

20. ACIDOSASA C. D. Chu & C. S. Chao ex P. C. Keng, J. Bamboo Res. 1(2): 31. 1982.

酸竹属 suan zhu shu

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Metasasa W. T. Lin.

Shrubby to arborescent bamboos. Rhizomes leptomorph, with running underground stems. Culms diffuse, erect; internodes terete, weakly grooved basally above branches, cavity with spongy pith; nodes weakly prominent. Branch complement 3 at mid-culm nodes, 3–5 at distal nodes. Culm sheaths deciduous, sparsely setose; auricles small or absent, with or without oral setae; blade lanceolate or triangular. Leaves usually medium-sized; auricles small or absent; blade with many secondary veins, transverse veins distinct. Inflorescence ebracteate, semelactant, a terminal raceme or racemose panicle. Spikelets robust, several to many flowered, long pedicellate. Glumes 2–4; lemma large, many veined, apex acuminate or shortly mucronate. Palea usually shorter than lemma, 2-keeled, veined between keels. Lodicules 3, membranous, usually transparent at margin. Stamens 6; filaments free; anthers yellow. Ovary appendage inconspicuous; style 1; stigmas 3, plumose. New shoots spring–early summer, fl. summer–autumn.

About 11 species: China, Vietnam; ten species (all endemic) in China.

The generic name *Acidosasa* and its type, *A. chinensis*, were previously published by Chu and Chao (J. Nanjing Technol. Coll. Forest Prod. 1979(1–2): 142–143. 1979), but not validly so (see Li, Taxon 46: 105–107. 1997).

Key based on vegetative features

- 1a. Culm sheath auricles absent.
 - 2a. Young culm internodes hairless.
 - 3a. Culm sheath sparsely spotted, sparsely shortly hispid; sheath blade short, usually 0.5–1 cm 1. *A. breviclavata*
 - 3b. Culm sheath unspotted, initially densely setose, especially at base; sheath blade long, usually 5–10 cm 2. *A. purpurea*
 - 2b. Young culm internodes hispid or pubescent.
 - 4a. Leaf ligule strongly prominent, 5–15 mm tall 3. *A. nanunica*
 - 4b. Leaf ligule truncate, less than 2 mm tall.
 - 5a. Culm internodes initially densely setose, with persistent traces of bristles; apex of culm sheath narrow, about as wide as base of sheath blade; leaf blade broad, usually 2.5–6.5 cm wide, transverse veins prominent 4. *A. chinensis*
 - 5b. Culm internodes apically sparsely setose initially; apex of culm sheath truncate, wider than base of sheath blade; leaf blade narrow, 1.5–2.5 cm wide, transverse veins not very distinct 5. *A. venusta*
- 1b. Culm sheath auricles present.
 - 6a. Young culm internodes setose, shortly hispid.
 - 7a. Culm sheath with thin, white powder; supra-nodal ridge strongly prominent 6. *A. lingchuanensis*
 - 7b. Culm sheath without white powder; supra-nodal ridge weakly prominent 7. *A. guangxiensis*
 - 6b. Young culm internodes without hairs.
 - 8a. Culm sheath purple spotted or purple striate; ligules of culm sheaths and leaf blades prominent, 4–8 mm 8. *A. notata*
 - 8b. Culm sheath without spots or striae; ligules not prominent.
 - 9a. Culm sheath initially green; leaf blade small, 8–18 mm 9. *A. chienouensis*
 - 9b. Culm sheath initially green with purple margins; leaf blade broad, 17–28 mm 10. *A. edulis*

