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Contents

Sect. *Phyllostachys* 451
Sect. *Heterocladae* 528
References 552

Arborescent or shrubby bamboos. Rhizomes monopodium. Culms diffuse, erect; internodes terete, flat or sulcate on the branching side, pith membranous, scrotiform, easily separated from inner culm walls; nodes a little prominent to prominent. Bud solitary. Branches 2 on each node, one thin and one thick. Culm leaves deciduous, sheaths papery, or leathery; auricles developed or absent; ligules conspicuous; blades erect or reflexed, narrowly triangular or ribbon, straight, or undulating. Foliage leaves

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1–4 (7) per branchlet; blades lanceolate to ribbon-lanceolate, transverse veins conspicuous. Flowering branches short, spicate, or capitate, solitary on nodes, flowering branches leafless or with leaves at the apex, 1 tiny prophyll present at basal inner side, 2–6 gradually larger bracts above the prophyll, spathes 2–7 above bracts, pseudospikelets 1–7 within each spathe, 1 to several spathes at the base of flowering branches without pseudospikelets and deciduous, making the base of flowering branches naked and petiole-shaped, buds within the upper spathes developing into secondary flowering branches or pseudospikelets; the base of pseudospikelets usually subtended by 1 membranous and 2-keeled prophyll, sometimes prophyll 1-keeled, glume-like bracts present above prophyll, buds, or secondary pseudospikelets inside the bracts; florets 1–6, the upper florets usually sterile; rachilla disarticulated, apex sometimes with traces of reduced florets; glumes 0 or 1 (3), veins 5 to many, keels present abaxially, sometimes with tiny reduced leaves; keels of lemma inconspicuous, veins 7 to many; palea as long as or a little shorter than lemma, apex bifid, aristate, 2-keeled abaxially; lodicules 3, seldom less than 3, upper margins with short cilia; stamens 3, filaments free, slender, anthers yellow; ovary petiolate, style 1, slender, stigmas 3, slender, plumose. Caryopses grooved adaxially. New shoots March to June, most species in May.

Approximately 69 species, 6 varieties, and 45 forms. Except Northeast China, Inner Mongolia, Qinghai, and Xinjiang, all species are naturally distributed in other parts of China or cultivated in gardens. Introduced into Europe and Americas (Keng and Wang 1996; Li et al. 2006; Ma et al. 2014; Shi et al. 2012; Yi et al. 2008, 2017).

Key to Species

1.	Culm leaf sheaths on the middle and lower culms with dense or sparse spots (on the undeveloped culms, culm sheaths without spots), blades usually spreading or recurved, the top of new shoots diffuse when young, or erect and imbricate; transverse sections of rhizome internodes without air canals or only several air canals (Sect. <i>Phyllostachys</i>)	2
–	Culm leaf sheaths on the lower internodes without spots, blades erect, flat, the top of new shoots imbricate as the pen point; transverse sections of rhizome internodes with a ring of air canals (Sect. <i>Heterocladae</i>)	53
2.	Culm leaves without auricles and oral setae, sheaths glabrous abaxially (or with tiny setae among veins at the top), seldom with sparse setae	3
–	Culm leaves with auricles, margins of auricles with setae, if auricles undeveloped, oral setae present, more than 5–10 mm long (<i>Ph. mannii</i> Gamble sometimes without auricles and oral setae, culm leaf sheaths crisp and purple red at the upper margins when fresh), sheaths with setae, seldom glabrous	28
3.	White crystal particles or pits present on the surface of internodes under hand lens 10 ×, especially dense at the upper part of internodes	4
–	White crystal particles or pits absent on the surface of internodes or only present below the nodes	5

(continued)

4.	Nodes without branches inconspicuous or lower than sheath scars (nodes prominent on the small culms); margins of culm leaf ligules with light green or white cilia when fresh	<i>P. sulphurea</i> (Carrière) Rivière et C. Rivière
–	Nodes prominent, taller than or as tall as sheath scars; margins of culm leaf ligules with purple red cilia when fresh	<i>P. makinoi</i> Hayata
5.	Sheath scars of the middle culm and the abaxial base of culm leaf sheaths with dense pubescence or sparse long setae	6
–	Sheath scars on the middle culm and the abaxial base of culm leaf sheaths glabrous	9
6.	Internodes extremely shortened at the base, irregularly swollen to be deformed, or internodes normal, the top of the middle and lower internodes a little swollen (the swollen part ca. 1 cm long)	<i>P. aurea</i> Carrière ex Rivière et C. Rivière
–	Internodes normal	7
7.	Upper margins of culm leaf sheaths dark purple when fresh; ligules with dark purple long pubescence, longer than ligule height	<i>P. rubromarginata</i> McClure
–	Upper margins of culm leaf sheaths not dark purple when fresh; ligules with white or nearly white cilia, shorter than ligule height	8
8.	Sheath scars and the base of culm leaf sheaths with short pubescence on the young culm	<i>P. meyeri</i> McClure
–	Sheath scars and the base of culm leaf sheaths with long setae (sometimes including the top of sheaths)	<i>P. verrucosa</i> G. H. Ye et Z. P. Wang
9.	Culm leaf ligules narrow and high, the width less than five times of the height, the linkage between ligules and sheaths truncate or arched, the lateral part not extended, or seldom extended and tiny setae present among upper veins of culm leaf sheaths abaxially, blades straight, seldom waved or a little crinkled	10
–	Culm ligules usually short and broad, sometimes tall and narrow, the base arched, the lateral extended downward, seldom not extended, blades crinkled or occasionally straight	19
10.	Tiny setae present among upper veins of culm leaf sheaths abaxially, coarse; internodes of young culms with dizzy spots, especially at the upper part	11
–	Abaxial surfaces of culm leaf sheaths without setae or occasionally present among veins at the top, sometimes with sparse setae; internodes of young culms without spots (old culms may with purple spots)	12
11.	The abaxial surfaces of foliage leaves with long pubescence at the base; culm leaf ligules truncate or arched, extended at both sides laterally	<i>P. nuda</i> McClure

(continued)

–	The abaxial surfaces of foliage leaves glabrous or seldom with long pubescence; culm leaf ligules arched like mountains, extended on both sides or one side laterally	<i>P. arcana</i> McClure
12.	Margins of culm leaf ligules with white cilia or mixed with several long cilia initially	13
–	Margins of culm leaf ligules with long cilia, dark brown or dark purple when fresh, if white, sheaths milk white when fresh	16
13.	Culm leaf blades triangular, lanceolate, or linear lanceolate	14
–	Culm leaf blades ribbon-shaped or linear lanceolate, ligules dark brown or light brown, truncate, or a little arched	15
14.	Lateral parts at the top of culm leaf sheaths drying out firstly to be straw yellow, ligules dark brown, arched; branchlets with foliage leaves 2 or 3	<i>P. propinqua</i> McClure
–	Lateral parts at the top of culm leaf sheaths not becoming straw yellow, ligules light brown-yellow, truncate or a little arched; branchlets with foliage leaves 1 or 2	<i>P. sapida</i> T. P. Yi
15.	Culm leaf ligules dark purple brown, sheaths light purple brown when fresh; young culms with thick white powder (<i>Ph. glauca</i> var. <i>variaoilis</i> J. L. Lu without white powder or with a little)	<i>P. glauca</i> McClure
–	Culm leaf ligules purple brown to light brown, sheaths green brown when fresh; young culms with a little white powder	<i>P. flexuosa</i> (Carrière) Rivière et C. Rivière
16.	Upper margins of culm leaf sheaths dark purple, blades erect, straight, apex crinkled	<i>P. virella</i> T. H. Wen
–	Upper margins of culm leaf sheaths not dark purple, blades reflexed, straight, apex not crinkled	17
17.	Foliage leaves 2 or 3 (4) per branchlet, pubescent at the abaxial base	18
–	Foliage leaves 4 or 5 per branchlet, glabrous abaxially	<i>P. albidula</i> N. X. Ma et W. Y. Zhang
18.	Culm leaf sheaths milk white to light yellow when fresh, margins of ligules with slender white cilia	<i>P. angusta</i> McClure
–	Culm leaf sheaths dark with brown, margins of ligules with fragile thick and long brown cilia	<i>P. flexuosa</i> (Carrière) Rivière et C. Rivière
19.	Culm leaf ligules arched, the lateral a little extended or not, sheaths more or less purple or purple red	20
–	Culm leaf ligules extremely prominent or hill-shaped, the lateral extended obviously, if extended inconspicuously, margins with 5 mm or longer cilia, sheaths green or brown-red when fresh	25
20.	Culms without white powder, glabrous	21
–	Culms white powdery	22
21.	Culm leaf sheaths without white powder, ligules light brown; foliage leaf auricles and oral setae present	<i>P. glabrata</i> S. Y. Chen et C. Y. Yao

(continued)

–	Culm leaf sheaths a little white powdery, ligules dark purple brown; foliage leaf auricles and oral setae absent	<i>P. tianmuensis</i> Z. P. Wang et N. X. Ma
22.	Foliage leaf auricles present	23
–	Foliage leaf auricles absent	24
23.	Culm leaf sheaths with light green or green-brown stripes abaxially, without white powdery; culm leaf ligules with purple-red long cilia; foliage leaf auricles and oral setae purple red	<i>P. purpureociliata</i> G. H. Lai
–	Culm leaf sheaths without stripes abaxially, white powdery; culm leaf ligules with white short cilia; foliage leaf auricles and oral setae light green initially, light brown later	<i>P. zhejiangensis</i> G. H. Lai
24.	Young culms with yellow green stripes; culm leaf ligules purple brown, margins purple-red ciliate; foliage leaf ligules purple red	<i>P. iridescens</i> C. Y. Yao et S. Y. Chen
–	Culms without stripes; culm leaf ligules light brown, margins white ciliate; foliage leaf ligules light green	<i>P. compar</i> W. Y. Zhang et N. X. Ma
25.	Margins of culm leaf ligules with dense 5 mm or longer cilia	<i>P. fimbriiligula</i> T. H. Wen
–	Margins of culm leaf ligules with cilia less than 5 mm long	26
26.	Culm leaf blades straight or a little wavy, sheaths with sparse setae abaxially	<i>P. acuta</i> C. D. Chu et C. S. Chao
–	Culm leaf blades (at least on the middle culm) strongly crinkled, sheaths glabrous abaxially	27
27.	Internodes at the middle of culms up to more than 25 cm, with slight white powder when young, nodes not purple	<i>P. vivax</i> McClure
–	Internodes at the middle of culms shorter than 25 cm, with thick powder, nodes purple	<i>P. violascens</i> (Carrière) Rivière et C. Rivière
28.	Internodes of young culms with purple spots	<i>P. purpureomaculata</i> W. T. Lin et Z. J. Feng
–	Internodes of young culms without spots	29
29.	Culm leaf auricles tiny, if auricles absent, oral setae long, occasionally auricles large and falcate and ligules with dense cilia up to more than 8 mm long	30
–	Culm leaf auricles conspicuous, usually falcate, if auricles absent or tiny, sheaths hard and crisp, with very sparse spots abaxially, ligules with short cilia	37
30.	Internodes of young culms with dense pubescence; nodes without branches inconspicuous or lower than sheath scars (nodes conspicuous in seedlings or in thin and undeveloped culms)	31
–	Internodes of young culms glabrous or nearly glabrous; nodes prominent on unbranched nodes, taller than or as tall as sheath scars	32
31.	Culms up to more than 20 cm in diameter; culm leaf sheaths with large, dense, and black-brown spots abaxially, ligules strongly arched; foliage leaf	<i>P. edulis</i> (Carrière) H. de Lehaie

(continued)

	blades small, 4–11 cm long, 0.5–1.2 cm wide, pubescent along the middle rib at the base	
–	Culms up to 10 cm in diameter; culm leaf sheaths with sparse and small spots, ligules truncate or arched; foliage leaf blades large, 10–15 cm long, 0.8–1.5 cm wide, sparsely pubescent on both surfaces	<i>P. kwangsiensis</i> W. Y. Hsiung, Q. H. Dai et J. K. Liu
32.	Culm leaf sheaths without spots or occasionally with sparse spots abaxially, the upper part with milk white or green purple stripes, oral setae erect	<i>P. robustiramea</i> S. Y. Chen et C. Y. Yao
–	Culm leaf sheaths with spots abaxially, without milk white or green-purple stripes, oral setae erect or radiate	33
33.	Young culms with white powder or white powder present below nodes, old culms all covered with white powder	34
–	Young culms without white powder or with slight white powder; margins of ligules with short cilia	36
34.	Culm leaf sheaths flesh pink or light red, ligules with to 10–12-mm-long cilia; foliage leaf blades pubescent abaxially	35
–	Culm leaf sheaths light yellow, ligules with short cilia; foliage leaf blades up to 20 cm long, 2 cm wide, glabrous abaxially	<i>P. lithophila</i> Hayata
35.	Foliage leaves 3–6 per branchlet; blades up to 17 cm long, to 2.2 cm wide	<i>P. primitina</i> T. H. Wen
–	Foliage leaves 3 or 4 per branchlet; blades up to 13 cm long, to 1.5 cm wide	<i>P. incarnata</i> T. H. Wen
36.	Culm leaf sheaths with dense setae abaxially, blades crinkled; sheath scars with dense pubescence on the 1- or 2-year-old culms	<i>P. circumpilis</i> C. Y. Yao et S. Y. Chen
–	Culm leaf sheaths with sparse setae or glabrous, blades straight or occasionally crinkled at the top; sheath scars glabrous	<i>P. bambusoides</i> Siebold et Zuccarini
37.	Internodes of young culms with tomenta; culm leaf blades erect, wavy or crinkled, usually clustered like pen apex at the top (blades of <i>P. aureosulcata</i> McClure sometimes diffuse)	38
–	Internodes of young culms glabrous; culm leaf blades strongly crinkled, diffuse on the top of new shoots, seldom straight, and pen apex-shaped (e.g., <i>P. incarnata</i> T. H. Wen)	43
38.	Culm leaf ligules short and broad, the width ten times as the height, margins entire, not lobed; culm leaf sheaths leathery, hard and crisp, upper margins purple	<i>P. mannii</i> Gamble
–	Culm leaf ligules tall, margins lobed; margins of culm leaf sheaths not purple	39
39.	Culm leaf sheaths light red brown or purple yellow, without milk white or gray-white stripes abaxially	40

(continued)

–	Culm leaf sheaths green with milk white stripes abaxially, or gray-white stripes present at the top and margins, seldom without stripes	41
40.	Culm leaf sheaths with sparse setae abaxially, ligules truncate or a little arched	<i>P. guizhouensis</i> C. S. Chao et J. Q. Zhang
–	Culm leaf sheaths with dense light-brown setae abaxially, ligules very prominent or hill-shaped	<i>P. nigra</i> (Loddiges ex Lindley) Munro
41.	Culm leaf sheaths glabrous, with milk white stripes; internodes with yellow or green stripes, or green or yellow without colorful stripes; basal internodes of some culms zigzag	<i>P. aureosulcata</i> McClure
–	Culm leaf sheaths setose, gray-white stripes present on the top and margins; internodes green, usually not zigzag	42
42.	Culm leaf sheaths setose abaxially on basal internodes, ligules with short cilia	<i>P. bissetii</i> McClure
–	Culm leaf sheaths setose abaxially on middle and basal culms, ligules with thick and long cilia	<i>P. varioauriculata</i> S. C. Li et S. H. Wu
43.	Culm leaf ligules 2 mm tall or taller, margins with cilia as long as or longer than ligules	<i>P. incarnata</i> T. H. Wen
–	Culm leaf ligules less than 2 mm tall, margins with short cilia	44
44.	Culm leaf sheaths light yellow when fresh, sometimes with red or green, with sparse spots abaxially; auricles green	<i>P. dulcis</i> McClure
–	Culm leaf sheaths not light yellow; auricles not green, if green, sheaths with spots abaxially	45
45.	Culm leaf sheaths brown red when fresh, with sparse or a little dense spots or spots clustered to be patches in large new shoots, upper margins dark purple	46
–	Culm leaf sheaths not brown red when fresh, with dense spots in various sizes abaxially, or if occasionally with small spots, ligules narrow and tall, upper margins not dark purple	47
46.	Culm leaf ligules wide (ten times as the height), margins arched or truncate; young culms with white powder	<i>P. platyglossa</i> Z. P. Wang et Z. H. Yu
–	Culm leaf ligules narrow, margins arched, or hill shaped; young culms with slight or without white powder	<i>P. rutila</i> T. H. Wen
47.	Culm leaf blades straight or a little crinkled	48
–	Culm leaf blades crinkled	49
48.	Culm leaf sheaths with sparse deciduous light brown setae abaxially, auricles tiny, deciduous, blades reflexed, the base narrower than the top of sheaths; foliage leaves 2–4 per branchlet, blades 5.5–15 cm long, 1.5–2.5 cm wide	<i>P. bambusoides</i> Siebold et Zuccarini
–	Culm leaf sheaths glabrous, auricles wide and large, blades erect, the base as wide as the top of sheaths;	<i>P. aristata</i> W. T. Lin

(continued)

	foliage leaves 1 or 2 per branchlet, blades 4–7 cm long, 0.8–1.2 cm wide	
49.	Culm leaf ligules narrow and tall (the width less than six times as the height), margins prominent like hills or arched; culm leaf sheaths with scattered spots abaxially	50
–	Culm leaf ligules wide, margins truncate or arched, culm leaf sheaths with dense spots or spots fused to be patches abaxially	51
50.	Margins of culm leaf ligules strongly prominent, hill shaped, the lateral extended; internodes without conspicuous ribs	<i>P. viridiglaucescens</i> (Carrière) Rivière et C. Rivière
–	Margins of culm ligules arched, the lateral not extended or a little extended; internodes with prominent ribs	<i>P. elegans</i> McClure
51.	Nodes strongly prominent, much taller than sheath scars	<i>P. prominens</i> W. Y. Xiong
–	Nodes moderately or a little prominent, as tall as or a little taller than sheath scars	52
52.	Culm leaf sheaths glabrous or nearly glabrous abaxially, auricles green when fresh; young culms with white powder	<i>P. yunhoensis</i> S. Y. Chen et C. Y. Yao
–	Culm leaf sheaths with setae abaxially, auricles purple red when fresh, gradually dark purple; young culms with slight white powder	<i>P. nigella</i> T. H. Wen
53.	Culm leaf auricles present, triangular, falcate, or ovate	54
–	Culm leaf auricles absent or extremely tiny	69
54.	Culm leaf ligules narrow and tall, the width usually less than eight times as the height, apex splitting into thick and long cilia, or short cilia in <i>P. bissetii</i> McClure (ligules of <i>P. aurita</i> J. L. Lu broad, but sheath nodes of 1- or 2-year-old culms and branches with rust setae)	55
–	Culm leaf ligules broad and short, the width more than eight times as the height, apex with short cilia	63
55.	Culm leaf sheaths with colorful stripes abaxially or at least at the top or the lateral (sometimes no stripes in <i>P. bissetii</i> McClure, but ligules shortly ciliate)	56
–	Culm leaf sheaths without stripes when fresh, if stripes present, not milk white or light yellow	59
56.	Culm leaf sheaths glabrous abaxially, with light yellow stripes, auricles connected with the base of blades	<i>P. aureosulcata</i> McClure
–	Culm leaf sheaths with setae and milk white stripes abaxially (sheaths of <i>P. bissetii</i> on the basal internodes with pubescence), the base of auricles connected with blades or not	57
57.	Culm leaf sheaths on basal internodes pubescent abaxially, ligules with short and slender cilia	58

(continued)

–	Culm leaf sheaths on the middle and basal internodes setose abaxially, ligules with thick and long cilia	<i>P. varioauriculata</i> S. C. Li et S. H. Wu
58.	Culm leaf sheaths dark green to light green, with a little purple, the top with milk white stripes, ligules truncate or arched, blades straight or wavy; leaf auricles present	<i>P. bissetii</i> McClure
–	Culm leaf sheaths light green, without stripes, ligules arched or the middle prominent; blades boat-shaped, not crinkled; foliage leaf auricles inconspicuous	<i>P. acutiligula</i> G. H. Lai
59.	Culm leaf sheaths red brown; foliage leaves 2 or 3 per branchlet	60
–	Culm leaf sheaths green or yellow, with purple; foliage leaves 1 or 2 per branchlet (<i>P. aurita</i> with foliage leaves 2 or 3)	61
60.	Culms with pubescence when young; culm leaf blades a little crinkled; foliage leaf blades light green abaxially	<i>P. nigra</i> (Loddiges ex Lindley) Munro
–	Culms without pubescence; culm leaf blades not crinkled; foliage leaf blades gray-green abaxially	<i>P. hirtivagina</i> G. H. Lai
61.	Internodes of young culms glabrous; sheath scars of 1- or 2-year-old branches with dense rust tomentum	<i>P. aurita</i> J. L. Lu
–	Internodes of young culms with sparse pubescence; sheath scars of 1- or 2-year-old branches glabrous	62
62.	Foliage leaves 2 per branchlet; culm leaf sheaths on middle and basal culms setose abaxially, the base of sheaths with bristle laterally	<i>P. guizhouensis</i> C. S. Chao et J. Q. Zhang
–	Foliage leaves 1 or 2 per branchlet; culm leaf sheaths on the basal culms with pubescence and setae abaxially, the other sheaths glabrous or nearly glabrous	<i>P. veitchiana</i> Rendle
63.	Culm leaf auricles large, triangular or narrowly falcate; sheath scars with dense pubescence or setae, seldom glabrous	64
–	Culm leaf auricles tiny, ovate, seldom large and falcate, sheath scars glabrous	65
64.	Foliage leaves 2 per branchlet; culm leaf auricles narrowly falcate, upward, only the base connected with blades	<i>P. lofushanensis</i> Z. P. Wang, C. H. Hu et G. H. Ye
–	Foliage leaves 1, seldom 2 per branchlet; culm leaf auricles triangular, extending laterally from the base of blades	<i>P. nidularia</i> Munro
65.	Culm leaf sheaths without stripes and setae abaxially, at least at the middle and base	66
–	Culm leaf sheaths with white or purple stripes and setae abaxially	67
66.	Sheath scars and nodes prominent; the top of culm leaf sheaths with obvious white radiate stripes	<i>P. funhuaensis</i> (X. G. Wang et Z. M. Lu) N. X. Ma et G. H. Lai

(continued)

–	Nodes flat, as tall as sheath scars; the top of culm leaf sheaths without white radiate stripes	<i>P. heteroclada</i> Oliver
67.	Young culms white powdery, without setae; internodes up to 32 cm long	<i>P. stimulosa</i> H. R. Zhao et A. T. Liu
–	Young culms white powdery, setose or the upper part with setae; internodes 8.5–22 cm long	68
68.	Culm leaf sheaths densely setose abaxially, with milk white or light purple stripes; auricles and ligules purple	<i>P. hispida</i> S. C. Li, S. H. Wu et S. Y. Chen
–	Culm leaf sheaths glabrous, with milk white stripes; auricles and ligules yellow green or green brown	<i>P. microphylla</i> G. H. Lai
69.	Culm leaf ligules strongly concave, U-shaped, light green	<i>P. rubicunda</i> T. H. Wen
–	Culm leaf ligules arched, or truncate, if a little concave, dark purple	70
70.	Culm leaf sheaths, blades, and ligules flesh pink	<i>P. carnea</i> G. H. Ye et Z. P. Wang
–	Culm leaf sheaths, blades, and ligules not flesh pink	71
71.	Culm leaf blades wavy or at least wavy at the top, sheaths glabrous or seldom with hair abaxially (sheaths of <i>P. robustiramea</i> S. Y. Chen et C. Y. Yao and <i>P. corrugata</i> with sparse setae abaxially)	72
–	Culm leaf blades not wavy, straight, sheaths hairy abaxially (sheaths of <i>P. longiciliata</i> G. H. Lai usually glabrous except those on basal internodes)	76
72.	Culm leaves on upper culms with tiny auricles, oral setae present	73
–	Culm leaf auricles and oral setae absent	74
73.	Culm leaf ligules truncate or a little arched, margins with cilia up to 5 mm long, blades erect to reflexed	<i>P. robustiramea</i> S. Y. Chen et C. Y. Yao
–	Culm leaf ligules arched, margins with cilia less than 5 mm, blades erect	<i>P. parvifolia</i> C. D. Chu et H. Y. Chou
74.	Culm leaf ligules with cilia to 5 mm long, sheaths with sparse spots abaxially; foliage leaf blades 2–2.5 cm wide	<i>P. virella</i> T. H. Wen
–	Culm leaf ligules without cilia or with short cilia, sheaths spotless abaxially; foliage leaf blades 0.9–1.6 cm wide	75
75.	Young culms glabrous, not white powdery; culm leaf sheaths dark green with purple, margins yellow brown, with purple-black stripes, usually glabrous; foliage leaf sheaths glabrous, auricles and oral setae inconspicuous	<i>P. atrovaginata</i> C. S. Chao et H. Y. Chou
–	Young culms white setose, densely white powdery; culm leaf sheaths light yellow green, sometimes with white stripes, sparsely setose and densely white powdery; foliage leaf sheaths setose, auricles inconspicuous, oral setae erect, or radiate	<i>P. corrugata</i> G. H. Lai
76.	Young culms setose	77
–	Young culms glabrous	78

(continued)

77.	Culm leaf sheaths sometimes with spots abaxially, glabrous, or sparsely setose, the base with dense pubescence; foliage leaves 3–5 per branchlet, blades 4.6–8 cm long, 0.6–1.1 cm wide	<i>P. rivalis</i> H. R. Zhao et A. T. Liu
–	Culm leaf sheaths spotless abaxially, slightly white powdery, usually glabrous; foliage leaves 2–4 per branchlet, blades 8–12.5 cm long, 1.5–2.1 cm wide	<i>P. longiciliata</i> G. H. Lai
78.	Young culms without white powder; culm leaf blades open or a little reflexed	<i>P. rubromarginata</i> McClure
–	Young culms with white powder within intranodes and below nodes; culm leaf blades erect	79
79.	Margins of culm leaf sheaths with cilia, the base of blades as wide as the top of sheaths; foliage leaves 2 per branchlet, seldom 3, margins of sheaths without cilia, blades white pubescent on both surfaces	<i>P. cantoniensis</i> W. T. Lin
–	Margins of culm leaf sheaths without cilia, the base of blades 1/3 as wide as the top of sheaths; foliage leaves 3 or 4 per branchlet, margins of sheaths with short cilia, blades white tomentose abaxially, the base with dense tomenta	<i>P. subulata</i> W. T. Lin et Z. M. Wu

Sect. *Phyllostachys*

Internodes of rhizomes without air canals or seldom with several air canals. Intranodes ca. 3 mm long. Culm leaf sheaths usually with spots or patches abaxially; blades reflexed or open; the base narrower than ligules. Flowering branches spicate.

