

3. ALPINIA Roxburgh, *Asiat. Res.* 11: 350. 1810, nom. cons.

山姜属 *shan jiang shu*

Albina Giseke, nom. rej.; *Buekia* Giseke, nom. rej.; *Zerumbet* J. C. Wendland, nom. rej.

Rhizomes creeping, thick. Pseudostems many, well developed, rarely absent. Leaves many, rarely 1–4; leaf blade oblong or lanceolate. Inflorescence a terminal panicle, raceme, or spike, dense or lax, covered by 1–3 spatulate involucre bracts when immature; bracts (when present) open to base, rarely hooded, each subtending 1 flower or a cincinnus of 2 to many flowers; bracteoles open to base or tubular, rarely hooded, sometimes absent. Calyx usually tubular, sometimes split on 1 side. Corolla central lobe ± hooded, usually wider than lateral lobes. Lateral staminodes small or absent, subulate or toothlike, adnate to base of labellum. Labellum often showy, usually larger than corolla lobes, sometimes inconspicuous, margin variously lobed or entire. Filament present or absent; connective crested or not. Ovary usually 3-loculed and placentation axile. Stigma usually well expanded, sometimes clavate, rarely geniculate. Stylodes often massive. Capsule usually globose, dry or fleshy, indehiscent or irregularly dehiscent. Seeds numerous, often angled, arillate.

About 230 species: tropical and subtropical Asia, Australia, and Pacific Islands; 51 species (35 endemic) in China.

- 1a. Bracteoles funnelliform or deeply concave, enclosing flower buds.
 - 2a. Bracteoles funnelliform, persistent; corolla lobes 0.5–1.2 cm; labellum 0.5–1.5 cm; bracts small.
 - 3a. Labellum ca. 1.5 cm; capsule black, 1.2–1.5 cm in diam. 1. *A. nigra*
 - 3b. Labellum ca. 0.5 cm; capsule not black, 0.8–1 cm in diam. 2. *A. conchigera*
 - 2b. Bracteoles shell-shaped, deciduous after anthesis; corolla lobes 1.8–4.5 cm; labellum more than 2 cm, bracts absent.
 - 4a. Inflorescence a panicle.
 - 5a. Capsule ribbed.
 - 6a. Inflorescences erect, rachis subglabrous; labellum ca. 3 cm 3. *A. formosana*
 - 6b. Inflorescences drooping, rachis densely tomentose; labellum 4–6 cm 4. *A. zerumbet*
 - 5b. Capsule not ribbed.
 - 7a. Petiole absent; leaf blade glabrous, 2–3.5 cm wide; labellum obovate, 2.7–3.5 × 1.5–2 cm 5. *A. calcarata*
 - 7b. Petiole 2.5–9 cm; leaf blade pubescent abaxially, 6–20 cm wide; labellum 3.5–4 × 3–3.8 cm.
 - 8a. Ligule 2-lobed; bracteoles deep red, 2–3.3 cm; corolla lobes white tinged with red, ca. 2.2 cm 6. *A. guinanensis*
 - 8b. Ligule entire; bracteoles brown, 3–4 cm; corolla lobes wholly white, 3–3.6 cm 7. *A. menghaiensis*
 - 4b. Inflorescence a raceme or spike.
 - 9a. Inflorescence a spike.
 - 10a. Labellum 1.5–2 cm.
 - 11a. Bracteoles ca. 1.5 cm, early deciduous; corolla lobes ca. 1.5 cm; labellum ovate-rhomboidal, ca. 1.6 × 1.6 cm 8. *A. shimadae*
 - 11b. Bracteoles ca. 3.2 cm, persistent; corolla lobes 1.8–2.2 cm; labellum suborbicular, ca. 2 × 2 cm 9. *A. sessiliflora*
 - 10b. Labellum 3–4.5 cm.
 - 12a. Corolla lobes ca. 2 cm; lateral staminodes absent; labellum white, with purple stripes toward center 10. *A. dolichocephala*
 - 12b. Corolla lobes 3–5 cm; lateral staminodes very small or 4–5 mm; labellum yellow at margin, yellow-red toward center.
 - 13a. Spikes ca. 15 cm; bracteoles 2- or 3-toothed at apex; labellum ovate-rhomboidal, not 2-lobed at apex 11. *A. kusshakuensis*
 - 13b. Spikes 20–25 cm; bracteoles subrounded at apex; labellum broadly ovate-rhomboidal, shortly 2-lobed at apex 12. *A. tonrokuensis*
 - 9b. Inflorescence a raceme.
 - 14a. Pedicels less than 2 mm.
 - 15a. Leaf blade abaxially glabrous 13. *A. mesanthera*
 - 15b. Leaf blade abaxially hairy.
 - 16a. Bracteoles ca. 1.2 cm; corolla lobes ciliate at margin; labellum ovate, ca. 2.2 cm 14. *A. kawakamii*
 - 16b. Bracteoles 4–5 cm; corolla lobes glabrous at margin; labellum obovate, 4.5–7 cm 15. *A. platyphilus*
 - 14b. Pedicels 2–15 mm.
 - 17a. Leaf blade adaxially glabrous.
 - 18a. Labellum 3–3.8 cm.
 - 19a. Ligule 2-cleft, ca. 10 mm; leaf blade cordate at base; labellum red, white at margin 16. *A. ovoideicarpa*
 - 19b. Ligule entire, 4–6 mm; leaf blade cuneate at base; labellum red with yellow center, margin not white 17. *A. blepharocalyx*
 - 18b. Labellum (3.5–)3.8–5.5 cm.