Key to fertile material

- 1a. Lemma glabrous.
 - 2a. Lemma not powdery.
 - 3a. Lemma slightly tessellate, not glossy, veins 21–24; palea 1.4–1.6 cm 1. *A. breviclavata*
 - 3b. Lemma glossy, veins 17–19; palea ca. 1.2 cm 4. *A. chinensis*
 - 2b. Lemma powdery.
 - 4a. Spikelets short, 1.5–7.5 cm; lemma weakly glaucous, 9–13-veined; palea keels hairy 9. *A. chienouensis*
 - 4b. Spikelets long, ca. 11 cm; lemma farinose, 9–11-veined; palea keels ciliate 6. *A. lingchuanensis*
- 1b. Lemma abaxially hairy or with tessellate venation.
 - 5a. Lemma glabrous, venation tessellate; stigmas flagellate 10. *A. edulis*
 - 5b. Lemma pubescent; stigmas not flagellate.
 - 6a. Lemma densely pubescent; palea ciliate.
 - 7a. Spikelets 6–8 in a panicle, subtended by a lanceolate bractlet 3. *A. nanunica*
 - 7b. Spikelets 1–6 in a raceme, not subtended by a bractlet.
 - 8a. Spikelets 4–9 cm; florets 3–15 2. *A. purpurea*
 - 8b. Spikelets 6–17 cm; florets 13–33 7. *A. guangxiensis*

- 6b. Lemma sparsely pubescent; palea pubescent or sparsely setose.
 9a. Spikelets robust, 4–6 mm wide; lemma 1.4–1.9 cm, pedicel 2–13 mm 8. *A. notata*
 9b. Spikelets slender, 3–4 mm wide; lemma ca. 1.3 cm.
 10a. Pedicel 0.5–1 cm, glabrous, shorter than lemma; palea shorter than lemma; lemma glaucous
 9. *A. chienouensis*
 10b. Pedicel 1–3 cm, slightly hairy; longer than lemma; palea about as long as lemma or sometimes
 slightly longer; lemma not glaucous 5. *A. venusta*

1. *Acidosasa breviclavata* W. T. Lin, *Bamboo Res.* 5: 27. 1986.

小叶酸竹 xiao ye suan zhu

Acidosasa gracilis W. T. Lin & X. B. Ye.

Culms 1–1.5 m, 5–6 mm in diam.; internodes terete, 13.5–18.5 cm, glabrous; nodes with sheath scars weakly prominent. Culm sheaths deciduous, abaxially shortly setose and spotted; auricles and oral setae absent; ligule short; blade lanceolate, ca. 5 mm. Leaves 4 or 5 per ultimate branch; sheath glabrous; auricles and oral setae usually absent; ligule ca. 1.5 mm, apex recurved; blade 12–18 × 1.8–2.5 cm, glabrous, secondary veins 6-paired, base narrow, margins serrulate, apex caudiform. Inflorescence incompletely known. Spikelets 5.5–6.5 × 0.6–0.7 cm; glumes ca. 6; pedicel 1.5–2 cm. Glumes ca. 4, lemma-shaped, 1.1–1.7 cm, glabrous; rachilla 6–7 mm, glabrous; lemma 1.8–2.1 × ca. 0.8 cm, glabrous, 21–24-veined, slightly tessellate, apex acuminate; palea 1.4–1.6 cm, narrow, glabrous; lodicules lanceolate, margins ciliolate. Anthers ca. 8 mm. Style short; stigmas plumose.

- About 300 m. Guangdong (Gudou Shan).

The culms are used for papermaking and weaving.

2. *Acidosasa purpurea* (Hsueh & T. P. Yi) P. C. Keng, *J. Wuhan Bot. Res.* 4: 335. 1985.

毛花酸竹 mao hua suan zhu

Indosasa purpurea Hsueh & T. P. Yi, *Acta Phytotax.* Sin 21: 94. 1983; *Acidosasa dayongensis* T. P. Yi.

Culms 3–10 m, 2–8 cm in diam.; internodes 30–45 cm, initially glabrous, glaucous below nodes; wall 4–10 mm thick, cavity with spongy pith; nodes prominent, sheath base initially setose. Culm sheaths unspotted, leathery, setose, transverse veins obscure, base densely setose, apex truncate; auricles and cilia absent; ligule arched or triangular, 2–6 mm, ciliolate; blade lanceolate, base narrower than sheath apex. Leaves 4–7 per ultimate branch; sheath glabrous; auricles and cilia absent; ligule strongly prominent, 1.5–4 mm; blade lanceolate, 12–21 × 1.6–2.6 cm, secondary veins 5–7-paired, transverse veins distinct, serrulate. Raceme terminal or lateral. Spikelets 1–5, purple, 4–9 × 0.3–0.7 cm, compressed; rachilla ca. 5 mm, densely hairy; florets 3–15; pedicel 1–3 cm, apically pubescent. Glumes densely hairy; lemma 1.3–2.1 cm, densely setose. Palea short, 7–15 mm, narrow, ciliolate, apex rounded. Lodicules lanceolate, 2–3 mm, glabrous. Anthers yellow, 3–4 mm. Style 3–4 mm; stigmas 3-cleft, plumose. New shoots Apr, fl. May–Sep.