49 species.

Phyllostachys acuta C. D. Chu et C. S. Chao

Culms up to 8 m tall, 4–6 cm in diameter; internodes up to 25 cm long, without white powder, nodes purple; nodes prominent, taller than sheath scars. Culm leaf sheaths green or green with purple abaxially, with purple-brown spots, especially dense at the middle, sparsely setose; auricles and oral setae absent; ligules arched, margins with short white cilia; blades ribbon-shaped, reflexed, green with yellow margins, straight or undulated. Foliage leaves 3–5 per branchlet; sheaths with pubescence initially; auricles semicircular, oral setae 5–10 mm long; blades 5.6–13 cm long, 1–2.2 cm wide, pubescent abaxially (especially dense along the middle rib). Flowering branches spicate, 8–10 cm long, the base subtended by 4 or 5 scaled and gradually larger bracts; spathes 5–10, tomenta present among veins, auricles tiny or absent, oral setae several, pseudospikelet 1. Pseudospikelets lanceolate, 2.5–3 (3–5) cm long, florets 2 or 1; rachilla pubescent; glumes 1, occasionally 2, seldom 3 or absent; lemma 2.2–2.4 cm long, pubescent; palea shorter than lemma, keels with short cilia, the other part glabrous or with sparse short pubescence; lodicules linear or



Fig. 1 *Phyllostachys acuta*. (a) New shoot; (b) bamboo grove

elliptic, 5 mm long; anthers 1.1 cm long; stigmas 3, plumose. New shoots April. Flowering April to May.

Jiangsu, Zhejiang. Zones 8–9.

New shoots are delicious. Culms are used for weaving or buildings (Fig. 1).

Phyllostachys albidula N. X. Ma et W. Y. Zhang

Culms 5–8 m tall, 2–4 cm in diameter; internodes 14–22 cm long, green, glabrous, gradually white powdery, a ring of white powder below the node; nodes a little prominent, as tall as sheath scars, initially purple. Culm leaf sheaths light yellow green or light yellow brown, sometimes with inconspicuous light green stripes, sparsely or densely purple brown spotted abaxially, margins yellow to brown, without cilia; auricles and oral setae absent; ligules prominent, arched, 3–7 mm tall, dark purple, margins with 1–3-mm-long cilia; blades reflexed, sword-like or ribbon-shaped, straight, green, margins light yellow. Foliage leaves 4 or 5 per branchlet; auricles absent, oral setae 1–2 occasionally; ligules arched, 2 mm tall; blades 9–12 cm long, 1.6–2 cm wide, secondary veins 4 or 5 pairs, glabrous. New shoots the end of March to the middle of April.

Zhejiang: Fuyang, cultivated in Anji Bamboo Garden (Ma and Zhang 2012). Zone 8.

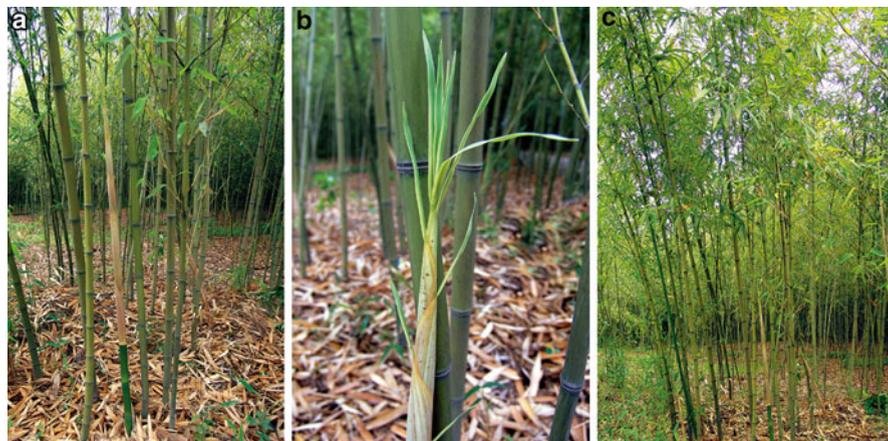


Fig. 2 *Phyllostachys angusta*. (a) Culms; (b) new shoot; (c) bamboo grove

Phyllostachys angusta McClure

Culms diffuse, up to 8 m tall, 4 cm in diameter; internodes up to 26 cm long, with a little white powder when young, culm walls 3 mm thick; nodes a little prominent, as tall as sheath scars. Culm leaf sheaths milk white or light yellow green abaxially, with purple stripes and sparse brown spots, margins ciliate; auricles and oral setae absent; ligules truncate or a little prominent, yellow green, margins with up to 5-mm-long cilia; blades open or reflexed, ribbon-shaped, straight, light green yellow, or sometimes mixed with purple. Foliage leaves 2 or 3 per branchlet; auricles and oral setae absent or sometimes oral setae present; ligules yellow green; blades 5–17 cm long, 1.2–2 cm wide, the base with pubescence abaxially. New shoot late April.

Henan, Jiangsu, Zhejiang. Introduced into the USA. Zone 8.

New shoots are edible. Culms are suitable for weaving (Fig. 2).

a. *Phyllostachys angusta* McClure f. *flavosulcata* G. H. Lai

Internodes green, grooves yellow on the branched side.

South Anhui (Lai 2013a). Zone 9.

Phyllostachys arcana McClure

Culms up to 8 m tall, 3 cm in diameter; internodes to 20 cm long, with white powder and purple aureole spots when young, nodes purple, culm walls 2–3 mm thick; nodes very prominent, taller than sheath scars. Culm leaf sheaths light green purple or yellow green, with purple stripes, sheaths on the basal internodes with purple spots and white powder, tiny setae present among veins; auricles and oral setae absent; ligules prominent, arched, light purple or yellow green, 4–8 mm tall, apex lobed, margins with short cilia; blades reflexed, ribbon-shaped, straight or a little crinkled on the basal internodes, green with purple stripes. Foliage leaves 2 or 3

per branchlet; ligules arched; blades 7–11 cm long, 1.2–1.5 cm wide, glabrous abaxially or the base with long pubescence occasionally. New shoots April.

Areas along Yellow River and Changjiang River. Introduced into the USA. Zones 7–9.

New shoots are edible. Culms are not suitable for weaving but can be used for tools or handles (Fig. 3).

a. *Phyllostachys arcana* McClure f. *luteosulcata* C. D. Chu et C. S. Chao

Culms green with yellow grooves.

Jiangsu, cultivated in the Bamboo Garden of Nanjing Forestry University. Zone 8 (Fig. 4).

Phyllostachys aristata W. T. Lin

Culms up to 3 m tall, 2 cm in diameter; internodes 15–22 cm long, with white powder below nodes, glabrous; sheath scars with dense brown setae; nodes very prominent. Culm leaf sheaths rectangular, with black-brown spots abaxially, the base with dense brown setae; auricles formed by extension of the blades, falcate, oral setae present; ligules ca. 1.5 mm tall, margins ciliate; blades erect, triangular or oblong triangular, the base as wide as the apex of sheaths. Foliage leaves 1 (2) per branchlet; sheaths pubescent; auricles and oral setae absent; ligules short; blades 4–7 cm long, 8–12 mm wide, pubescent abaxially, secondary veins 4 or 5 pairs.

Guangdong: Huidong (Lianghua). Zone 10.

This species was treated as a synonym of *Phyllostachys rubromarginata* McClure in *Flora of China* (Li et al. 2006).

Phyllostachys aurea Carrière ex Rivière et C. Rivière

Culms 5–12 m tall, 2–5 cm in diameter; internodes 15–30 cm long, with white powder when young, the basal or sometimes middle internodes extremely shortened, constricted, or swollen, or nodes inclined mutually, normal internodes at the middle and the base of culms usually swollen apically, culm walls 4–8 mm thick; sheath scars with short setae initially; nodes as tall as sheath scars or a little taller. Culm leaf sheaths yellow green or light brown yellow with purple, with brown spots or patches, the base with short and white setae abaxially; auricles and oral setae absent; ligules truncate or a little arched, light yellow green, margins with long cilia; blades open or reflexed, narrowly triangular, or ribbon-shaped, the base crinkled, green, margins yellow. Foliage leaves 2 or 3 per branchlet; auricles and oral setae deciduous or absent; blades 6–12 cm long, 1–1.8 cm wide, glabrous or pubescent abaxially. Flowering branches spicate, 3–8 cm long; spathes 5–7, reduced leaves ovate or narrowly lanceolate, pseudospikelets 1–3 within each spathe; florets 1–4; rachilla internodes glabrous; glumes 0–2; lemma glume like but longer than glume, with dense pubescence near the margin, veins

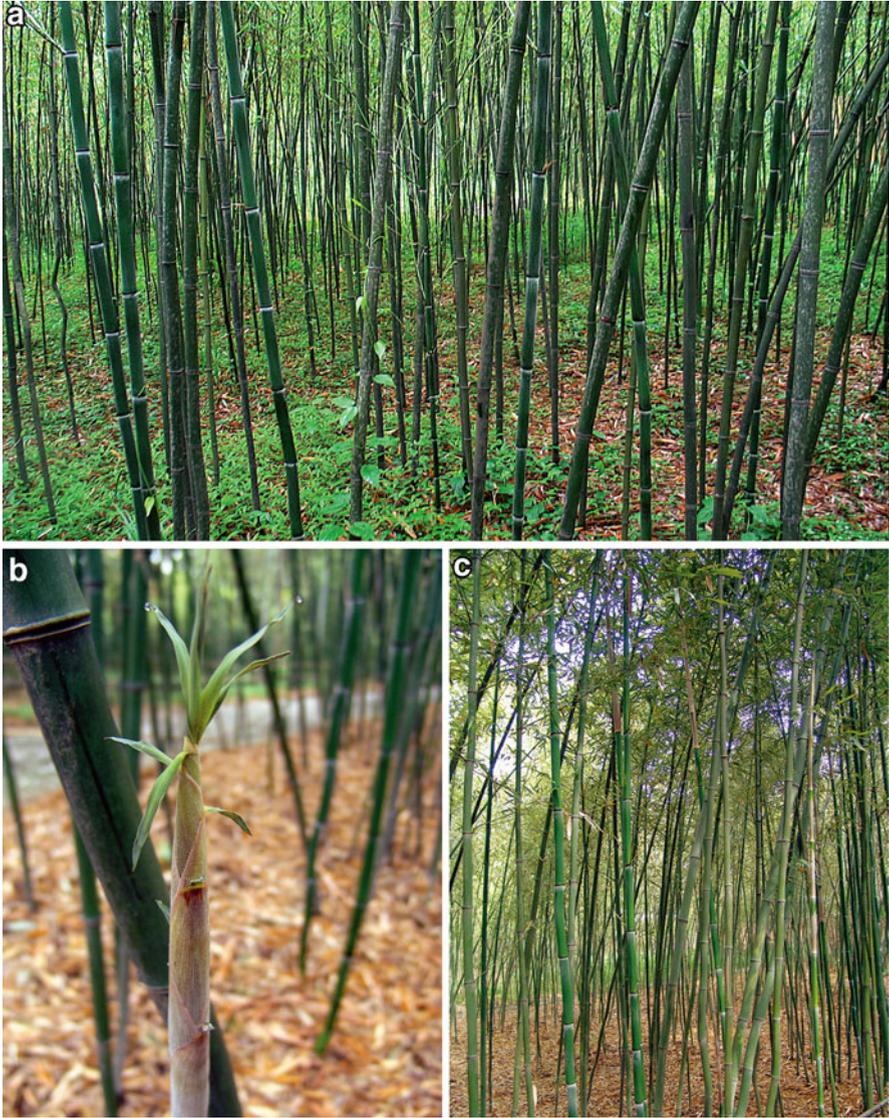


Fig. 3 *Phyllostachys arcana*. (a) Bamboo grove; (b) new shoot; (c) culms

many; palea as long as or shorter than lemma, veins 2 or 3 between keels, veins 2–5 outside each keel; lodicules 3, tomentose, 3.5–5 mm long; stamens 3, filaments free, anthers 10–12 mm long; stigmas 2, plumose. Caryopses linear lanceolate, apex with the persistent base of style. New shoots May.

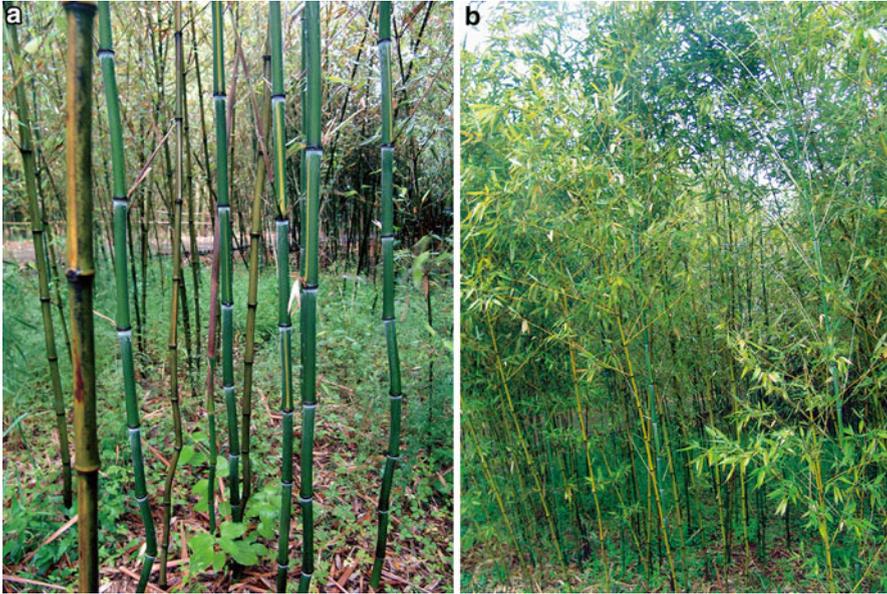


Fig. 4 *Phyllostachys arcana* f. *luteosulcata*. (a) Culms; (b) bamboo grove

South area of the Yellow River. Wild bamboo forests distributed in Minqing of Fujian, Jiande of Zhejiang, Liangping of Chongqing. Cultivated around the world. Zones 7–10.

New shoots are delicious (Fig. 5).

a. *Phyllostachys aurea* Carrière ex Rivière et C. Rivière f. *flavescens inversa* (H. de Lehaie) Muroi

Culms green with yellow grooves on the branched side. Several foliage leaf blades with yellow stripes.

Zhejiang. Cultivated in Europe, the USA, and Japan. Zones 7–10.

b. *Phyllostachys aurea* Carrière ex Rivière et C. Rivière f. *holochrysa* Muroi et Kasahara ex G. H. Lai

Young culms yellow green, gradually becoming yellow; the basal internodes with green stripes occasionally.

Zhejiang. Cultivated in Europe, the USA, and Japan (Ma et al. 2014). Zones 7–10.

c. *Phyllostachys aurea* Carrière ex Rivière et C. Rivière f. *koi* G. H. Lai

Culms yellow with green grooves on the branched side. Some foliage leaf blades with milky white or light yellow slender stripes.

Cultivated in Zhejiang, Sichuan, Europe, the USA, and Japan (Lai 2013a). Zones 7–10.



Fig. 5 *Phyllostachys aurea*. (a) Culms; (b) new shoots; (c) bamboo grove

***Phyllostachys aureosulcata* McClure**

Culms up to 9 m tall, 4 cm in diameter, the basal 2 or 3 internodes zigzag on thin culms; internodes up to 39 cm long, grooves yellow, white powdery, and pubescent when young; nodes taller than sheath scars. Culm leaf sheaths purple green abaxially, usually with light yellow stripes and brown spots or not, with slight white powder; auricles formed by extension of blades, or connected with the apex of sheaths, light yellow with purple or purple brown, oral setae present; ligules truncate or arched, purple, margins with short cilia; blades erect or open, light green yellow or purple green, triangular or triangular lanceolate, straight or wavy. Foliage leaves 2 or 3 per branchlet; auricles tiny or absent, oral setae short; blades ca. 12 cm long, 1.4 cm wide. Flowering branches spicate, 8.5 cm long, the base with 4 scale-shaped and gradually larger bracts; spathes 4 or 5, glabrous or with sparse and short pubescence, auricles and oral setae absent, reduced leaves tapering,



Fig. 6 *Phyllostachys aureosulcata*. (a) Internode; (b) new shoot and culms; (c) bamboo grove

pseudospikelets 5–7 within each spathe, the basal spathe usually without pseudospikelets. Florets 1 or 2; rachilla pubescent; glumes 1 or 2, keeled; lemma 15–19 cm long, with pubescence on the middle and upper parts; palea a little shorter than lemma, the upper part with pubescence; lodicules 3.5 mm long, margins ciliate; anthers 6–8 mm long; stigmas 3, plumose. New shoots middle April to early May. Flowering May to June.

Beijing, Zhejiang. Introduced into the USA. Zones 7–9 (Fig. 6).

a. *Phyllostachys aureosulcata* McClure f. *aureocaulis* Z. P. Wang et N. X. Ma

Internodes yellow or the basal one or two internodes with green stripes; foliage leaf blades with light yellow stripes sometimes.

Zhejiang: Anji. Zone 8 (Fig. 7).

b. *Phyllostachys aureosulcata* McClure f. *flavostriata* S. J. Zhao

Culms green with golden stripes in different width.

Jiangsu: Lianyungang (Mountain of Flowers and Fruits). Zone 8.

c. *Phyllostachys aureosulcata* McClure f. *pekinensis* J. L. Lu

Culms green.

Beijing, Jiangsu, Zhejiang, Henan. Zones 7–9.

New shoots are edible (Fig. 8).

d. *Phyllostachys aureosulcata* McClure f. *spectabilis* C. D. Chu et C. S. Chao

Culms golden with green grooves.



Fig. 7 *Phyllostachys aureosulcata* f. *aureocaulis*. (a) Culms; (b) new shoot; (c) culm leaf; (d) bamboo grove

Beijing, Jiangsu; introduced into Zhejiang and Sichuan. Zones 7–9 (Fig. 9).

e. *Phyllostachys aureosulcata* McClure f. *vittata* X. Y. Zeng

Culms green, foliage leaf blades green with white or yellow stripes.

Fig. 8 *Phyllostachys aureosulcata* f. *pekinensis*. (a)
Culm leaf



Zhejiang: Hangzhou; cultivated in Hangzhou Botanical Garden. Zone 8.
This bamboo can be cultivated for ornamentation (Fig. 10).

Phyllostachys bambusoides Siebold et Zuccarini

Culms up to 20 m tall, 15 cm in diameter; internodes to 40 cm long, bright green when young, glabrous, without white powder, occasionally with a ring of white powder below nodes, culm walls ca. 5 mm thick; nodes taller than sheath scars. Culm leaf sheaths yellow brown, sometimes mixed with green or purple, with dense purple-brown patches, spots, and stripes, and sparse brown setae abaxially; auricles purple brown, falcate, sometimes absent, oral setae present; ligules arched, light brown or green, margins ciliate; blades reflexed, ribbon-shaped, straight, or occasionally a little crinkled at the apex, green in center, purple outside the green part, margins yellow. Foliage leaves 2–4 per branchlet; auricles semicircular, oral setae radiate; ligules prominent; blades 5.5–15 cm long, 1.5–2.5 cm wide. Flowering branches spicate, 5–8 cm long, seldom to 10 cm long, the base subtended by 3–5 scale-shaped and gradually larger bracts; spathes 6–8, auricles tiny or nearly absent, oral setae present, short, reduced leaves ovate to linear lanceolate, the base shrunk to be round, the top tapering and aristate, pseudospikelets 1 or 2, seldom 3 within each bract, the basal 1–3 bracts without pseudospikelets and deciduous. Pseudospikelets lanceolate, 2.5–3 cm long, florets 1 or 2 (3); rachilla extended to the back of palea of the uppermost fertile floret, the apex with reduced florets, internodes pubescent except the extension part; glume 1 or absent; lemma 2–2.5 cm long, shortly puberulent, apex aristate; palea shorter than lemma, glabrous or apex



Fig. 9 *Phyllostachys aureosulcata* f. *spectabilis*. (a) Internode; (b) new shoots; (c) young culms and culm leaves; (d) bamboo grove



Fig. 10 *Phyllostachys aureosulcata* f. *vittata*. (a) Foliage leaf branches; (b) foliage leaf branches

pubescent, keels ciliate; lodicules diamond elliptic, 3.5–4 mm long, anthers 11–14 mm long; style long, stigmas 3, plumose. New shoots late May.

Areas along and south of the Yellow River. Introduced into Japan. Zones 7–9. Culms are used for bamboo timber producing (Fig. 11).

a. *Phyllostachys bambusoides* Siebold et Zuccarini f. *albovariegata* (Makino) Muroi

Culms with a white stripe occasionally, foliage leaf blades with white stripes.

Introduced into the bamboo garden of Zhejiang A & F University. Originally distributed in Japan. Zone 8 (Fig. 12).

b. *Phyllostachys bambusoides* Siebold et Zuccarini f. *castilloni-inversa* (H. de Lehaie) Muroi

Culms green with yellow grooves.

