

121. ARISTIDA Linnaeus, Sp. Pl. 1: 82. 1753.

三芒草属 san mang cao shu

Lu Shenglian (卢生莲), Chen Shouliang (陈守良); Sylvia M. Phillips

Perennials, less often annuals or suffruticose. Culms tufted. Leaf blades usually basal, rolled or rarely flat. Inflorescence a narrow or open panicle. Spikelets with 1 floret; glumes scarious, narrow, unequal with the upper usually longer, 1(–3)-veined; floret callus bearded, obtuse to pungent or 2-toothed; lemma narrowly cylindrical or laterally compressed, convolute, glabrous or sparsely hairy; awn 3-branched, branches arising directly from lemma apex or seated on a straight or twisted column, persistent or disarticulating either at base or apex of column (always persistent in China), scabrid. Stamens 3.

About 300 species: widely distributed in tropical and warm-temperate regions of the world; ten species (six endemic) in China.

This genus is found on poor, dry soils in areas of low rainfall, but does not usually penetrate into true desert.

1a. Annuals; culms usually branched.

2a. Lemma 1.7–2 mm; central awn 0.5–0.8 cm 1. *A. cumingiana*

2b. Lemma 5–11 mm; central awn 1–2.5 cm.

3a. Glumes subequal or lower glume slightly shorter; lemma distinctly longer than upper glume 2. *A. adscensionis*

3b. Glumes unequal, lower glume 1/2–2/3 length of upper glume; lemma ± equal to upper glume 3. *A. depressa*

1b. Perennials; culms usually unbranched.

4a. Lower glume longer than upper glume; panicle open, branches divaricate, bearded in axils 4. *A. chinensis*

4b. Lower glume shorter than upper glume or glumes subequal; panicle narrow, branches erect or ascending, glabrous in axils.

5a. Column of awn 1–3 mm, twisted; lateral awns 5–10 mm.

6a. Leaf sheaths and blades glabrous; glumes and lemma smooth (rarely scabrid); anthers 3.5–4 mm 5. *A. tsangpoensis*

6b. Leaf sheaths and blades with silky hairs; glumes and lemma scabrid or lemma with long soft hairs; anthers 4–4.5 mm 6. *A. scabrescens*

5b. Column of awn absent or very short and straight; lateral awns reduced, 0.1–3 mm, or up to 6 mm.

7a. Lateral awns 0.1–0.4 mm 7. *A. brevissima*

7b. Lateral awns 1.1–6 mm.

8a. Glumes 7–10 mm, lemma 6.5–8 mm, central awn 4–8 mm.

9a. Lateral awns 1.1–3 mm; apex of glumes acute, upper mucronate; leaf sheaths smooth 8. *A. trisetata*

9b. Lateral awns 5–6 mm; apex of glumes obtuse or emarginate; leaf sheaths scaberulous 9. *A. batangensis*

8b. Glumes 12–13 mm; lemma ca. 9 mm, central awn 8–9 mm 10. *A. alpina*

1. *Aristida cumingiana* Trinius & Ruprecht, Sp. Gram. Stipac. 141. 1842.

黄草毛 huang cao mao

Delicate annual. Culms solitary or tufted, capillary, erect or geniculate at base, 6–20 cm tall, branched. Leaf sheaths smooth, loose, shorter than internodes; leaf blades narrow, involute, 2.5–10 cm, abaxial surface glabrous, adaxial surface hairy, smooth; ligule ca. 0.2 mm. Panicle oblong to ovate in outline, loose, open, 5–10 cm; branches capillary, ascending, inserted 2–3 together along main axis. Spikelets green or purple; glumes unequal, 1-veined, scabrid on vein, apex acuminate-mucronate, lower glume lanceolate, 2–2.5 mm, upper glume narrowly lanceolate-oblong, 2.8–3.5 mm; callus small, broadly obtuse; lemma 1.7–2 mm, upper part scabrid; awn arising directly from lemma apex, stiffly spreading, central branch 5–8 mm, laterals about half as long. Anthers 0.5–0.6 mm. Fl. and fr. summer and autumn.