- NW Guangxi, Hunan, Jiangxi, SE Yunnan.

The earlier but not validly published name “*Acidosasa hirtiflora* Z. P. Wang & G. H. Ye” was applied to this species in *FRPS* 9(1): 565. 1996).

The shoots are edible, although rather bitter, and the culms are used for weaving and fencing.

3. *Acidosasa nanunica* (McClure) C. S. Chao & G. Y. Yang, *Acta Phytotax. Sin.* 39: 66. 2001.

长舌酸竹 chang she suan zhu

Indocalamus nanunicus McClure, *Lingnan Univ. Sci. Bull.* 9: 25. 1940; *Acidosasa xiushanensis* T. P. Yi; *Arundinaria bicorniculata* W. T. Lin & Z. J. Feng; *A. nanunica* (McClure) C. D. Chu & C. S. Chao; *A. projecta* W. T. Lin; *Metasasa albofarinosa* W. T. Lin; *M. carinata* W. T. Lin; *Pseudosasa altiligulata* T. H. Wen; *P. nanunica* (McClure) Z. P. Wang & G. H. Ye; *P. nanunica* var. *angustifolia* S. L. Chen & G. Y. Sheng; *P. projecta* (W. T. Lin) P. C. Keng.

Culms to 4 m, ca. 1 cm in diam.; internodes green-yellow, straight, terete, smooth, initially glaucous, black powdery when old; wall thick, pith spongy; nodes prominent, remains of sheath base persistent; intranode ca. 1 cm. Branches 1–3 per node at mid-culm, secondary branchlets undeveloped. Culm sheaths gradually deciduous, light purple-brown, densely white tomentose and brown setose, setae retrorse and adnate, base brown setose, margins ciliolate; auricles and oral setae absent; ligule truncate or arcuate, 7–9 mm; blade linear-lanceolate, scabrous, margins sparsely serrulate. Leaves 2–4 per ultimate branch; sheath striate, densely tomentose to subglabrous; auricles and oral setae absent; ligule acute, 5–15 mm, ciliolate; blade elliptic to lanceolate, 10–30 × 2–4.5 cm, abaxially pubescent, adaxially glabrous, secondary veins 9–12-paired, base oblique, both margins distally serrulate, apex shortly acuminate. Panicle 18–25 cm; bract lanceolate, ca. 2 mm. Pedicels 1–2.5 cm, slender, glabrous; spikelets 6–8, 3–7 × 3–5 cm; florets 7–9; rachilla 5–7 mm, densely pubescent, apex densely long ciliate. Glumes 2, abaxially shortly pubescent and keeled, margin proximally glabrous but distally ciliate, 5–9-veined; lemma 1.5–1.7 cm, abaxially shortly pubescent, margin proximally glabrous, 13–18-veined, apex acute; palea narrow, keels ciliate, apex acute or 2-lobed; lodicules lanceolate, prominently striate, margin not ciliate. Ovary shortly setose. Caryopsis oblong, with long beak, glabrous. New shoots late Apr.

- Flat lands, slopes of hills, valleys, streams; below 500 m. Chongqing, Guangdong, S Hunan, Jiangxi, Zhejiang.

Acidosasa xiushanensis was described from Chongqing (Xiushan), which lies to the northwest of what is otherwise the distribution of *A. nanunica*.

4. *Acidosasa chinensis* C. D. Chu & C. S. Chao ex P. C. Keng, *J. Bamboo Res.* 1(2): 31. 1982.