Cultivated in Nanjing and Yixing of Jiangsu. Originally distributed in Japan. Zone 8.

c. *Phyllostachys bambusoides* Siebold et Zuccarini f. *castillonis* (Mitford) Muroi

Culms and branches yellow, grooves green, sometimes green stripes 2–3 by the side of grooves. Foliage leaves with several light yellow stripes.

Cultivated in Anji Bamboo Garden, the bamboo garden of Nanjing Forestry University, and the Louguantai Bamboo Garden (Zhouzhi, Shaanxi). Japan, Europe. Zones 8–9.

This bamboo can be cultivated for ornamentation.

d. *Phyllostachys bambusoides* Siebold et Zuccarini f. *duihuazhu* C. J. Wu

Internodes with purple-black spots on grooves.

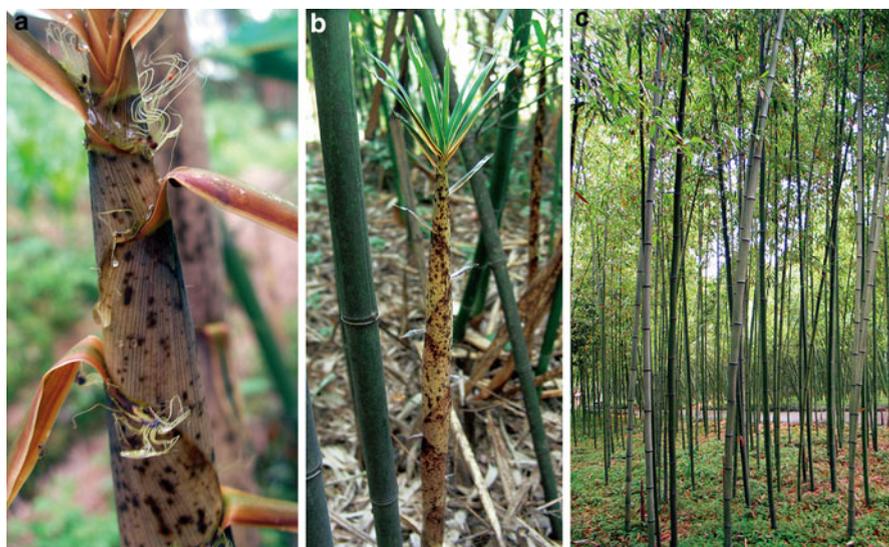


Fig. 11 *Phyllostachys bambusoides*. (a) New shoot; (b) new shoot and culm; (c) bamboo grove

Henan: Boai; cultivated in the Louguantai Bamboo Garden (Zhouzhi, Shaanxi). Zone 8 (Fig. 13).

e. *Phyllostachys bambusoides* Siebold et Zuccarini f. *holochrysa* (Pfitzer) Muroi
Culms and branches golden, sometimes basal internodes with green stripes; foliage leaf blades with yellow white stripes.

Cultivated in Changzhou. Originally distributed in Japan. Introduced into France and the USA. Zone 8.

f. *Phyllostachys bambusoides* Siebold et Zuccarini f. *kawadana* Makino ex I. Tsuboi

Culms with yellow stripes occasionally; foliage leaf blades with yellow stripes.

Cultivated in the bamboo garden of Zhejiang A & F University. Originally distributed in Japan. Zone 8.

g. *Phyllostachys bambusoides* Siebold et Zuccarini f. *lacrima-deae* P.C. Keng et T. H. Wen

Internodes with purple-brown or light brown spots.

Areas between Yellow River and Changjiang River. Zones 7–9 (Fig. 14).

h. *Phyllostachys bambusoides* Siebold et Zuccarini f. *marliacea* (Makino ex I. Tsuboi) Muroi

Internodes with ribs, basal internodes very short.



Fig. 12 *Phyllostachys bambusoides* f. *albovariegata*. (a) Culms; (b) culms and branches; (c) new shoot and culms; (d) bamboo grove

Cultivated in the bamboo garden of Zhejiang A & F University. Originally distributed in Japan. Zone 8.

- i.** *Phyllostachys bambusoides* Siebold et Zuccarini f. *mixta* Z. P. Wang et N. X. Ma
Internodes with yellow grooves and brown spots.
Henan: Boai; cultivated in Anji Bamboo Garden, Zhejiang. Zone 8 (Fig. 15).



Fig. 13 *Phyllostachys bambusoides* f. *duihuazhu*. (a) Internode; (b) culm and branches; (c) bamboo grove

j. *Phyllostachys bambusoides* Siebold et Zuccarini f. *shouzhu* T. P. Yi

Young culms with slight white powder, nodes flat, internodes long; culm leaf sheaths glabrous; foliage leaf auricles and oral setae absent.



Fig. 14 *Phyllostachys bambusoides* f. *lacrima-deae*. (a) Culms; (b) patches on the culm; (c) new shoot; (d) bamboo grove

Large areas of pure bamboo forests are distributed in Sichuan and Chongqing, Zone 9.

New shoots are delicious and suitable for eating when fresh. Culms are pliable and can be used for buildings, furniture, farming tools, and weaving (Fig. 16).



Fig. 15 *Phyllostachys bambusoides* f. *mixta*. (a) Internode; (b) culms

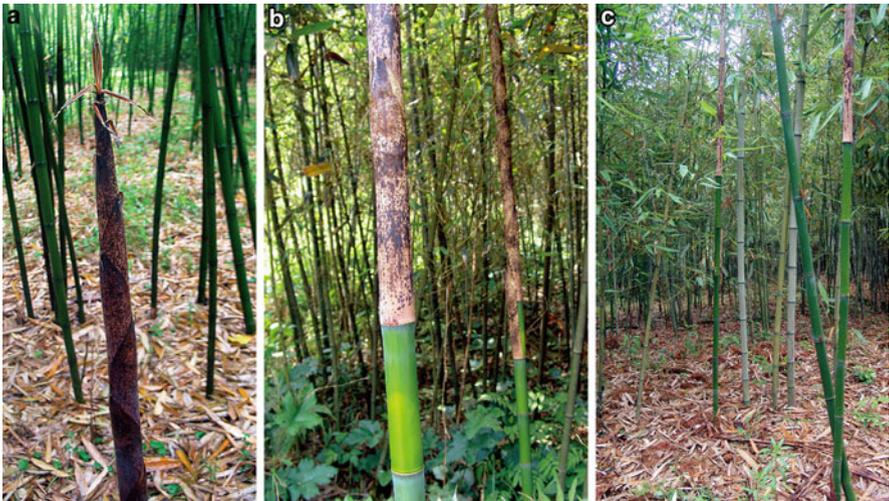


Fig. 16 *Phyllostachys bambusoides* f. *shouzhu*. (a) New shoot; (b) culm leaves; (c) culms

Phyllostachys bissetii McClure

Culms 5–7 m tall, up to 4 cm in diameter; internodes up to 25 (30) cm long, with white powder when young and white setae, a little coarse, culm walls ca. 4 mm thick; nodes prominent, a little taller than sheath scars. Culm leaf sheaths dark green to

light green abaxially, with a little purple, the apex with milk white stripes, white powdery, glabrous or sometimes pubescent, spots absent or tiny spots present on the upper part, margins ciliate; auricles green or green with purple, falcate or tiny, or absent, oral setae present or absent; ligules truncate or arched, purple, wider than the base of culm blades, margins ciliate; blades erect, dark green or dark green with purple, narrowly triangular or triangular lanceolate, straight or wavy, the base wide. Foliage leaves 2 per branchlet; auricles and oral setae deciduous; blades 7–11 cm long, 1.2–1.6 cm wide. New shoots middle and late April.

Zhejiang, Sichuan. Introduced into the USA. Zone 9.

New shoots are edible. Culms are used for bamboo timber producing (Fig. 17).

a. *Phyllostachys bissetii* McClure f. *denigrata* T. P. Yi et H. R. Qi

Culms green at the first year, gradually purple black; rhizomes sometimes purple black.

Chongqing: Liangping, alt. 700 m (Yi 1991a). Zone 9.

This bamboo can be cultivated for ornamentation.

***Phyllostachys circumpilis* C. Y. Yao et S. Y. Chen**

Culms up to 7 m tall, 3–4.5 cm in diameter; internodes 17–20 cm long, without white powder when young, old culms with light orange stripes and cloud patches, nodes mixed with purple initially, culm walls ca. 5 mm thick; sheath scars with light brown pubescence; nodes taller than or as tall as sheath scars. Culm leaf sheaths milk yellow green, with light purple veins, brown spots and patches, and dense white short setae abaxially, margins ciliate; auricles absent on the basal culm sheaths, oral setae short, auricles tiny on the middle and upper culm leaves, green purple, oral setae long; ligules truncate or arched, margins with green or light purple cilia, to 5 mm long; blades reflexed, green purple, ribbon-lanceolate, crinkled, margins milk yellow with purple. Foliage leaves 2 or 3 per branchlet; sheaths pubescent; auricles semicircular, oral setae long; ligules prominent, margins with long and white cilia; petioles with dense short pubescence; blades 8–12 cm long, 1.8–2 cm wide, densely short pubescent abaxially. New shoots middle and late April.

Zhejiang. Zone 8.

New shoots are delicious.

***Phyllostachys compar* W. Y. Zhang et N. X. Ma**

Culms 7–10 m tall, 5–8 cm in diameter; young culms green with fine ribs, slightly white powdery, densely white powdery below nodes; old culms pale white or pale green; nodes prominent, a little taller than sheath scars; internodes 25–35 cm long; branches 2, branching from upper nodes, spreading. Culm leaf sheaths dark brown with red, sometimes green brown, with dense dark purple-brown spots and patches, white powdery, glabrous, upper margins sparsely ciliate; auricles and oral setae absent; ligules wide and short, 0.5–1 mm tall, light brown, apex truncate or a little arched, margins with white short cilia; blades ribbon-shaped, green purple, the middle and upper part intensively crinkled, reflexed. Foliage leaves 3 or 4 per branchlet; sheaths glabrous; auricles and oral setae absent, seldom developed; ligules



Fig. 17 *Phyllostachys bissetii*. (a) New shoots and culms; (b) young culms; (c) bamboo grove

prominent, 1–2 mm long, truncate; blades ribboned-lanceolate, 6–12 cm long, 14–18 mm wide, glabrous; secondary veins 4 or 5 pairs. Flowering branches unknown. New shoots the end of March to the middle of April.

Zhejiang: Jiaxing; Shanghai. Zone 9.

New shoots are delicious, and the yield is high. Culm walls are thin and can be used for general tools.

Phyllostachys dulcis McClure

Culms 6–10 m tall, 4–6 cm in diameter; internodes ca. 25 cm long, with slight white powder when young, old culms gray green, usually with light yellow or orange stripes and patches; nodes taller than sheath scars. Culm leaf sheaths light yellow or milk white abaxially, with a little green or purple red at the top, sometimes with purple stripes, with sparse spots and setae abaxially, margins green brown; auricles green or green with purple, ovate or falcate, oral setae present; ligules arched, light purple brown, margins with short cilia; blades reflexed, ribbon-shaped, crinkled, purple green, margins light green yellow. Foliage leaves 2 or 3 per branchlet; auricles and oral setae present; ligules prominent; blades 9–14 cm long, 1.5–2.5 cm wide, pubescent abaxially. New shoots late April.

Jiangsu, Zhejiang. Introduced into the USA. Zone 8.

New shoots are edible (Fig. 18).



Fig. 18 *Phyllostachys dulcis*. (a) New shoot; (b) bamboo grove

Phyllostachys edulis (Carrière) H. de Lehaie

Culms up to more than 20 m tall, more than 20 cm in diameter; internodes up to 40 cm long, with dense pubescence and thick white powder when young, culm walls to 10 mm thick; sheath scars with setae initially; nodes inconspicuous or prominent on thin culms. Culm leaf sheaths yellow brown or purple brown abaxially, with brown spots and dense brown setae; auricles tiny, oral setae developed; ligules strongly prominent, margins with long and thick cilia; blades reflexed, green, oblong triangular or lanceolate, crinkled. Foliage leaves 2–4 per branchlet; auricles inconspicuous, oral setae present; ligules prominent; blades 4–11 cm long, 0.5–1.2 cm wide, with gray white and short pubescence along the middle rib on the abaxial base, secondary veins 3–6 pairs. Flowering branches spicate, 4–7 cm long, subtended by bracts; spathes more than 10, reduced leaves lanceolate or subulate, pseudospiklets 1–3 inside each fertile spathe; floret 1; internodes of rachilla pubescent; glume 1; lemma 22–24 mm long, the upper part and margins with cilia; palea a little shorter than lemma, pubescent above the middle part; lodicules 3, lanceolate; stamens 3, filaments free, anthers ca. 12 mm long; stigmas 3, plumose. Caryopses oblong elliptic, 4.5–6 mm long, 1.5–1.8 mm in diameter, apex with persistent basal style. New shoots May.

Mount Qinling and area around Han River to the south of the Changjiang River and Taiwan, cultivated in some area of the Yellow River. Introduced into Japan, Europe, and the USA. Zones 8–10.

This species is the most widely distributed bamboo in China with a long cultivation history and great economical value. Culms are used for buildings and weaving, and rhizomes are suitable for making crafts. Branchlets are used for brooms. New shoots can be eaten when fresh or made into instant shoots, slices, dry shoots, and can food, and shoot clothes can also be eaten as vegetable; culm leaf sheaths are materials for weaving jute bags, carpets, shoe pads, and paper making. *Dictyophora* and other edible fungi can be cultivated under the bamboo forest (Fig. 19).

a. *Phyllostachys edulis* (Carrière) H. de Lehaie f. ***abbreviata*** G. H. Lai

The basal internodes shortened and concave, nodes asymmetric, adjacent nodes usually not connected, occasionally connected on one side like bowknot, the other side not swollen.

Anhui: Guangde (Lai 2013a). Zone 8.

b. *Phyllostachys edulis* (Carrière) H. de Lehaie f. ***anjiensis*** (P. X. Zhang) G. H. Lai

Culm leaf sheaths light yellow brown or pale yellow brown, with light purple-brown stripes, particularly near the margins, densely purple brown spotted on the upper part and sparsely on the middle and lower part.

Zhejiang: Anji (Lai 2013a). Zone 8.

c. *Phyllostachys edulis* (Carrière) H. de Lehaie f. ***bicolor*** (Nakai) G. H. Lai

Culms yellow with green grooves, several green stripes outside grooves; some foliage leaf blades with light yellow stripes.

Zhejiang (Lai 2012). Zone 8 (Fig. 20).



Fig. 19 *Phyllostachys edulis*. (a) Habitat; (b) young culms and new shoot; (c) culm leaves; (d) bamboo corridor; (e) culms

d. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *epruinosa* G. H. Lai

Young culms glabrous, without white powder, a ring of white powder absent below nodes.



Fig. 20 *Phyllostachys edulis* (Carrière) H. de Lehaie f. *bicolor*. (a) Culm leaves and culms; (b) culms

Anhui: Guangde (Lai and Hong 1995). Zone 8.

e. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *exaurita* T. G. Chen

Culm leaf auricles and oral setae absent; the apex of culms curved and pendulous.

Jiangsu: Changzhou (possibly introduced from montane area of Fujian). Zones 8–9.

f. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *gracilis* (W. Y. Hsiung) C.S. Chao et Renvoize

Culms short, 7–8 m tall, 3–4 cm in diameter, culm walls thick.

Jiangsu: Yixing; Anhui: Guangde, Jingxian. Cultivated in the bamboo garden of Nanjing Forestry University. Zone 8 (Fig. 21).

g. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *heterocycla* (Carrière) Makino ex A.V. Vasil'ev

Internodes below the middle part of the culm extremely shortened and swollen on one side; the adjacent nodes connected on one side.

Sparsely found in normal moso bamboo forests; cultivated in gardens. Zones 8–10 (Figs. 22 and 23).

h. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *holochrysa* (Muroi et K. Kasahara) Ohrnberger

Young culms and branches yellow, glossy, sometimes with purple patches; 2-year-old culms and branches golden, more than 3-year-old culms and branches



Fig. 21 *Phyllostachys edulis* (Carrière) H. de Lehaie f. *gracilis*. (a) Young culms and culm leaves; (b) culm bud; (c) culms

dark yellow, several internodes with 1 or 2 green stripes occasionally; some foliage leaf blades with white stripes; the color of culm leaf sheaths and patches lighter than *Phyllostachys edulis*.

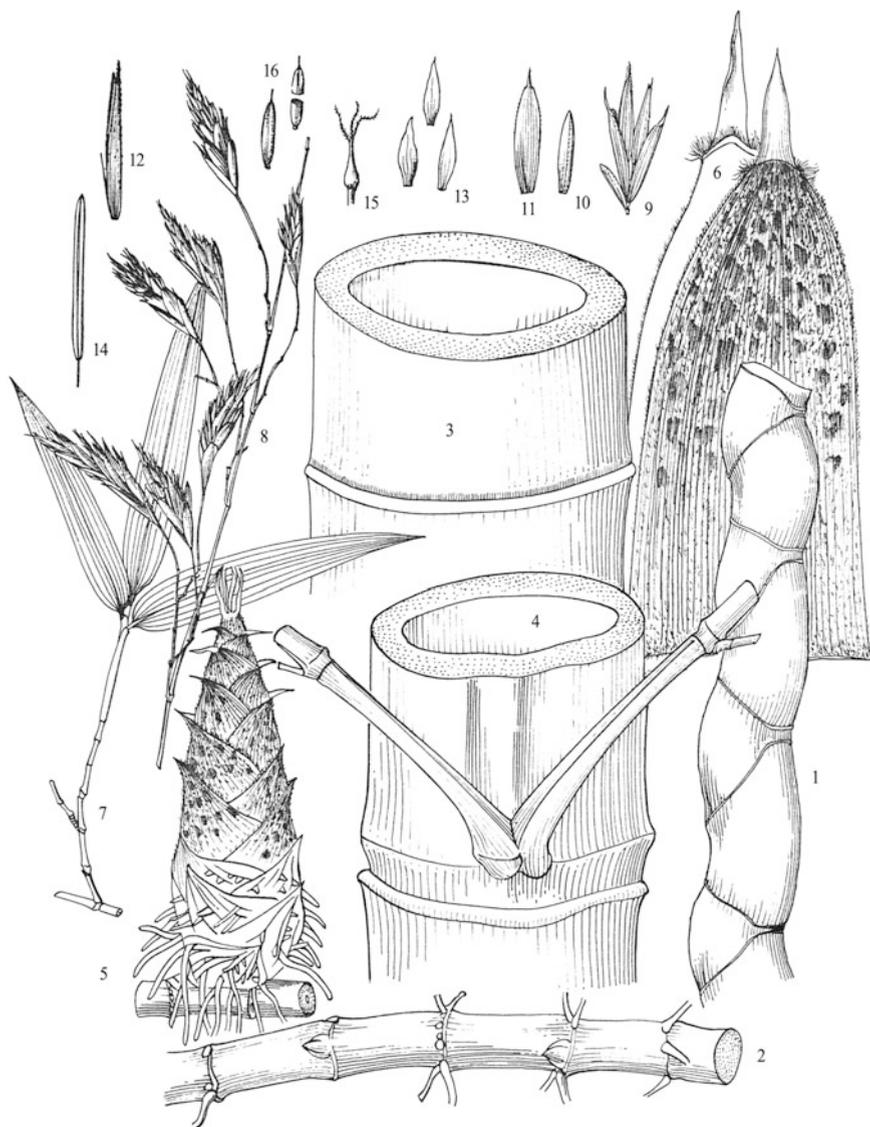


Fig. 22 *Phyllostachys edulis* f. *heterocyclus*. 1. Part of culm, showing abnormal internodes. *Phyllostachys edulis*. 2. Rhizome; 3. part of culm, showing node; 4. part of culm, showing branches; 5. new shoot; 6. culm leaf; 7. branchlet with foliage leaves; 8. flowering branch; 9. part of pseudospikelet clusters, including prophyll and 4 pseudospikelets; 10. prophyll; 11. glume; 12. florets and the extension of rachilla; 13. lodicules; 14. stamens; 15. pistil; 16. caryopsis (adapted from Yi et al. 2008)

Anhui, Jiangsu, Zhejiang. Zone 8.

This form was considered as invalid due to the basionym not validly published, and it was combined into *Phyllostachys edulis* "Lutea" (Ohrnberger 1999).



Fig. 23 *Phyllostachys edulis* f. *heterocycla*. (a) Young culm; (b) culms and branches; (c) bamboo grove

i. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *huamozhu* (T. H. Wen) C. S. Chao et Renvoize

Culms and foliage leaf blades with yellow-green stripes.

Sparsely found in moso bamboo forests; cultivated in gardens along the Changjiang River area. Zones 8–9 (Fig. 24).

j. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *luteosulcata* (T.H.Wen) C. S. Chao et Renvoize

Culms green with yellow grooves.

Hunan; introduced into Hangzhou and Anji of Zhejiang. Zone 8.

This form was treated as a synonym of *Phyllostachys edulis* “Gimmei” by some researchers (Ohrnberger 1999; Fig. 25).

k. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *mira* (P. X. Zhang, G. H. Lai et X. Q. Hua) T. P. Yi

Fig. 24 *Phyllostachys edulis* f. *huamozhu*. (a) Culms



Fig. 25 *Phyllostachys edulis* f. *luteosulcata*. (a) Culms; (b) culm leaves

Basal internodes slant mutually, the adjacent internodes connected on one side, swollen as tortoise shell on the other side, culms and branches with yellow and green stripes, grooves green; some foliage leaf blades with several light yellow stripes; rhizomes yellow when underground, green stripes present gradually when exposed under the sunshine.

Zhejiang: Anji (Yi et al. 2015a). Zone 8.

l. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *nabeshimana* (Muroi) C. S. Chao et Renvoize

Internodes green with light yellow or light yellow-green stripes.

Anhui, Zhejiang. Zone 8.

m. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *obliquinoda* (Z. P. Wang et N. X. Ma) Ohrnberger

Culms thin, adjacent internodes slant mutually, not swollen, nodes not connected.

Jiangsu, Anhui, Zhejiang. Zone 8.

This form was treated as a synonym of *Phyllostachys edulis* ‘Dance Frock’ (Ohrnberger 1999; Fig. 26).

n. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *obtusangula* (S. Y. Wang) Ohrnberger

Culms with 5–7 ridges, the transverse section quincunx.

Hunan (Yueyang: Junshan), Fujian (Nanjing). Zones 8–9.

o. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *pachyloen* (G. Y. Yang et al.) Y. L. Ding ex G. H. Lai

Culms a little quadrate, culm walls up to 4 cm thick, or sometimes basal internodes nearly solid.

Jiangxi: Wanzai; introduced into Nanchang and Yifeng (Lai 2013a). Zone 9 (Fig. 27).

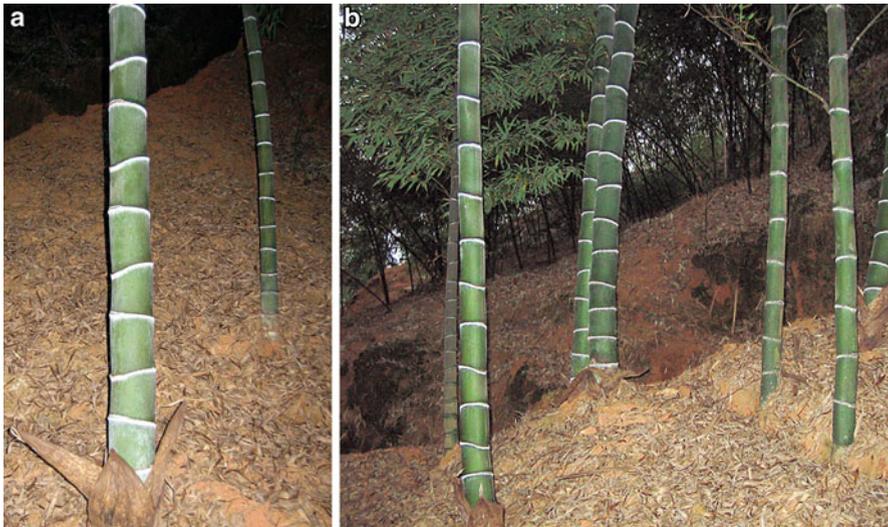


Fig. 26 *Phyllostachys edulis* f. *obliquinoda*. (a) Culms; (b) bamboo grove



Fig. 27 *Phyllostachys edulis* f. *pachyloen*. (a) Transection of the culm; (b) young culms

p. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *porphyrosticta* G. H. Lai

Internodes green with purple patches.

