

1. ZINGIBER Miller, Gard. Dict. Abr., ed. 4, [1545]. 1754, nom. cons.

姜属 *jiang shu*

Rhizomes branched, tuberous, aromatic. Pseudostems erect, leafy. Leaves distichous, held in plane parallel to rhizome; petiole swollen, cushionlike; leaf blade oblong, lanceolate, or linear. Inflorescences conical, arising from rhizomes on peduncle clothed with scalelike sheaths, rarely breaking through leaf sheaths without peduncle; bracts closely imbricate, green or other color, 1-flowered, persistent; bracteoles not tubular. Calyx tubular, split on 1 side, apex 3-toothed. Corolla tube slender; central lobe white or cream, usually wider than lateral lobes. Lateral staminodes adnate to labellum, forming a 3-lobed labellum; central lobe retuse or cleft at apex. Filament short; connective with elongate appendage wrapped around style. Ovary 3-loculed; ovules numerous per locule; placentation axile. Style slender, extending beyond anther locules; stigma not expanded. Capsule dehiscent loculicidally or irregularly. Seeds black, covered by aril; aril white, margin irregularly lacerate.

Between 100 and 150 species: tropical to warm-temperate Asia; 42 species (34 endemic, one introduced) in China.

Zingiber purpureum Roscoe, which is cultivated in Yunnan (Jinghong Xian) for medicinal purposes, is not described in this account.

- 1a. Peduncle erect, 10–30 cm, robust, sometimes absent.
 - 2a. Inflorescences breaking through leaf sheaths, peduncle absent; ligule 2-lobed, 1–3 cm 1. *Z. ellipticum*
 - 2b. Inflorescences arising from rhizomes on peduncle clothed with scalelike sheaths.
 - 3a. Leaf blade 2–3 cm wide.
 - 4a. Ligule 2–4 mm; inflorescences ovoid, 4–5 cm; bracts ovate, apex mucronate 2. *Z. officinale*
 - 4b. Ligule 8–10 mm; inflorescences fusiform, 4–12 cm; bracts rhombic, apex obtusely acuminate 3. *Z. laoticum*
 - 3b. Leaf blade 3–8 cm wide.
 - 5a. Ligule 10–20 mm.
 - 6a. Ligule 1–1.2 cm; labellum ca. 3 × 2.5 cm, central lobe ligulelike, lateral lobes inconspicuous, ca. 3 mm 4. *Z. neotruncatum*
 - 6b. Ligule 1.5–2 cm; labellum ca. 1.5 × 2.5 cm, central lobe suborbicular or subobovate, lateral lobes obovate, ca. 1 cm, free nearly to base 5. *Z. zerumbet*
 - 5b. Ligule 1–6 mm.
 - 7a. Ligule ca. 6 mm.
 - 8a. Ligule 2-lobed; flowers hairy; central lobe of labellum white with orange base, 2-cleft at apex, lateral lobes 2-cleft at apex 6. *Z. menghaiense*
 - 8b. Ligule emarginate at apex; flowers glabrous; central lobe of labellum white, emarginate at apex, lateral lobes entire at apex 7. *Z. stipitatum*
 - 7b. Ligule 1–4 mm.
 - 9a. Inflorescences oblong; bracts acute at apex 8. *Z. corallinum*
 - 9b. Inflorescences fusiform or ellipsoid; bracts obtuse at apex.
 - 10a. Rhizomes white inside; leaf blade elliptic-oblong, 4–11 cm wide, glabrous; ovary glabrous 9. *Z. nudicarpum*
 - 10b. Rhizomes yellow inside; leaf blade oblong-oblong-lanceolate, 1.5–5 cm wide, adaxially glabrous, abaxially sparsely pubescent along midvein and at margin; ovary densely pubescent 10. *Z. paucipunctatum*
 - 1b. Peduncle usually to 10 cm, slender, sometimes to 20 cm but then not erect.
 - 11a. Labellum not lobed or inconspicuously 3-lobed, lateral lobes absent or very small.
 - 12a. Ligule to 0.6 cm.
 - 13a. Ligule to 1 mm; corolla ivory white; labellum elliptic 11. *Z. integrilabrum*
 - 13b. Ligule 1–6 mm; corolla purple; labellum broadly ovate to lanceolate.
 - 14a. Pseudostems 30–40 cm; labellum reddish purple, lanceolate 12. *Z. koshunense*
 - 14b. Pseudostems 60–130 cm; labellum yellow with purple stripes, broadly to narrowly ovate.
 - 15a. Flowers purple; bracteoles oblong, 2–3 cm; calyx villous, apex 3-toothed 13. *Z. atrorubens*
 - 15b. Flowers yellow; bracteoles narrowly ovate, 3.5–4 cm; calyx glabrous, apex subtruncate 14. *Z. longiglande*
 - 12b. Ligule 1–5 cm.
 - 16a. Ligule 3.5–5 cm.
 - 17a. Ligule entire, 4–5 cm, white pubescent; corolla lobes yellowish; labellum ligulelike 15. *Z. longiligulatum*
 - 17b. Ligule 2-lobed, to 3.5 cm; corolla lobes slightly red; labellum oblong-cuneate 16. *Z. roseum*
 - 16b. Ligule 1–3 cm.
 - 18a. Corolla lobes red; labellum orange, 1.8–2 × 0.9–1 cm 17. *Z. yingjiangense*
 - 18b. Corolla lobes yellowish or yellowish white; labellum yellow or white, 2.5–3.5 × 1.6–3.5 cm.
 - 19a. Corolla lobes yellowish white, apex red; labellum yellow with brown lines, broadly ovate 18. *Z. tuanjuum*
 - 19b. Corolla lobes yellowish; labellum white with yellowish margin, narrowly elliptic 19. *Z. wandingense*
 - 11b. Labellum conspicuously 3-lobed.
 - 20a. Ligule entire.

- 21a. Leaf blade hairy; ligule pale purple, 5–7 cm; corolla lobes red; labellum pale brown with black spots, central lobe ligulelike 20. *Z. integrum*
- 21b. Leaf blade glabrous; ligule green-white, 1.3–1.5 cm; corolla lobes white; labellum white, central lobe semiorbicular 21. *Z. orbiculatum*
- 20b. Ligule 2-lobed.
- 22a. Leaf blade adaxially hairy; petiole absent.
- 23a. Ligule 0.1–0.5 cm.
- 24a. Pseudostems 30–60 cm; leaf blade 20–30 × 6–8 cm; labellum deep violet, obovate 22. *Z. kawagoi*
- 24b. Pseudostems 80–100 cm; leaf blade 28–50 × 10–15 cm; labellum yellow, ligulelike 23. *Z. xishuangbannaense*
- 23b. Ligule 0.8–4 cm.
- 25a. Ligule 3–4 cm; labellum brown with purple-brown spots, central lobe ligulelike 24. *Z. fragile*
- 25b. Ligule 0.8–1.1 cm; labellum white with red spots, central lobe broadly obovate 25. *Z. recurvatum*
- 22b. Leaf blade adaxially glabrous; petiole usually present.
- 26a. Ligule (1–)4–8 cm.
- 27a. Corolla tube yellowish; anther connective appendage purple, ca. 7 mm 26. *Z. flavomaculosum*
- 27b. Corolla tube white; anther connective appendage blue, 11–14 mm.
- 28a. Bracts obovate; bracteoles tubular; corolla tube ca. 2.7 cm; ovary glabrous 27. *Z. monglaense*
- 28b. Bracts and bracteoles oblong; corolla tube 4–4.7 cm; ovary densely villous 28. *Z. bisectum*
- 26b. Ligule to 2 cm.
- 29a. Leaf blade abaxially densely black spotted 29. *Z. nigrimaculatum*
- 29b. Leaf blade abaxially not black spotted.
- 30a. Labellum white, white with purple lines, or yellowish white with purple or red apex.
- 31a. Leaves aggregated at apex of pseudostems; petiole 2–5 cm 30. *Z. densissimum*
- 31b. Leaves not aggregated at apex of pseudostems; petiole absent to 1.5 cm.
- 32a. Labellum white with purple lines or yellowish white with purple or red apex.
- 33a. Central lobe of labellum white with purple lines, elliptic, ca. 2.8 cm, apex entire 31. *Z. yunnanense*
- 33b. Central lobe of labellum yellowish white, oblanceolate, ca. 2 cm, apex purple or red, 3-toothed 32. *Z. cochleariforme*
- 32b. Labellum wholly white.
- 34a. Calyx ca. 2.5 cm, apex subtruncate; central lobe of labellum broadly ovate 33. *Z. leptorrhizum*
- 34b. Calyx 1.1–1.4 cm, apex 2- or 3-toothed; central lobe of labellum fan-shaped or obovate.
- 35a. Leaf blade narrowly lanceolate, 15–27 × 1.8–3.5 cm; bracts purple; central lobe of labellum obovate, ca. 1 cm, lateral lobes ca. 0.3 cm 34. *Z. lingyunense*
- 35b. Leaf blade obovate, oblanceolate, or oblong, 1.5–35 × 1.2–7.5 cm; bracts green or white; central lobe of labellum fan-shaped, 1.7–2.5 cm, lateral lobes 1–1.5 cm 35. *Z. simaoense*
- 30b. Labellum yellow, red, or purple.
- 36a. Labellum yellow, at least centrally.
- 37a. Labellum yellowish; corolla lobes linear, 3.5–4 × ca. 0.5 cm 36. *Z. guangxiense*
- 37b. Labellum yellow at center, white at margin; corolla lobes lanceolate, 2.7–3 × ca. 0.7 cm 37. *Z. mioga*
- 36b. Labellum red or purple.
- 38a. Leaf blade 25–40 × 5–11 cm, abaxially appressed villous and glandular spotted 38. *Z. longyanjiang*
- 38b. Leaf blade 9–35 × 3–6 cm, abaxially glabrous except for slightly hairy midvein, rarely sparsely villous, not glandular spotted.
- 39a. Petiole ca. 2 mm, ligule 2–4 mm 39. *Z. teres*
- 39b. Petiole 3–12 mm, ligule 4–7 mm.
- 40a. Bracts broadly ovate or elliptic, pubescent; corolla lobes 3–3.5 cm 40. *Z. striolatum*
- 40b. Bracts lanceolate or linear-lanceolate, glabrous; corolla lobes 2–2.1 cm.
- 41a. Petiole 10–17 mm; leaf blade abaxially sparsely villous; corolla tube ca. 2.6 cm 41. *Z. gulinense*
- 41b. Petiole 3–6 mm; leaf blade abaxially glabrous; corolla tube ca. 3.8 cm 42. *Z. pleiostachyum*