酸竹 suan zhu

Culms to 8 m, 3–5 cm in diam.; internodes initially

densely setose, traces of setae persistent, obviously striate; nodes weakly prominent. Culm sheaths red-brown, sparsely spotted, fragile when dry, initially shortly setose, transverse veins distinct, margins ciliate, apex narrow; auricles and oral setae absent; ligule arched, short, ciliate or fimbriate; blade lanceolate, 1.5–4.5 cm, base about as wide as sheath apex. Leaves 2–5 per ultimate branch; sheath glabrous; auricles and oral setae usually absent; blade oblong-lanceolate or lanceolate, (11–)16–22(–30) × (2–)2.5–3.5(–6.5) cm, glabrous, secondary veins 6–11-paired, base cuneate, margins serrulate, apex long acuminate. Flowering branchlets terminal, 10–26 cm; bracts triangular, minute, glabrous, apex long caudate. Spikelets 3–5, forming simple raceme or panicle, robust, (3–)5–6(–10) × 0.3–0.6 cm; pedicel 1.5–4 cm, glabrous; florets (3–)8 or 9(–18); rachilla 6–7 mm, glabrous. Glumes usually 4, apical 2 lemma-shaped; lemma ca. 2 cm, glossy, glabrous, 17–19-veined; palea narrow, glabrous; lodicules elliptic-lanceolate. Anthers yellow, ca. 5 mm. New shoots Apr–May, fl. Oct.

• Scattered in broad-leaved woodlands, open mountain areas; ca. 700 m. Guangdong (Hewei Shan).

The shoots are edible when salted, and the culms are used for papermaking and weaving.

5. *Acidosasa venusta* (McClure) Z. P. Wang & G. H. Ye ex C. S. Chao & C. D. Chu, *Acta Phytotax. Sin.* 29: 524. 1991.

黎竹 li zhu

Semiarundinaria venusta McClure, *Lingnan Univ. Sci. Bull.* 9: 55. 1940.

Culms ca. 1.4 m, 8–9 mm in diam.; internodes initially sparsely hairy, glaucous below nodes; nodes prominent. Culm sheaths initially proximally hairy, distally glabrous or nearly so, transverse veins obscure, margins ciliate, apex truncate; auricles and oral setae absent; ligule truncate, minutely ciliate; blade deciduous, initially green, slightly purple, strap-shaped, small, scabrous. Leaf sheaths glabrous; auricles absent, oral setae absent or scarce; ligule prominent; blade oblong-lanceolate, 9–20 × 1.7–2.6 cm, glabrous, secondary veins ca. 5-paired. Raceme terminal or lateral. Spikelets 3 or 4, lanceolate or linear, 11–15 × 0.3–0.4 cm; florets 5–10, slightly compressed; pedicel 1–3 cm, slightly hairy. Glumes 2, abaxially minutely setose, apex acute; rachilla 6–7 mm, apex hairy; lemma ca. 1.3 cm, minutely setose, many veined, ciliolate, apex acute or acuminate, mucronate; palea about as long as lemma, rarely slightly longer, sparsely setose; keels ciliolate, apex obtuse; lodicules 3, nearly equal, transparent, glabrous, margins ciliolate. Ovary and style glabrous; stigmas 3-cleft, plumose. Fl. Nov.

• Guangdong (Huaxian).

This species is cultivated in the botanical garden of Zhongshan (Sun Yat Sen) University.

6. *Acidosasa lingchuanensis* (C. D. Chu & C. S. Chao) Q. Z. Xie & X. Y. Chen, *Bull. Bot. Res.*, Harbin 13: 74. 1993.

灵川酸竹 ling chuan suan zhu

Indosasa lingchuanensis C. D. Chu & C. S. Chao, *Acta Phytotax. Sin.* 21: 69. 1983.