Zhejiang, Chongqing, Sichuan, Shaanxi (Lai 2013d). Occasionally found in moso bamboo forests. Zones 8–9.

q. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *purpureoculmis* P. X. Zhang, G. H. Lai et H. F. Zhang

Basal internodes of young culms with light purple-brown spots, gradually darker and denser, the whole culms nearly purple at last.

Zhejiang: Anji (Zhang et al. 2012). Zone 8.

r. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *purpureosulcata* P. X. Zhang, G. H. Lai et H. F. Zhang

Young culms green, grooves gradually purple black, internodes with purple and light yellow stripes.

Zhejiang: Anji (Zhang et al. 2012). Zone 8.

s. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *tetragulata* (S. Y. Wang) T. P. Yi

Culms tetragonal.

Hunan: Yueyang (Junshan). Zone 9.

t. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *tubaiformis* (S. Y. Wang) Ohrnberger

The base of culms thickened downward strongly, usually prismatoid, internodes shortened, 5–10 cm long, nodes more or less slant.

Hunan: Yueyang (Junshan and Taojiang); cultivated in the bamboo garden of Yiyang Forestry Institute. Zone 9 (Fig. 28).



Fig. 28 *Phyllostachys edulis* f. *tubaeformis*. (a) Young culms; (b) bamboo grove

u. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *tumescens* (T. P. Yi et L. Yang) T. P. Yi

Culms 4–6 m tall, 7–8 cm in diameter, nodes of lower branches extremely swollen as tuberculiform.

Sichuan: Changning (Yi and Yang 2002; Yi et al. 2015a). Distributed sparsely in moso bamboo forests. Zone 9.

v. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *ventricosa* (Z. P. Wang et N. X. Ma) Ohrnberger

More than ten internodes below the middle culm swollen like Buddha belly, adjacent internodes not slant mutually.

Zhejiang: Anji. Zone 8 (Fig. 29).

w. *Phyllostachys edulis* (Carrière) H. de Lehaie f. *venusta* G. H. Lai

Culms short, to 5 (8) m tall, 2–3(4) cm in diameter, culms green with yellow stripes.

Anhui: Guangde; Jiangsu: Yixing (Lai and Hong 1995). Zone 8.

Phyllostachys elegans McClure

Culms 4.5–8 m tall, ca. 3 cm in diameter; internodes 12–15 cm long, with white powder when young and dense fine ribs; nodes as tall as or a little taller than sheath scars. Culm leaf sheaths green with purple, with white powder, dense spots, and

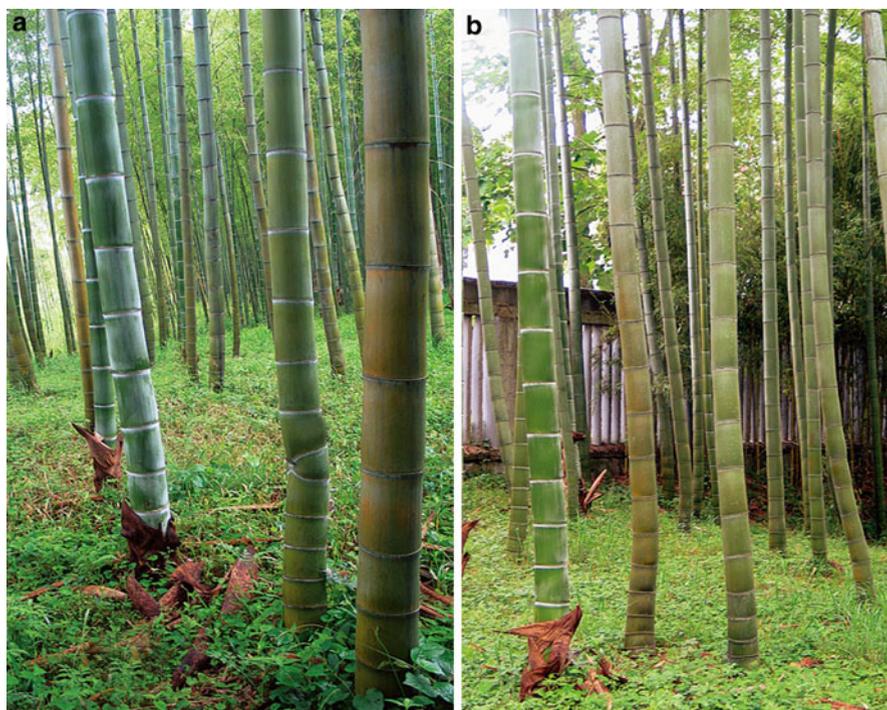


Fig. 29 *Phyllostachys edulis* f. *ventricosa*. (a) Culms; (b) bamboo grove

setae abaxially, margins without cilia; auricles green purple, narrowly falcate, oral setae long and crinkled; ligules arched, light green purple, margins ciliate; blades reflexed, ribbon-shaped, crinkled, green purple. Foliage leaves 2 or 3 per branchlet; auricles tiny or absent, oral setae present; ligules prominent, purple; blades 4.5–12 cm long, 1–1.7 cm wide. New shoots middle April.

Zhejiang, Hunan, Guangdong, Hainan. Introduced into the USA. Zones 8–11.

New shoots are edible (Fig. 30).

Phyllostachys fimbriiligula T. H. Wen

Culms up to 9 m tall, to 5 cm in diameter; internodes 20–25 cm long, a ring of white powder below nodes initially; nodes prominent, as tall as sheath scars. Culm leaf sheaths green with red brown, with brown spots and deciduous sparse setae abaxially, the apex narrowed; auricles absent; ligules arched, to 1 cm tall, the lateral parts extended downward, margins fimbriate; blades erect, narrowly ribbon-shaped, straight. Foliage leaves 3–4 per branchlet; auricles ovate, oral setae radiate, up to 13 mm long; ligules ca. 1 mm tall, margins ciliate; blades 8–15 cm long, 1–1.8 cm wide, gray green with pubescence abaxially. New shoots May.

Zhejiang; introduced into Anhui (Guangde). Zone 8.

New shoots are edible, and the yield is high (Fig. 31).



Fig. 30 *Phyllostachys elegans*. (a) New shoot and culms; (b) bamboo grove

Phyllostachys flexuosa (Carrière) Rivière et C. Rivière

Culms 5–6 (12) m tall, 2–4 (7) cm in diameter, the base zigzag sometimes; internodes to 30 cm long or longer, with slight white powder when young, old culms gray white, culm walls 2–5 mm thick; nodes prominent as tall as sheath scars. Culm leaf sheaths green brown, with light purple stripes and sparse or dense brown spots abaxially; auricles and oral setae absent; ligules truncate or a little arched, purple brown or sometimes yellow green with purple, margins ciliate; blades reflexed, narrowly triangular or ribbon-shaped, straight, light green purple, light yellow near margins. Foliage leaves 2–3 per branchlet; auricles and oral setae absent; blades 8–12 cm long, 1–2 cm wide, the abaxial base with pubescence. Flowering branches spicate, 4–6 cm long, subtended by 3–6 scale-shaped and gradually larger bracts; spathes 4–6, the lateral parts usually pubescent, auricles and oral setae absent, reduced leaves narrow, lanceolate to subulate, pseudospikelets 2 or 3 inside each bract. Pseudospikelets 2.5–3.5 cm long, narrowly lanceolate, florets 2 or 3, usually only the top floret developed; apex of rachilla extended like needle, internodes pubescent; glume usually 1; lemma ca. 2.5 cm long, glabrous, apex aristate; palea ca. 2.2 cm long, nearly glabrous or apex with sparse pubescence; lodicules narrowly ovate lanceolate, ca. 2 mm long; anthers 1 cm long; stigmas 3. New shoots late April to early May.

Beijing, Shanxi, Shaanxi, south Gansu, Jiangsu, Henan, Hunan. Introduced into Europe, North Africa, and the USA. Zones 7–8.

New shoots are delicious. Culms are pliable and suitable for weaving (Fig. 32).

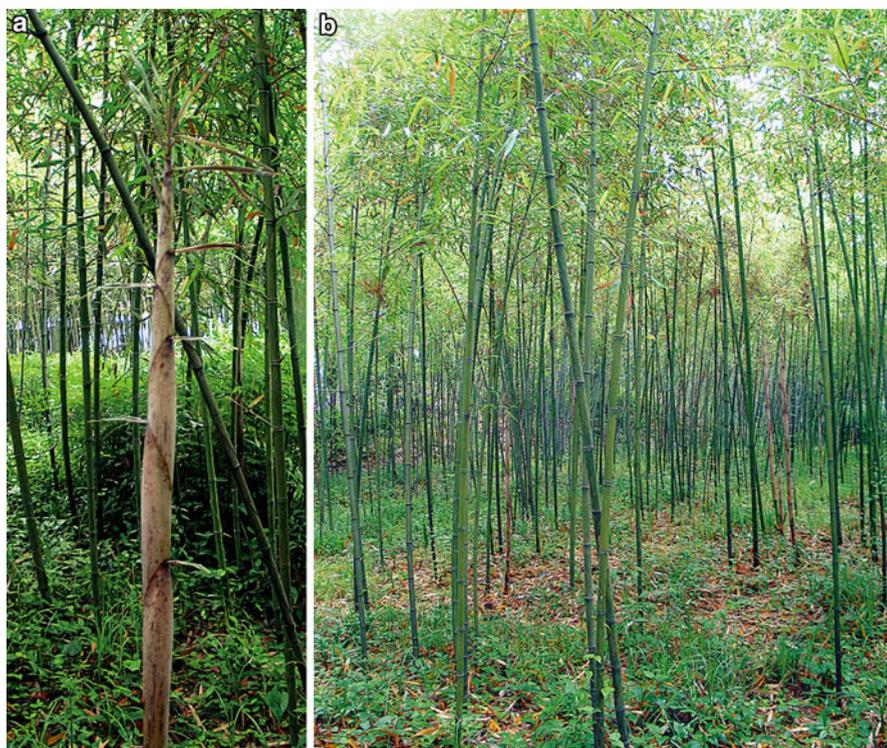


Fig. 31 *Phyllostachys fimbriiligula*. (a) New shoot; (b) bamboo grove

Phyllostachys glabrata S. Y. Chen et C. Y. Yao

Culms 6–7 m tall, 3–4 cm in diameter; internodes ca. 19 cm long, dark green when young, a little coarse, old culms gray green, culm walls ca. 5 mm thick; nodes flat or a little prominent as tall as sheath scars. Culm leaf sheaths light red brown or light yellow with purple, with dense purple brown spots abaxially, these spots cloud patch like at the top; auricles and oral setae absent; ligules truncate or a little arched, light brown, margins wavy, ciliate; blades reflexed, narrowly triangular or ribbon-shaped, crinkled, purple green, purple red, or orange yellow near the margins. Foliage leaves 2 or 3 per branchlet; auricles green, oral setae green or purple red; blades 8–11 cm long, 1.2–2 cm wide. Flowering branches spicate, 4–7 cm long, subtended by 3–6 gradually larger scale-shaped bracts; spathes 4–7, glabrous, auricles tiny, oral setae dense and radiate, reduced leaves roundly ovate to narrowly lanceolate, pseudospikelet 1 inside each bract. Pseudospikelets narrowly lanceolate, 2–2.8 cm long, florets 2; internodes of rachilla pubescent; glumes absent; lemma 1.9–2.4 cm long, glabrous, a little coarse; palea 1.7–2.2 cm long, nearly glabrous; lodicules thin, 2.5–3 mm long; anthers 8–12 mm long; stigmas 3, plumose. New shoots middle and late April. Flowering May.

Zhejiang; cultivated in Hangzhou Botanical Garden. Zone 8.

New shoots are edible and delicious (Fig. 33).



Fig. 32 *Phyllostachys flexuosa*. (a) Flowering branches; (b) floret; (c) new shoots; (d) bamboo grove

a. *Phyllostachys glabrata* S. Y. Chen et C. Y. Yao f. *viridistriata* G. H. Lai

Internodes light yellow, dark yellow, or yellow green, grooves green; foliage leaf blades with yellow or light yellow-green stripes.

Anhui: Guangde (Lai et al. 1998). Zone 8.

Phyllostachys glauca McClure

Culms up to 12 m tall, 5 cm in diameter; internodes to 40 cm long, with thick white powder when young, culm walls 3 mm thick; nodes as tall as sheath scars. Culm leaf sheaths light purple brown or light purple green with different-colored stripes, with purple veins and sparse spots abaxially; auricles and oral setae absent; ligules truncate, dark purple, 2–3 mm tall, margins dentate, shortly ciliate; blades open or reflexed, linear lanceolate or ribbon-shaped, straight or sometimes a little



Fig. 33 *Phyllostachys glabrata*. (a) New shoot; (b) new shoots and culms; (c) bamboo grove

crinkled, purple green, yellow near margins. Foliage leaves 2 or 3 per branchlet; auricles and oral setae deciduous; ligules purple-brown; blades 7–16 cm long, 1.2–2.5 cm wide, pubescent along the middle rib abaxially. Flowering branches spicate, to 11 cm long, subtended by 3–5 gradually larger scale-shaped bracts; spathes 5–7, glabrous or pubescent on one side, oral setae sometimes present, several, short and slender, reduced leaves narrowly lanceolate to subulate, pseudospikelets 2–4 inside each bract, only 1 or 2 developed normally, lateral pseudospikelets subtended by lanceolate bracts, apex with pubescence. Pseudospikelets ca. 2.5 cm long, narrowly lanceolate, florets 1 or 2, usually the uppermost one mature; rachilla extending to be aristate, internodes with dense short pubescence; glumes absent or only 1; lemma ca. 2 cm long, usually with short pubescence; palea a little shorter than lemma, keels with short pubescence; lodicules ca. 4 mm long; anthers 12 mm long; stigmas 2, plumose. New shoots middle April to late May. Flowering June.

Areas along the Yellow River and the Changjiang River. Introduced into the USA. Zones 7–9.

New shoots are edible. Culms are used for weaving (Fig. 34).

a. *Phyllostachys glauca* McClure var. *variabilis* J. L. Lu

Young culms without white powder or with a little white powder, culm leaf sheaths on internodes without branches with light-brown cloud-like long patches.

Henan: Boai, Xinyang; introduced into Louguantai Bamboo Garden, Zhouzhi, Shaanxi. Zone 8 (Fig. 35).



Fig. 34 *Phyllostachys glauca*. (a) New shoots and culms; (b) bamboo grove



Fig. 35 *Phyllostachys glauca* var. *variabilis*. (a) New shoot; (b) bamboo grove

b. *Phyllostachys glauca* McClure f. *yunzhu* J. L. Lu

Internodes with purple-brown spots or patches.

Shanxi, Shaanxi, Henan; cultivated in the gardens of Fujian, Jiangsu, Zhejiang, and Yunnan. Zones 7–10 (Fig. 36).

***Phyllostachys guizhouensis* C. S. Chao et J. Q. Zhang**

Culms up to 16 m tall, 8 cm thick; internodes 30–40 cm long, green when young, white powder present below nodes, with sparse setae, old culms gray green; nodes flat on middle and basal parts of culms, the upper prominent. Culm leaf sheaths purple yellow abaxially, with purple veins and sparse brown setae; auricles of basal culm leaves tiny, those of upper culm leaves falcate, ca. 1 cm long, purple, oral setae purple, sparse; ligules a little arched or truncate, 2 mm tall, purple, margins with dense white cilia; blades narrowly triangular to ribbon-shaped, erect or open, purple brown, with green stripes. Foliage leaves 2 per branchlet; oral setae sparse, erect, deciduous; blades 8–11 cm long, 1.1–1.6 cm wide. New shoots May.

Guizhou: Bijie. Cultivated along riverside at the altitude 1440 m. Zone 9.

Culms are suitable for weaving, furniture, and buildings (Fig. 37).



Fig. 36 *Phyllostachys glauca* f. *yunzhu*. (a) Culms; (b) new shoot; (c) bamboo grove

Phyllostachys incarnata T. H. Wen

Culms up to 8 m tall, 4.5 cm in diameter; internodes ca. 20 cm long, with white powder when young, especially dense below nodes; nodes as tall as sheath scars, taller than sheath scars on thin culms. Culm leaf sheaths flesh pink, the upper part or whole of culm leaf sheaths on thin new shoots green, with sparse spots abaxially,



Fig. 37 *Phyllostachys guizhouensis*. (a) Culm leaves; (b) bamboo grove

sometimes with dark brown patches, sparsely setose or glabrous; auricles purple brown, falcate, oral setae purple brown and crinkled; ligules arched or sometimes nearly truncate, purple brown, margins with long cilia; blades erect or reflexed, triangular or linear triangular, undulate. Foliage leaves 3 or 4 per branchlet; auricles ovate or semicircular, green mixed with purple, oral setae radiate; blades up to 13 cm long, 1.5 cm wide, pubescent abaxially. Flowering branches spicate. Florets 2 or 3; glumes 1 or 2; lemma 22 mm long, pubescent, especially dense at the top; palea 18 mm long, sparsely pubescent; lodicules 4 mm long; anthers 7 mm long; style 1, long, stigmas 3, plumose. New shoots April to May, flowering April to May.

Zhejiang. Zone 8.

Shooting periods are long and new shoots are delicious (Fig. 38).

a. *Phyllostachys incarnata* T. H. Wen f. *bicolor* P. X. Zhang, X. X. Chen et G. H. Lai

Culms and branches yellow, grooves green, internodes with several green stripes; some foliage leaf blades with light yellow or white stripes.



Fig. 38 *Phyllostachys incarnata*. (a) Culms; (b) new shoot; (c) bamboo grove

Zhejiang: Anji (Zhang et al. 2014). Zone 8.

This form is found occasionally in the populations of *Phyllostachys incarnata*, and it can be cultivated for ornamentation.

Phyllostachys iridescens C. Y. Yao et C. Y. Chen

Culms 6–12 m tall, 4–7 cm in diameter; internodes 17–24 cm long, with white powder when young, with yellow and green stripes on the 1- or 2-year-old culms, old culms without stripes, culm walls 6–7 mm thick; nodes as tall as sheath scars. Culm leaf sheaths purple red or light red brown, with dense purple-brown spots and a little white powder abaxially, margins purple brown; auricles and oral setae absent; ligules arched, purple brown, margins with long purple red cilia; blades reflexed, ribbon-shaped, straight or a little crinkled, green, margins red yellow. Foliage leaves 3 or 4 per branchlet; auricles absent, oral setae purple; ligules purple red; blades 8–17 cm long, 1.2–2.1 cm wide. Flowering branches spicate, (2.5) 5–6 (8.5) cm long, subtended by 3–5 gradually larger scale-shaped bracts; spathes 5–7, pubescent abaxially, oral setae short, 1–3, reduced leaves small, pseudospikelets 2 or 3 (4) inside each spathe. Pseudospikelets 3–3.5 cm long, purple, lanceolate, florets 1–3, usually the top one mature; rachilla extended to be needle-shaped, internodes pubescent; glumes usually 1 or absent, lanceolate; lemma 1.8–2.1 cm long, glabrous, apex aristate; palea 1.5–1.8 cm long, nearly glabrous or the top with sparse hairs, keels conspicuous or not; lodicules ovate-lanceolate, 2.5–3 mm long; anthers ca. 1 cm long; stigmas 3, plumose. New shoots middle and late April. Flowering April to May.

Jiangsu, Zhejiang. Widely cultivated in villages of Zhejiang. Zone 8.

New shoots are delicious (Fig. 39).

a. *Phyllostachys iridescens* C. Y. Yao et C. Y. Chen f. *heterochroma* P. X. Zhang

Young culms bright yellow, sometimes lower internodes with red patches; old culms yellow, grooves green, occasionally with 1 or 2 green stripes; some foliage leaf blades with yellow-white stripes.

Zhejiang: Anji (Zhang 2006). Zone 8.

b. *Phyllostachys iridescens* C. Y. Yao et C. Y. Chen f. *luteosulcata* P. X. Zhang

Grooves of culms and branches yellow.

Zhejiang: Anji (Zhang 2017). Zone 8.

Phyllostachys kwangsiensis W. Y. Hsiung, Q. H. Dai et J. K. Liu

Culms 8–16 m tall, 4–10 cm thick; internodes ca. 35 cm long at the middle and basal culms, with dense pubescence when young, culm walls ca. 4 mm thick; white powder present above and below sheath scars; nodes without branches not prominent, lower than sheath scars. Culm leaf sheaths brown purple abaxially, with sparse dark brown spots, several stripes, and setae; auricles inconspicuous, oral setae long and purple; ligules purple red, truncate to arched, margins with 1–2-cm-long cilia; blades long lanceolate to ribbon-shaped, reflexed, crinkled, green purple, margins light yellow. Foliage leaves 1–4 per branchlet; oral setae developed; ligules prominent, margins with long cilia; blades 10–15 cm long, 0.8–1.5 cm wide, sparsely pubescent on both surfaces. Flowering branches spicate, up to 10 cm long, subtended by 4–6 gradually larger scale-shaped bracts; spathes 4–7, glabrous, oral setae usually 1 or 2, reduced leaves ovate-lanceolate to subulate; pseudospikelets 2 or 3 inside each spathe. Florets 2 or 3; rachilla internodes pubescent; glume 1, with sparse pubescence; lemma 2–2.5 cm long, with slender setae; palea shorter than lemma, the



Fig. 39 *Phyllostachys iridescens*. (a) Young culms; (b) new shoot; (c) bamboo grove

middle and upper parts with tiny setae abaxially; lodicules long elliptic diamond-shaped, ca. 4 mm long, pubescent; anthers 7–8 mm long; stigmas 2, plumose. New shoots April. Flowering April to May.

Mainly in Guangxi, also in Hunan and Guangdong. Naturally distributed in coniferous forests or broad-leaved forests. Zones 8–10.

New shoots are edible. Culms are firm and pliable, and internodes are long and symmetrical. Therefore, culms of this bamboo are suitable for weaving, buildings, and furniture (Fig. 40).

Phyllostachys lithophila Hayata

Culms 3–12 m tall, 4–12 cm in diameter; internodes 10–40 cm long, with white powder when young, gradually becoming dark green and with a ring of white powder below nodes, culm walls 4–8 mm thick. Culm leaf sheaths nearly leathery, light yellow, with dark-brown spots, sparsely setose abaxially; auricles tiny or inconspicuous, oral setae dark brown; ligules prominent, green with yellow, margins ciliate; blades drill-shaped or linear lanceolate, a little crinkled, light yellow green. Foliage leaves 2 or 3 per branchlet, sometimes 4 or 5; sheaths glabrous; auricles inconspicuous; ligules prominent; petioles 4–8 mm long; blades narrowly lanceolate, 8–20 cm long, 1.2–2 cm wide. New shoots April to May.

Taiwan. Zone 11.

This species was treated as a synonym of *Phyllostachys reticulata* (Ruprecht) K. Koch in *Flora of China* (Li et al. 2006; Fig. 41).