Hill slopes, dry grasslands; 200–800 m. Fujian, Guangdong, Hunan, Jiangsu, Yunnan, Zhejiang [India, Indonesia (Celebes), Laos, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam; Africa, N Australia].

This is much the smallest species in China, easily recognized by its delicate habit and very small, often purplish spikelets. It is one of the most widespread species in the genus.

2. *Aristida adscensionis* Linnaeus, Sp. Pl. 1: 82. 1753.

三芒草 san mang cao

Aristida adscensionis var. *vulpioides* (Hance) Hackel ex Henrard; *A. heymanii* Regel; *A. vulgaris* Trinius & Ruprecht; *A. vulpioides* Hance; *Chaetaria adscensionis* (Linnaeus) P. Beauvois.

Annual. Culms tufted, erect or geniculate at base, 15–55 cm tall, branched. Leaf sheaths smooth, glabrous, shorter than internodes, laxly overlapping; leaf blades involute, 3–20 cm, finely pointed; ligule ca. 0.5 mm. Panicle usually narrow, loosely contracted, 4–20 cm; branches short, ascending, inserted singly on main axis. Spikelets gray-green or purplish green; glumes subequal or unequal with upper longer, 1-veined, scabrid on vein, lower glume lanceolate-oblong, 4–6.8 mm, acute, upper glume linear, 5–8 mm, obtuse to emarginate or apiculate; callus ca. 0.5 mm, narrowly obtuse; lemma linear, distinctly longer than upper glume, 7–11 mm, laterally compressed, smooth or rarely scabrid in upper half, keel scabrid upward;

awn branches arising directly from lemma apex, central branch 1–2.5 cm, laterals slightly shorter. Anthers 1.8–2 mm. Fl. and fr. Jun–Oct.

Dry mountain slopes, rocky fissures, and along river banks; 200–1800 m. Gansu, Hebei, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Yunnan [tropical and warm-temperate regions of the world].

Aristida adscensionis is a widely distributed, variable, annual pioneer of dry, open places, recognized by its long, parallel-sided, flattened lemma often exerted from the glumes. It is used for forage.

3. *Aristida depressa* Retzius, Observ. Bot. 4: 22. 1786.

仪英三芒草 *yi ying san mang cao*

Aristida vulgaris var. *depressa* (Retzius) Trinius & Ruprecht; *Chaetaria depressa* (Retzius) P. Beauvois.

Annual. Culms slender, erect or geniculate at base, 30–50 cm tall, branched. Leaf sheaths glabrous, shorter than internodes, loose; leaf blades involute, 4–15 cm, abaxial surface smooth, adaxial surface pubescent, apex finely pointed; ligule ca. 0.5 mm. Panicle lax and open or loosely contracted, 7–18 cm; branches filiform, 2–5 cm, ascending or slightly flexuously spreading, inserted singly or in small groups along main axis. Spikelets greenish or stramineous; glumes clearly unequal with upper longer, narrowly lanceolate, 1-veined, lower glume 4–4.7 mm, scabrid on vein and back, acuminate, upper glume 7–8 mm, smooth, emarginate to acute; callus 0.3–0.5 mm, obtuse; lemma linear, about as long as upper glume, 6.5–8 mm, laterally compressed, smooth or punctately scabrid, keel spinulose; awn arising directly from lemma apex, branches subequal, central branch 1.2–1.5 cm, laterals ca. 1 cm. Anthers 1.5–2 mm. Fl. Jul–Sep.

Grassy mountain slopes, river banks and roadsides; 700–1600 m. Sichuan, Yunnan [India, Myanmar, Sri Lanka, Thailand].

This is a variant from the *Aristida adscensionis* gene pool, in which species it is often included.

4. *Aristida chinensis* Munro, Proc. Amer. Acad. Arts 4: 363. 1860.

华三芒草 *hua san mang cao*

Aristida formosana Honda.