1. *Zingiber ellipticum* (S. Q. Tong & Y. M. Xia) Q. G. Wu & T. L. Wu in Q. G. Wu et al., *Acta Phytotax. Sin.* 34: 416. 1996.

侧穗姜 *ce sui jiang*

Plagiostachys elliptica S. Q. Tong & Y. M. Xia, *Acta Phytotax. Sin.* 25: 460. 1987.

Rhizomes deep purple-red inside. Pseudostems 60–100 cm. Leaf sheath brown; ligule 2-lobed, 1–3 cm, brown pubescent;

petiole 1–9 cm; leaf blade elliptic or elliptic-lanceolate, 40–55 × 14–16 cm, adaxially sparsely hairy, abaxially densely pubescent, base cuneate or attenuate, margin ciliate, apex shortly acuminate. Inflorescences breaking through leaf sheaths 20–50 cm above ground, sessile, ellipsoid to oblong, 11–18 × 4–5.5 cm; bracts yellowish white or pale yellowish green, obovate, 4–4.5 × 3–4.5 cm, pubescent, copiously slimy. Calyx yellowish, 1.5–2 cm, split on 1 side, pubescent. Corolla tube yellowish, 4–4.5 cm; central lobe narrowly ovate, 2–3 cm × 8–10 mm; lateral

lobes lanceolate, 5–7 mm wide. Labellum 2.4–2.8 cm; central lobe purple with 2 parallel, yellow lines and yellow blotches at base, obovate-oblong, 1.5–2 cm × 7–9 mm; lateral lobes yellow with purple blotches, elliptic, 1.2–1.6 cm × 6–8 mm. Filament 5–10 mm; anther yellow, 1.3–1.4 cm; connective appendage purple, 1–1.3 cm. Ovary glabrous. Capsule yellow-green, obovoid, 3-angled, apex with persistent calyx. Seeds 4–6 per valve, brownish black, enclosed by white aril. Fl. Aug, fr. Oct. $2n = 22^*$.

- Forests; ca. 600 m. SE Yunnan (Maguan Xian).

2. *Zingiber officinale* Roscoe, Trans. Linn. Soc. London 8: 348. 1807.

姜 jiang

Amomum zingiber Linnaeus, Sp. Pl. 1: 1. 1753; *Zingiber sichuanense* Z. Y. Zhu et al.

Rhizomes branched, yellowish inside, thickened, fleshy, strongly aromatic. Pseudostems 50–100 cm. Leaves sessile; ligule slightly 2-lobed, 2–4 mm, membranous; leaf blade lanceolate or linear-lanceolate, 15–30 × 2–2.5 cm, glabrescent. Inflorescences arising from rhizomes, ovoid, 4–5 × ca. 1.5 cm; peduncle to 25 cm; bracts pale green, sometimes yellowish at margin, ovate, ca. 2.5 cm, apex mucronate; bracteoles equaling bracts. Calyx ca. 1 cm. Corolla yellowish green; tube 2–2.5 cm; lobes lanceolate, ca. 1.8 cm. Central lobe of labellum with purple stripe and cream blotches, oblong-obovate, shorter than corolla lobes; lateral lobes ovate, ca. 6 mm, free nearly to base. Stamen dark purple; anther ca. 9 mm; connective appendage curved, ca. 7 mm. Fl. Oct. $2n = 22^*$.

Cultivated. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [native origin unknown; widely cultivated in the tropics and subtropics].

Widely cultivated for medicine and spice.

3. *Zingiber laoticum* Gagnepain, Bull. Soc. Bot. France 54: 168. 1907.

梭穗姜 suo sui jiang

Pseudostems ca. 80 cm. Leaves sessile; leaf sheath 2–7 cm; ligule entire, 8–10 mm, membranous; leaf blade linear, ca. 30 × 3 cm, glabrescent, base attenuate, apex caudate. Inflorescences arising from rhizomes, fusiform, 8–12 × ca. 2.5 cm; peduncle 15–30 cm; bracts purple, rhombic, 3–4 × 1.5–2.5 cm, margin membranous, apex obtuse-acuminate. Calyx 2.5–2.8 cm, pubescent. Corolla tube 3–4 cm; lobes with brown stripe, lanceolate, ca. 2 cm. Labellum with brown stripe, ca. 2 cm. Anther sessile, ca. 1.3 cm; connective appendage incurved, ca. 7 mm. Ovary hirsute. Fl. Apr.

Roadsides; ca. 800 m. S Yunnan [Laos].

4. *Zingiber neotruncatum* T. L. Wu et al., Novon 10: 91. 2000.

截形姜 jie xing jiang

Zingiber truncatum S. Q. Tong, Acta Phytotax. Sin. 25: 147. 1987, not Stokes (1812, nom. illeg., included *Amomum zedoaria* Christmann).

Pseudostems 1–1.5 m, base with purple sheaths. Leaves sessile; ligule 1–1.2 cm, densely white pubescent, apex truncate; leaf blade narrowly lanceolate, 30–40 × 4.5–6 cm, adaxially glabrous except densely white pubescent at base of midvein, abaxially white pubescent, base cuneate, apex acuminate or caudate. Inflorescences arising from rhizomes, oblong or narrowly ellipsoid, 10–13 × 3–3.5 cm; peduncle erect, 6–13 cm; bracts red, ovate or broadly so, 3–4 × 2.5–3.5 cm, densely white pubescent; bracteoles white with red apex, tubular, ca. 3.5 cm. Flowers white. Calyx ca. 1.5 cm, apex truncate. Corolla tube ca. 5 cm, apex slightly yellowish; central lobe narrowly lanceolate, ca. 3 × 1 cm; lateral lobes ca. 7 mm wide. Labellum ovate, ca. 3 × 2.5 cm; central lobe ligulelike, apex emarginate; lateral lobes inconspicuous, ca. 3 mm. Anther sessile, ca. 1.5 cm; connective appendage ca. 5 mm. Ovary green, sparsely white pubescent. Fl. Aug.

- Moist places in forests; ca. 800 m. S and W Yunnan.

5. *Zingiber zerumbet* (Linnaeus) Roscoe ex Smith, Exot. Bot. 2: 105. 1806.

红球姜 hong qiu jiang

Amomum zerumbet Linnaeus, Sp. Pl. 1: 1. 1753.

Rhizomes yellowish inside, tuberous. Pseudostems 0.6–2 m. Leaves sessile or shortly petiolate; ligule entire, 1.5–2 cm; leaf blade lanceolate or oblong-lanceolate, 15–40 × 3–8 cm, glabrescent or abaxially somewhat pilose, base narrowed, apex acuminate. Inflorescences arising from rhizomes, conical or ovoid-oblong, 6–15 × 3.5–5 cm, apex obtuse; peduncle 10–30 cm, scalelike sheaths 5–7; bracts closely imbricate, green when young, red when old, slightly hairy, slimy adaxially, margin membranous; bracteoles ca. 1.5 cm. Calyx 1.2–2 cm, membranous, split on 1 side, apex 3-toothed. Corolla tube 2–3 cm, slender; lobes pale yellow, lanceolate, central one 1.5–2.5 cm. Labellum pale yellow, ca. 1.5 × 2.5 cm; central lobe suborbicular or subobovate, 1.5–2 × ca. 1.5 cm, apex emarginate; lateral lobes obovate, ca. 1 cm, free nearly to base. Stamen ca. 1 cm; connective appendage beaklike, ca. 8 mm. Ovary ca. 4 mm, glabrous. Capsule ellipsoid, 0.8–1.2 cm. Seeds black. Fl. Jul–Sep, fr. Oct. $2n = 22^*$.