- 20a. Pedicels 4–8 mm; lateral staminodes 4–8 mm 18. *A. napoensis*
 20b. Pedicels 2–4 mm; lateral staminodes 2–3 mm.
 21a. Ligule 3–10 mm; bracteoles 2–3.5 cm; labellum 3.5–4.5 cm 19. *A. hainanensis*
 21b. Ligule 10–15 mm; bracteoles ca. 5.5 cm; labellum ca. 5 cm 20. *A. uraiensis*
- 17b. Leaf blade adaxially hairy.
 22a. Petiole 2.5–8 cm.
 23a. Petiole 2.5–4 cm; ligule 1–2 cm; labellum ca. 4 cm, yellow at center 21. *A. emaculata*
 23b. Petiole 4–8 cm; ligule ca. 0.8 cm; labellum ca. 2.5 cm, red at center 22. *A. kwangsiensis*
 22b. Petiole less than 2.5 cm.
 24a. Lateral staminodes subulate, 6–8 mm.
 25a. Calyx 4–6-toothed at apex; labellum broadly ovate, 3.9–4.5 cm, yellow with red center
 23. *A. rubromaculata*
 25b. Calyx 3-toothed at apex; labellum ovate, 3–3.5 cm, red with yellow center 17. *A. blepharocalyx*
 24b. Lateral staminodes absent or ca. 3 mm.
 26a. Lateral staminodes absent; pedicel ca. 7 mm; corolla lobes densely sericeous 24. *A. malaccensis*
 26b. Lateral staminodes subulate, ca. 3 mm; pedicel ca. 3 mm; corolla lobes ciliate at margin 19. *A. hainanensis*
- 1b. Bracteoles flat or slightly concave, sometimes very small (ca. 1 mm) or absent.
 27a. Bracteoles absent or very small (ca. 1 mm); bracts absent or minute.
 28a. Ligule 1–3 cm or more, membranous.
 29a. Leaf blade linear, 1.2–2.5 cm wide 25. *A. officinarum*
 29b. Leaf blade lanceolate, 3–6 cm wide.
 30a. Inflorescence a panicle; labellum nearly fan-shaped, ca. 1 cm 26. *A. flabellata*
 30b. Inflorescence a raceme; labellum obovate, ca. 2 cm 27. *A. oxyphylla*
 28b. Ligule less than 0.5 cm, not membranous.
 31a. Leaf blade hairy on both surfaces.
 32a. Leaf blade 25–40 × 4–7 cm; racemes 15–30 cm; labellum ovate, ca. 6 mm wide 28. *A. japonica*
 32b. Leaf blade 10–18 × 2–3 cm; racemes 4–5 cm; labellum oblong-obovate or oblong, 0.8–1.6 cm 29. *A. nanchuanensis*
 31b. Leaf blade glabrous.
 33a. Inflorescence a spike.
 34a. Leaf sheath pubescent; spikes 1.5–6 cm; flowers usually in pairs proximally on spike rachis,
 solitary distally; labellum entire at margin 30. *A. bambusifolia*
 34b. Leaf sheath glabrous; spikes 10–20 cm; flowers in clusters of 3 on spike rachis; labellum crisped
 at margin 31. *A. jiangnanfeng*
 33b. Inflorescence a raceme.
 35a. Labellum ca. 2 cm.
 36a. Leaf blade linear-lanceolate, ca. 2.3 cm wide; lateral staminodes absent; labellum obovate 32. *A. pricei*
 36b. Leaf blade linear, 0.3–1.5 cm wide; lateral staminodes linear, 8–9 mm; labellum ovate 33. *A. graminifolia*
 35b. Labellum (0.5–)0.7–1.6 cm.
 37a. Ligule cuneate, ca. 4 mm; petiole absent; racemes 4–8(–12) cm; lateral staminodes triangular,
 ca. 1 mm 34. *A. brevis*
 37b. Ligule 2-lobed, 2–3 mm; petiole 0.5–3 cm; racemes 9–22 cm; lateral staminodes linear,
 3–4 mm 35. *A. sichuanensis*
- 27b. Bracteoles flat or concave, more than 1 mm; bracts present.
 38a. Inflorescence a panicle.
 39a. Panicles narrow, branches 3–6 mm; labellum 6–7 mm 36. *A. oblongifolia*
 39b. Panicles spreading, branches more than 8 mm; labellum more than 10 mm.
 40a. Bracts and bracteoles persistent in fruit; capsule oblong or ellipsoid; petiole to 0.6 cm 37. *A. galanga*
 40b. Bracts and bracteoles early deciduous; capsule globose; petiole 1–9 cm.
 41a. Petiole and leaf blade pubescent adaxially (sometimes glabrous in *A. polyantha*).
 42a. Pseudostems to 4.6 m; leaf blade to 100 × 25 cm; labellum suborbicular or oblong, ca. 2.2 ×
 1.8–2.2 cm 38. *A. polyantha*
 42b. Pseudostems 1–2 m; leaf blade 30–40(–80) × 8–10(–20) cm; labellum oblong-ovate, 1–1.2 ×
 0.6–0.7 cm 39. *A. maclurei*
- 41b. Petiole and leaf blade glabrous adaxially.
 43a. Ligule 5–6 mm, thin; panicles glabrous 40. *A. intermedia*
 43b. Ligule 10–20 mm, thick; panicles hairy.
 44a. Panicle branches apically 1–3-flowered; labellum 1.5–2 cm 41. *A. guangdongensis*
 44b. Panicle branches apically 3–8-flowered; labellum 1.2–1.4 cm.
 45a. Leaf blade oblong, 10–14 cm wide; bracteoles oblong 42. *A. globosa*

- 45b. Leaf blade linear-lanceolate, ca. 7 cm wide; bracteoles ovate 43. *A. tonkinensis*
- 38b. Inflorescence a raceme or spike.
- 46a. Inflorescences conelike or cylindric, densely flowered.
- 47a. Inflorescences conelike, 4.5–9 × 3–4 cm; bracts 1.7–2.2 cm; petiole absent to 1 cm 44. *A. strobiliformis*
- 47b. Inflorescences cylindric, 7–9 × 1.5–2.5 cm; bracts less than 0.8 cm; petiole 2.5–4.5 cm 45. *A. pinnanensis*
- 46b. Inflorescences neither conelike nor cylindric, laxly flowered.
- 48a. Pseudostems not frondlike; leaves 1–4.
- 49a. Leaf blade adaxially green with deep green stripes along veins, glabrous; labellum white with red stripes, ovate, ca. 1.2 cm 46. *A. pumila*
- 49b. Leaf blade adaxially uniformly green, glabrous except pubescent along midvein and at margin; labellum yellow with red stripes, broadly ovate, ca. 0.7 cm 47. *A. psilogyna*
- 48b. Pseudostems frondlike; leaves many.
- 50a. Leaf blade elliptic or ovate-elliptic; inflorescences ca. 4 cm; labellum oblong 48. *A. coriacea*
- 50b. Leaf blade elliptic-lanceolate; inflorescences 5–6 cm; labellum ovate or rhomboidal-ovate.
- 51a. Plants with odor of coriander (*Coriandrum sativum*); bracts deciduous 49. *A. coriandriodora*
- 51b. Plants without odor of coriander; bracts persistent.
- 52a. Leaf blade adaxially glabrous; spikes 10–16 cm; bracts densely tomentose 50. *A. stachyodes*
- 52b. Leaf blade adaxially densely pubescent; spikes 7–9 cm; bracts densely sericeous 51. *A. jingxiensis*

1. *Alpinia nigra* (Gaertner) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 35: 213. 1977.