Phyllostachys makinoi Hayata

Culms 10–20 m tall, 3–8 cm in diameter; internodes up to 40 cm long, with slight white powder initially, pigskin-shaped pits or white microdots seen under hand lens, culm walls to 10 mm thick; nodes as tall as or taller than sheath scars. Culm leaf sheaths milk yellow abaxially, sometimes with green or brown, green ribs present, without white powder or a little white powdery, glabrous, with spots in different sizes; auricles and oral setae absent; ligules a little arched or truncate,



Fig. 40 *Phyllostachys kwangsiensis*. (a) New shoots; (b) bamboo grove

Fig. 41 *Phyllostachys lithophila*. (a) Bamboo grove



purple, margins with purple red long cilia; blades reflexed, ribbon-shaped, straight or a little crinkled, the middle part green, lateral parts orange or green yellow. Foliage leaves 2 or 3 per branchlet; auricles sometimes present, oral setae developed; ligules arched, usually lobed, margins with purple-red cilia; blades 8–14 cm long, 1.5–2 cm wide, pubescent abaxially at first. New shoots early May.

Taiwan, Fujian; introduced into Jiangsu and Zhejiang. Zones 9–10.

New shoots are edible. Culms are fine, firm, and tenacious and can be used for buildings, papermaking, furniture making, and flute making (Fig. 42).

a. *Phyllostachys makinoi* Hayata f. *wuyishanensis* S. S. You et H. L. Yu ex G. H. Lai

Culm leaf sheaths with light yellow stripes; foliage leaf blades with 1 or 2 golden stripes.

Zhejiang, Fujian (Lai 1999). Zones 9–10.

Phyllostachys mannii Gamble

Culms up to 10 m tall, 4–6 cm in diameter; internodes 30–42 cm long, without white powder when young, with sparse white pubescence, culm walls 3–7 mm thick;



Fig. 42 *Phyllostachys makinoi*. (a) New shoot; (b) bamboo grove

nodes as tall as or a little taller than sheath scars. Culm leaf sheaths dark purple or light purple, with light yellow or light yellow-green stripes and sparse purple-brown spots abaxially, upper margins with short cilia; auricles absent or present, purple and falcate, in different size, the larger one with purple and long setae; ligules truncate or a little arched, purple, with long pubescence abaxially, margins with short cilia; blades erect or open, light green yellow or purple green, triangular or triangular ribboned, straight or wavy to a little crinkled, margins milk yellow with purple. Foliage leaves 1 or 2 per branchlet; auricles tiny or inconspicuous, oral setae erect; blades 7.5–16 cm long, 1.3–2.2 cm wide. New shoots early May.

China: areas from the Yellow River to the Changjiang River, even to southeast Tibet. India. Introduced into the USA. Zones 7–9 (Fig. 43).

Phyllostachys meyeri McClure

Culms 5–11 m tall, 3–7 cm in diameter; internodes up to 35 cm long, with white powder when young, culm walls 3 mm thick; nodes a little prominent, taller or as tall as sheath scars. Culm leaf sheaths light brown purple, dark green or yellow brown, with white powder, brown spots and patches, and purple stripes abaxially, the base with white pubescence; auricles and oral setae absent; ligules prominent centrally, yellow green to light yellow brown, margins with short cilia; blades reflexed, narrowly ribbon-shaped, a little wavy or crinkled, purple green, lateral parts yellow. Foliage leaves 2 or 3 per branchlet; auricles and oral setae absent, or oral setae several; ligules extremely prominent; blades 7–13 cm long, 1–2 cm wide. Flowering branches spicate, 5.5–7 (10) cm long, subtended by 2–4 gradually larger scale-shaped bracts; spathes 5–8, glabrous or pubescent on one side, auricles and oral



Fig. 43 *Phyllostachys mannii*. (a) New shoot; (b) bamboo grove

setae absent, reduced leaves tiny, ovate lanceolate to subulate, pseudospikelets 1–3 inside each spathe. Pseudospikelets 3–3.5 cm long, lanceolate, florets 1 or 2; rachilla extending to be needle-shaped, internodes pubescent; glumes usually 1, lanceolate; lemma 2–2.5 cm long, glabrous, apex aristate; palea 1.8–2.3 cm long, nearly glabrous or only apex with pubescence; lodicules 3, elliptic lanceolate, 2.5 mm long; anthers 1–1.2 cm long; stigmas 3, plumose. New shoots late April.

Henan, Shaanxi, areas along the Changjiang River, and southern area of the Changjiang River. Introduced into the USA. Zones 8–9 (Fig. 44).

Phyllostachys nigella T. H. Wen

Culms up to 7 m tall, 4 cm in diameter; internodes 18–22 cm long, glabrous when young, with slight white powder; nodes as tall as or taller than sheath scars. Culm leaf sheaths brown or gray green, with dense spots of different sizes, especially dense at the top, and a little white powder and light brown setae abaxially; auricles and oral setae dark purple; ligules dark purple, ca. 2 mm tall, arched or truncate, margins with long cilia; blades dark green adaxially, dark purple abaxially, margins yellow, crinkled, reflexed. Foliage leaves 2–4 (6) per branchlet; auricles falcate, oral setae developed, 12 mm long; ligules extremely prominent, ciliate; blades 10–15 cm long, 13–19 mm wide. New shoots May.

Zhejiang: Fuyang. Zone 8.

New shoots are delicious. Culms are suitable for handles of farming tools, shed skeletons, or weaving (Fig. 45).



Fig. 44 *Phyllostachys meyeri*. (a) New shoot; (b) bamboo grove

Phyllostachys nigra (Loddiges ex Lindley) Munro

Culms 4–8 (10) m tall, up to 5 cm in diameter; internodes 25–30 cm long, with white powder and pubescence when young, light green initially, gradually with purple spots 1 year later, finally becoming purple black, glabrous; sheath scars pubescent; nodes prominent, taller or as tall as sheath scars. Culm leaf sheaths red brown, spotless or with tiny dark purple spots, especially dense at the top, slightly white powdery, and densely setose abaxially; auricles purple black, long elliptic or falcate or tiny, oral setae purple black; ligules arched, purple, margins with long cilia; blades erect or open, green, veins purple, triangular or triangular lanceolate, a little crinkled or wavy. Foliage leaves 2 or 3 per branchlet; auricles inconspicuous, oral setae deciduous; blades 7–10 cm long, 0.7–1 cm wide, the abaxial base with short pubescence initially, secondary veins 3–5 pairs. Flowering branches shortly spicate, 3.5–5 cm long, subtended by 4–8 gradually larger scale-shaped bracts; spathes 4–6, glabrous or a little pubescent, margins ciliate, auricles absent, oral setae several or absent, reduced leaves tiny, usually subulate or cusped, or large and ovate lanceolate, pseudospikelets 1–3 inside each spathe. Pseudospikelets lanceolate, 1.5–2 cm long, florets 2 or 3, rachilla pubescent; glumes 1–3, occasionally absent, the upper part usually with pubescence abaxially; lemma with dense pubescence, 1.2–1.5 cm



Fig. 45 *Phyllostachys nigella*. (a) New shoots; (b) bamboo grove

long; palea shorter than lemma; anthers 8 mm long; stigmas 3, plumose. New shoots late April.

Originally distributed in China, cultivated widely in China, wild bamboo forests present in adjacent areas of south Hunan and Guangxi. Introduced into India, Japan, Europe, and Americas. Zones 7–10.

This species is a famous ornamental bamboo, cultivated in ground or pots. Culms can be made into crafts, instruments, or walking sticks (Fig. 46).

a. *Phyllostachys nigra* (Loddiges ex Lindley) Munro var. *henonis* (Mitford) Stapf ex Rendle

Culms light green, up to 18 m tall; the top of culm leaf sheaths with few dark brown spots.

Southern areas of the Yellow River. Introduced into Japan and Europe. Zones 7–10.

New shoots are edible. Culms can be used for buildings, farming tools, furniture, rods, and weaving. The traditional Chinese medicine bamboo juice and bamboo shavings are usually made from this bamboo (Fig. 47).

b. *Phyllostachys nigra* (Loddiges ex Lindley) Munro var. *punctata* Bean

The 1-year-old culms dark green, basal internodes with light purple spots in the next spring, spots gradually present on upper internodes and darker, internodes purple black with dense tiny spots in the third year, powdery; foliage leaf blades a little thicker.



Fig. 46 *Phyllostachys nigra*. (a) Culms; (b) new shoots; (c) culm leaves; (d) bamboo grove



Fig. 47 *Phyllostachys nigra* var. *henonis*. (a) New shoots; (b) culm leaves; (c) bamboo grove

Zhejiang: Anji; Anhui: Guangde. Zone 8.

This variety was treated as a synonym of *Phyllostachys nigra* (Loddiges ex Lindley) Munro var. *nigra* (Vorontsova et al. 2016).

Phyllostachys nuda McClure

Culms 6–9 m tall, 2–4 cm in diameter, the base usually zigzag; internodes to 30 cm long, with white powder when young, especially dense below sheath scars, nodes dark purple, culm walls thick; nodes very prominent, taller than sheath scars. Culm leaf sheaths light green or light red brown, with purple stripes or purple-brown patches and white powder abaxially, verrucose setae present among veins; auricles and oral setae absent; ligules truncate, yellow green, margins with short cilia; blades reflexed, narrowly triangular or ribbon-shaped, a little crinkled when young, gradually straight, green with purple stripes. Foliage leaves 2–4 per branchlet; auricles and oral setae absent; blades 8–16 cm long, gray green abaxially, secondary veins 4 or 5 pairs. Flowering branches spicate, 5–9 cm long, the base subtended by 3–5 gradually larger-scale-shaped bracts; spathes 5–7, margins ciliate, auricles and oral setae absent, reduced leaves tiny, ovate lanceolate to subulate, 2 or 3 pseudospikelets inside each bracts, the basal one or two spathes usually sterile and deciduous. Florets 1 or 2, 2.7–3.5 cm long, narrowly lanceolate; rachilla extending to be needle-shaped, internodes with dense pubescence; glumes absent or 1; lemma 2.5–3 cm long, glabrous or margins with short cilia; palea 2–2.5 cm long, usually glabrous; lodicules 3, ca. 4 mm long; anthers ca. 1 cm long; stigmas 2 or 3, plumose. New shoots April to May. Flowering May.

Shaaxi, Jiangsu, Anhui, Zhejiang, Jiangxi, Fujian, Taiwan, Hunan; introduced into Shandong. Introduced into the USA. Zones 8–10.

New shoots are thick, called “stone shoots” in native area, and they are the major materials for making dried bamboo shoots (Fig. 48).

a. *Phyllostachys nuda* McClure f. *localis* Z. P. Wang et Z. H. Yu

The basal internodes of old culms with purple patches, even present all over the internode, making internodes purple.

Zhejiang: Anji. Zone 8 (Fig. 49).

b. *Phyllostachys nuda* McClure f. *varians* P. X. Zhang

New foliage leaves white with green stripes, gradually green white or light green.

Zhejiang: Anji (Zhang 2006). Zone 8.

Phyllostachys platyglossa Z. P. Wang et Z. H. Yu

Culms up to 8 m tall, 2.5 cm in diameter; internodes to 35 cm long, with white powder when young, dark green with purple, old culms green, the lower part purple; nodes as tall as sheath scars. Culm leaf sheaths maroon with light green, with sparse or dense brown spots and sparse setae abaxially, margins dark purple; auricles purple, ovate or falcate, oral setae long; ligules truncate or arched, purple, margins ciliate; blades reflexed, triangular ribbon-shaped, strongly crinkled, green purple or green, margins light green yellow. Foliage leaves 2 per branchlet; auricles inconspicuous, oral setae several; blades 7–14 cm long, 1.2–2.2 cm wide. New shoots middle April.

Zhejiang, Jiangsu. Zone 8.

New shoots are edible, and culms can be used for weaving (Fig. 50).



Fig. 48 *Phyllostachys nuda*. (a) Young culms; (b) new shoots; (c) culm leaf; (d) bamboo grove

a. *Phyllostachys platyglossa* Z. P. Wang et Z. H. Yu f. *leucodermis* G. H. Lai
Culm leaf sheaths light yellow, with light red or green stripes.
Anhui: Guangde (Lai and Hong 1995). Zone 8.

Phyllostachys primotina T. H. Wen

Culms up to 9 m tall, 7 cm in diameter; internodes short, 17–20 cm long, young culms green, glabrous, white powdery below nodes, whole internodes of old culms white powdery; nodes a little prominent; sheath scars glabrous. Culm leaf sheaths

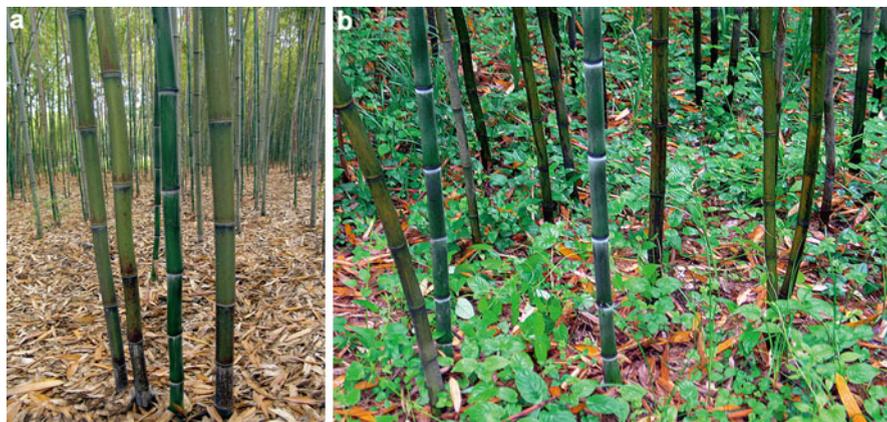


Fig. 49 *Phyllostachys nuda* f. *localis*. (a) Culms; (b) bamboo grove

light red initially, with sparse dark-brown tiny spots and dense light yellow setae, margins ciliate; auricles absent; ligules brown, prominent, extended laterally, margins with 12-mm-long fimbriate cilia; blades reflexed, crinkled, pubescent adaxially at the base, margins ciliate. Foliage leaves 3–6 per branchlet; sheaths 4.5–4.7 cm long, white setose abaxially, margins ciliate; auricles elliptic, oral setae radiate; ligules 2 mm tall, prominent, margins with 3–4-mm-long cilia, erect; blades broadly lanceolate, 9–17 cm long, 14–22 mm wide, green and glabrous adaxially, pubescent abaxially, apex aristate, the base blunt, petiole 5 mm long, secondary veins 4 or 5 pairs, transverse veins present. New shoots late February to April.

Zhejiang: Suichang. Zone 8.

This species was treated as a synonym of *Phyllostachys incarnata* T. H. Wen (Keng and Wang 1996; Li et al. 2006).

Phyllostachys prominens W. Y. Xiong

Culms up to 10 m tall, 7 cm in diameter; internodes to 22 cm long, without white powder or with slight white powder when young, terminals of internodes inflated like trumpet and nodes strongly prominent; nodes taller than sheath scars. Culm leaf sheaths light brown yellow, or with a little red or green abaxially, with spots in different sizes and sparse setae, margins brown; auricles purple or with green, falcate, oral setae long; ligules purple brown, margins with short cilia or sometimes mixed with long cilia; blades reflexed, ribbon-lanceolate, strongly crinkled, purple green or light green, margins orange or light yellow. Foliage leaves 2–4 per branchlet; auricles green, oral setae light yellow or green; ligules prominent, yellow green; blades 8.5–18 cm long, 1.3–2.2 cm wide, the abaxial base pubescent. Flowering branches spicate, 5–6 cm long, subtended by 3–5 gradually larger scale-shaped bracts; spathes 4–6, pubescent among veins, auricles tiny or absent, oral setae several, reduced leaves tiny, subulate or cusped, pseudospikelets 1 or 2 inside each spathe. Pseudospikelets lanceolate, ca. 2.5 cm long, florets 2, rachilla



Fig. 50 *Phyllostachys platyglossa*. (a) New shoot and young culms; (b) culm leaf; (c) bamboo grove

pubescent, the top florets usually sterile; glume absent or only 1; lemma 1.6–2 cm long, the upper part with short pubescence; palea as long as lemma, the upper part and keels with short pubescence; lodicules lanceolate or elliptic, 3.5–4 mm long; anthers 10 mm long; stigmas 3, plumose. New shoots May. Flowering May.

Zhejiang. Zone 8.

New shoots are edible. Culms are used for bamboo timber producing (Fig. 51).

Phyllostachys propinqua McClure

Culms up to 6 m tall, 4 cm in diameter; internodes ca. 20 cm long, the basal internodes dark purple with green, thickly white powdery when young, culm walls ca. 4 mm thick; nodes a little prominent, as tall as sheath scars. Culm leaf sheaths light red brown or yellow brown, with light or dark stripes and purple-brown spots and patches abaxially, the upper margins usually dried firstly to become light yellow; auricles and oral setae absent; ligules arched, dark brown, margins with short cilia; blades reflexed, lanceolate or linear lanceolate, straight, green, purple brown abaxially, yellow near margins. Foliage leaves 2 or 3 per branchlet; auricles and oral setae usually absent; ligules long arched, with short cilia; blades 7–16 cm long, 1–2 cm wide, pubescent along the middle rib. New shoots April to May.

Henan, Jiangsu, Anhui, Zhejiang, Hubei, Guizhou, Guangxi. Introduced into the USA. Zones 7–9.

New shoots are delicious. Culms can be used for weaving or for rods and handles (Fig. 52).

a. *Phyllostachys propinqua* McClure f. *lanuginosa* T. H. Wen

The lower part of culm leaf sheaths pale green, the upper part yellow brown with brown stripes, culm leaf blades crinkled. New shoots middle April.

Zhejiang, Anhui. Zone 8.



Fig. 51 *Phyllostachys prominens*. (a) New shoot; (b) young culms



Fig. 52 *Phyllostachys propinqua*. (a) Inflorescence; (b) new shoot; (c) new shoot and culms; (d) bamboo grove

Phyllostachys purpureociliata G. H. Lai

Culms 6–8 m tall, 2–4.5 cm in diameter, new culms bright green, blue green below nodes due to coverage of sparse white powder, glabrous, old culms green or gray green; internodes 25–35 cm long, a little inflated; nodes a little prominent; intranodes 2 mm tall. Culm leaf sheaths light red brown with green, sometimes with light green or green-brown stripes, with dense purple-brown patches abaxially, upper margins withered, glabrous; auricles and oral setae absent; ligules purple red, 2–3

mm tall, apex truncate or a little arched, with purple-red thick and long cilia; blades ribbon-shaped, green, with yellow margins, obviously crinkled (those on upper internodes nearly straight), reflexed. Foliage leaves 3 or 4 per branchlet; sheaths glabrous; auricles and oral setae developed, purple red; ligules protruding with purple red; blades linear lanceolate, 6–14 cm long, 13–20 mm wide, the abaxial base with long pubescence, secondary veins 5–6 (7) pairs. New shoots early April.

Anhui: She County (Lai 2013b). Zone 9.

Phyllostachys purpureomaculata W. T. Lin et Z. J. Feng

Culms 1.1–1.5 m tall, 4–6 mm in diameter, zigzag; internodes 5.5–14 cm long, with slight white powder, green with purple spots; nodes prominent, geniculate. Culm leaf sheaths glabrous, with purple spots abaxially, margins ciliate; auricles unequal, oral setae undeveloped; ligules 0.5 mm tall, arched, margins with white cilia; blades linear lanceolate, the base 4/9 as wide as the apex of sheaths. Foliage leaves 3 or 4 per branchlet; sheaths with white pubescence, margins ciliate; auricles oblong, oral setae radiate; blades 4–9.5 cm long, 0.8–1.5 cm wide, glabrous, secondary veins 5 or 6 pairs.

Guangdong: Guangning (Jiuzitang). Zone 10.

This species was treated as a synonym of *Phyllostachys heteroclada* Oliver in *Flora of China* (Li et al. 2006).

Phyllostachys robustiramea S. Y. Chen et C. Y. Yao

Culms up to 10 m tall, 6 cm in diameter; internodes to 26 cm long, purple green when young, white powdery, glabrous, old culms gray green, culm walls 3.5–4 mm thick; nodes prominent, taller than sheath scars. Culm leaf sheaths light green purple, green purple, or dark green with purple, the apex with milk white and light purple or purple green and purple radiate stripes, sparsely setose abaxially, occasionally with sparse spots; auricles undeveloped on lower culm leaves, tiny on upper culm leaves, oral setae several, green and erect; ligules light green, truncate or a little arched, 2–3 mm tall, margins with dense cilia; blades erect or reflexed, crinkled on the middle and lower culm leaves, lanceolate to ribbon-lanceolate, light green to dark green or dark brown, margins light yellow. Foliage leaves 2 or 3 per branchlet; auricles tiny, oral setae light green brown to light yellow, 4–6 mm long; blades 6.5–12 cm long, 1.1–2 cm wide. New shoots middle and late April.

Zhejiang: Anji; introduced into Hangzhou Botanical Garden. Zone 8.

New shoots are delicious. Culms are used for making handles or weaving (Fig. 53).

Phyllostachys rubromarginata McClure

Culms up to 10 m tall, 3.5 cm in diameter; internodes up to 35 cm or longer, without white powder when young, culm walls 4.5–6 mm thick; sheath scars with dense downward light yellow setae initially; nodes a little prominent, as tall as sheath scars. Culm leaf sheaths green or light green, spotless or with sparse spots in large new shoots abaxially, culm leaf sheaths on the basal internodes usually with purple or golden stripes, upper margins dark purple, the base with dense light yellow setae; auricles and oral setae absent; ligules truncate or a little concave, less than 1 mm tall,



Fig. 53 *Phyllostachys robustiramea*. (a) Flowering branches; (b) new shoot; (c) bamboo grove

dark purple, with long pubescence abaxially, margins with short cilia; blades open or a little reflexed, ribbon-shaped, straight, green purple, the base narrower than ligules. Foliage leaves 1 or 2 per branchlet; auricles undeveloped, oral setae erect, foliage leaves on young culms with small auricles and nearly radiate oral setae; ligules purple, margins ciliate; blades 6–17 cm long, 1.2–2.2 cm wide, pubescent or glabrous abaxially. Flowering branches spicate, ca. 5 cm long, subtended by 4 or 5 gradually larger scale-shaped bracts; spathes 5 or 6, auricles and oral setae absent or oral setae short and tiny, reduced leaves tiny, lanceolate to subulate, pseudospikelets (1) 2–4 inside each spathe, when 3 or 4 pseudospikelets, 1 or 2 of them small and undeveloped. Florets 1–4, subtended by 1 bracts; rachilla glabrous or pubescent; glumes 1 or 2, sometimes absent; lemma 1.5–2 cm long, pubescent; palea shorter than lemma, pubescent; lodicules long diamond, ca. 4 mm long; anthers 8–10 mm long; stigmas 3, plumose.

Henan, Anhui, Zhejiang, Jiangxi, Guangxi, Yunnan. Zones 8–10.

New shoots are delicious. Culms are suitable for weaving (Fig. 54).

***Phyllostachys rutila* T. H. Wen**

Culms up to 11 m tall, 3–5 cm in diameter; internodes to 24 cm long, with thin white powder or not when young, glabrous, nodes purple red; nodes prominent, taller than or as tall as sheath scars. Culm leaf sheaths brown red, with brown ribs



Fig. 54 *Phyllostachys rubromarginata*. (a) Culms; (b) new shoot

and diffuse spots abaxially, spots gradually denser upward, spots combined into patches in bigger shoots, sparsely white pubescent, margins without cilia; auricles dark brown, long elliptic to ovate, oral setae to 2 cm long; ligules arched or truncate, the middle usually mountain-shaped, the lateral parts usually extended downward in large culm leaves, margins ciliate; blades purple, narrowly lanceolate, open, crinkled or sometimes nearly straight. Foliage leaves 1 or 2 per branchlet; auricles and oral setae absent, or oral setae several, foliage leaves on young branches sometimes with developed auricles and oral setae; ligules 1–1.5 mm tall; blades 10–13 cm long, 1.5–2 cm wide. New shoots May.