Moist places in forests. Guangdong, Guangxi, Taiwan, Yunnan [Cambodia, India, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam].

Widely cultivated, medicinal.

6. *Zingiber menghaiense* S. Q. Tong, Acta Phytotax. Sin. 25: 145. 1987.

勐海姜 meng hai jiang

Pseudostems 1.3–1.8 m, base purplish red. Ligule 2-lobed, ca. 6 mm, margin membranous, white; petiole ca. 3 mm, pubescent; leaf blade narrowly lanceolate, ca. 25 × 3.5–4 cm, glabrous, base cuneate, margin membranous, white, apex caudate. Inflorescences arising from rhizomes, narrowly ellipsoid or oblong, 9–12 × 3–4 cm; peduncle erect, purplish red, 15–20 cm, white pubescent; bracts red when old, purplish red at margin, ovate or broadly so, 3.5–4 × 3–3.5 cm, white pubescent; bracteoles ca. 3 cm, glabrous. Calyx white, ca. 1.5 cm, base white

pubescent. Corolla tube white, yellow at apex, ca. 3.5 cm; lobes orange, central one narrowly elliptic, ca. 2 × 1 cm, lateral ones ca. 5 mm wide. Labellum slightly villous; central lobe white, orange at base, narrowly obovate, ca. 2.2 × 1.2 cm, apex 2-cleft; lateral lobes white, red at basal margin, ca. 1.2 cm × 4 mm, apex 2-cleft. Filament ca. 2 mm; anther yellowish, ca. 1 cm; connective appendage orange, ca. 5 mm.

• Forests; ca. 1200 m. S Yunnan (Xishuangbanna Dai Zu Zizhizhou).

7. *Zingiber stipitatum* S. Q. Tong, Acta Phytotax. Sin. 25: 146. 1987.

唇柄姜 chun bing jiang

Pseudostems 1–1.6 m, base purplish red. Leaf sheath green, with conspicuous, longitudinal stripes; ligule emarginate, ca. 6 mm; petiole ca. 4 mm; leaf blade narrowly lanceolate, 24–30 × 3.5–4.5 cm, glabrous, base rounded or cuneate, apex acuminate or caudate. Inflorescences arising from rhizomes, oblong or narrowly ellipsoid, 12–17 × 4–5 cm; peduncle erect, 11–19 cm; bracts green when young, becoming red, purplish red at apex, nearly white at margin, ovate or broadly so, 3–4.5 × 2.5–3.5 cm, puberulent; bracteoles tubular, ca. 2.5 cm. Flowers white, glabrous. Calyx ca. 1.5 cm, apex 1-toothed. Corolla tube ca. 3.8 cm; lobes lanceolate, ca. 1.7 × 1 cm, central one wider than lateral ones. Labellum white; central lobe suborbicular, ca. 1.8 × 1.2 cm, base narrowed into a claw, apex emarginate; lateral lobes red at basal margin, ca. 1.1 cm × 3 mm, apex acute. Anther sessile, ca. 1 cm; connective appendage ca. 6 mm. Ovary pale green, densely white pubescent. Fl. Jul.

• Moist places in forests; ca. 1200 m. W Yunnan (Ruili Xian).

8. *Zingiber corallinum* Hance, J. Bot. 18: 301. 1880.

珊瑚姜 shan hu jiang

Pseudostems ca. 1 m. Leaves sessile; leaf sheath sparsely hairy or glabrous; ligule 2–4 mm; leaf blade oblong-lanceolate or lanceolate, 20–30 × 4–6 cm, adaxially glabrous, abaxially sparsely hairy or glabrous. Inflorescences arising from rhizomes, oblong, 15–30 cm; peduncle 15–20 cm, scalelike sheaths 4–5 cm; bracts red, ovate, 3–4 cm, apex acute. Calyx 1.5–1.8 cm, split to middle. Corolla tube ca. 2.5 cm; lobes with purple stripe, oblong, ca. 1.5 cm, apex acute, central lobe larger than lateral ones. Central lobe of labellum obovate, ca. 1.5 cm; lateral lobes ca. 8 mm, apex acute. Anther sessile, ca. 1 cm; connective appendage beaklike, curved, ca. 5 mm. Ovary 2–2.5 mm, sericeous. Seeds black, glossy. Fl. May–Aug, fr. Aug–Oct. $2n = 22^*$.

• Dense forests. Guangdong, Guangxi, Hainan.

Medicinal.

9. *Zingiber nudicarpum* D. Fang, Guihaia 2: 139. 1982.

光果姜 guang guo jiang

Rhizomes white inside, 1.5–2.5 cm in diam. Pseudostems 1.5–2.5 m. Ligule ca. 2 mm, apex emarginate; petiole ca. 5 mm; leaf blade elliptic-oblong, 20–45 × 4–11 cm, glabrous, base narrowed, apex acuminate. Inflorescences arising from rhizomes,

fusiform, 7–14 × 2.5–3 cm; peduncle erect, 17–25 cm, scalelike sheaths 1–4.5 cm; bracts obovate, 3.7–5 × 1.5–6 cm, apex obtuse; bracteoles ovate-oblong, 3–3.3 × ca. 1.7 cm, membranous. Flowers white or yellowish. Calyx 2.5–3.2 cm, membranous, apex slightly 3-toothed. Corolla tube ca. 4.5 cm; lobes lanceolate, ca. 2 cm, central one cucullate, larger than lateral ones. Labellum purple dotted, ca. 2.5 cm; central lobe ovate, ca. 1.5 cm wide, apex 2–4-lobed; lateral lobes ovate, 6–8 mm, apex emarginate. Filament ca. 2 mm; anther 1.3–1.5 cm; connective appendage 1.2–1.4 cm. Ovary glabrous. Fl. Jun. $2n = 22^*$.

• Forest floors; ca. 300 m. Guangxi.

10. *Zingiber paucipunctatum* D. Fang in D. Fang & D. H. Qin, Guihaia 16: 6. 1996.

少斑姜 shao ban jiang

Rhizomes yellow inside, tuberous. Pseudostems ca. 1.8 m. Leaf sheath subglabrous; ligule 2-lobed, 1–2 mm, papery, margin ciliate; petiole ca. 2 mm, pubescent; leaf blade oblong-ob-lanceolate, 6–40 × 1.5–5 cm, adaxially glabrous, abaxially pubescent along midvein and at margin, base attenuate, apex acuminate. Inflorescences arising from rhizomes, ellipsoid, rarely subconical, 10–20 × 3–4 cm, many flowered; peduncle erect, 19–32 cm; bracts imbricate, purple with green margin, obovate to broadly ovate, 2.5–3.5 cm, pubescent, apex obtuse; bracteoles pale purple with white margin, broadly elliptic, ca. 2.8 × 2 cm, apex 2-cleft. Calyx ca. 1.7 cm, split on 1 side, apex 3-toothed, ciliate. Corolla tube white, ca. 3.5 cm; lobes yellowish, central one ca. 2.3 × 1.3 cm, lateral ones lanceolate, ca. 1.7 cm × 7 mm. Labellum yellowish; central lobe suborbicular or broadly ovate, 1.6–2 × 2–2.5 cm, inconspicuously sparsely punctate, margin erose, apex 2-cleft; lateral lobes broadly ovate, ca. 5 × 7 mm, apex entire or 1-toothed. Anther subsessile, ca. 1.2 cm; connective appendage ca. 1 cm. Ovary densely appressed pubescent. Fl. Jul–Aug.

• S and W Guangxi.

11. *Zingiber integrilabrum* Hance, J. Bot. 20: 80. 1882.

全唇姜 quan chun jiang

Rhizomes branched, odorless. Pseudostems 40–100 cm. Ligule orbicular, 2-lobed, to 1 mm; petiole absent to 5 mm; leaf blade lanceolate, 15–18 × ca. 3 cm, adaxially glabrous, abaxially pubescent or pilose. Inflorescences arising from rhizomes, ca. 1/2 embedded in ground, 4- or 5-flowered; peduncle 1–2 × as long as inflorescence, scalelike sheaths 2–3 cm; bracts becoming brownish when old, lanceolate, 2–3 cm, glabrous; bracteoles ca. 2 cm, membranous. Calyx ca. 2 cm, split on 1 side, glabrous. Corolla ivory white; tube ca. 2.7 cm; lobes lanceolate, ca. 1.8 cm. Labellum elliptic; lateral lobes reduced to rounded teeth or absent. Anther sessile, ca. 8 mm; connective appendage ca. 7 mm. Fl. Apr.

• Hong Kong.

12. *Zingiber koshunense* C. T. Moo in T. L. Wu et al., Novon 10: 88. 2000.

恒春姜 heng chun jiang

Rhizomes subcreeping, slender. Pseudostems 30–40 cm.

Ligule small, membranous; petiole short; leaf blade linear-lanceolate, 15–25 × 5–6 cm, base narrowed, apex acuminate. Inflorescences 2 or 3 arising from rhizomes, oblong; bracts green, lanceolate; bracteoles 2 per flower. Calyx short. Corolla lobes purple. Labellum reddish purple, lanceolate. Capsule orange-red, oblong, 3-angled, with bracteoles adnate, pink, persistent. Seeds 3 or 4 per valve, brown, subglobose; aril saclike. Fl. Jan, fr. Sep.