黑果山姜 *hei guo shan jiang*

Zingiber nigrum Gaertner, Fruct. Sem. Pl. 1: 35. 1788; *Alpinia allughas* (Retzius) Roscoe; *Heritiera allughas* Retzius; *Languas allughas* (Retzius) Burkill.

Pseudostems 1.5–3 m. Leaves sessile or subsessile; ligule orbicular, 4–6 mm, glabrous; leaf blade lanceolate or elliptic-lanceolate, 25–40 × 6–8 cm, glabrous, base and apex acute. Panicles erect, to 30 cm; branches expanded, 2–8 cm; rachis and branches tomentose, usually lax with remote cincinni; bracts ovate; bracteoles funnelform, tomentose, persistent. Pedicel 3–5 mm. Calyx tubular, 1.2–1.5 cm, split down 1 side for ca. 2/3 its length, pubescent abaxially. Corolla tube ca. 1 cm; lobes oblong, ca. 1.2 cm, pubescent abaxially, central one wider than lateral ones, apex cucullate. Lateral staminodes subulate. Labellum obovate, ca. 1.5 cm, base clawed, apex 2-cleft. Stamen ca. 1.5 cm; filament linear, ca. 1 cm; anther curved. Ovary densely pubescent. Capsule black when dry, globose, 1.2–1.5 cm in diam., sparsely pubescent, irregularly dehiscent, apex with flower remains; pedicel 5–10 mm. Seeds 5–6 mm in diam. Fl. and fr. Jul–Aug.

Forests; 900–1100 m. S Yunnan [Bhutan, India, Sri Lanka, Thailand].

Chinese records of *Alpinia aquatica* (J. König) Roscoe (e.g., in FRPS) are referable to *A. nigra*.

Medicinal.

2. *Alpinia conchigera* Griffith, Not. Pl. Asiat. 3: 424. 1851.

节鞭山姜 *jie bian shan jiang*

Languas conchigera (Griffith) Burkill.

Pseudostems 1.2–2 m. Ligule entire, ca. 5 mm, tomentose or glabrous; petiole 5–10 mm; leaf blade lanceolate, 20–30 × 1–10 cm, glabrous except pubescent along midvein abaxially and at margin, lateral veins very conspicuous and dense when dry, base obtuse, apex acute. Panicles 20–30 cm, usually only

1- or 2-branched; secondary branches many, ca. 1.5 cm; bracts ca. 5 mm; bracteoles funnelform, 3–4 mm, apex obliquely truncate. Pedicel 3–5 mm. Calyx pale green, cupular, 3–4 mm, apex 3-cleft. Corolla white or pale blue-green, abaxially pubescent; tube equaling calyx; lobes 5–7 mm, central one rounded at apex. Lateral staminodes red, quadrate, ca. 1.5 mm. Labellum pale yellow or pinkish with red streaks, obovate, ca. 5 mm, concave, base bearing a purple callosity covering corolla throat. Filament pale yellowish to pinkish, ca. 5 mm, slender; anther ca. 2 mm. Ovary pyriform, glabrous. Capsule globose when fresh, oblong when dry, 8–10 mm in diam. Seeds 3–5, strongly aromatic. Fl. May–Jul, fr. Sep–Dec.

Forests; 600–1100 m. Yunnan [Bangladesh, Cambodia, India, Indonesia (Sumatra), Laos, W Malaysia, Myanmar, Thailand, Vietnam].

Medicinal.

3. *Alpinia formosana* K. Schumann, Bot. Jahrb. Syst. 27: 283. 1899.

美山姜 *mei shan jiang*

Alpinia koshunensis Hayata; *Languas formosana* (K. Schumann) Sasaki; *L. koshunensis* (Hayata) Sasaki.

Pseudostems to 1(–3.5) m. Ligule to 1 cm, abaxially vil- lous, apex obtuse; petiole absent to 1 cm; leaf blade lanceolate or oblong-lanceolate, 50–70 × 8–12 cm, both ends acuminate. Panicles narrow, 15–20 cm; rachis glabrous or sparsely villous; branches 2- or 3-flowered; bracteoles elliptic, ca. 1.5 cm, apex mucronate. Pedicel ca. 3 mm. Calyx 1.3–1.7 cm, split on 1 side, apex 3-toothed, ciliate. Corolla tube ca. 1 cm, glabrous; lobes oblong, ca. 1.5 cm, apex ciliate. Lateral staminodes subulate, less than 2 mm. Labellum white tinged with yellow, marked with red stripes at center, broadly ovate, ca. 3 cm, apex shortly 2-cleft, crisped. Stamen ca. 2 cm, with a kneelike bend. Ovary subglobose, white sericeous. Capsule vermilion, ellipsoid, wrinkled. Fl. Jul–Aug.

Taiwan [Japan].

This species was recognized as a natural hybrid between *Alpinia intermedia* and *A. zerumbet* by Yang and Wang (in Chiu & Peng, Proc.

Cross-Strait Symp. Florist. Diversity Conservation, 183–197. 1998).

4. *Alpinia zerumbet* (Persoon) B. L. Burtt & R. M. Smith, Notes Roy. Bot. Gard. Edinburgh 31: 204. 1972.

艳山姜 *yan shan jiang*

Costus zerumbet Persoon, Syn. Pl. 1: 3. 1805; *Alpinia fluviatilis* Hayata; *A. schumanniana* Valetton; *A. speciosa* (J. C. Wendland) K. Schumann (1893), not (Blume) D. Dietrich (1839); *Languas schumanniana* (Valetton) Sasaki; *L. speciosa* (J. C. Wendland) Small; *Zerumbet speciosum* J. C. Wendland.