Jiangsu, Zhejiang. Zone 8.

Culms are used for bamboo timber producing. New shoots are edible.

Phyllostachys sapida T. P. Yi

Culms 4–7 m tall, 1.2–3 cm in diameter; internodes 12–20 (26) cm long, a ring of white powder below nodes when young, culm walls 4–10 mm thick; nodes prominent like ridges, taller than sheath scars. Culm leaf sheaths glabrous abaxially, with dark purple spots, margins with short cilia; auricles and oral setae absent; ligules truncate or a little arched, 0.5–2 mm tall, light brown yellow, margins with short cilia; blades reflexed, straight, triangular to linear lanceolate, purple green or dark green. Foliage leaves 1 or 2 per branchlet; auricles and oral setae absent; ligules ca. 1 mm tall; blades 9–15 cm long, 1.4–1.8 cm wide, gray abaxially, secondary veins 4–5 pairs. New shoots late May.

Sichuan: Pengzhou (Yi 1991b). Montane yellow soil at the altitude 1500 m. Zone 9.

New shoots are edible.

This species was treated as a synonym of *Phyllostachys propinqua* McClure (Li et al. 2006) or *P. arcana* McClure (Vorontsova et al. 2016; Fig. 55).

Phyllostachys sulphurea (Carrière) Rivière et C. Rivière

Culms golden.

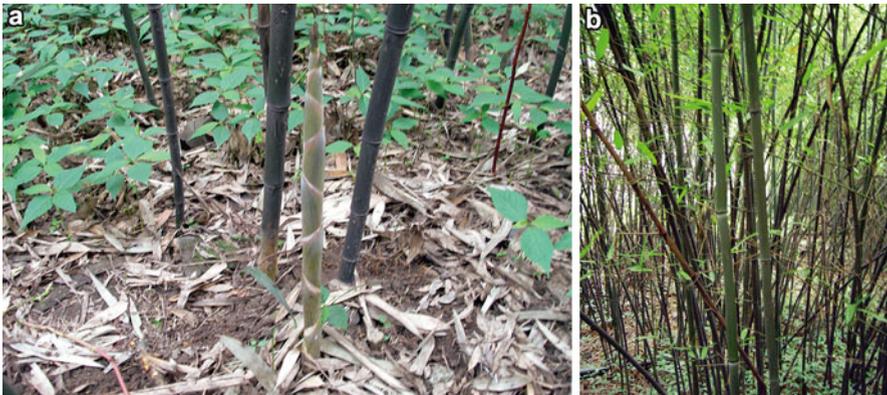


Fig. 55 *Phyllostachys sapida*. (a) New shoot; (b) culms

This species is cultivated in gardens of Jiangsu, Shanghai, and Zhejiang and is introduced into Japan and Europe. Zones 8–9 (Fig. 56).

a. *Phyllostachys sulphurea* (Carrière) Rivière et C. Rivière var. *viridis* R. A. Young

Culms 6–15 m tall, 4–10 cm in diameter; internodes 20–45 cm long, with thin white powder initially, glabrous, pigskin-shaped pits or white crystal dots seen under the magnifier, sulcate, or flat on the branching side, pith membranous, culm walls ca. 5 mm thick; sheath scars a little prominent; nodes inconspicuous on branchless nodes. Branches 2 on each node. Culm leaves deciduous, glabrous, milk yellow or green-yellow brown with gray, with green stripes and light brown or brown round spots or patches abaxially; auricles and oral setae absent; ligules arched or truncate, margins ciliate; blades reflexed, narrowly triangular to ribbon-shaped, green, margins orange, a little crinkled. Foliage leaves 2–5 per branchlet; sheaths nearly glabrous or with pubescence on the upper part; auricles and oral setae developed; blades 6–13 cm long, 1.1–2.2 cm wide. New shoots middle May.

Areas along the Yellow River and Changjiang River, Fujian. Zones 7–9.

Culms are used for buildings or farming tools. New shoots are a little bitter and edible (Fig. 57).

b. *Phyllostachys sulphurea* (Carrière) Rivière et C. Rivière f. *houzeauana* (C. D. Chu et C. S. Chao) C. S. Chao et S. A. Renvoize

Culms green with green-yellow groove.

Shandong, Zhejiang, Jiangsu, Jiangxi, Henan. Zones 7–8 (Fig. 58).

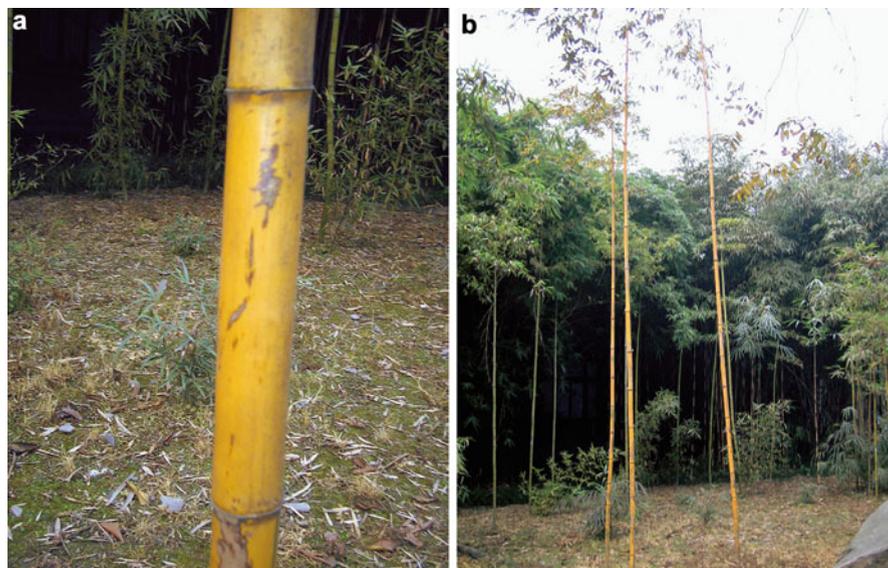


Fig. 56 *Phyllostachys sulphurea*. (a) Internode; (b) culms



Fig. 57 *Phyllostachys sulphurea* var. *viridis*. (a) New shoot; (b) bamboo grove

c. *Phyllostachys sulphurea* (Carrière) Rivière et C. Rivière f. ***robert young*** (McClure) T. P. Yi

Culms yellow green when culm leaves falling off initially, the basal internodes with several green stripes, internodes gradually becoming yellow with green stripes.

Zhejiang, Shanghai, Jiangsu (Yi et al. 2007). The USA (introduced). Zone 8 (Fig. 59).

d. *Phyllostachys sulphurea* (Carrière) Rivière et C. Rivière f. ***tricolor*** G. H. Lai

Culms yellow with green, grooves yellow, internodes with several light yellow and light green stripes.

Anhui: Guangde (Baidian Town) (Lai and Hong 1995). Zone 8 (Fig. 60).

e. *Phyllostachys sulphurea* (Carrière) Rivière et C. Rivière f. ***viridisulcata*** (P. X. Zhang) P. X. Zhang ex G. H. Lai

Young culms and branches gray green, gradually becoming golden, grooves green.

Zhejiang: Anji, Anhui: Guangde (Lai 2002). Zone 8 (Fig. 61).

Phyllostachys tianmuensis Z. P. Wang et N. X. Ma

Culms 7–8 m tall, 3–4 cm in diameter; internodes ca. 20 cm long, green when young, grooves on the branching side with yellow stripes; nodes as tall as sheath scars. Culm leaf sheaths light red brown, with brown spots, denser at the base, a little white powdery, the upper margins purple red, margins without cilia; auricles and oral setae absent; ligules arched or nearly truncate, dark purple brown, setose abaxially,



Fig. 58 *Phyllostachys sulphurea* f. *houzeauana*. (a) Young culms; (b) culms and branches; (c) new shoot; (d) culms

margins with short cilia; blades reflexed, long lanceolate or ribbon-shaped, crinkled above the middle parts, green, yellow near the margin. Foliage leaves 2 or 3 per branchlet; auricles and oral setae absent; ligules arched or nearly truncate; blades up to 15 cm long, ca. 2 cm wide, pubescent abaxially initially. New shoots late March to late April.

Zhejiang, Anhui. Zone 8 (Fig. 62).



Fig. 59 *Phyllostachys sulphurea* f. *robert* young. (a) Culms; (b) internode and branches; (c) new shoot; (d) bamboo grove



Fig. 60 *Phyllostachys sulphurea* f. *tricolor*. (a) Culms; (b) inflorescence; (c) bamboo grove

- a. *Phyllostachys tianmuensis*** Z. P. Wang et N. X. Ma f. *flexicaulis* G. H. Lai
Culms zigzag.
Anhui: Jixi (Shangtian) (Lai and Hong 1995). Zone 8.

Phyllostachys varioauriculata S. C. Li et S. H. Wu

Culms 3–4 m tall, 1.1–3 cm in diameter, ribs present on the surface; internodes up to 30 cm long, with slight white powder when young, pubescent, coarse, a ring of white powder below nodes; nodes prominent, taller than sheath scars. Culm leaf sheaths thinly papery, dark green purple, the top with milk white or light purple radiate stripes, with dense gray white setae and white powder abaxially, margins ciliate, sheaths on lower internodes with sparse brown spots at the abaxial top; auricles purple, falcate or tiny, or developed on one side, oral setae crinkled; ligules truncate or a little arched, dark purple, margins with purple or white cilia; blades erect, green purple, narrowly triangular or lanceolate, the base narrower than the top of sheaths. Foliage leaves 2 per branchlet; auricles tiny, oral setae deciduous; ligules yellow green; blades 5–11 cm long, 0.9–1.1 cm wide, gray green abaxially, the base pubescent. New shoots middle April, dark green purple.

Anhui: Shucheng; introduced into Zhejiang (Hangzhou). Zone 8 (Fig. 63).



Fig. 61 *Phyllostachys sulphurea* f. *viridisulcata*. (a) New shoot; (b) new shoot and culms; (c) culms

a. *Phyllostachys varioauriculata* S. C. Li et S. H. Wu var. *glabrata* G. H. Lai

Culm leaf sheaths glabrous abaxially, the base with long setae or nearly glabrous. Anhui: Ningguo (Meilin Town) (Lai and Hong 1995). Zone 8.

This variety was treated as a synonym of *Phyllostachys microphylla* G.H. Lai (Vorontsova et al. 2016).

Phyllostachys verrucosa G. H. Ye et Z. P. Wang

Culms ca. 3 m tall, 1.2 cm thick; internodes up to 16 cm long, with dense purple spots when young making culms light purple, darker above and below nodes, with

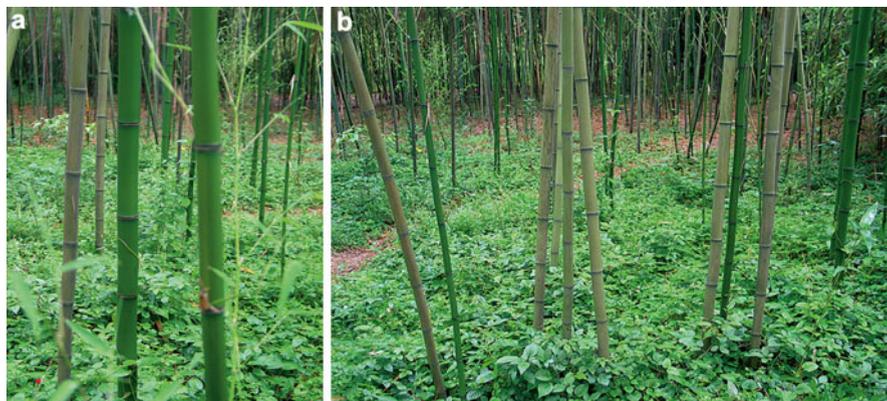


Fig. 62 *Phyllostachys tianmuensis*. (a) Culms; (b) bamboo grove



Fig. 63 *Phyllostachys varioauriculata*. (a) New shoot; (b) bamboo grove

white powder below nodes; sheath scars with white setae initially; nodes strongly prominent, taller than sheath scars. Culm leaf sheaths papery, with tiny spots or nearly spotless, dense verrucose setae present among veins, sometimes mixed with long setae, especially dense at the apex, the base with a ring of white long setae; auricles and oral setae absent; ligules to 5 mm tall, dark purple, apex arched, usually lobed, with white cilia; blades ribbon-shaped or narrowly lanceolate, reflexed, light purple yellow. Foliage leaves 2 or 3 per branchlet, auricles and oral setae absent; ligules 1–1.5 mm tall, apex arched, margins with short white cilia; blades 7.5–9.5 cm long, 8–11 mm wide, pubescent along the basal middle ribs abaxially. New shoots April.

Hunan: Changsha; cultivated in the bamboo garden of Hunan Academy of Forestry. Zone 8.

Phyllostachys violascens (Carrière) Rivière et C. Rivière

Culms 8–10 m tall, 4–6 cm in diameter; internodes 15–25 cm long, with dense white powder when young, the side opposite the groove usually a little swollen, sometimes with yellow stripes, culm walls ca. 3 mm thick; nodes purple brown initially, nodes as tall as sheath scars. Culm leaf sheaths brown green or light dark brown abaxially, white powdery initially, with spots in different sizes and purple stripes; auricles and oral setae absent; ligules arched, brown green or purple brown, the lateral parts extended and exposed, margins with slender cilia; blades reflexed, green or purple brown, ribbon-lanceolate, strongly crinkled or straight on upper culms. Foliage leaves 2 or 3 (6) per branchlet; auricles and oral setae absent; blades 6–18 cm long, 0.8–2.2 cm wide. New shoots May.

Jiangsu, Anhui, Zhejiang, Jiangxi, Hunan, Fujian; introduced into Chongqing, Sichuan. Zones 8–9.

This species is early shooting and has a high yield of new shoots. New shoots are delicious (Fig. 64).

a. *Phyllostachys violascens* (Carrière) Rivière et C. Rivière f. *aurantia* T. P. Yi

New shoots purple red, margins of culm leaf blades with light yellow stripes. Sichuan: Dujiangyan (Yi et al. 2015b). Zone 9.

b. *Phyllostachys violascens* (Carrière) Rivière et C. Rivière f. *chrysotherma* T. G. Chen

Culms and branches yellow, basal internodes with green stripes. Jiangsu: Changzhou (Chen 2013). Zone 8.

c. *Phyllostachys violascens* (Carrière) Rivière et C. Rivière f. *notata* (S. Y. Chen et C. Y. Yao) G. H. Lai

Internodes green, grooves yellow. New shoots middle April.

Zhejiang; introduced into Anhui (Guangde) and Sichuan (Pi County) (Lai 2012). Zone 8 (Fig. 65).

d. *Phyllostachys violascens* (Carrière) Rivière et C. Rivière f. *prevernalis* (S. Y. Chen et C. Y. Yao) G. H. Lai.

Culms with slight white powder, erect; internodes long, the length of internodes equal, the middle part of internodes obviously constricted; nodes strongly prominent, shooting earlier than *Phyllostachys violascens*.

Zhejiang; introduced into Jiangsu, Anhui, Sichuan (Lai 2012). Zone 8 (Fig. 66).

e. *Phyllostachys violascens* (Carrière) Rivière et C. Rivière f. *viridisulcata* (P. X. Zhang et W. X. Huang) G. H. Lai



Fig. 64 *Phyllostachys violascens*. (a) Young culms; (b) culm leaf and culms; (c) bamboo grove



Fig. 65 *Phyllostachys violascens* f. *notata*. (a) Internode; (b) bamboo plants

Culms and branches golden with several green stripes, grooves green; culm leaf sheaths a little yellow, some foliage leaves with several golden stripes.

Zhejiang: Anji; introduced into Sichuan (Lai 2013a). Zone 8.

Culms are yellow and green. This forma is a rare bamboo for ornamentation and an excellent shoot using species (Fig. 67).

Phyllostachys virella T. H. Wen

Culms up to 9 m tall, 5 cm in diameter; internodes to 30 cm long, pitted, pubescent when young; nodes prominent, taller than sheath scars; white powdery within intranodes and below nodes. Culm leaf sheaths gray green initially, with sparse spots abaxially, the upper margins purple, glabrous; auricles and oral setae absent; ligules dark purple, 1–2 mm tall, apex truncate, with ca. 5-mm-long purple cilia; blades triangular to ribbon-shaped, erect, the upper part crinkled, green, margins purple. Foliage leaves 2 or 3 per branchlet; margins of sheaths ciliate; auricles absent, oral setae 3–5, 8 mm long, erect; ligules 1 mm tall, truncate, margins with 1–2-mm-long cilia; blades 11–16 cm long, 2–2.5 cm wide, glabrous, margins smooth, or occasionally coarse. New shoots April to May.

Zhejiang: Dongyang. Zone 8.

Phyllostachys viridiglaescens (Carrière) Rivière et C. Rivière

Culms up to 8 m tall, 4–5 cm in diameter; internodes 21–25 cm long, with white powder when young; nodes taller than sheath scars. Culm leaf sheaths light purple

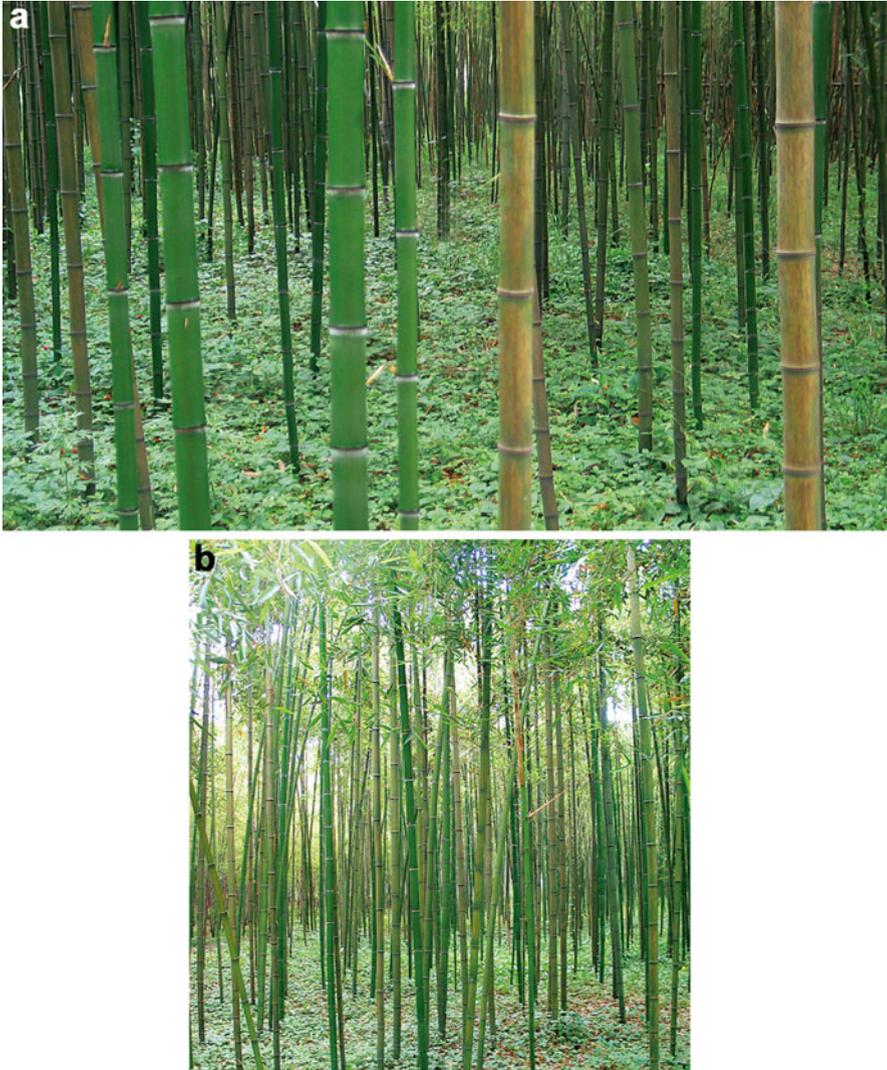


Fig. 66 *Phyllostachys violascens* f. *prevernalis*. (a) Culms; (b) bamboo grove

brown, sometimes a little green yellow, with dark brown spots and yellow setae abaxially; auricles purple brown or light green, narrowly falcate, oral setae up to 2 cm long; ligules extremely prominent, purple brown, margins ciliate; blades reflexed, ribbon-shaped, the upper part crinkled, yellow green centrally, margins orange. Foliage leaves 1–3 per branchlet; auricles inconspicuous, oral setae present; ligules prominent; blades 9.5–13.5 cm long, 1.2–1.8 cm wide. Flowering branches spicate, 5.5–8.5 cm long, subtended by 3–5 gradually larger scale-shaped bracts; spathes 4–7, pubescent, auricles tiny, oral setae present, or only several setae, or both absent, reduced leaves lanceolate, ovate to subulate, 3–5 spathes below flowering

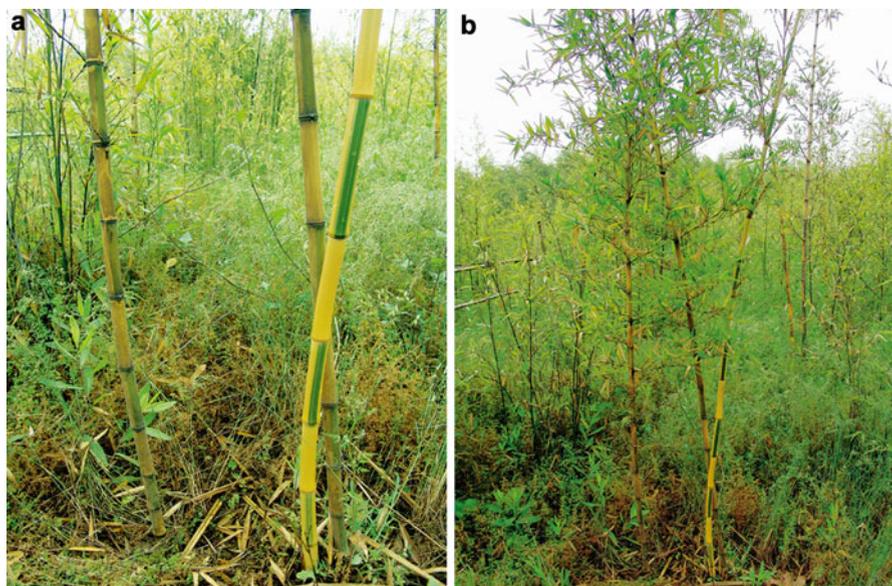


Fig. 67 *Phyllostachys violascens* f. *viridisulcata*. (a) Culms; (b) bamboo grove

branches sterile, the other spathes with 1 or 2 pseudospikelets. Florets 1 or 2; rachilla pubescent, extended to the back of palea of upper florets; glume absent or; lemma ca. 2.5 cm long, the upper part pubescent, apex aristate; palea shorter than lemma, the upper part pubescent; lodicules ca. 4 mm long, narrowly elliptic, ciliate; anthers ca. 12 mm long; stigmas 3, plumose. New shoots late April.

Jiangsu, Zhejiang, Anhui, Jiangxi. Introduced into France. Zone 8.

New shoots are edible. Culms can be used for handle tools (Fig. 68).