- S Taiwan (including Lan Yu).

13. *Zingiber atrorubens* Gagnepain, Bull. Soc. Bot. France 49: 252. 1902.

川东姜 *chuan dong jiang*

Rhizomes gingerlike, strongly aromatic. Pseudostems 80–110 cm. Leaves sessile; ligule with red lines, obtusely deltoid, 2-lobed, ca. 6 mm; leaf blade glaucous, lanceolate, 15–25 × 3–6 cm, adaxially glabrous, abaxially pilose near base. Inflorescences arising from rhizomes, ovoid, laxly few flowered; peduncle embedded in ground, very short; bracts green or pale purple, ovate-oblong or lanceolate, ca. 5 cm, pilose; bracteoles oblong, ca. 2.3 cm, membranous. Flowers purple. Calyx ca. 3 cm, split on 1 side to middle, villous, apex 3-toothed. Corolla tube 4–5 cm; lobes lanceolate, central one 1.5–1.8 cm wide, lateral ones pale purple, narrower than central one. Labellum with purple stripes, ovate or narrowly so, ca. 3 × 2 cm, apex entire or emarginate; lateral lobes absent. Anther sessile, ca. 1.5 cm; connective appendage ca. 1.5 cm. Ovary villous.

- Guangxi, E Sichuan.

14. *Zingiber longiglande* D. Fang & D. H. Qin, Guihaia 16: 7. 1996.

长腺姜 *chang xian jiang*

Rhizomes yellow inside, tuberous; roots with fusiform tubers at tip. Pseudostems ca. 1.3 m. Leaf sheath membranous at margin; ligule 2-lobed, 1–6 mm, membranous; petiole absent to 5 mm, appressed pubescent; leaf blade narrowly elliptic, rarely lanceolate, 8–30 × 1.5–5 cm, adaxially glabrous, abaxially sparsely appressed pubescent, base attenuate, apex acuminate. Inflorescences arising from rhizomes, ovoid or narrowly ellipsoid, 5–6.6 × 2–3.5 cm; bracts purple, narrowly ovate, ca. 4.5 × 1.3(–2) cm, sparsely appressed pubescent abaxially, apex shortly acuminate; bracteoles narrowly ovate, 3.4–4 × ca. 1 cm, apex obtuse. Calyx glabrous, 2.3–2.5 cm, split on 1 side, apex subtruncate, with 3 rounded teeth. Corolla tube 3–4 cm; lobes yellow, central one ovate, ca. 3 × 1.4 cm, lateral ones lanceolate, ca. 2.5 cm × 8 mm. Labellum yellow with pink spots, broadly ovate, ca. 3.5 × 3 cm, margin slightly undulate, apex retuse; lateral lobes absent. Anther subsessile, ca. 1.4 cm; connective appendage ca. 1.8 cm. Ovary densely appressed pubescent. Style 6–6.7 cm; stigma ciliate. Stylodes needle-shaped, ca. 8 mm. Fl. Jul.

- Hill slopes; ca. 700 m. Guangxi.

15. *Zingiber longiligulatum* S. Q. Tong, Acta Phytotax. Sin. 25: 140. 1987.

长舌姜 *chang she jiang*

Pseudostems 80–100 cm, base with purple sheaths. Ligule entire, 4–5 cm, white pubescent; petiole 5–10 mm; leaf blade lanceolate or narrowly lanceolate-elliptic, 40–50 × ca. 10 cm, adaxially glabrous, abaxially white pubescent, base narrowed, apex acuminate. Inflorescences arising from rhizomes, oblong, 4–4.5 × 2–2.4 cm; peduncle 2–6 cm; bracts narrowly lanceolate, 4–4.5 cm × 8–9 mm, white pubescent, apex acuminate; bracteoles 3.8–4.2 cm. Calyx 2–2.3 cm, membranous, puberulent, apex 3-toothed. Corolla tube yellowish at apex, 3.8–4.2 cm, densely pubescent; lobes yellowish, central one linear-lanceolate, 2.8–3.2 cm × ca. 3 mm, lateral ones ca. 2 mm wide. Labellum yellowish, ligulelike, ca. 3 × 1 cm, apex entire; lateral lobes absent. Anther sessile, white, ca. 1.7 cm; connective appendage orange, ca. 8 mm. Ovary densely brown pubescent. Fl. Aug.

- Forest floors; ca. 900 m. W Yunnan (Yingjiang Xian).

16. *Zingiber roseum* (Roxburgh) Roscoe, Trans. Linn. Soc. London 8: 348. 1807.

红冠姜 *hong guan jiang*

Amomum roseum Roxburgh, Pl. Coromandel 2: 15. 1800.

Pseudostems ca. 1.5 m. Leaves sessile; ligule 2-lobed, to 3.5 cm, membranous; leaf blade oblong or oblong-lanceolate, ca. 30 × 3–5 cm, adaxially glabrous, abaxially villous. Inflorescences arising from rhizomes, ellipsoid, ca. 6 cm, very dense; peduncle very short; bracts red, 3.5–4.5 cm, outer ones broadly ovate, inner ones ovate-lanceolate. Calyx green, ca. 1.5 cm. Corolla tube white, ca. 2 cm; lobes pale red, lanceolate. Labellum white, oblong-cuneate, shorter than corolla lobes, margin recurved, crisped; lateral lobes yellow, orbicular, very small. Stamen arching over and equaling labellum; anther equaling connective appendage. Fl. autumn. $2n = 22$.

Moist places of forests; ca. 900 m. SW Yunnan [India, Myanmar, Thailand].

17. *Zingiber yingjiangense* S. Q. Tong, Acta Phytotax. Sin. 25: 142. 1987.

盈江姜 *ying jiang jiang*

Pseudostems 1–1.2 m, base with red sheaths. Leaf sheath longitudinally striate, white pubescent; ligule 2-lobed, 1.5–2.4 cm, hairy; petiole reddish adaxially, ca. 5 mm; leaf blade elliptic or lanceolate-elliptic, 25–45 × 9–11 cm, abaxially pubescent, midvein elevated adaxially when dry, base attenuate, apex acuminate or shortly so. Inflorescences arising from rhizomes, oblong, 5–6 × 2.4–3 cm; peduncle 2–6 cm; outer bracts ovate or oblong, 3.5–5.5 × 2–2.5 cm, inner bracts narrowly lanceolate, 4–4.5 × 0.7–1 cm, pubescent; bracteoles red at margin, narrowly triangular, equaling bracts. Calyx 1.6–2 cm, pubescent, apex minutely 2-toothed. Corolla tube 3–3.3 cm, densely pubescent; lobes red, lanceolate, 2.2–2.5 cm × 4–6 mm, glabrous. Labellum orange, oblong, 1.8–2 × 0.9–1 cm, apex entire; lateral lobes absent. Filament very short; anther white, ca. 1.6 cm; connective appendage orange, ca. 9 mm. Ovary densely brown pubescent. Fl. Aug.

- Forests; ca. 1000 m. W Yunnan (Yingjiang Xian).

18. *Zingiber tuanjuum* Z. Y. Zhu, Acta Bot. Yunnan. 6: 187. 1984.

团聚姜 *tuan ju jiang*

Rhizomes irregularly branched, yellowish white inside. Pseudostems 0.8–1.5 m. Ligule 2-lobed, 1–2.8 cm; petiole 0.5–1.5 cm; leaf blade lanceolate, rarely elliptic, ca. 15 × 3.5–8.5 cm, adaxially glabrous, abaxially appressed villous, base cuneate, apex caudate-acuminate. Inflorescences arising from rhizomes, subellipsoid, 5–7 × 2–3 cm, 12–20-flowered; peduncle 2–6(–16) cm, villous; bracts purple-brown or purplish red, broadly ovate or lanceolate, 3.5–5.5 × 1–5 cm, sparsely appressed villous, apex acuminate, outer ones subdistichous; bracteoles equaling bracts, villous. Calyx white, ca. 2.8 cm, membranous, split on 1 side. Corolla yellowish white; tube 3.5–4 cm, throat sparsely pubescent; lobes red at apex, lanceolate, central one ca. 3.5 × 1.7 cm, lateral ones 2.5–3.5 cm, margin entire or crisped. Lateral lobes of labellum toothlike or absent. Filament ca. 2 mm; anther ca. 1.5 cm; connective appendage 1.8–2.2 cm. Ovary densely villous.

- Forests; ca. 900 m. C Sichuan (Emei Shan).

Used as a vegetable.

19. *Zingiber wandingense* S. Q. Tong, Acta Phytotax. Sin. 25: 143. 1987.

