single, in 2 rows; pedicels glabrous. Spikelets elliptic to narrowly obovate, (3–)3.5–4 mm, glabrous, acute; lower glume broadly ovate, 1/3–1/2 spikelet length, 5–7-veined; upper glume separated from lower glume by a short internode, 5–7-veined; upper lemma finely rugose, apex subacute. Fl. and fr. Sep–Nov. $2n = 72$.

Hill slopes, grassy places, fields, open forests. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan, Yunnan [tropical Asia, Australia, Pacific Islands].

This species is a troublesome weed.

- 1a. Spikelets elliptic, broadest at middle, acuminate 8a. var. *subquadriflora*
- 1b. Spikelets narrowly obovate, broadest above middle, acute 8b. var. *miliiformis*

8a. *Brachiaria subquadriflora* var. *subquadriflora*

四生臂形草(原变种) si sheng bi xing cao (yuan bian zhong)

Panicum subquadriflorum Trinius, Gram. Panic. 145. 1826; *P. pseudodistachyum* Hayata; *Urochloa subquadriflora* (Trinius) R. D. Webster.

Leaf sheaths and blades usually glabrous, rarely with tubercle-based hairs on sheaths or pubescent on both surfaces of blades. Pedicels glabrous. Spikelets elliptic, broadest in middle, glabrous. Fl. and fr. Sep–Nov.

Mountain slopes, grassy places, fields, open forests. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan [tropical Asia, Pacific Islands].

8b. *Brachiaria subquadriflora* var. *miliiformis* (Presl) S. L. Chen & Y. X. Jin, Acta Phytotax. Sin. 22: 472. 1984.

锐头臂形草 rui tou bi xing cao

Panicum miliiforme Presl, Reliq. Haenk. 1: 300. 1830; *Brachiaria miliiformis* (Presl) A. Chase.

Leaf sheaths glabrous or loosely tuberculate-hairy or margins ciliate. Pedicels glabrous. Spikelets narrowly obovate, broadest above middle, 3–3.5 mm, acute. Fl. and fr. autumn. $2n = 54–56, 72$.

Roadsides, grassy places. Hong Kong, Yunnan [India, Malaysia, Sri Lanka].

9. *Brachiaria urochlooides* S. L. Chen & Y. X. Jin, Acta Phytotax. Sin. 22: 471. 1984. [“*urochloides*”].

尾稃臂形草 *wei fu bi xing cao*

Annual. Culms slender, decumbent and rooting at base, branching, 40–60 cm tall. Leaf sheaths glabrous or with tubercle-based hairs, ciliate along one margin; leaf blades linear-lanceolate, 5–9 × 0.3–0.5 cm, both surfaces with tubercle-based

hairs, margins cartilaginous, scabrous, apex acute; ligule ciliate, hairs ca. 1 mm. Inflorescence axis 1–2.5 cm; racemes 2–4, 1.5–3 cm, secund, ascending; rachis scarcely winged, 0.5–0.6 mm wide, scabrous on edges; spikelets single or paired in the lower part. Spikelets lanceolate, 3.5–4 mm, without a stipe, subglabrous, abruptly acuminate; lower glume ovate, 1/2–3/5 spikelet length, clasping, 3–5-veined, acute; upper glume 5-veined, thinly pubescent near margins; upper lemma clearly shorter than spikelet, ca. 2.5 mm, rugulose, apex mucronate. Fl. and fr. May–Oct.

- Grassy places. S Yunnan.

This species resembles *Urochloa* in its mucronate upper lemma, but the lower glume is adaxial and characters of the leaf epidermis show it to be better placed in *Brachiaria*.

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