Perennial. Culms densely tufted, erect, wiry, 30–60 cm tall, unbranched. Leaf sheaths smooth, longer than internodes, bearded at mouth; leaf blades involute, filiform, curling when dry, 10–20 cm, abaxial surface smooth, adaxial surface pubescent; ligule ca. 0.2 mm. Panicle ovate in outline, open, 1/2 length of plant or more, 20–30 cm; branches 3–15 cm, divaricate, solitary or in small widely spaced groups along central axis, bearded in axils, strongly scabrid, lower part naked, spikelets clustered distally. Spikelets gray-green or purple; glumes unequal with lower longer, linear-lanceolate, 1–3-veined, acuminate-mucronate, lower glume 8–14 mm, scabrid on vein, upper glume 1/2–2/3 length of lower, smooth; callus ca. 0.5 mm; lemma 5–8 mm, terete, smooth; awn branches arising directly from lemma apex, central branch 1–1.5 cm, laterals slightly shorter or subequal to central branch. Anthers 1–2 mm.

Fl. and fr. Apr–Dec.

Grassy hill slopes. Fujian, Guangdong, Guangxi, Hainan, Taiwan [Cambodia, Indonesia (Celebes), Philippines, Thailand, Vietnam].

This is a species of local distribution, easily distinguished by its large, open, scabrid panicle and spikelets with inverted glumes (lower glume longer).

5. *Aristida tsangpoensis* L. Liu, Fl. Xizang. 5: 82. 1987.

藏布三芒草 *zang bu san mang cao*

Perennial forming tough tussocks; roots sometimes coated in sand. Culms erect or slightly geniculate, 15–40 cm tall, unbranched. Leaf sheaths glabrous, rarely collar with short hairs or sometimes silky hairs at mouth; leaf blades flat or involute, 5–10 cm, abaxial surface smooth, adaxial surface scabrid. Panicle narrow, 5–11 cm; branches 1.5–4 cm, paired, appressed to axis; pedicels often villous below spikelet. Spikelets yellowish green or gray-purple; glumes slightly unequal with upper longer, 1-veined, lower glume narrowly lanceolate-oblong, (7–)9–11 mm, scabrid on vein, subacute, mucronate, upper glume linear-oblong, (9–)11–12 mm, smooth on vein, acute, mucronate; callus ca. 0.5 mm, obtuse; lemma 6–9 mm, streaked gray-purple, smooth or punctately scabrid; awn with 1–2 mm slightly twisted column, central branch 1–1.4 cm, laterals 7–9.7 mm. Anthers 3.5–4 mm. Fl. and fr. Jul–Sep.

• Mountain slope forests, under montane scrub, sandy riversides; 3000–3900 m. Xizang, Yunnan.

6. *Aristida scabrescens* L. Liu, Fl. Xizang. 5: 84. 1987.

糙三芒草 *cao san mang cao*

Perennial. Culms densely tufted, erect, 15–60 cm tall, unbranched. Leaf sheaths usually shorter than internodes, sparsely silky hairy along margins, sheath-collar ciliate, villous at mouth; leaf blades gray-green, involute, 5–20 cm, abaxial surface smooth, adaxial surface densely pilose with short hairs. Panicle narrowly contracted or lax, 4–16 cm; branches 1–7 cm, capillary, paired, appressed to axis or loosely ascending. Spikelets yellowish green to purplish green; glumes subequal with upper slightly longer, lanceolate, scabrid, apiculate, lower glume 10–12 mm, upper glume 12–14 mm; callus obtuse; lemma 8–9 mm, punctately scabrid, also with some long soft hairs; awn with 2–3 mm twisted column, central branch ca. 1.5 cm, laterals ca. 1.2 cm. Anthers 4–4.5 mm. Fl. and fr. Jul–Sep.

• Grassy places on mountain slopes, river banks; 3100–4100 m. Xizang.

7. *Aristida brevissima* L. Liu, Fl. Xizang. 5: 80. 1987.

短三芒草 *duan san mang cao*

Perennial forming small tough tussocks. Culms erect, 15–30 cm tall, unbranched. Leaves mainly basal; leaf sheaths glabrous except for ca. 2 mm hairs at mouth, shorter than internodes, tightly overlapping; leaf blades involute, needle-like, 4–8 cm, abaxial surface smooth, adaxial surface scabrid. Panicle narrow, 7–13 cm; branches short, few-spiculate, paired. Spikelets yellowish green; glumes equal or upper slightly longer, 10–11 mm, narrowly lanceolate, smooth, glabrous, 1-veined;

callus ca. 0.6 mm, obtuse; lemma 8–9 mm, streaked blackish, punctately scabrid, awns arising directly from lemma apex, very reduced; central awn ca. 2 mm, lateral awns vestigial, 0.1–0.4 mm. Anthers 3–4 mm. Fl. Aug.