碗町姜 *wan ding jiang*

Pseudostems 1.3–1.6 m × 1.3–2.2 cm, base with purplish red sheaths. Leaf sheath conspicuously longitudinally striate; ligule 2-lobed, 1.2–1.5 cm; leaf blade lanceolate or lanceolate-elliptic, 30–40 × 6–7.5 cm, adaxially glabrous, abaxially sparsely hairy, midvein basally purplish red and enlarged, base cuneate or attenuate, apex acuminate or shortly so. Inflorescences arising from rhizomes, ellipsoid, 6–9 × 2.5–3.5 cm; peduncle 3–7 cm, scalelike sheaths deep red; bracts white with pale red base and apex, oblong to narrowly lanceolate, 3.4–4 × 0.8–2.1 cm; bracteoles 3–3.5 cm. Calyx white, 1.8–2 cm, apex entire. Corolla tube white, 3.5–4 cm; lobes yellowish, central one narrowly lanceolate, 2–2.2 cm × 6–8 mm, lateral ones narrower. Labellum white with yellowish margin, narrowly elliptic, 2.8–3 × 1.6–1.8 cm, apex entire; lateral lobes absent. Anther sessile, yellow, ca. 1.4 cm; connective appendage orange, ca. 8 mm. Ovary densely white pubescent. Fl. Jul.

- Forests; ca. 1000 m. W Yunnan (Wanding Zhen).

20. *Zingiber integrum* S. Q. Tong in S. Q. Tong & Y. M. Xia, Acta Phytotax. Sin. 25: 465. 1987.

全舌姜 *quan she jiang*

Pseudostems 1.5–2 m. Leaves sessile; ligule pale purple, entire, 5–7 cm; leaf blade lanceolate or oblong-lanceolate, 40–70 × 8–9.5 cm, adaxially sparsely hairy along sides of midvein, abaxially sparsely hairy except densely pubescent along sides of midvein, midvein basally enlarged and densely red dotted at sides, base subrounded or cuneate, apex acuminate. Inflorescences arising from rhizomes, ovoid or capitate, 5–7 × 4–4.5 cm; peduncle 2–4 cm; bracts ovate or broadly oblong, 4–4.5 × 2–2.3 cm, inner ones attenuate-deltoid, 3.4–4 cm × 4–5 mm,

apex acute; bracteoles red, 3.4–4 cm. Calyx white, 2.5–3 cm, 3-angled, apex 3-toothed. Corolla tube white with red apex, 4–4.3 cm; lobes red, lanceolate, central one 2.5–3 × 1.5–3 cm, lateral ones narrower. Labellum pale brown, black dotted; central lobe ligulelike, 2.8–3.2 × 0.9–1.1 cm; lateral lobes 1.6–1.9 × 1.1–1.3 cm. Anther sessile, white, ca. 1.3 cm; connective appendage ca. 1.4 cm. Ovary pale brown pubescent. Fl. Jul.

- Gullies; ca. 900 m. SW Yunnan (Jinghong Xian) [?Thailand].

Tentatively recorded from Thailand by Theilade (Nordic J. Bot. 19: 409. 1999).

21. *Zingiber orbiculatum* S. Q. Tong in S. Q. Tong & Y. M. Xia, Acta Phytotax. Sin. 25: 463. 1987.

圆瓣姜 *yuan ban jiang*

Pseudostems 1.4–3.2 m. Ligule greenish white, 1.3–1.5 cm, glabrous, apex subtruncate; leaf blade narrowly lanceolate, 45–60 × 7–9 cm, glabrous, midvein basally enlarged and densely red dotted at sides, base cuneate, apex acuminate. Inflorescences arising from rhizomes, ovoid or capitate, 5–8 × 3.5–5 cm; peduncle 2–5 cm; bracts ovate or broadly so, 3–4 × 2.8–3.6 cm, apex acute or shortly acuminate; bracteoles pale proximally, red distally, tubular, 3.4–4.1 cm, white pubescent. Calyx 1.8–2.2 cm, puberulent except densely pubescent at base, apex 3-toothed. Corolla tube 3.4–3.6 cm; lobes white with red apex, lanceolate, 2.7–3 cm, pubescent. Labellum white, orbicular, 2.2–2.4 × 2–2.2 cm; central lobe semiorbicular, margin crisped, apex emarginate; lateral lobes auriculate, ca. 1.4 cm × 5 mm. Filament ca. 2 mm; anther yellow, ca. 1.2 cm; connective appendage ca. 1.2 cm. Ovary pale proximally, yellow distally, subellipsoid, densely pubescent. Capsule dark red with pale brown base, oblong, 4–5 × 2–2.5 cm, 3-angled. Seeds black, obovoid, ca. 6 × 5 mm. Fl. Jul.

- Forests; ca. 600 m. S Yunnan (Mengla Xian).

22. *Zingiber kawagoi* Hayata, Icon. Pl. Formos. 10: 35. 1921.

毛姜 *mao jiang*

Rhizomes creeping, ca. 1 cm in diam., subterete, slender. Pseudostems 30–60 cm. Ligule auriculate, 2-lobed; petiole very short; leaf blade oblong or oblong-lanceolate, 20–30 × 6–8 cm, sparsely pubescent on both surfaces, base obtuse, apex acuminate. Inflorescences arising from rhizomes, 4–5 cm, many flowered; peduncle 4–5 cm; bracts lanceolate, ca. 2 cm, base sheathlike. Calyx ca. 1 cm, split on 1 side, base hirsute, apex truncate. Corolla tube slender, 2–3 cm; lobes purple, ca. 2 cm, central one ca. 9 mm wide, wider than lateral ones, concave. Labellum obovate, ca. 2.2 × 2 cm; central lobe deep violet, obovate-oblong, 1.5–1.2 cm, apex emarginate; lateral lobes yellowish at base, violet at margin and apex, smaller than central lobe. Anther linear, subcylindric, ca. 1 cm; connective appendage linear, curved, ca. 1 cm. Ovary glabrous. Capsule enclosed by persistent bracts and bracteoles, loculicidally dehiscent; pericarp fleshy, red inside. Seeds black; aril cushionlike.

- Taiwan.

23. *Zingiber xishuangbannaense* S. Q. Tong in S. Q. Tong & Y. M. Xia, Acta Phytotax. Sin. 25: 461. 1987.

版纳姜 *ban na jiang*

Pseudostems 80–100 cm, base with red sheaths. Leaves sessile; ligule 2-lobed, 2–4 mm; leaf blade purplish red abaxially on basal leaves, elliptic or narrowly lanceolate, 28–50 × 10–15 cm, adaxially sparsely hairy along sides of midvein, abaxially densely pubescent, base subrounded or cuneate, apex caudate or acuminate. Inflorescences arising from rhizomes, red, ellipsoid or lanceolate, 3–9 × 3–4 cm; peduncle 4–13 cm; bracts ovate or elliptic, 4–4.5 × 3–3.3 cm; bracteoles pale with red apex, 2.4–2.6 cm × 5–6 mm. Calyx 1–1.5 cm, apex 2-toothed. Corolla pale with yellowish apex; tube 4–6 cm; lobes red, lanceolate, curved, central one 2.3–3 × 0.7–1.2 cm, lateral ones narrower. Labellum yellow; central lobe ligulelike, 2.1–2.5 cm × 6–7 mm, margin curved; lateral lobes auriculate, 1.3–1.5 cm × 7–8 mm. Anther ca. 1.4 cm; connective appendage yellow, ca. 1.4 cm. Ovary glabrous. Capsule obpyriform, 3.5–4.5 × 2–2.5 cm, 3-angled. Seeds oblong, ca. 5 mm. Fl. Jul.

• Forests; ca. 800 m. S Yunnan (Xishuangbanna Dai Zu Zizhizhou).

24. *Zingiber fragile* S. Q. Tong in S. Q. Tong & Y. M. Xia, *Acta Phytotax. Sin.* 25: 464. 1987.

脆舌姜 *cui she jiang*

Pseudostems 0.8–3 m. Leaves sessile; ligule red spotted at base, 2-lobed, 3–4 cm, membranous, fragile; leaf blade lanceolate or narrowly so, 40–50 × 9–11 cm, slightly puberulent except densely pubescent along sides of midvein, base cuneate, apex acuminate. Inflorescences arising from rhizomes, ovoid or capitate, 4–8 × 3–7.5 cm; peduncle very short; bracts red, ovate or oblong, 3–5 × 2.8–3.8 cm, brown pubescent, apex convex, acute, inner bracts triangular, 3.8–4 × 1.1–1.3 cm, apex attenuate; bracteoles pale red, 2.8–3 cm, white puberulent. Calyx 1.9–2.2 cm, apex 3-toothed, bearded. Corolla tube 3.1–4.2 cm, white pubescent; lobes red, lanceolate, 2.3–3.2 cm × 8–9 mm, lateral ones narrower. Labellum brown with purplish brown spots; central lobe ligulelike, 2–2.4 cm × 7–9 mm; lateral lobes auriculate, 1.3–1.5 cm. Filament ca. 3 mm; anther ca. 2 cm; connective appendage purple, ca. 1.3 cm. Ovary white, pubescent. Fl. Jul.

Forests; ca. 600 m. S Yunnan (Xishuangbanna Dai Zu Zizhizhou) [N Thailand].

25. *Zingiber recurvatum* S. Q. Tong & Y. M. Xia, *Acta Phytotax. Sin.* 25: 470. 1987.