Pseudostems 2–3 m. Ligule 5–10 mm, abaxially hairy; petiole 1–1.5 cm; leaf blade lanceolate, 30–60 × 5–10 cm, glabrous except pubescent at margin, base attenuate, apex acuminate with a spiral mucro. Panicles drooping, to 30 cm, enclosed by 2 long sheaths when young; rachis purple-red, velvety; branches very short, 1- or 2(or 3)-flowered; bracteoles enclosing flower buds, white with pink apex, elliptic, 3–3.5 cm, glabrous. Pedicel 1–2 cm. Calyx white, subcampanulate, ca. 2 cm, split on 1 side, apex toothed. Corolla tube shorter than calyx; lobes milky white with pink apex, oblong, ca. 3 cm; central lobe larger than lateral ones. Lateral staminodes subulate, ca. 2 mm. Labellum yellow with purple-red stripes, broadly ovate-spatulate, 4–6 cm, apex crisped. Stamen ca. 2.5 cm. Ovary golden yellow hirsute. Capsule vermilion, globose, ca. 2 cm in diam., ribbed, apex with persistent calyx. Seeds angled. Fl. Apr–Jun, fr. Jul–Oct. $2n = 48^*$.

Guangdong, Guangxi, Hainan, Taiwan, Yunnan, [Bangladesh, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam].

Cultivated for ornament, including plants with variegated leaves.

5. *Alpinia calcarata* Roscoe, Trans. Linn. Soc. London 8: 347. 1807.

距花山姜 *ju hua shan jiang*

Languas calcarata (Roscoe) Merrill.

Pseudostems to 1.3 m. Leaves sessile; ligule 8–15 mm, glabrous, apex obtuse; leaf blade linear-lanceolate, 20–32 × 2–3.5 cm or narrower, glabrous, base attenuate, margin with well-spaced, short bristles, apex acuminate and caudate-mucronate. Panicles less than 10 cm; rachis slightly velvety; proximal branches 3- or 4-flowered; bracteoles oblong, to 1.7 cm, membranous, apex obtuse. Pedicel ca. 3 mm. Calyx to 1.2 cm, split on 1 side, pubescent, apex 3-toothed. Corolla tube white, ca. 9 mm; lobes oblong, ca. 2.2 cm. Lateral staminodes red, subulate, ca. 3 mm, adnate to base of labellum. Labellum white with rose red and purple streaks, obovate, 2.7–3.5 × 1.5–2 cm, apex emarginate. Filament ca. 1.3 cm; anther 5–7 mm. Ovary 3–4 mm in diam., sericeous. Capsule red, globose. Fl. May. $2n = 48^*$.

Forests. Guangdong [India, Myanmar, Sri Lanka].

6. *Alpinia guinanensis* D. Fang & X. X. Chen in D. Fang, Guihaia 2: 135. 1982.

桂南山姜 *gui nan shan jiang*

Pseudostems to 3 m. Leaf sheath striate, pubescent; ligule 2-lobed or -cleft, 1–1.5 cm, abaxially pubescent, margin ciliate; petiole 2.5–6 cm, pubescent; leaf blade oblong, 18–90 × 7.5–18 cm, adaxially glabrous, abaxially sparsely pubescent, base obliquely cuneate, margin ciliate, apex caudate. Panicles suberect, 16–36 cm, densely pubescent; branches 3–14 mm, apically 1–3-flowered; involucral bracts 2, oblong, 15–24 × ca. 2.8 cm, abaxially pubescent, early deciduous; bracts oblong, 2–5 mm, deciduous; bracteoles deep red, shell-shaped, 2–3.3 cm, deciduous, margin ciliate. Pedicel 1–2 mm. Calyx pale red, ca. 1.5 cm, apex 3-toothed, ciliate. Corolla tube ca. 1 cm, densely pubescent at throat; lobes white tinged with red, oblong, ca. 2.2 cm × 7 mm, apex cucullate, central lobe wider than lateral ones. Lateral staminodes purple, linear, (2–)5–9 mm. Labellum yellow with purple stripes, ovate, ca. 4 × 3 cm, base rounded, margin undulate, apex emarginate. Filament ca. 1.6 cm; anther ca. 1 cm. Ovary densely pubescent. Capsule red, globose, smooth. Fl. Apr. $2n = 48^*$.

• Scrub. Guangxi.

7. *Alpinia menghaiensis* S. Q. Tong & Y. M. Xia in S. Q. Tong, Bull. Bot. Res., Harbin 18: 142. 1998.

勐海山姜 *meng hai shan jiang*

Pseudostems 1.5–3 m. Leaf sheath striate, glabrous; ligule entire, 1.4–1.6 cm, densely brown pubescent; petiole 4–9 cm, thinly pubescent; leaf blade oblong-lanceolate, 10–120 × 16–20 cm, abaxially pubescent, base cuneate, margin densely ciliate, apex shortly acuminate. Panicles 28–34 cm, densely brown bristly; branches very short, 1- or 2-flowered; bracteoles brown, 3–4 cm, leathery. Calyx light purple-red, tubular, 2–2.3 cm, apex 4-toothed. Corolla tube white, 0.5–1.8 cm, pubescent; lobes white, central one subovate, 3.1–3.6 × 2.1–2.6 cm, lateral ones narrowly elliptic, 1.2–1.5 cm wide. Lateral staminodes red, ca. 1 cm. Labellum orange-yellow, scarlet at center, yellow at margin and at red-stripped apex, broadly ovate, 3.5–4 × 3.2–3.8 cm, apex narrowed, 2-lobed. Stamen ca. 3 cm; filament ca. 1.2 cm. Ovary densely yellow-brown pubescent. Style white pubescent. Fl. Apr.

• Low forests; ca. 900 m. SW Yunnan (Menghai Xian).

8. *Alpinia shimadae* Hayata, Icon. Pl. Formos. 5: 219. 1915.

密穗山姜 *mi sui shan jiang*

Alpinia densespicata Hayata; *A. mediomaculata* Hayata; *Languas densespicata* (Hayata) Sasaki; *L. mediomaculata* (Hayata) Sasaki.

Pseudostems 1–2 m. Leaves subsessile or shortly petiolate; ligule oblong, margin hirsute; leaf blade linear-lanceolate, glabrous except hirsute at margin. Spikes cylindric, 12–15 cm, densely flowered; rachis sericeous-villous; bracteoles obovate, ca. 1.5 cm, early deciduous. Calyx subcylindric, ca. 1.8 cm, split on 1 side, abaxially hirsute, apex 3-toothed. Corolla tube ca. 8 mm; lobes ca. 1.5 cm, margin ciliate, central lobe suborbicular, lateral ones narrower. Labellum ovate-rhomboidal, ca. 1.6 × 1.6 cm, base with 2 callosities, margin erose. Anther ca. 8 mm, apex 2-cleft. Ovary cylindric, ca. 3.5 mm, densely villous. Capsule globose, ca. 1.3 cm in diam., sometimes

slightly ribbed, hirsute, base without persistent bracteoles, apex with persistent calyx. Fl. May, fr. Jul.