- Mountain slopes; 3000–3100 m. Xizang, Yunnan.

8. *Aristida triseta* Keng, Sunyatsenia 6: 102. 1941.

三刺草 san ci cao

Perennial forming small tough tussocks, base clothed in old leaf sheaths. Culms erect, 10–40 cm tall, unbranched. Leaves mainly basal; leaf sheaths glabrous, shorter than internodes, laxly overlapping in clusters; leaf blades usually involute, curved, 3.5–15 cm, acute; ligule ca. 2 mm. Panicle linear, 3.5–9 cm; branches short, stiff, few-spiculate, inserted singly, appressed to main axis. Spikelets purple or brown; glumes subequal or slightly unequal with upper longer, 7–10 mm, 1-veined, scabrid on vein, lower glume narrowly lanceolate, subacute, upper glume linear-oblong, acute and mucronate; callus 0.5–0.8 mm, obtuse; lemma 6.5–8 mm, streaked purple-brown, smooth or upper part scabrid, narrowly tapering into apex; awns arising directly from lemma apex; central awn 4–8 mm, lateral awns much reduced, 1.1–3 mm. Anthers 3–4 mm. Fl. and fr. Jul–Sep.

- Forests, under montane scrub, grasslands on steep dry mountainsides; 2400–4700 m. Gansu, Qinghai, Sichuan, Xizang, Yunnan.

9. *Aristida batangensis* Z. X. Tang & H. X. Liu, J. Sichuan Univ., Nat. Sci. Ed. 29: 423. 1992.

巴塘三芒草 ba tang san mang cao

Perennial forming tough tussocks, old sheaths persistent. Culms erect or base geniculate, 50–70 cm tall, unbranched. Leaf sheaths scaberulous, lower purplish; leaf blades involute, often curved, tough, 3–15 cm, adaxial surface hispidulous; ligule 1–1.5 mm. Panicle linear, sparsely branched; branches short, appressed to main axis. Spikelets hoary green; glumes slightly unequal with upper longer, narrowly lanceolate, lower glume ca. 7 mm, upper glume 8.5–9 mm, 1-veined, smooth, obtuse or emarginate; callus ca. 0.5 mm, obtuse, bearded with 0.2–0.8 mm hairs; lemma cylindrical, awns arising directly from lemma apex; central awn 7–8 mm, lateral awns 5–6 mm. Anthers ca. 3 mm.

- Habitat unknown; 2600–2700 m. W Sichuan (Batang).

10. *Aristida alpina* L. Liu, Fl. Xizang. 5: 82. 1987.

高原三芒草 gao yuan san mang cao

Perennial forming small tough tussocks. Culms erect, 15–25 cm tall, unbranched, upper part dark-gray, terminal node usually included in uppermost leaf sheath. Leaf sheaths glabrous, pilose at mouth (hairs ca. 2 mm), tightly overlapping; leaf blades gray-green, involute or rarely flat, 4–18 cm, abaxial surface smooth, adaxial surface scabrid. Panicle narrow, 4–10 cm; branches 2–5 cm, appressed to main axis. Spikelets dark-purple or brown; glumes subequal with upper slightly longer, 1.2–1.3 cm, lanceolate, 1-veined, scabrid on upper part and vein, apiculate; callus ca. 0.5 mm, bearded with ca. 0.8 mm hairs, obtuse; lemma ca. 9 mm, dark purple, scabrid in upper part, awns arising directly from lemma apex; central awn 8–9 mm, lateral awns 4–6 mm. Anthers ca. 3 mm. Fl. and fr. summer and autumn.

- Dry mountain slopes; ca. 4500 m. Xizang.

This species is very similar to *Aristida triseta*, but with somewhat larger spikelet parts.

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