弯管姜 *wan guan jiang*

Pseudostems 2–3 m × 2–3.5 cm, robust. Leaves sessile; ligule 2-lobed, 8–11 mm, densely pale brown pubescent; leaf blade abaxially purplish red, elliptic-lanceolate or narrowly so, 45–55 × 11–15 cm, adaxially hairy along sides of midvein, abaxially puberulent except densely pubescent along sides of midvein, base rounded, apex acuminate or caudate. Inflorescences arising from rhizomes, red, ovoid or capitate, 7–9 × 6–7 cm; peduncle embedded in ground, 3–5(–15) cm; outer bracts ovate-orbicular or broadly ovate, 3.4–5 × 2.6–4 cm, inner bracts elliptic or narrowly so, 5–5.6 × 1.6–2 cm, apex acuminate or shortly so; bracteoles red, ca. 4.5 cm. Calyx ca. 1.9 cm, apex 2-

subulate, slightly red dotted. Corolla red with pale base; tube recurved, 4.6–5 cm, 4-angled, slightly white hairy; lobes lanceolate, 3–3.2 × 0.8–1.2 cm. Labellum white with red spots; central lobe broadly obovate, apex convex; lateral lobes auriculate. Filament ca. 1 mm; anther ca. 1.5 cm; connective appendage ca. 1.7 cm. Ovary yellowish, densely and softly white hairy. Capsule purple, ovoid, 4.5–5 × 2.2–2.6 cm, 3-angled, apex with persistent calyx. Seeds black. Fl. Jul.

• Moist places in forests; ca. 700 m. S Yunnan (Mengla Xian).

26. *Zingiber flavomaculosum* S. Q. Tong, *Acta Phytotax. Sin.* 25: 144. 1987.

黄斑姜 *huang ban jiang*

Pseudostems 1–1.5 m. Ligule 2-lobed, 4–5 cm; petiole present on proximal leaves; leaf blade narrowly lanceolate or narrowly elliptic, 40–55 × 9–11 cm, abaxially white pubescent, base cuneate or broadly so, apex shortly acuminate. Inflorescences arising from rhizomes, capitate, ca. 6 × 4 cm; peduncle 2–5 cm, scalelike sheaths red; bracts pale red, ovate-orbicular or oblong, 3–3.2 × 1.7–2 cm, pubescent; bracteoles ca. 2.8 cm, white pubescent. Calyx ca. 1.6 cm, puberulent. Corolla tube yellowish, ca. 3.5 cm; central lobe lanceolate, ca. 2.2 × 1.1 cm; lateral lobes narrower. Labellum lobes gray with yellow-spotted apex, central one nearly ligulelike, ca. 2.5 × 1 cm, apex entire, lateral ones auriculate, ca. 1.5 cm × 8 mm. Anther sessile, ca. 1.3 cm; connective appendage purple, ca. 7 mm. Ovary pale green, densely brown pilose. Fl. Aug.

• Forests; ca. 600 m. S Yunnan (Xishuangbanna Dai Zu Zizhizhou).

27. *Zingiber monglaense* S. J. Chen & Z. Y. Chen, *Guihaia* 8: 315. 1988.

斑蝉姜 *ban chan jiang*

Pseudostems 1.6–2 m. Leaf sheath green; ligule 2-lobed to middle, 4.5–8 cm, membranous; petiole absent to 2 cm; leaf blade elliptic or oblong-elliptic, 30–70 × 6–15 cm. Inflorescences arising from rhizomes, ca. 1/2 embedded in ground, globose or ellipsoid, 3.5–4.3 cm in diam.; bracts red, white at base and margin, obovate, 3–4 × 1.3–1.5 cm, abaxially pilose, apex tomentose; bracteoles white or red, tubular, 2.7–3 × ca. 1.3 cm, abaxially pubescent. Calyx white, 1.5–2 cm, split on 1 side, pubescent, apex 3-toothed. Corolla tube white, ca. 2.7 cm, pubescent; lateral lobes ca. 2.4 cm × 5 mm. Labellum purplish brown with dense, yellow spots and yellow base; central lobe linear-oblong, 1.7–2.4 cm × 7–8 mm, apex entire or emarginate; lateral lobes ca. 1.4 cm. Anther subsessile, orange, 1.3–1.5 cm; connective appendage pale blue, 1.1–1.4 cm. Fl. Jun–Jul. $2n = 22^*$.

• Forests; ca. 800 m. S Yunnan (Mengla Xian).

28. *Zingiber bisectum* D. Fang in D. Fang & D. H. Qin, *Guihaia* 16: 5. 1996.

裂舌姜 *lie she jiang*

Rhizomes yellowish inside, tuberous; roots tuberous at tip. Pseudostems to 3.4 m. Leaf sheath villous; ligule 2-cleft, 1–6 cm, subscarios; petiole absent to 5 mm, villous abaxially; leaf blade suboblong or oblong-ob lanceolate, ca. 8.5 × 4.5–10 cm,

adaxially densely brown dotted along midvein, abaxially sparsely villous, base attenuate, apex acuminate. Inflorescences arising from rhizomes, ovoid or suboblong, 7–10 × 2.5–7 cm, many flowered; peduncle 2–12.5 cm, villous; bracts red or green, oblong, 4–4.5 × ca. 1.1 cm, villous; bracteoles oblong, 3.5–4 cm × ca. 7 mm, villous. Calyx ca. 2 cm, split on 1 side, villous, apex 3-toothed. Corolla tube white, 4–4.7 cm; lobes yellowish, central one ca. 2.5 cm × 8–9 mm, lateral ones lanceolate, ca. 2.3 cm × 5 mm. Labellum black-purple spotted; central lobe obovate, ca. 2 × 1.3 cm, apex 3-toothed; lateral lobes ca. 10 × 7 mm. Anther sessile, ca. 1.5 cm; connective appendage ca. 1.2 cm. Ovary densely villous. fl. Aug.

- Hill slopes; ca. 300 m. S Guangxi (Yongning Xian).

29. *Zingiber nigrimaculatum* S. Q. Tong, Acta Phytotax. Sin. 27: 287. 1989.

黑斑姜 hei ban jiang

Pseudostems 0.8–1.2 m × 6–12 mm. Leaf sheath green, white puberulent; ligule bright red at margin, 2-lobed, or entire (when apex truncate), ca. 6 mm, white puberulent; petiole 3–10 mm; leaf blade abaxially densely black spotted, elliptic or narrowly lanceolate, 15–40 × 3–9 cm, abaxially glabrous except puberulent along midvein, lateral veins prominent adaxially, base cuneate, apex acuminate or caudate-acuminate. Inflorescences arising from rhizomes. Flowers unknown. Infructescence capitate, 3.5–5 × 5–6 cm; peduncle white, apex purplish red, 2–6 cm, glabrous; bracts green, purplish red at apex, lanceolate, ca. 2.5 cm × 6 mm, glabrous. Capsule yellowish green, ovoid, 3.5–4 × 2–2.2 cm, 3-angled, apex with persistent calyx. Seeds purplish black, subovoid, ca. 7 × 5 mm. Fr. Nov.

- Forests; ca. 1800 m. S Yunnan (Mengla Xian).

30. *Zingiber densissimum* S. Q. Tong & Y. M. Xia, Acta Phytotax. Sin. 25: 467. 1987.

多毛姜 duo mao jiang

Pseudostems 40–70 cm. Leaves aggregated at pseudostem apex; ligule 2-lobed, 0.6–1(–2) cm, densely silvery villous; petiole 2–5 cm, densely silvery villous; leaf blade lanceolate or narrowly so, 22–45 × 4–9 cm, adaxially glabrous, abaxially densely silvery villous, base cuneate or attenuate, apex shortly acuminate. Inflorescences arising from rhizomes, pale or with pale red apex, narrowly ovoid or ovoid, 4.5–5 × 3.4–4.5 cm; peduncle embedded in ground, 3–13 cm, slender; bracts red at apex, elliptic, 3.8–4.2 cm, apex mucronate; bracteoles 2.4–2.6 cm × 4–6 mm, silvery villous. Flowers white. Calyx 1.3–1.5 cm, silvery villous, apex unequally 3-toothed. Corolla tube 4.5–5 cm; lobes lanceolate, central one 2.8–3.1 cm × 8–10 mm, lateral ones 2.2–2.5 cm × 5–6 mm. Labellum fan-shaped; central lobe obovate, 2.5–3 × 2–2.5 cm, apex emarginate; lateral lobes narrower than central one, 2–2.4 × 1–1.2 cm. Filament ca. 2 mm; anther yellow, ca. 1.3 cm; connective appendage ca. 9 mm. Ovary white, silvery villous. Capsule ovoid, ca. 3 × 2 cm, 3-angled. Seeds pale, obovoid, ca. 3 mm. Fl. Jul.

Mixed forests; ca. 1400 m. SW Yunnan (Menghai Xian) [N Thailand].

31. *Zingiber yunnanense* S. Q. Tong & X. Z. Liu, Acta Bot.

Yunnan. 13: 27. 1991.