- Forests, montane regions; 400–800 m. Taiwan.

9. *Alpinia sessiliflora* Kitamura, Bot. Mag. (Tokyo) 59: 39. 1946.

大头山姜 da tou shan jiang

Alpinia macrocephala Hayata, Icon. Pl. Formos. 5: 223. 1915, not K. Schumann (1904); *A. pricei* Hayata var. *sessiliflora* (Kitamura) J. Jung Yang & J. C. Wang.

Pseudostems 1–2 m. Leaves petiolate; ligule oblong, abaxially hirsute; leaf blade linear-lanceolate, ca. 80 × 11 cm, adaxially glabrous, abaxially glabrous except sparsely villous along veins, base attenuate, margin hirsute, apex acute or acuminate. Spikes erect, dark red or purple-red, ca. 9 × 6 cm, densely flowered; rachis densely villous, base with 2 spathe-like bracts subtending inflorescence; bracteoles ca. 3.2 cm, persistent. Pedicel absent. Calyx cylindrical, ca. 1.5 cm × 8 mm, base velvety abaxially. Corolla tube ca. 1.4 cm, glabrous; lobes obovate, 1.8–2.2 cm. Lateral staminodes absent. Labellum suborbicular, ca. 2 × 2 cm, base constricted, margin crisped. Filament ca. 7 mm; anther ca. 8 mm. Ovary globose, less than 1 cm in diam., densely villous. Capsule dark red, fusiform-globose, ca. 1.5 × 1 cm, base with persistent bracteoles, apex with persistent calyx. Fl. Jan.

- Montane regions; 1300–2000 m. Taiwan.

10. *Alpinia dolichocephala* Hayata, Icon. Pl. Formos. 9: 119. 1920.

紫纹山姜 zi wen shan jiang

Languas dolichocephala (Hayata) Sasaki.

Pseudostems to 2 m. Leaves sessile; ligule yellow, purple striped abaxially, entire or nearly 2-cleft, villous; leaf blade lanceolate, 70–90 × 10–12 cm, glabrous except shortly hirsute at margin, base abruptly attenuate, apex with caudate tip ca. 1 cm. Spikes ca. 15 cm, 20–30 cm in fruit, dark yellow sericeous-villous; bracteoles ca. 3 cm, nearly hard and brittle, base and margin hirsute, apex subrounded with hairlike arista 1–2 mm. Pedicel absent. Calyx subcylindrical, ca. 2 cm, split on 1 side, abaxially very shortly hirsute. Corolla tube ca. 1 cm; lobes ca. 2 cm, central one hooklike, distal margin hirsute, apex mucronate. Lateral staminodes absent. Labellum white, purple striped toward center, broadly ovate, ca. 4 × 4 cm, margin erose, apex 2-cleft. Filament glabrous; anther ca. 1 cm. Ovary subglobose, ca. 2 mm in diam. Capsule globose, ca. 1.5 cm in diam., shortly hirsute. Fl. Apr.

- Forests; 400–700 m. Taiwan.

11. *Alpinia kusshakuensis* Hayata, Icon. Pl. Formos. 9: 121. 1920.

菱唇山姜 ling chun shan jiang

Languas kusshakuensis (Hayata) Sasaki.

Pseudostems more than 2 m. Leaves sessile or shortly petiolate; ligule 2-lobed, ca. 8 mm, abaxially villous; leaf blade lanceolate, ca. 50 × 10 cm, glabrous except ciliate at margin, base attenuate, apex abruptly acuminate. Spikes ca. 15 cm, densely

many flowered, densely villous; bracteoles shell-shaped, 2.5–3 cm, apex 2- or 3-toothed. Pedicel very short or absent. Calyx ca. 2 cm, split to middle on 1 side, abaxially hirsute, margin and apex slightly hairy. Corolla tube ca. 1 cm; lobes 3–5 cm, central one obovate-spatulate, ca. 1.5 cm wide. Lateral staminodes 4–5 mm. Labellum yellow-red toward center, yellow at margin, ovate-rhomboidal, 4–4.5 × ca. 3 cm, throat hirsute, margin erose-denticulate, apex caudate, not 2-lobed. Stamen ca. 4 cm; anther linear, ca. 1.5 cm. Ovary ca. 1 cm, densely villous. Style glabrous. Fl. May.

- Taiwan (Taibei Shi).

This species was recognized as a natural hybrid between *Alpinia shimadae* and *A. uraiensis* by Yang and Wang (loc. cit.).

12. *Alpinia tonrokuensis* Hayata, Icon. Pl. Formos. 9: 123. 1920.

台北山姜 tai bei shan jiang

Pseudostems 2–3 m. Leaves subsessile; ligule 2-lobed, ca. 8 mm, abaxially villous; leaf blade lanceolate, ca. 55 × 10 cm, glabrous except hirsute at margin, base acute, apex with linear-caudate tip ca. 2 cm. Spikes erect, 20–25 cm, densely flowered, densely yellow villous; bracteoles pink, shell-shaped, ca. 3 × 3 cm, apex subrounded. Calyx pink, obconical-cylindrical, ca. 2 cm, split to middle on 1 side. Corolla tube ca. 1 cm; lobes obovate, 4–5 cm, base attenuate. Lateral staminodes very small. Labellum yellow-red toward center, yellow at margin, broadly ovate-rhomboidal, 3–4 × 2.5 cm, base densely hirsute, apex subcuspidate, shortly 2-lobed. Stamen erect or recurved; anther linear, ca. 1.5 cm; connective 2-lobed, ca. 6 mm wide, hirsute. Ovary densely tomentose. Stigma funnelliform. Fl. May.

- Taiwan (Taibei Shi).

This species was recognized as a natural hybrid between *Alpinia uraiensis* and *A. zerumbet* by Yang and Wang (loc. cit.).

13. *Alpinia mesanthera* Hayata, Icon. Pl. Formos. 5: 225. 1915.