Culms ca. 4 m, to 3 cm in diam., internodes initially green,

30–40 cm, sparsely hispid, slightly coarse, hollow; wall unevenly thickened; nodes weakly prominent; sheath scars prominent. Branches 3 per node. Culm sheaths light yellow-green, proximally sparsely brown setose and slightly powdery, margin ciliate; auricles open; oral setae deciduous, radiate, 1–1.5 cm; ligule truncate or slightly arched, subglabrous or shortly fimbriate, proximally sparsely pubescent; blade reflexed, green, broadly linear-lanceolate. Leaves 3–5 per ultimate branch; sheath margin ciliate; auricles small; oral setae erect; blade linear to lanceolate, 6.5–14 × 1–2.3 cm, glabrous, secondary veins 5-paired. Spikelets solitary, forming simple raceme, pale to green, ca. 11 cm, slender; florets 8–12 pairs. Rachilla 4–5 mm; lemma ca. 1 × 0.5 cm, 9–11-veined, abaxially powdery, glabrous; palea slightly shorter than lemma, apex obtuse; keel ciliate; lodicules 3, abaxially light brown, adaxially transparent, base contracted, clawed. Stamens 6; filaments filiform; anthers ca. 5 mm. Ovary ellipsoid; stigma slender. Fruit unknown.

• Guangxi (Lingchuan).

The culms are used for papermaking and weaving.

7. *Acidosasa guangxiensis* Q. H. Dai & C. F. Huang in Ohrnberger, *Bamboos World*, 34. 1999.

广西酸竹 guang xi suan zhu

Culms 2–3 m, 1–2 cm in diam.; internodes initially green, 16–18 cm, shortly hispid, finally glabrous. Culm sheaths straw-colored when dry, deciduously densely hispid, margins ciliate; auricles oblong or falcate; oral setae radiate; ligule triangular, ca. 2 mm, margin shortly ciliate; blade erect, linear-lanceolate, scabrous. Leaves 4–8 per ultimate branch; sheath glabrous; auricles small; oral setae radiate; ligule arched; blade 10–16 × 1.5–2.3 cm, abaxially sparsely hairs, especially proximally. Spikelets 3–6, forming simple raceme, 6–17 cm; florets 13–33; pedicels 1.5–3 cm, glabrous or pubescent. Glumes 2; lemma light green, 1.3–1.5 cm, abaxially densely coarsely pubescent, margins ciliate; palea narrow, keels ciliate; lodicules oblong-lanceolate, abaxially pubescent, margin long ciliate. Stigma purple.

• Guangxi (Nanning).

When Dai and Huang (*Bamboo Res.* 1986(3): 64. 1986) originally described this species they indicated two types, which rendered the name not validly published.

The culms are used for making broom handles and fences.

8. *Acidosasa notata* (Z. P. Wang & G. H. Ye) S. S. You, *J. Bamboo Res.* 12(3): 11. 1993.

斑箨酸竹 ban tuo suan zhu

Pseudosasa notata Z. P. Wang & G. H. Ye, *J. Nanjing Univ.*, *Nat. Sci. Ed.* 1981(1): 97. 1981; *Acidosasa fujianensis* C. S. Chao & H. Y. Zou; *A. longiligula* (T. H. Wen) C. S. Chao & C. D. Chu; *Arundinaria concava* C. D. Chu & H. Y. Zou; *A. notata* (Z. P. Wang & G. H. Ye) H. Y. Zou ex C. S. Chao & G. Y. Yang; *Indosasa longiligula* T. H. Wen; *?I. pusilloaurita* W. T. Lin; *I. wuningensis* T. H. Wen & H. Y. Zou; *Pleioblastus acutiligulatus* W. T. Lin.

Culms 3–6 m, 1.5–2 cm in diam.; internodes 20–25 cm,

initially glabrous; wall ca. 3 mm thick, cavity with lamellate pith; nodes weakly prominent. Culm sheaths green, purple striate, sparsely purple spotted, initially shortly setose, margins ciliate; auricles oblong, small, ca. 4 mm; oral setae ca. 7 mm; ligule prominent, ca. 6 mm, ciliate, glaucous; blade reflexed, initially green, lanceolate. Leaves 2–5(–8) per ultimate branch; sheath initially pubescent, soon glabrous; auricles and oral setae developed but soon deciduous; ligule prominent, 5–8 mm, pubescent, erose; blade linear-lanceolate, 11–20(–30) × 1–2.3 (–3) cm, secondary veins 5–7-paired, margins obscurely serrulate. Raceme terminal or lateral. Spikelets 3–5, green, tinged purple, slightly compressed, 2.5–7 × 0.4–0.6 cm; florets 3–10; pedicel 2–13 mm, glabrous, terminal one longer. Rachilla ca. 7 mm, pubescent; glumes glabrous; lemma 1.4–1.9 cm, sparsely pubescent; palea 1.3–1.5 cm, pubescent; lodicules 5–6 mm, margin transparent. Anthers yellow. New shoots Apr, fl. Apr–May.