Phyllostachys vivax McClure

Culms 5–15 m tall, up to 8 cm in diameter; internodes 25–35 cm long, with white powder when young, culm walls ca. 5 mm thick; nodes prominent, a little taller than sheath scars, usually taller at one side. Culm leaf sheaths light yellow green with purple or light yellow brown, with dense black brown patches and spots abaxially, especially dense at the middle part, with slight white powder; auricles and oral setae absent; ligules arched, extended laterally, light brown to brown, margins ciliate; blades reflexed, ribbon-long-lanceolate, strongly crinkled, green abaxially, brown purple adaxially. Foliage leaves 2 or 3 per branchlet; auricles and oral setae present; ligules ca. 3 mm tall; blades a little pendulous, 9–18 cm long, 1.2–2 cm wide. Flowering branches spicate, subtended by 4–6 gradually larger scale-shaped bracts; spathes 5–7, glabrous or sparsely pubescent, auricles tiny, oral setae radiate, reduced leaves ovate lanceolate to narrowly lanceolate, up to 2.5 cm long, pseudospikelets 1 or 2 inside each spathe. Pseudospikelets 3.5–4 cm long, florets 2 or 3, pubescent; glume 1; lemma 2.7–3.2 cm long, sparsely pubescent; palea 2.2–2.6 cm long, nearly glabrous, 2-keeled; lodicules narrowly lanceolate, ca. 5 mm long; anthers 12 mm



Fig. 68 *Phyllostachys viridiglaucescens*. (a) Culms; (b) new shoot; (c) bamboo grove

long; ovary glabrous, stigmas 3. New shoots middle to late April. Flowering April to May.

Jiangsu, Zhejiang; cultivated in Fujian, Henan, and Shandong. Introduced into the USA. Zones 7–9.

New shoots are edible (Fig. 69).



Fig. 69 *Phyllostachys vivax*. (a) New shoot and culms; (b) bamboo grove

a. *Phyllostachys vivax* McClure f. *aureocaulis* N. X. Ma

Culms yellow, basal internodes with one or several green stripes.

Henan: Yongcheng; introduced into Zhejiang, Sichuan, Guangdong, and Guangxi. Zone 8.



Fig. 70 *Phyllostachys vivax* f. *aureocaulis*. (a) New shoots; (b) new shoots and young culms; (c) bamboo grove

This bamboo is giant and beautiful (Fig. 70).

b. *Phyllostachys vivax* McClure f. *huanwenzhu* J. L. Lu

Culms green with yellow grooves.

Henan: Yongcheng. This bamboo is resistant to -29°C . Zone 8 (Fig. 71).

c. *Phyllostachys vivax* McClure f. *luteolineata* T. P. Yi, J. Y. Shi et M. S. Sun

Culms green with light yellow stripes.

Fig. 71 *Phyllostachys vivax* f. *huanwenzhu*. (a) Internodes; (b) culms



Yunnan: Kunming, altitude 2000 m (Sun et al. 2014). Zone 9.

d. *Phyllostachys vivax* McClure f. *viridivittata* P. X. Zhang et G. H. Lai

Culms and branches yellow, grooves green, shorter than *Phyllostachys vivax*.

This form was found in the bamboo grove of *Phyllostachys vivax*. The living type is preserved in Anji Rare Bamboo Protection Base.

This form is suitable for ornamentation.

Zhejiang: Anji (Zhang and Lai 2009). Zone 8.

***Phyllostachys yunhoensis* S. Y. Chen et C. Y. Yao**

Culms 5–6 m tall, 3–4 cm in diameter; internodes 13–14 cm long, green when young, with white powder, color fading when old, with gray white powder; nodes as tall as sheath scars; intranodes 2 mm tall. Culm leaf sheaths dark green or brown yellow, with dense different-sized brown spots abaxially, especially dense at the top, glabrous, with slight white powder; auricles green, falcate or ovate, oral setae purple, 5 mm long; ligules arched, purple, margins with long cilia; blades ribbon-shaped, reflexed, crinkled, purple green or green, margins orange. Foliage leaves 2 (3) per branchlet; auricles and oral setae developed; ligules 1.5 mm tall; blades 9.5–14 cm long, 1.6–1.9 cm wide. New shoots middle April.



Fig. 72 *Phyllostachys yunhoensis*. (a) New shoots; (b) bamboo grove

Zhejiang: Yunhe. Cultivated sporadically. Zone 8.

New shoots are delicious. Culms are crisp and are suitable for use as a whole (Fig. 72).

Phyllostachys zhejiangensis G. H. Lai

Culms 7–9 m tall, 3–5 cm in diameter, basal internodes zigzag occasionally; internodes 21–30 cm long at the middle of culms; nodes a little to medium prominent, nodes taller than or as tall as sheath scars, intranodes 2.5–3 mm tall; young culms green or lower part of the internode bright green, nodes green, white powdery below nodes or on the upper part of internodes, glabrous; old culms pale green or pale white, white powdery. Culm leaf sheaths yellow brown with green, margins and apex brown, with medium to dense purple brown spots, especially dense at the top, glabrous, white powdery; auricles and oral setae absent; ligules 2.5–3.5 mm tall, brown or yellow brown initially, apex truncate or arched, margins shortly ciliate; blades lanceolate to ribbon-lanceolate, brown green with a little purple, margins light yellow green, the lower part straight, the upper part crinkled, or only apex crinkled later, reflexed. Foliage leaves 3 or 4 (5); sheaths glabrous; auricles ovate, oral setae developed, radiate, initially light green, later light brown, or deciduous; ligules prominent, 2–3 mm tall, initially light green, later light brown, arched; blades large, 11–18 cm long, 2–2.9 cm wide, dark green adaxially, pale green abaxially, pubescent at the abaxial base, secondary veins 5–6 pairs, transverse veins inconspicuous. New shoots late April.

Zhejiang (Hangzhou), introduced into Shanghai and Anhui (Lai 2013a). Zone 8.

Sect. *Heterocladae*

Z. P. Wang et G. H. Ye

Transverse surfaces of rhizomes with a ring of air canal. Intranodes ca. 5 mm tall. Culm leaf sheaths without any spots or patches; blades erect; the base as wide as ligules. Flowering branches capitate.

20 species.

Phyllostachys acutiligula G. H. Lai

Culms 2.0–2.5 m tall, 0.5–1.0 cm in diameter, geniculate; internodes 15–20 cm long, green with purple initially, with sparse white setae and white powder, a ring of white powder below nodes on old culms; nodes very prominent, taller than sheath scars. Culm leaf sheaths light green, the upper margins light yellow brown, spotless and stripes, with thick white powder, sheaths on the basal internodes with sparse deciduous setae, those on the upper internodes nearly glabrous, the base glabrous, margins with light yellow or brown cilia; auricles variable in size, sometimes tiny, ovate, formed by extension of blades, light brown, sometimes developed, short falcate to narrowly falcate, or only one auricle developed, the other one undeveloped, forming one big and one small or only 1 auricle, nearly horizontal, more or less amplexicaul, light purple red, oral setae short, 1–3, or absent, sometimes auricles and oral setae absent on thin culms; ligules 1–1.5 mm tall, light yellow green when fresh, sometimes with light purple, arched, those on lower internodes usually cambered, with white short cilia; blades triangular to long triangular, erect, boat-shaped, not crinkled, green with purple on margins, the base not shrunk as wide as ligules. Foliage leaves 1 or 2 per branchlet; auricles inconspicuous, oral setae several, straight; ligules not prominent; blades hard, 8–11 cm long, 15–20 mm wide, the abaxial base with pubescence, secondary veins 6–7 pairs, transverse veins inconspicuous. New shoots middle to late April.

South Anhui (Lai 2013b). Zone 9.

Phyllostachys atrovaginata C. S. Chao et H. Y. Chou

Culms 7–8 m tall, 3–5 cm in diameter; internodes to 31 cm long, with slight white powder when young; nodes and sheath scars prominent moderately. Culm leaf sheaths dark green abaxially, the lower part with purple red sometimes, yellow brown near the margins, with purple-black stripes, or sheaths dark green, stripes purple, glabrous or sparsely setose; auricles and oral setae absent, occasionally with sparse oral setae; the lateral of ligules not prominent, green brown, truncate, margins with short cilia; blades erect, triangular or triangular lanceolate, dark green, wavy or a little crinkled, margins purple red. Foliage leaves 2 or 3 per branchlet; auricles and oral setae inconspicuous; ligules with tomentum; blades 5.5–13 cm long, 1–1.6 cm wide. New shoots late April to early May.

Zhejiang. Introduced into the USA. Zone 8.

Culms are used for bamboo timber producing (Fig. 73).



Fig. 73 *Phyllostachys atrovaginata*. (a) New shoot; (b) new shoot and culms

Phyllostachys aurita J. L. Lu

Culms 3.5 m tall, 2.5 cm in diameter; internodes 21–31 cm long, with thin white powder when young, glabrous, culm walls ca. 2 mm thick; sheath scars and branch nodes with dense rust setae; nodes prominent, taller than sheath scars. Culm leaf sheaths green abaxially, as long as or longer than internodes, with a little white powder, spotless, margins with dense dark purple cilia at the middle and upper part, the base with clustered rust setae; auricles falcate, oral setae long; ligules truncate or a little arched, brown, margins with long cilia; blades erect, triangular, straight or wavy, green with a little purple, the base as wide as ligules. Foliage leaves 2 or 3 per branchlet; auricles tiny to nearly absent, oral setae long; blades 6–13 cm long, 0.8–1.5 cm wide, the abaxial base with dense pubescence, the other part with sparse pubescence. New shoots middle to late April.

Zhejiang, Henan, Hubei, Guangxi, and Guizhou. Zones 8–9.

This species was treated as a synonym of *Phyllostachys rubromarginata* McClure in *Flora of China* (Li et al. 2006; Fig. 74).

Phyllostachys cantoniensis W. T. Lin

Culms ca. 1 m tall, 0.3–0.5 cm in diameter; internodes 9–15 cm long, with white pubescence and purple spots, sulcate on the branching side, white powdery below nodes; sheath scars with setae; nodes a little prominent or prominent. Culm leaf sheaths with white and short pubescence abaxially, the base with dense setae,

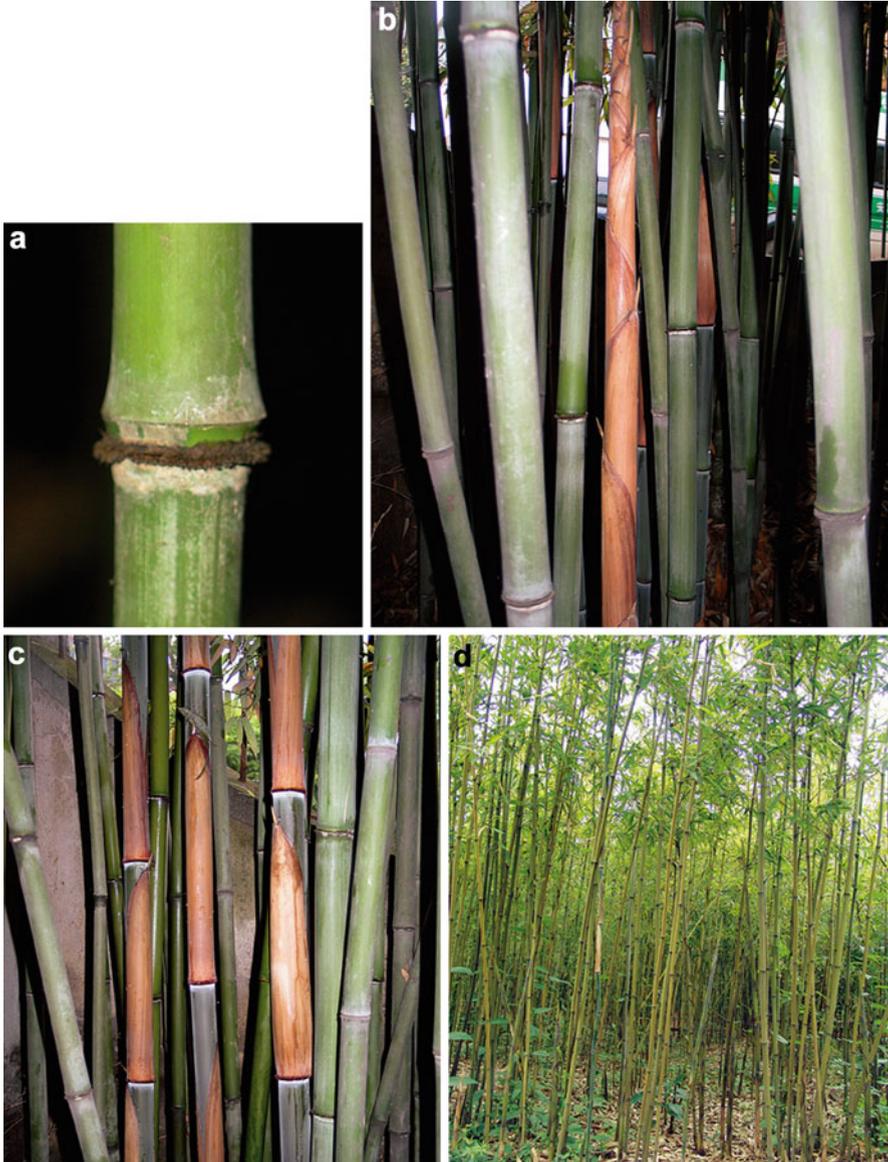


Fig. 74 *Phyllostachys aurita*. (a) Node; (b) new shoot and culms; (c) culm leaves; (d) bamboo grove

without light yellow stripes, margins densely ciliate; oral setae absent; ligules ca. 1 mm tall, the apex arched, margins with white pubescence; blades lanceolate, erect or reflexed, the base extended forming two inconspicuous auricles, as wide as the apex of sheaths. Foliage leaves 2 per branchlet, seldom 3; sheaths with white pubescence, without cilia; auricles narrow, with white and short pubescence

abaxially, oral setae several, short; ligules truncate, very short; blades 4–10 cm long, 0.7–1.4 cm wide, white pubescent on both surfaces, secondary veins 5 pairs.

Guangdong: Guangzhou (Huangpodong). The foot of hills. Zone 10.

This species was treated as a synonym of *Phyllostachys nidularia* Munro (Li et al. 2006) or *P. heteroclada* Oliver (Vorontsova et al. 2016).

Phyllostachys carnea G. H. Ye et Z. P. Wang

Culms ca. 2.5 m tall, 1.5 cm in diameter; internodes 22 cm long, with white powder when young, especially dense below nodes, with downward setae; nodes strongly prominent. Culm leaf sheaths green with flesh pink abaxially, white powdery, glabrous, spotless; auricles and oral setae absent; ligules flesh pink, 1–1.5 mm tall, prominent centrally, margins with short cilia; blades erect, tiny, linear lanceolate, the base narrowed, flesh pink. Foliage leaves 2 or 3 per branchlet; oral setae deciduous; ligules arched or truncate, margins ciliate; blades small, 6–9 cm long, 0.6–1.2 cm wide, glabrous. New shoots May.

Hunan: Zhangjiajie. Under slope forests at the altitude 800 m. Zone 9.

Phyllostachys corrugata G. H. Lai

Culms 4 m tall, 3 cm in diameter, young culms dark green, white pubescent, and densely white powdery; old culms green; nodes prominent, sometimes inclined (especially sheath scars, intranodes unequal in height), nodes taller than sheath scars; internodes 18–21 cm long, intranodes 4–5 mm tall. Culm leaf sheaths light yellow green, occasionally with light white stripes, spotless or sometimes apex with several light brown patches, sparsely setose abaxially, margins densely ciliate; auricles and oral setae absent; ligules short, 1–2 mm tall, light yellow, apex truncate or arched, margins with white cilia; blades ribbon-shaped, the base 1/3 as wide as ligules, crinkled, reflexed, and green purple. Foliage leaves 2 or 3 per branchlet; sheaths pubescent, margins ciliate, auricles inconspicuous or tiny, oral setae erect or radiate, ligules short; blades lanceolate, 6–12 cm long, 10–15 mm wide, the abaxial base pubescent; secondary veins 4 or 5 pairs. New shoots late March.

Anhui: Guangde (Lai 2013b). Zone 9.

Phyllostachys funhuaensis (X. G. Wang et Z. M. Lu) N. X. Ma et G. H. Lai

Culms taller than *Phyllostachys heteroclada* Oliver, up to 6 cm in diameter, young culms light green with a little yellow, a ring of white powder below nodes, the other parts of internodes without white powder or little; nodes and sheath scars prominent. Culm leaf sheaths light green when fresh, the top with conspicuous milk white radiate stripes mixed with light purple red, sheaths on the lower internodes with conspicuous stripes; auricles nearly undeveloped or tiny; blades green with purple red. Foliage leaf blades larger than *P. heteroclada*. Bracts of pseudospikelets and lemma light purple red.

Zhejiang: Fenghua (Louyan: Nijiacun Village) (Lai 2001). Altitude ca. 480 m. Zone 9.

The yield of new shoots is very high, and bamboo shoots are delicious. Culms can be used for shed skeletons, tools, and weaving.

Phyllostachys heteroclada Oliver

Culms up to 8 (10) m, 4 (5.5) cm in diameter; internodes up to 38 cm long, with white powder and sparse short pubescence when young; nodes as tall as sheath scars or taller than sheath scars when culms thin. Culm leaf sheaths green with purple or green, white powdery abaxially, glabrous or with sparse short pubescence, margins ciliate; auricles ovate, elliptic or sometimes short falcate, light purple, oral setae several, auricles and oral setae absent on small culm leaves or only with oral setae; ligules with short cilia; blades erect, triangular or narrowly long triangular, green, green purple or purple, boat-shaped, involute. Foliage leaves (1) 2 (3) per branchlet; auricles absent, oral setae erect; blades 5.5–12.5 cm long, 1–1.7 cm wide, the abaxial base with pubescence. Flowering branches densely capitate, (16) 18–20 (22) mm long, usually growing laterally on old branches, subtended by 4–6 gradually larger scale-shaped bracts, when growing terminally on young leafy branches, subtended by 1 or 2 spathes, the top of spathes with ovate or oblong-ovate reduced leaves, when growing on old branches, flowering branches subtended by 2–6 spathes, papery or thinly leathery, broadly ovate or wider, gradually narrower apically, herbaceous, 9–12 mm long, apex with short pubescence, margins with cilia, the other part glabrous or nearly glabrous, apex aristate, pseudospikelets 4–7 inside each spathe, sometimes reduced to one; pseudospikelets subtended by bracts in different shapes and sizes, up to 12 mm long, more or less membranous, keeled abaxially, apex tapering, apex and keels with long pubescence, lateral veins 2 or 3 pairs. Pseudospikelets up to 15 mm long, florets 3–7, the upper florets sterile; rachilla internodes 1.5–2 mm long, rodlike, glabrous, apex nearly truncate; glumes 0–3, bract-like, sometimes the upper one similar to lemma; lemma lanceolate, 8–12 mm long, the upper or middle parts pubescent, veins 9–13, keels present on the top abaxially, apex tapering; palea shorter than lemma, with short pubescence except the base; lodicules diamond ovate, ca. 3 mm long, fine veins 7, margins ciliate; anthers 5–6 mm long; style ca. 5 mm long, stigmas 3, sometimes 2, plumose. New shoots May. Flowering April to August.

The basin of the Yellow River and south by the river. Wild bamboo forests occur in those areas. Zones 8–9.

New shoots are edible. Culms are used for bamboo timber producing (Figs. 75 and 76).

a. *Phyllostachys heteroclada* Oliv. f. ***denigrata*** (T. P. Yi et H. R. Qi) T. P. Yi et H. R. Qi

1-year-old culms light green, gradually becoming purple black, rhizomes sometimes purple black.

Chongqing: Liangping (Yi 1993). Zone 9 (Fig. 77).

b. *Phyllostachys heteroclada* Oliver f. ***flaviculmis*** P. X. Zhang, X. X. Chen et G. H. Lai

Culms and branches yellow, occasionally with several green stripes; foliage leaf blades occasionally with yellow white stripes.

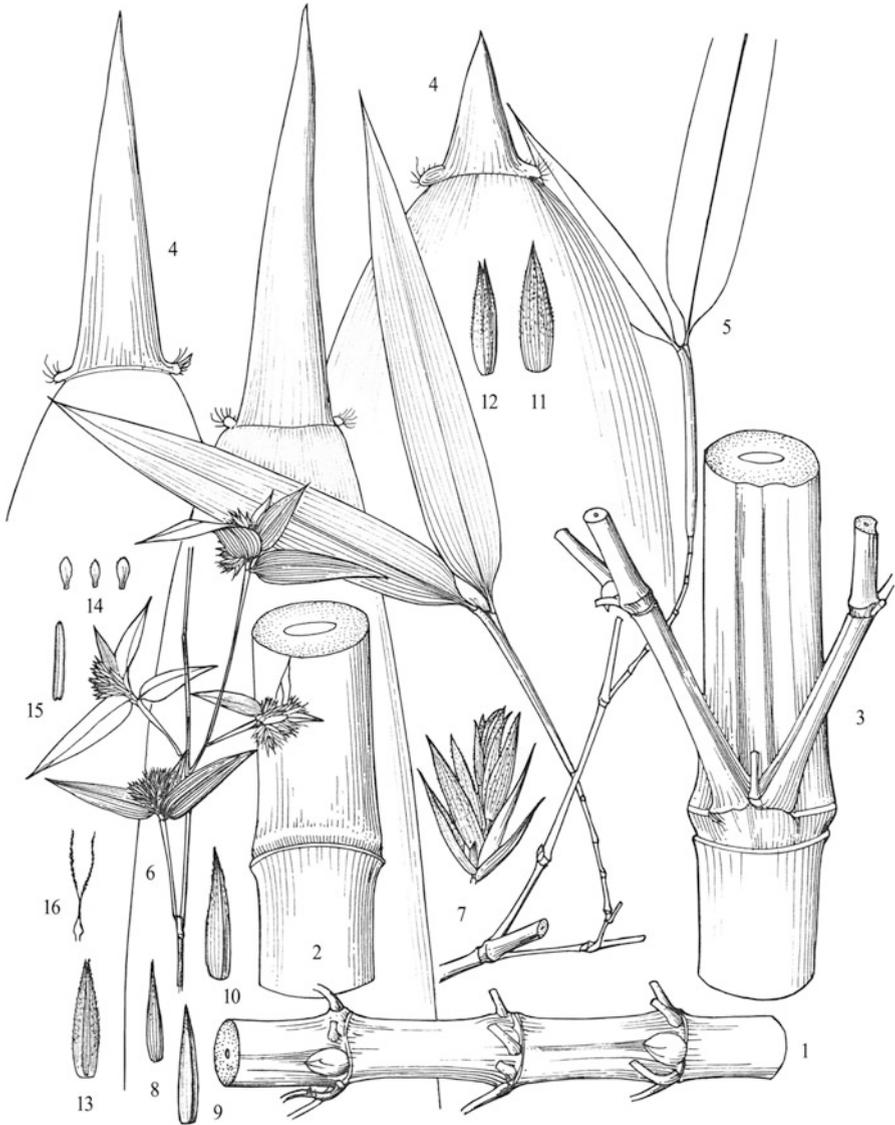


Fig. 75 *Phyllostachys heteroclada*. 1. Rhizome; 2. part of culm, showing node; 3. part of culm, showing branches; 4. culm leaf; 5. branchlets with foliage leaves; 6. flowering branches; 7. pseudo-spikelet, showing basal bracts with buds; 8. the first bract; 9. the second bract; 10. glume; 11. lemma; 12. abaxial surface of palea; 13. adaxial surface of palea; 14. lodicules; 15. anther; 16. pistil (adapted from Yi et al. 2008)

This form can be cultivated for ornamentation.
Zhejiang: Anji (Zhang et al. 2014). Zone 8.



Fig. 76 *Phyllostachys heteroclada*. (a) Flowering branches; (b) new shoot; (c) bamboo grove

c. *Phyllostachys heteroclada* Oliver f. *purpurata* (McClure) T. H. Wen
 Culm leaf blades purple red.
 Guangdong. Zone 10 (Fig. 78).



Fig. 77 *Phyllostachys heteroclada*. (a) Culms; (b) flowering branches; (c) bamboo grove

d. *Phyllostachys heteroclada* Oliver f. *solida* (S. L. Chen) Z. P. Wang et Z. H. Yu

Culm walls thick, internodes solid or nearly solid in slender culms, the upper internodes a little flat and quadrate on the branching side, the basal or lower one or two internodes sometimes extremely shortened as the beads of an abacus.