疏花山姜 shu hua shan jiang

Languas mesanthera (Hayata) Sasaki.

Pseudostems 1–2 m. Leaves sessile; ligule strigose abaxially and at margin, apex rounded; leaf blade linear-lanceolate, ca. 60 × 10 cm, glabrous except villous at margin, base cuneate, apex acuminate. Racemes erect, ca. 27 cm, lax; peduncle hirsute; bracteoles ca. 2.2 × 1.7 cm, split on 1 side, glabrous, apex 2- or 3-lobed. Pedicel held at right angle to rachis. Calyx cylindrical, ca. 2 cm, split on 1 side, base shortly hirsute abaxially, apex 3-lobed, ciliate. Corolla tube cylindrical, ca. 1.3 cm, abaxially glabrous; central lobe obovate, ca. 3 × 2.5 cm, apex emarginate or 2-cleft, ciliate; lateral lobes oblong-spatulate, narrower than central one. Lateral staminodes warty, hirsute. Labellum orbicular, ca. 3 cm in diam., margin denticulate, apex 2-cleft. Filament ca. 1 cm; anther obsagittate, ca. 1 cm. Ovary oblong, ca. 1.3 cm, densely villous. Fl. Jul.

- Taiwan.

14. *Alpinia kawakamii* Hayata, Ic. Pl. Formos. 5: 222. 1915.

密毛山姜 mi mao shan jiang

Alpinia elwesii Turrill; *A. shimadae* Hayata var. *kawakamii* (Hayata) J. Jung Yang & J. C. Wang; *Languas kawakamii* (Hayata) Sasaki.

Pseudostems 1–2 m. Leaves subsessile; leaf sheath pubescent, marked with conspicuous, vertical striations; ligule 2-cleft, ca. 4 mm, abaxially pubescent; leaf blade linear-lanceolate, ca. 45 × 5.5 cm, adaxially glabrous, abaxially densely pubescent, base attenuate, apex caudate-acuminate. Racemes erect, 12–15 cm, stout, densely flowered; rachis villous; bracteoles obovate, ca. 1.2 cm × 7 mm, abaxially pubescent, margin ciliate. Pedicel ca. 1 mm, villous. Calyx ca. 1 cm, split on 1 side, abaxially densely pubescent, margin ciliate. Corolla white; tube ca. 1 cm, glabrous; lobes ciliate at margin, lateral ones elliptic-lanceolate, ca. 1.8 cm × 7 mm, narrower than central one. Lateral staminodes very short. Labellum ovate, ca. 2.2 × 1.6 cm, apex emarginate, white tinged with red. Stamen ca. 1.7 cm; filament ca. 7 mm. Ovary ovoid, ca. 2.5 mm in diam. Seeds black; aril membranous.

- Montane regions; 400–900 m. S Taiwan.

This species was united with *Alpinia copelandii* Ridley, from the Philippines, by Moo (in Li et al., Fl. Taiwan 5: 832–833. 1978) and in FRPS.

15. *Alpinia platytilus* K. Schumann in Engler, Pflanzenr. 20(IV. 46): 334. 1904.

宽唇山姜 kuan chun shan jiang

Pseudostems ca. 2 m. Leaves subsessile; ligule ca. 1 cm, yellow villous; leaf blade lanceolate, ca. 60 × 16 cm, abaxially sericeous-velvety, base attenuate, apex acute. Racemes erect, 25 cm or more; rachis very stout, golden yellow, sericeous-velvety; bracteoles reddish, broadly elliptic, 4–5 × ca. 7.5 cm, glabrous, apex obtuse. Pedicel very short. Calyx 3–3.7 cm, split nearly to base on 1 side, apex 3-lobed, lobes subequal. Corolla white; tube short and wide, ca. 5 mm, sericeous-villous; lobes broadly elliptic, 3.5–4 cm. Lateral staminodes hooklike, ca. 7 mm. Labellum yellow tinged with red, obovate, 4.5–7 × 8–9 cm, base with very densely sericeous scab, apex 2-cleft. Filament ca. 1.5 cm, base villous; anther elliptic, ca. 1.7 cm. Ovary broadly ellipsoid, sericeous-villous.

- Wet areas in forests; 800–1600 m. S Yunnan.

16. *Alpinia ovoideicarpa* H. Dong & G. J. Xu, Guihaia 13: 328. 1993.

卵果山姜 luan guo shan jiang

Pseudostems 2–2.5 m. Ligule 2-lobed, ca. 1 cm, leathery; petiole 3–5 cm; leaf blade oblong-elliptic, 40–60 × 4–12.5 cm, glabrous, base obliquely cordate. Racemes erect, 18–24 cm, densely flowered; rachis densely golden hispid; bracteoles brownish, narrowly elliptic, 2.5–3.8 cm. Pedicel ca. 2.5 cm, densely golden hispid. Calyx pale red, tubular, ca. 1.6 cm, white pubescent, apex 3-toothed. Corolla white; tube ca. 1 cm, white puberulent; lobes white ciliate at margin, central one suborbicular, ca. 2.5 × 2 cm, apex mucronate, lateral ones narrowly elliptic, ca. 2 × 1.5 cm. Lateral staminodes subulate, 4–6 mm. Labellum yellow with red stripes, white at margin, ovate, 3–3.8 × ca. 1.5 cm, apex reflexed. Stamen ca. 2.4 cm; filament red, ca.

1.2 cm. Capsule red, ovoid, ca. 1.5 × 1.2 cm. Fl. Apr, fr. Sep.

- Forests. Guangxi.

17. *Alpinia blepharocalyx* K. Schumann in Engler, Pflanzenr. 20(IV. 46): 334. 1904.

云南草蔻 yun nan cao kou

Pseudostems 1–3 m. Ligule ca. 6 mm, apex villous; petiole to 2 cm; leaf blade adaxially dark green, abaxially pale green, lanceolate or oblanceolate, 45–60 × 4–15 cm, adaxially glabrous, abaxially densely villous or glabrous, base attenuate, apex acuminate, mucronate. Racemes drooping, 20–30 cm; rachis hirsute; bracteoles green, elliptic, 3–4 cm, dry and brittle, sparsely villous or glabrescent, 1-flowered, early deciduous at anthesis. Pedicel 4–8 mm, slightly elongate in fruit. Calyx ellipsoid, 2–2.5 cm, split on 1 side, margin ciliate, apex 3-toothed. Corolla flesh-colored; tube ca. 1 cm, pubescent at throat; central lobe suborbicular, ca. 2 cm wide; lateral lobes broadly lanceolate, 2–2.5 cm. Lateral staminodes subulate, 6–7 mm. Labellum red with yellow center, ovate, 3–3.5 × ca. 3 cm, apex acute. Filament ca. 7 mm; anther ca. 1.7 cm. Ovary oblong, tomentose. Capsule ellipsoid, ca. 3 × 2 cm, pubescent. Seeds gray-yellow to dull brown, forming globose clumps 1.2–1.6 cm in diam. Fl. Mar–Jul, fr. Apr–Dec.