云南姜 yun nan jiang

Pseudostems 1–1.5 m, base with purplish red sheaths. Leaves subsessile; ligule 2-lobed, 4–7 mm, densely pubescent; leaf blade abaxially purplish red on basal leaves, lanceolate or narrowly so, 15–32 × 5–6.5 cm, abaxially sparsely hairy, base cuneate, apex acuminate or caudate. Inflorescences arising from rhizomes, ellipsoid, ca. 5.7 × 3.5 cm; peduncle embedded in ground, 4–12 cm; bracts slightly hairy, outer ones densely purplish red spotted, yellowish green at base, elliptic, apex mucronate, inner ones green, densely purplish red spotted at apex, tubular, 4–4.5 cm × 6–8 mm; bracteoles ca. 3 cm. Calyx white with red base and apex, ca. 1 cm, sparsely hairy. Corolla tube white with red apex, ca. 3.7 cm, glabrous; central lobe red with slightly yellowish green base, ca. 3.3 × 1.3 cm. Labellum glabrous; central lobe white with purple lines, elliptic, ca. 2.8 × 1.7 cm; lateral lobes auriculate, ca. 1/4 as long as central lobe. Anther yellowish, ca. 1 cm; connective appendage purplish, 2-cleft, ca. 1.5 cm. Ovary densely white pubescent. Fl. Jul.

- W Yunnan (Tengchong Xian).

32. *Zingiber cochleariforme* D. Fang, Acta Phytotax. Sin. 18: 225. 1980.

匙苞姜 chi bao jiang

Rhizomes pale yellow, fleshy, strongly aromatic. Pseudostems 0.7–2 m. Ligule 2-lobed, 4–7(–14) mm, glabrous or thinly pubescent; petiole absent to 6 mm, villous; leaf blade elliptic-lanceolate, rarely lanceolate, 35–50 × 8–14 cm, adaxially glabrous, abaxially pilose, glandular spotted on both surfaces, base rounded-cuneate to cuneate, apex acuminate. Inflorescences arising from rhizomes, ovoid to obovoid, 3–6 × 1.5–5 cm; peduncle 1–6 cm, slender, villous; bracts purple or white, cuneate-cochleate to oblong, 1.5–4 × 0.5–2 cm, abaxially pubescent, apex truncate or rounded; bracteoles 2.2–2.8 cm. Calyx yellowish, 1–1.3 cm. Corolla tube 3.5–4 cm; lobes yellowish white, lanceolate, 2.5–3.5 cm. Labellum yellowish white, ca. 2.5 cm; central lobe purple or red at apex, oblanceolate, ca. 2 cm × 8 mm, apex 3-toothed; lateral lobes suboblong, ca. 9 × 5 mm, throat shortly hairy. Anther ca. 1.2 cm; connective appendage purple or red, rarely yellow, ca. 1.2 cm. Ovary densely villous. Capsule red, ovoid-ellipsoid, ca. 4 × 2 cm, obtusely 3-angled, pilose. Seeds black; aril white. Fl. Aug–Oct, fr. Oct–Nov.

- NW Guangxi (Longlin Ge Zu Zizhixian).

33. *Zingiber leptorrhizum* D. Fang, Guihaia 2: 138. 1982.

细根姜 xi gen jiang

Rhizomes 1.5–3 mm in diam., slender. Pseudostems 30–150 cm. Ligule 2-lobed, 3–13 mm, villous; petiole very short; leaf blade lanceolate, 4–30 × 2–5 cm, adaxially glabrous, abaxially sparsely appressed villous, base cuneate, apex acuminate. Inflorescences arising from rhizomes, narrowly ovoid, 4.5–7 × 1.5–2 cm, 7–12-flowered; peduncle 5–14 cm, clothed with lanceolate, scalelike sheaths 3–5 cm; bracts deep purple, lanceolate, 4–4.5 × 1–1.2 cm, abaxially villous; bracteoles lanceolate, 3.2–3.5 × ca. 1.2 cm, apex 2-lobed. Flowers white, abaxially villous.

Calyx ca. 2.5 cm, apex subtruncate. Corolla tube 3–3.7 cm; lobes lanceolate, hoodlike, 2.6–3 cm × ca. 7 mm. Labellum white, ca. 3 cm; central lobe broadly ovate, ca. 2 cm, apex emarginate or rounded; lateral lobes deltoid, 4–8 mm, apex acute. Filament very short; anther ca. 1.5 cm; connective appendage ca. 1.5 cm. Ovary densely villous. Capsule red. Fl. Aug–Sep. fr. Oct–Nov.

- Forest floors. E Guangxi.

34. *Zingiber lingyunense* D. Fang, Acta Phytotax. Sin. 18: 226. 1980.

乌姜 wu jiang

Rhizomes white outside, violet inside, fleshy, tuberous, slightly sweet tasting. Pseudostems 0.5–1.7 m. Ligule 2-lobed, 1–5 mm; petiole 1–5 mm; leaf blade narrowly lanceolate, 15–27 × 1.8–3.5 cm, adaxially glabrous, abaxially pilose, base rounded-cuneate, apex acuminate. Inflorescences arising from rhizomes, ovoid to ovoid-oblong, 3–5.5 × 1–3 cm; peduncle to 24 cm, slender, clothed with purple, oblong or oblanceolate, scalelike sheaths 1–4.5 cm; bracts purple, oblong or oblanceolate, 2.5–4 × 0.6–1.4 cm, abaxially hairy. Flowers white. Calyx 1.1–1.4 cm, base hairy, apex 2- or 3-toothed. Corolla tube ca. 2.5 cm; lobes lanceolate, 1.5–2 cm × ca. 5 mm. Labellum white, ca. 2 cm; central lobe obovate, ca. 1 × 1.2 cm, apex emarginate or rounded; lateral lobes small, ca. 3 mm. Anther ca. 1 cm; connective appendage ca. 1 cm. Ovary villous. Fl. Aug–Sep, fr. Oct–Nov.

- Among rocks in forests. NW Guangxi (Lingyun Xian).

35. *Zingiber simaoense* Y. Y. Qian, Bull. Bot. Res., Harbin 18: 284. 1998.

思茅姜 si mao jiang

Rhizomes fleshy; roots ending in tubercles. Pseudostems 30–65 cm. Ligule 2-lobed, 1–8 mm, densely villous; petiole 0.3–1.5(–4.5) cm, gray-brown villous; leaf blade obovate, oblanceolate, or oblong, 1.5–35 × 1.2–7.5 cm, abaxially villous, adaxially glabrous, base cuneate, apex acuminate. Inflorescences arising from rhizomes, green or red, obovoid, 4–7 × 1.5–4 cm; peduncle white, 3–10 cm, villous, scalelike sheaths white, 0.8–3.5 cm, sparsely villous; bracts greenish or white with pinkish apex, obovate or elliptic, 3–5 × 1.3–2.6 cm, villous. Flowers white. Calyx 1–1.5 cm, villous. Corolla tube 4–5 cm; lobes narrowly ovate or lanceolate, 2.4–3 × 0.7–1.1 cm. Labellum fan-shaped, glabrous; central lobe orbicular, 1.7–2.5 × 2.2–3 cm, apex truncate or rounded; lateral lobes obovate, 1–1.5 cm. Anther 1.1–1.2 cm; connective appendage 1.2–1.3 cm. Ovary villous. Capsule red, ovoid, 2–3.5 cm. Seeds black, rarely red. Fl. Sep.

- Forests; 1200–1600 m. S Yunnan (Simao Xian).

36. *Zingiber guangxiense* D. Fang, Acta Phytotax. Sin. 18: 226. 1980.

桂姜 gui jiang

Rhizomes tuberous, ca. 1.3 cm in diam. Pseudostems 0.5–1.5 m. Ligule 2–6 mm, puberulent, apex emarginate; petiole 1–4 mm; leaf blade lanceolate or oblong-lanceolate, 25–35 × 5–9

cm, densely purple-brown glandular spotted, abaxially appressed villous, base rounded-cuneate to cuneate, apex acuminate. Inflorescences arising from rhizomes, obovoid, 4–8 × 2–4 cm, more than 20-flowered; peduncle 2.5–20 cm, slender; bracts red or purple, rarely green, oblong-lanceolate, 4–5 × 1–1.5 cm, abaxially pilose. Calyx 0.9–1.8 cm, hairy. Corolla tube ca. 4.5 cm, glabrous; lobes linear, 3.5–4 cm × ca. 5 mm, pilose. Labellum yellowish, ca. 3 cm; central lobe oblong, ca. 2 cm × 7 mm, apex 2-cleft, rarely entire; lateral lobes suboblong, ca. 10 × 5 mm. Anther ca. 1.4 cm; connective appendage red, ca. 1.8 cm. Ovary ca. 5 mm, densely pilose. Capsule ovoid, 3–4 × 1–1.5 cm, obtusely 3-angled, hairy. Seeds red; aril white. Fl. Sep–Oct. fr. Oct–Nov.

- Forest floors. SE Guangxi (Bobai Xian).

The spelling of the specific epithet follows the protologue; in FRPS it was given as "*Zingiber kwangsiense*."

37. *Zingiber mioga* (Thunberg) Roscoe, Trans. Linn. Soc. London 8: 348. 1807.