• Forming pure stands or mixed with other bamboos; 500–1000 m. C and S Fujian, Jiangxi.

This species and *Pseudosasa maculifera* are possibly synonymous.

The shoots are sweet, and the culms are commonly used to make containers and tools.

9. *Acidosasa chienouensis* (T. H. Wen) C. S. Chao & T. H. Wen, J. Bamboo Res. 7(1): 31. 1988.

粉酸竹 *fen suan zhu*

Indosasa chienouensis T. H. Wen, J. Bamboo Res. 2(1): 67. 1983; *Acidosasa glauca* B. M. Yang.

Culms 7–13 m, 4–10 cm in diam.; internodes initially green, 30–48 cm, glabrous, glaucous; wall 3–5 mm thick; nodes prominent, persistent sheath base initially setose. Culm sheaths glaucous-green, shorter than internodes, yellow-brown to brown setose, setae deciduous but leaving hairy traces, proximally denser and more persistent; auricles small, pubescent; oral setae radiating, ca. 5 mm; ligule prominent, arched, 2–3 mm; blade deciduous, erect or reflexed, green, narrowly lanceolate, margin serrulate. Leaves (3 or)4 per ultimate branch; sheath glabrous; auricles absent, cilia deciduous; ligule ca. 1 mm; blade lanceolate, 9–15 × 0.8–1.8 cm, secondary veins 4–6-paired. Inflorescence racemose, terminal. Spikelets 2–5, ± laterally compressed, 1.5–7.5 × 0.2–0.4 cm; florets 3–12(–15); pedicel 5–10 mm, glabrous. Rachilla ca. 5 mm, pubescent; glumes 2, glabrous; lemma 1.3–1.4 cm, sometimes sparsely pubescent, thinly glaucous, 7–13-veined, apex acuminate; palea shorter than lemma, apex rounded, ciliolate. Anthers ca. 4 mm. New shoots Mar–Apr, fl. Jun.

• 300–600 m. C Fujian, S Hunan.

10. *Acidosasa edulis* (T. H. Wen) T. H. Wen, J. Bamboo Res. 7(1): 31. 1988.

黄甜竹 *huang tian zhu*

Sinobambusa edulis T. H. Wen, J. Bamboo Res. 3(2): 30. 1984.

Culms to 12 m, to 6 cm in diam.; internodes initially green, flattened above branches, 25–40 cm, initially glabrous, smooth, white powdery or tuberculate below nodes; nodes glabrous, swollen, ca. 8 mm. Culm sheaths initially abaxially green, margin purple or light brown to brown, subtriangular, brown setose, base densely pubescent, margin ciliate, apex narrow; auricles narrowly falcate, expanded, ca. 1.2 cm; ligule short, margin ciliate; blade reflexed, purple, lanceolate to oblong-lanceolate, scabrid. Leaves 4 or 5 per ultimate branch; sheaths green, 5–5.5 cm, glabrous, striolate, margin ciliate; auricles and oral setae absent; ligule ovate, glabrous; blade lanceolate or oblong-lanceolate, 11–18 × 1.7–2.8 cm, proximally pubescent, distally glabrous, lateral veins 6 or 7, tessellate. Spikelets 2–4, 7–11 cm; pedicels 3–12 mm; florets 7–14; rachilla 4–5 mm. Glumes 2, 7–8 mm, 5–7-veined; lemma ca. 1.7 × 0.9 cm, 13-veined, tessellate; palea narrow, 4-veined between keels; lodicules apically ciliate. Stamens (5 or)6. Ovary oblong; stigmas flagellate.

• Fujian (Fuzhou).

The shoots are edible when salted, and the culms are used for papermaking and weaving.

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