Dense or sparse forests; 400–1200 m. Guangdong, Guangxi, Yunnan [Bangladesh, India, Laos, Myanmar, Thailand, Vietnam].

Medicinal.

- 1a. Leaf blade abaxially densely villous 17a. var. *blepharocalyx*
- 1b. Leaf blade abaxially glabrous 17b. var. *glabrior*

17a. *Alpinia blepharocalyx* var. *blepharocalyx*

云南草蔻(原变种) yun nan cao kou (yuan bian zhong)

Alpinia bracteata Roxburgh (1820), not Roscoe (1815); *Languas blepharocalyx* (K. Schumann) Handel-Mazzetti.

Leaf blade abaxially densely villous. Fl. Apr–Jun, fr. Jul–Dec. $2n = 48^*$.

Sparse forests; 500–1000 m. Yunnan [Bangladesh, India, Laos, Myanmar, Thailand, Vietnam].

17b. *Alpinia blepharocalyx* var. *glabrior* (Handel-Mazzetti) T. L. Wu in T. L. Wu & S. J. Chen, Acta Phytotax. Sin. 16(3): 35. 1978.

光叶云南草蔻 guang ye yun nan cao kou

Languas blepharocalyx var. *glabrior* Handel-Mazzetti, Symb. Sin. 7: 1322. 1936.

Leaf blade abaxially glabrous. Fl. Mar–Jul, fr. Apr–Nov.

Dense forests; 400–1200 m. Guangdong, Guangxi, Yunnan [Thailand, Vietnam].

18. *Alpinia napoensis* H. Dong & G. J. Xu, Guihaia 13: 327. 1993.

那坡山姜 na po shan jiang

Pseudostems purple spotted, 1.5–2 m. Ligule entire or 2-

lobed, 4–8 mm, leathery; petiole 0.5–4 cm; leaf blade oblong- or elliptic-lanceolate, 40–60 × 4–12 cm, glabrous, base attenuate, slightly oblique, apex acuminate. Racemes erect, 13–27 cm; rachis densely brown hispid; bracteoles brownish when dry, narrowly elliptic, 2.5–4.5 × ca. 1.2 cm, apex mucronate, ciliate. Pedicel 4–8 mm, brown hispid. Calyx pink, tubular, 1.5–2 cm, apex 3- or 4-toothed, white ciliate. Corolla tube white, ca. 1.2 cm; lobes equal, central one broadly elliptic, ca. 3 × 2.5 cm, lateral ones white, narrower, margin ciliate. Lateral staminodes subulate, 4–8 mm. Labellum bright red with yellow or white margin and yellow apex with a few red stripes, broadly ovate, 3.8–5.5 × ca. 2 cm. Stamen ca. 2.5 cm; filament red, ca. 1.3 cm. Capsule red, globose or subglobose, ca. 1.5 cm in diam. Fl. Apr, fr. Sep.

• Forests. Guangxi.

19. *Alpinia hainanensis* K. Schumann in Engler, Pflanzenr. 20 (IV. 46): 335. 1904.

草豆蔻 *cao dou kou*

Alpinia henryi K. Schumann; *A. henryi* var. *densihispida* H. Dong & G. J. Xu; *A. kainantensis* Masamune; *A. katsumadae* Hayata; *Languas henryi* (K. Schumann) Merrill; *L. katsumadae* (Hayata) Merrill.

Pseudostems to 3 m. Ligule (3–)5–10 mm, abaxially hirsute; petiole absent to 2 cm; leaf blade linear-lanceolate, 20–65 × 2–12 cm, glabrous or rarely abaxially sparsely hirsute, base obliquely attenuate, margin hairy, apex acuminate, with spirally caudate mucro. Racemes erect, 10–30 cm, yellow hirsute; bracts 4–4.5 cm, glabrous; bracteoles milky white, broadly elliptic, 2–3.5 cm, hirsute at base and gradually becoming glabrous toward mucronate apex. Pedicel 2–4 mm. Calyx campanulate, 2–3 cm, split on 1 side, abaxially hairy, apex 2-toothed. Corolla tube 8–10 mm; lobes lanceolate, 2.5–3 cm, margin ciliate. Lateral staminodes subulate, ca. 3 mm. Labellum marked with radiate, purple stripes from center to margin, triangular-ovate, 3.5–4.5 cm, apex shallowly 2-cleft. Filament ca. 1.5 cm; anther 1.2–1.5 cm. Ovary hirsute, ca. 5 mm in diam. Capsule globose, 2–3 cm in diam., yellow hirsute. Fl. Apr–Jun, fr. May–Aug. *2n* = 48*.

Dense or sparse forests. Guangdong, Guangxi, Hainan [Vietnam].

20. *Alpinia uraiensis* Hayata, Icon. Pl. Formos. 5: 224. 1915.

大花山姜 *da hua shan jiang*

Languas uraiensis (Hayata) Sasaki.

Pseudostems more than 2 m. Leaves sessile; ligule oblong-triangular, 1–1.5 cm × ca. 6 mm, abaxially hirsute, apex obtuse; leaf blade linear-lanceolate, ca. 1 m × 13 cm, glabrous, base and apex acuminate. Racemes erect, flowering part ca. 25 cm, densely flowered; rachis densely strigose-tomentose, many grooved; bracts reddish purple at apex, linear, ca. 2.5 cm × 4–5 mm, glabrous; bracteoles orbicular, ca. 5.5 cm, glabrous except strigose at base abaxially. Pedicel ca. 3 mm, moderately stout, densely tomentose. Calyx nearly white, campanulate-cylindric, ca. 3.5 × 2 cm, deeply split on 1 side, abaxially sparsely hirsute, apex finely 6-toothed. Corolla tube ca. 1.3 cm, abaxially sparsely hirsute or subglabrous; central lobe obovate-oblong, ca.