荷 rang he

Amomum mioga Thunberg in Murray, Syst. Veg., ed. 14, 51. 1784; *Zingiber echuanense* Y. K. Yang; *Z. oligophyllum* K. Schumann.

Rhizomes yellowish. Ligule 2-lobed, 3–12 mm, membranous; petiole absent to 1.7 cm; leaf blade lanceolate-elliptic or linear-lanceolate, 20–37 × 4–6 cm, glabrous or abaxially pilose, apex caudate. Inflorescences arising from rhizomes, ellipsoid, 5–7 cm; peduncle absent to 17 cm, scalelike sheaths oblong; bracts reddish green with purple veins, elliptic. Calyx 2.5–3 cm. Corolla tube longer than calyx; lobes yellowish, lanceolate, 2.7–3 cm × ca. 7 mm. Labellum ovate, ca. 3 cm; central lobe yellow with white margin, ca. 2.5 × 1.8 cm; lateral lobes ca. 1.3 cm × 4 mm. Anther ca. 1 cm; connective appendage ca. 1 cm. Capsule obovoid, loculicidally dehiscent; pericarp red inside. Seeds black; aril white. Fl. Aug–Oct. $2n = 22$.

Moist places in mountain valleys; rarely cultivated. Anhui, Guangdong, Guangxi, Guizhou, Hunan, Jiangsu, Jiangxi, Yunnan, Zhejiang [Japan].

Medicinal and a vegetable.

38. *Zingiber longyanjiang* Z. Y. Zhu, Bull. Sichuan School Chin. Mat. Med. 30(2): 28. 1992.

龙眼姜 long yan jiang

Rhizomes yellowish white inside, tuberous. Pseudostems 1–1.8 m, base purplish brown. Ligule 2-lobed, 4–11 mm; petiole purple or yellowish green, 4–10 mm, white villous; leaf blade oblong or oblong-lanceolate, 25–40 × 5–11 cm, adaxially subglabrous, abaxially appressed villous and glandular spotted, base broadly cuneate, apex acuminate. Inflorescences arising from rhizomes, obovoid or narrowly ovoid, 3–5 × 2–4 cm; peduncle 1–3 cm; bracts greenish white or yellowish white, ovate or oblong, 2.5–3 × 2–3 cm, apex rounded, inner bracts oblanceolate or lanceolate, 2.5–3.8 × 0.8–1.5 cm, abaxially slightly villous, apex emarginate or acute. Calyx white, 8–10 mm, white villous, apex truncate or undulate. Corolla tube yellowish white, 3–4.2 cm, white villous; central lobe lanceolate,

2.5–2.9 cm × 6–9 mm; lateral lobes narrower than central one, apex 2-cleft. Labellum pale purple with yellowish white base, ca. 2.5 cm, throat glabrous; central lobe ligulelike or narrowly oblong, 1.3–1.6 cm; lateral lobes oblong, 6–8 × 3–5 mm, apex 2-cleft. Anther yellowish white, ca. 1.1 cm; connective appendage purple at apex, ca. 1.5 cm. Ovary densely villous. Capsule purple, oblong, 3–4 × 1.5–2 cm, obtusely 3-angled, slightly villous. Seeds purplish brown, ellipsoid or ovoid. Fl. Aug–Sep, fr. Oct–Nov.

- 600–3200 m. C Sichuan (Emei Shan).

Medicinal.

39. *Zingiber teres* S. Q. Tong & Y. M. Xia, Acta Phytotax. Sin. 25: 468. 1987.

柱根姜 zhu gen jiang

Rhizomes cylindrical, aromatic. Pseudostems 60–100 cm × 6–10 mm, base with green sheaths. Ligule 2-lobed, 2–4 mm, pubescent, lobes rounded at apex; petiole ca. 2 mm; leaf blade narrowly lanceolate, 18–25 × 3–4 cm, glabrous except sparsely puberulent along midvein abaxially, base cuneate, apex acuminate or caudate. Inflorescences arising from rhizomes, ellipsoid or narrowly so, 4.5–5 × 2–3 cm; peduncle embedded in ground, 6–12 cm, slender; bracts elliptic or narrowly so, 3–4 × 1–2 cm, glabrous except red pubescent at acute or acuminate apex; bracteoles red with white base, tubular, 2.5–2.8 cm. Calyx 1.4–1.6 cm, apex obscurely 3-toothed. Corolla tube yellow, 4–5 cm; central lobe lanceolate, 2.6–3 × 0.9–1 cm; lateral lobes 2–2.2 cm × 5–7 mm. Labellum yellow at base; lobes purple with yellow stripes, central one obovate, 1.8–2 × 1.1–1.3 cm, apex acuminate, lateral ones auriculate, small. Anther sessile, ca. 1.1 cm; connective appendage yellow proximally, purple distally, ca. 1 cm. Ovary densely white pubescent. Capsule (immature) white with purple or white apex, oblong, ca. 5 × 1.8 cm, 3-angled. Seeds subobovoid, ca. 5 mm; aril white. Fl. Oct.

Forests; ca. 1200 m. SW Yunnan (Menglian Dai-Lahu-Va Zu Zizhixian) [N Thailand].

40. *Zingiber striolatum* Diels, Bot. Jahrb. Syst. 29: 262. 1900.

阳荷 yang he

Zingiber didymoglossum K. Schumann; *Z. emeiense* Z. Y. Zhu; *Z. hupehense* Pampanini; *Z. liangshanense* Z. Y. Zhu.

Rhizomes white, slightly fragrant. Pseudostems 1–1.5 m. Ligule brown striped, 2-lobed, 4–7 mm, membranous; petiole 0.8–1.2 cm; leaf blade lanceolate or elliptic-lanceolate, 25–35 × 3–6 cm, abaxially glabrous or sparsely villous, base attenuate, apex caudate. Inflorescences arising from rhizomes, subovoid; peduncle 1.5–2 cm or longer, scalelike sheaths 2 or 3; bracts red, broadly ovate or elliptic, 3.5–5 cm, pubescent. Calyx ca. 5 cm, membranous. Corolla tube white, 4–6 cm; lobes white or yellowish with purplish brown stripes, oblong-lanceolate, 3–3.5 cm. Labellum pale purple, obovate, ca. 3 × 2.6 cm; lateral lobes ca. 5 mm. Filament very short; anther lanceolate, ca. 1.5 cm; connective appendage ca. 1.5 cm. Capsule ca. 3.5 cm, loculicidally dehiscent; pericarp red inside. Seeds black; aril white. Fl. Jul–Oct, fr. Sep–Dec. $2n = 22^*$.

• Forest floors, streamsides; 300–1900 m. Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan.

Medicinal.

41. *Zingiber gulinense* Y. M. Xia, Acta Bot. Yunnan. 18: 51. 1996.

古林姜 gu lin jiang

Pseudostems 50–90 cm, base with purple sheaths. Leaf sheath green, glabrous; ligule 2-lobed, glabrous; petiole 1–1.7 cm; leaf blade elliptic, 10–18 × 5.6–7 cm, adaxially glabrous, abaxially sparsely villous, base cuneate, apex acuminate. Inflorescences arising from rhizomes, capitate, 1.8–3 × 1.8–2.5 cm; peduncle embedded in ground, 2–7 cm; bracts lanceolate, 3–3.2 × ca. 1.1 cm; bracteoles densely red spotted, tubular, ca. 2.8 cm. Calyx white, ca. 1.4 cm, glabrous, apex emarginate. Corolla yellow, glabrous; tube ca. 2.6 cm; lobes ovate, central one ca. 2.1 cm × 8 mm, apex acuminate; lateral lobes ca. 1.7 cm × 6 mm, apex acute. Labellum purple with white dots, base white; central lobe oblong, ca. 1 cm × 2 mm; lateral lobes linear, ca. 1 cm × 2 mm. Stamen purple; filament ca. 2 mm; anther ca. 9 mm; connective appendage ca. 4 mm. Ovary pale green, glabrous. Capsule purple, ovoid, ca. 2.3 × 1.2 cm, 3-angled. fl. Sep.

- Forests; ca. 600 m. SE Yunnan (Maguan Xian).

42. *Zingiber pleiostachyum* K. Schumann in Engler, Pflanzenr. 20(IV. 46): 185. 1904.

多穗姜 duo sui jiang

Pseudostems ca. 50 cm. Ligule 2-lobed, ca. 6 mm, glabrous; petiole 3–6 mm; leaf blade oblong or oblong-lanceolate, 9–15 × 3–4.5 cm, glabrous. Inflorescences numerous, arising from rhizomes, 4–6-flowered; peduncle flexuous, 4–7 cm, glabrous, clothed with 5 or 6 oblong-lanceolate sheaths; bracts linear-lanceolate, ca. 3 cm, glabrous; bracteoles convolute. Flowers red. Pedicel 6–7 mm, sericeous. Calyx ca. 1.8 cm, split on 1 side. Corolla tube ca. 3.8 cm, very slender; lobes ca. 2 cm. Labellum subrhombic, ca. 2.4 cm; lateral lobes ca. 6 mm, apex acute. Anther ca. 1 cm; connective appendage ca. 1 cm.

- Taiwan.