Jiangsu, Anhui, Zhejiang, Hunan. Introduced into the USA. Zones 8–9 (Fig. 79).



Fig. 78 *Phyllostachys heteroclada* f. *purpurata*. (a) Culms and new shoot; (b) culms; (c) bamboo grove

Phyllostachys hirtivagina G. H. Lai

Culms 1–2.5 (5) m tall, 1–1.8 (3) cm in diameter, some culms zigzag at the base or geniculate; internodes 20–25 cm long, a little purple initially, with dense white powder, usually glabrous, green or yellow green when old; nodes a little prominent; intranodes 3–4 mm tall. Branches nearly vertical to the culm. Culm leaf sheaths red



Fig. 79 *Phyllostachys heteroclada* f. *solida*. (a) Culms; (b) new shoot; (c) bamboo grove

brown with green or light green brown with red on small culms, without milk white stripes and spots abaxially, densely light brown setose and white powdery, the base

glabrous, margins with light brown cilia; auricles present, ovate, short falcate or falcate, purple, oral setae purple, and crinkled; ligules 2–2.5 mm tall, light yellow green with purple or green brown, truncate, or a little arched, with white short cilia; blades triangular to long triangular, purple, erect, boat-shaped, not crinkled, and the base a little narrowed and as wide as the ligule. Foliage leaves (1) 2 or 3 (4) per branchlet; sheaths glabrous; auricles inconspicuous, oral setae several, and erect; ligules inconspicuous or a little prominent; blades ribbon-lanceolate, 5–10 cm long, 1–1.5 cm wide, the adaxial surface dark green, the abaxial surface gray green, the base with long pubescence abaxially, secondary veins 5–6 pairs. Inflorescence nearly capitate or short spicate, pseudospikelets 6–12; palea and lemma pubescent except the base; stamens 3, anthers light yellow. New shoots late April. Flowering April to May.

South Anhui (Lai 2013b). Zone 9.

a. *Phyllostachys hirtivagina* G. H. Lai f. *luteovittata* G. H. Lai

Internodes green, gray green, or yellow green, grooves yellow; the color of culm leaf sheaths lighter than *Phyllostachys hirtivagina*.

South Anhui (Jingde), under the forest of *Pinus massoniana* (Lai 2013a). Zone 9.

***Phyllostachys hispida* S. C. Li, S. H. Wu et S. Y. Chen**

Culms 3.5–5.5 cm tall, 1–1.5 cm in diameter, the second internode 10–11 cm long, the middle internodes 20–31 cm long, young culms dark green with dark purple, white powdery, glabrous, sometimes white setose, a little coarse; old culms gray green or yellow green, a little dirty (left by white powder), a ring of white powder below nodes, ridges conspicuous on the surface of the internode; culm walls 3 mm thick; nodes taller than sheath scars, sheath scars dark purple initially, gradually green, intranodes 3–4 mm tall. Culm leaf sheaths papery, light yellow brown, with yellow white stripes, apex of young culm leaf sheaths light purple red, but later faded, margins light yellow initially and later like withered, spotless or those on basal internodes with sparse brown spots, densely white setose and white powdery abaxially; auricles and oral setae usually absent, or present on culm leaves of the upper internodes, auricles linear falcate, initially light yellow brown with green purple, oral setae several, light purple brown, crinkled; ligules a little prominent, 1.5–2.5 mm tall, light yellow brown or light purple when fresh, light brown when dry, truncate to arched, lobed, white ciliate; blades erect, narrowly triangular to narrowly lanceolate, green with purple, the base 2/3 as wide as the ligule, initially crinkled, later straight. Foliage leaves 1 or 2 (3) per branchlet; sheaths pubescent on the upper part; auricles inconspicuous, oral setae erect, initially light yellow brown, later brown, deciduous; ligules inconspicuous; petioles 2–3 mm long; blades ribbon-lanceolate, 7.5–14 cm long, 11–19 mm wide, gray green and pubescent at the base abaxially, secondary veins 4 or 5 pairs, transverse veins inconspicuous, margins serrate on one side and entire on the other side. Inflorescence spicate or capitate, lateral or terminal, subtended by 4 or 5 gradually larger bracts, bracts initially light purple, later brown, the largest one 11–14 mm long, apex aristate, veins 4 or 5 pairs, transverse veins inconspicuous, glabrous; auricles and oral setae absent, margins with white cilia. Pseudospikelets 1–3 inside each bract, sessile; glumes 2, the first

one narrowly lanceolate, apex tapering, upper margins ciliate, ribs present abaxially, 1-keeled, the second one membranous, ovate lanceolate, apex tapering, ribs present, 1-keeled, margins without cilia. Floret 1 per pseudospikelet; lemma 13–16 mm long, apex tapering, light green, pubescent on the middle and upper part, veins conspicuous, transverse veins inconspicuous; palea 12–16 mm long, pubescent on the middle and upper part, margins ciliate, 2-keeled, apex bifid, slightly light purple; lodicules 3, membranous, nearly linear, 4 mm long; stamens 3, filaments white, 16–21 cm long, anthers initially yellow green, later light yellow white, 5–6 mm long; ovary long subulate, light yellow green, style 10 mm long, stigmas 3, plumose. Caryopses unknown. New shoots middle April. Flowering April to May.

Anhui: Guangde; Jiangsu: Nanjing, Suzhou; Zhejiang: Hangzhou Botanical Garden (Li et al. 1982). Zone 8.

This species was treated as a synonym of *Phyllostachys varioauriculata* S. C. Li et S. H. Wu in *Flora of China* and *World Checklist of Bamboos and Rattans* (Li et al. 2006; Vorontsova et al. 2016).

a. *Phyllostachys hispida* S. C. Li, S. H. Wu et S. Y. Chen var. *glabrivagina* G. H. Lai

Culm leaf sheaths and foliage leaf sheaths glabrous.

Anhui: Guangde (Lai 2013c). Zone 8.

Phyllostachys lofushanensis Z. P. Wang, C. H. Hu et G. H. Ye

Culms more than 3 m tall, more than 2 cm in diameter; internodes with white powder when young, especially dense below nodes; sheath scars shorter than nodes, with dense brown setae initially, persistent on 2- or 3-year-old culms; nodes strongly prominent like the mouth of a trumpet. Branches spreading and dominant branches strong. Culm leaf sheaths with setae at the base abaxially, spotless, the upper parts a little narrowed to be arch-shaped, making the top quadrate; auricles oblong, upward, oral setae present; ligules truncate or a little concave, margins with white short cilia; blades ribbon-shaped, erect, straight or wavy. Foliage leaves 2 per branchlet, seldom 1; auricles undeveloped, oral setae several, erect; ligules truncate, nearly glabrous; blades 7–10 cm long, 1–1.6 cm wide, glabrous. New shoots May.

Guangdong: Mount Luofu. Montane forests at the altitude 400 m. Zone 10.

New shoots are edible.

Phyllostachys longiciliata G. H. Lai

Culms 4–5.5 cm tall, 1–1.8 cm in diameter, the part without branches erect or nearly erect, the part with branches zigzag, or the whole culm geniculate; internodes 26–37 cm long; nodes prominent, or one side prominent and geniculate, nodes taller than or as tall as sheath scars, intranodes 4–6 mm tall, branches nearly vertical to the culm; young culms dark green, a ring of white powder below nodes, the other part of internodes thinly white powdery, densely white setose or nearly glabrous; old culms green or yellow green, without white powder. Culm leaf sheaths green or light green, spotless, purple-veined, apex purple, margins initially light yellow brown or brown, later withered like, with gray white long cilia, thinly white powdery abaxially, the

basal sheaths with sparse gray white setae abaxially, glabrous at the base; auricles and oral setae absent or auricles tiny; ligules arched, 2–3 mm tall, light brown green, lobed, ciliate; blades narrowly triangular to lanceolate, the base narrower than the ligule, purple green or the lower part green and the upper part purple green, straight, erect. Foliage leaves 2–4 per branchlet; sheaths densely pubescent, margins without cilia; auricles inconspicuous or absent; oral setae several, initially yellow green, later light brown, erect, persistent, or deciduous; ligules 0.5 mm, light green and later light brown, truncate; blades broadly lanceolate, 8–12.5 (18) cm long, 1.5–2.1 (2.6) cm wide, glabrous adaxially, gray green or light green abaxially, glabrous or pubescent at the base abaxially, secondary veins 5 or 6 pairs, transverse veins inconspicuous. New shoots late April.

Anhui: Guangde (Lai 2013a). Zone 8.

Phyllostachys microphylla G. H. Lai

Culms 1.5–3.2 m tall, 0.7–2.0 cm in diameter; nodes prominent moderately; internodes 15–22 cm long, initially purple green or dark purple, densely white powdery, glabrous, or the upper of internode setose; intranodes 4 mm tall. Culm leaf sheaths light purple brown, apex with milk white stripes abaxially, spotless, white powdery, glabrous or basal sheaths sparsely setose, sparsely brown setose at the base, margins ciliate; auricles variable, culm leaves of thin culms or those on the basal and upper parts of culms without auricles, those on the middle parts of culms with 1 or 2 auricles, sometimes one big and one small, falcate, oral setae several or absent; ligules 3 mm tall, arched, white ciliate; blades narrowly triangular to lanceolate, erect, not crinkled or a little crinkled, the base 2/3 as wide as ligule. Foliage leaves 2–4 per branchlet; sheaths hairy; auricles inconspicuous; oral setae several, erect; ligules not prominent; blades small, 4–6 cm long, 8–10 mm wide, pubescent at the abaxial base. Pseudospikelets (2) 3–7 (8), shortly spicate or nearly capitates, lateral, subtended by several gradually larger bracts; the largest bract 12–15 mm long, apex aristate, glabrous, veins 9–13, auricles and oral setae absent. Pseudospikelets 4–8 per bract, sessile; glume 1, 13–15 mm long, nearly glabrous, keel 1. Florets 1–3; lemma 13–17 mm long, apex tapering, veins 5–7, pubescent above the middle part; palea 12–15 mm long, 2-keeled, pubescent above the middle part, apex bifid; lodicules 3, membranous, narrowly ovate, margins without cilia; stamens 3, filaments white; anthers 5–6 mm long, yellow; ovary coniform, style ca. 4 mm long, stigmas 3, plumose. New shoots middle April. Flowering May.

Shandong: Laoshan; Jiangsu: Lianyungang; Anhui: Jinzhai; Zhejiang: Anji (Lai 2013c). Zones 7–9.

Phyllostachys nidularia Munro

Culms up to 10 m tall, 5 cm in diameter; internodes up to 30 cm long, with white powder when young; sheath scars with brown setae initially; nodes as tall as or a little taller than sheath scars. Culm leaf sheaths green abaxially, the upper part with milk white stripes and white powder, the middle and basal parts with purple stripes, densely brown setose at the base, gradually sparse upward, margins with cilia;

auricles formed by lateral extension of blades at the base, triangular or falcate, purple, oral setae several; ligules a little arched, purple brown, margins with cilia; blades erect, triangular, green purple, involute. Foliage leaves 1 (2) per branchlet, blades downward; auricles and oral setae tiny or absent; ligules short; blades 4–13 cm long, 1–2 cm wide, sometimes the base of the abaxial surface pubescent. Flowering branches densely capitate, 1.5–2 cm long, subtended by 2–4 gradually larger scale-shaped bracts, the lower ones ovate, the upper ones narrow, papery, 16 mm long, margins ciliate, the other part glabrous or pubescent at lateral parts and the top, reduced leaves nearly absent or blade-shaped, pseudospikelets 2–8 inside each spathe; bracts of pseudospikelets narrow, size variable or not, membranous, veins 5–7, keels present, the upper part and keels with long pubescence. Florets 2–5, the upper 1 or 2 florets sterile; rachilla internodes a little rod like, the upper flat and with several long pubescence, the apex truncate; glume 1, seldom 3, the shape, size, and texture like the bracts, up to 15 mm long; lemma herbaceous, with dense and long setae, apex aristate, veins many, the first lemma 10–12 mm long, up to 16 mm long; palea shorter than lemma, setose, 6–11 mm long; anthers 4.5–5.5 mm long; styles 3, sometimes 2 or 1, plumose. New shoots April to May. Flowering April to August.

Shaanxi, Henan, south of Changjiang River. Large areas of *Phyllostachys nidularia* natural forests occur in those regions. Introduced into Japan. Zones 8–9.

New shoots are edible. Culms are used for bamboo timber producing (Fig. 80).

a. *Phyllostachys nidularia* Munro f. *farcta* H. R. Zhao et A. T. Liu

Internodes solid or nearly solid.

Guangdong: Lianshan. Zone 10 (Fig. 81).

b. *Phyllostachys nidularia* Munro f. *glabrovagina* (McClure) T. H. Wen

Culm leaf sheaths glabrous, foliage leaf sheaths deciduous; leaf 1 per branchlet.

Distribution and use are the same with *Phyllostachys nidularia*. Zones 8–9 (Fig. 82).

c. *Phyllostachys nidularia* Munro f. *mirabilis* T. P. Yi et C. Q. Shen

Culms and branches green, grooves yellow; culm leaf sheaths light green, without stripes.

Sichuan: Huaying (Yi 1991a). Zone 9 (Fig. 83).

d. *Phyllostachys nidularia* Munro f. *speciosa* T. P. Yi et C. G. Chen

Culms and branches yellow, grooves green; culm leaf sheaths light green, with yellow stripes; rhizomes exposed above the ground yellow, grooves green.

Sichuan: Huaying (Yi 1991a). Zone 9 (Fig. 84).

e. *Phyllostachys nidularia* Munro f. *sulfurea* T. P. Yi et C. G. Chen

Culms yellow, sometimes with 1 (2) green stripes on the basal internodes; culm leaf sheaths light green, with yellow stripes; branches yellow, sometimes with one green stripes abaxially; rhizomes exposed above ground yellow.

Sichuan: Huaying (Yi 1991a). Zone 9 (Fig. 85).



Fig. 80 *Phyllostachys nidularia*. (a) Inflorescence; (b) culm leaf; (c) culm leaf; (d) bamboo grove

f. *Phyllostachys nidularia* Munro f. *vexillaris* T. H. Wen

Culm leaf sheaths glabrous abaxially, auricles large, like butterfly wings.
Zhejiang: Yuyao (Siming Mountain). Zone 8.

***Phyllostachys parvifolia* C. D. Chu et H. Y. Chou**

Culms up to 8 m tall, 5 cm in diameter; internodes to 25 cm long, green when young, with purple stripes and thick white powder; nodes as tall as or taller than sheath scars or lower than sheath scars at the basal culms. Culm leaf sheaths light brown or light purple red abaxially, with light yellow brown stripes or yellow white stripes at the upper of sheaths, thinly white powdery, margins with white cilia; auricles and oral setae absent, or oral setae several, or blades on the upper part of culms extended to be tiny auricles and oral setae several; ligules 2–2.5 mm tall, dark green or purple red, arched, margins with short cilia; blades erect, green, margins or upper part purple red, triangular or triangular lanceolate, wavy. Foliage leaves 2 per



Fig. 81 *Phyllostachys nidularia* f. *farcta*. (a) New shoots and culms; (b) transection of culms; (c) new shoot; (d) bamboo grove

branchlet; auricles inconspicuous, oral setae several, erect; blades 3.5–6.2 cm long, 0.7–1.2 cm wide. New shoots early May.

Zhejiang, Anhui. Zone 8.



Fig. 82 *Phyllostachys nidularia* f. *glabrovagina*. (a) New shoot; (b) bamboo grove

New shoots are edible (Fig. 86).

Phyllostachys rivalis H. R. Zhao et A. T. Li

Culms ca. 4 m tall, 1.5–2 cm in diameter; internodes up to 24 cm long, brown purple or yellow green when young, with inconspicuous purple stripes, white powder, and setae, especially dense below nodes; sheath scars with cilia initially; nodes taller than sheath scars. Culm leaf sheaths green abaxially, becoming brown purple under the sunshine or the upper part milk white with green and purple stripes, sometimes with brown spots, glabrous, or sparsely setose, sometimes with dense pubescence at the base, upper margins with light brown cilia; auricles and oral setae absent, or oral setae several; ligules 0.8–1 mm tall, green, truncate or a little concave, margins with dense cilia; blades erect, green, narrowly triangular or ribbon triangular, margins purple. Foliage leaves (2) 3–5 (7) per branchlet; sheaths purple, pubescent; auricles absent, oral setae erect; ligules truncate, purple red; blades 4.6–8 cm long, 0.6–1.1 cm wide, pubescent initially abaxially. New shoots early May.

Zhejiang, Anhui, Fujian, Guangdong. Zones 8–10.

New shoots are edible (Fig. 87).



Fig. 83 *Phyllostachys nidularia* f. *mirabilis*. (a) Internode and culm leaf; (b) new shoot; (c) bamboo grove

Phyllostachys rubicunda T. H. Wen

Culms up to 6 m tall, 3–4.5 cm in diameter; internodes up to 30 cm long, dark green with a little purple, with a little white powder or not; nodes as tall as or a little taller than sheath scars. Culm leaf sheaths light green with purple stripes and white powder abaxially, glabrous or sparsely setose, margins ciliate; auricles and oral setae absent, or auricles tiny with several oral setae on upper culms; ligules 1–1.5 mm tall, green, concave, margins with cilia; blades erect, triangular, narrowly triangular or



Fig. 84 *Phyllostachys nidularia* f. *speciosa*. (a) Culms and branches; (b) new shoot; (c) bamboo grove

lanceolate, light green. Foliage leaves 3 or 4 per branchlet; auricles absent, oral setae present; blades 6–12.5 cm long, 1–2.2 cm wide. New shoots middle and late May. Zhejiang, Jiangsu, Fujian. Zones 8–9.

New shoots are edible. Culms are used for bamboo timber producing (Fig. 88).



Fig. 85 *Phyllostachys nidularia* f. *sulfurea*. (a) Culm leaves; (b) culms

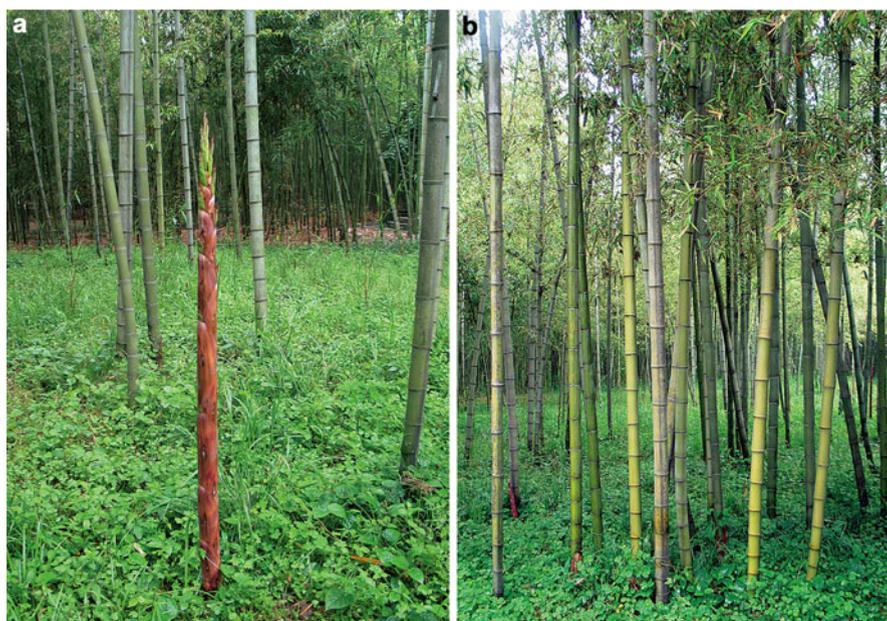


Fig. 86 *Phyllostachys parvifolia*. (a) New shoot; (b) bamboo grove

Phyllostachys stimulosa H. R. Zhao et A. T. Liu

Culms up to 8 m tall, 3.5 cm in diameter; internodes up to 32 cm long, with white powder when young; nodes as tall as sheath scars or taller than sheath scars in thin culms. Culm leaf sheaths green, with purple stripes and setae abaxially, margins



Fig. 87 *Phyllostachys rivalis*. (a) Branches; (b) culm bud; (c) bamboo grove



Fig. 88 *Phyllostachys rubicunda*. (a) New shoot; (b) bamboo grove

yellow brown; auricles formed by extension of the base of blades, broadly ovate, purple, oral setae several; ligules 1.5 mm tall, purple, arched, margins with short cilia; blades erect, triangular or narrowly triangular, green purple. Foliage leaves 1–3 per branchlet; auricles absent, oral setae developed; blades 6–11.5 cm long, 1–2 cm wide, gray white abaxially. New shoots early May.

Zhejiang. Zone 8.

Culms are used for bamboo timber producing (Fig. 89).

Phyllostachys subulata W. T. Lin et Z. M. Wu

Culms 1–1.5 m tall, 0.6–0.8 cm in diameter; internodes 4–9 cm long, glabrous, white powder below nodes; sheath scars with setae; nodes prominent; intranodes with white powder. Culm leaf sheaths with setae at the abaxial base, the top a little arched, margins without cilia; auricles inconspicuous, oral setae absent; ligules arched, ca. 1 mm tall, margins with white cilia; blades erect, drill-shaped, involute, 1/3 as wide as the top of sheaths. Foliage leaves 3 or 4 per branchlet; sheaths with setae at the top, margins with slender cilia; auricles absent, oral setae absent or 2 or 3; ligules truncate, setose abaxially; blades 2–7 cm long, 0.5–2 cm wide, with white pubescence abaxially, the base with dense tomenta, secondary veins 4 or 5 pairs.



Fig. 89 *Phyllostachys stimulosa*. (a) Culms; (b) flowering branches; (c) new shoot; (d) bamboo grove

Guangdong: Lianping (West Lake) (Lin 1994). Zone 10.

This species was treated as a synonym of *Phyllostachys nidularia* in *Flora of China* (Li et al. 2006).



Fig. 90 *Phyllostachys veitchiana*. (a) Young culms and culm leaves; (b) inflorescence; (c) new shoot; (d) culm leaves

***Phyllostachys veitchiana* Rendle**

Culms 3–5 m tall, 1–2.5 cm in diameter; internodes 20–22 cm long, with white powder and sparse short pubescence when young; nodes taller than sheath scars. Culm leaf sheaths green abaxially, with purple stripes and white powder, glabrous or the base with sparse pubescence and setae, margins ciliate; auricles triangular or falcate, purple, upward, oral setae crinkled; ligules arched, purple, margins with thick cilia; blades erect or recurved, triangular or narrowly triangular, straight or wavy, purple or green purple. Foliage leaves 1 or 2 per branchlet; auricles absent, oral setae several, erect; ligules with thick cilia; blades 8–14 cm long, 1.2–1.8 cm wide. Flowering branches densely capitate or shortly spicate, subtended by 5 or 6 gradually larger scale-like bracts, bracts thin leathery, margins with dense cilia; spathes at the lower part of flowering branches broadly ovate, gradually narrow upward, auricles and oral setae absent, ligules conspicuous, reduced leaves tiny, subulate or triangular, pseudospikelets 1 or 2 within each spathe; florets 4 or 5;

rachilla disarticulated; glumes 1 or 2, size variable, narrower than lemma, more or less membranous, with long pubescence, apex tapering and aristate; lemma narrowly lanceolate, with dense long pubescence except the base, veins inconspicuous, keels present, apex tapering and aristate, lemma of the first floret 12–14 mm long, palea, stamen and pistil hypogenetic and tiny, palea of the other florets shorter than lemma, with long pubescence, apex bifid; lodicules spatulate, the top with cilia; anthers 6 mm long; ovary prismatic, style 1, stigmas 3. New shoots May. Flowering May to June.

West Hubei, West Sichuan. Zone 9.

New shoots are edible. Culms are used for bamboo timber producing (Fig. 90).

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