3.5 × 2.8 cm. Lateral staminodes linear, ca. 2 mm. Labellum yellow with reddish center, with radiate stripes on distal middle part disappearing at margin, oblong-triangular, ca. 5 × 4 cm, apex 2-cleft; lobes 6–7 mm, with small warts, base densely villous. Filament ca. 1 cm; anther ca. 1.8 cm. Ovary globose. Style apex cupular. Capsule pale scarlet, globose, ca. 2.5 cm in diam., densely hairy. Fl. Apr–May.

• Taiwan.

21. *Alpinia emaculata* S. Q. Tong, Acta Phytotax. Sin. 27: 285. 1989.

无斑山姜 *wu ban shan jiang*

Pseudostems 1.5–2.5 m. Leaf sheath finely striate; ligule entire, 1–2 cm, leathery, pubescent, soon glabrescent; petiole 2.5–4 cm; leaf blade elliptic-lanceolate or oblong-lanceolate, 40–80 × 10–18 cm, adaxially glabrous, abaxially pubescent, base cuneate, margin densely ciliate, apex shortly acuminate. Racemes 15–25 cm; rachis densely brown hispid; bracteoles red-brown, 3–4 cm, slightly hairy, soon glabrescent, apex rounded toothed, ciliate. Pedicel 2–4 mm. Calyx pale red, tubular, ca. 2.2 cm, white pubescent, apex 3-toothed. Corolla tube ca. 1.5 cm, slightly white hairy; lobes white, central one suborbicular, 3.2–3.5 × 3–3.3 cm, lateral ones narrowly elliptic. Lateral staminodes pale red, subulate, ca. 1 cm. Labellum red with yellow center and margin, broadly ovate, ca. 4 × 6 cm, apex abruptly convex, entire. Stamen ca. 2.8 cm; filament white pubescent at base. Ovary yellow-green, densely brown villous. Capsule brownish, globose, ca. 3.4 cm in diam., apex with persistent calyx. Fr. Mar.

• Forests; ca. 800 m. S Yunnan.

22. *Alpinia kwangsiensis* T. L. Wu & S. J. Chen, Acta Phytotax. Sin. 16(3): 35. 1978.

长柄山姜 *chang bing shan jiang*

Pseudostems 1.5–3 m. Ligule 2-cleft, ca. 8 mm, hirsute; petiole 4–8 cm; leaf blade oblong-lanceolate, 40–60 × 8–16 cm, adaxially glabrous, abaxially densely pubescent, base cordate or attenuate, slightly oblique, apex with spirally rolled, sharp tip. Racemes erect, 13–30 cm, densely flowered, slightly elongate in fruit, densely yellow hirsute; bracteoles brown, oblong, ca. 3.5 cm, yellow hirsute, apex 2-cleft. Pedicel ca. 2 mm. Calyx pale purple, cylindric, ca. 2 cm, split on 1 side, yellow hirsute, apex 3-cleft. Corolla white; tube ca. 1.2 cm; lobes oblong, ca. 2 × 1.4 cm, margin ciliate. Labellum white, adaxially tinged with red, ovate, ca. 2.5 cm. Anther ca. 1 cm; filament ca. 1 cm. Ovary oblong, ca. 5 mm, densely yellow hirsute. Capsule globose, ca. 2 cm in diam., sparsely villous. Fl. and fr. Apr–Jun. *2n* = 48*.

• Shaded wet places in valley forests; near sea level to 700 m. Guangdong, Guangxi, Guizhou, Yunnan.

23. *Alpinia rubromaculata* S. Q. Tong, Acta Phytotax. Sin. 27: 284. 1989.

红斑山姜 *hong ban shan jiang*

Pseudostems 1.5–2.5 m. Leaf sheath conspicuously striate; ligule entire, 8–10 mm, leathery, pubescent, soon glabrescent;

petiole 1–2.5 cm; leaf blade elliptic-lanceolate or oblong-lanceolate, 40–80 × 10–14 cm, abaxially densely pubescent, base narrow, oblique, apex shortly acuminate. Racemes 18–30 cm; rachis brown hispid; bracteoles oblong-triangular, 3.5–4 cm, apex 3-toothed, teeth rounded. Calyx red, tubular, 2.3–2.6 cm, base and apex densely white pubescent, apex 4–6-toothed, ciliate. Corolla tube white, ca. 1 cm, pubescent; lobes white, elliptic, 3.8–4.5 × 1.7–2.1 cm, base with a small appendage, margin ciliate. Lateral staminodes red, ca. 8 mm, pubescent. Labellum yellow with a few stripes, red at center, red spotted at margin, broadly ovate, 3.9–4.5 × 5–5.8 cm, apex 2-lobed. Stamen ca. 3 cm; filament ca. 1.2 cm, base white pubescent. Ovary yellow-brown villous. Fr. Apr.

- Forests; ca. 800 m. S Yunnan.

24. *Alpinia malaccensis* (N. L. Burman) Roscoe, Trans. Linn. Soc. London 8: 345. 1807.

毛瓣山姜 mao ban shan jiang

Maranta malaccensis N. L. Burman, Fl. Indica, 2. 1768.

Pseudostems ca. 3 m or more. Ligule 2-cleft, to 1 cm, slightly tomentose; petiole ca. 2 cm, grooved; leaf blade oblong-lanceolate or lanceolate, to 90 × 15 cm, abaxially pubescent, base acute, apex acuminate. Racemes erect, to 35 cm; rachis stout, densely yellow pubescent; bracteoles white, broadly elliptic, 3.5–4 cm. Pedicel ca. 7 mm, densely yellow pubescent. Calyx campanulate, ca. 1.5 cm, densely sericeous. Corolla white, sericeous; tube ca. 1 cm; lobes oblong-lanceolate, 2.5–3 cm. Lateral staminodes absent. Labellum yellow with red stripes, ovate, ca. 3.5 cm, apex emarginate. Stamen ca. 2.4 cm. Ovary villous. Capsule yellow, globose, ca. 2 cm in diam., dehiscing irregularly. Fl. Apr. $2n = 48^*$.

Xizang, Yunnan; cultivated in Guangdong [Bangladesh, Bhutan, India, Indonesia (Java), W Malaysia, Myanmar, Thailand].

Cultivated as an ornamental.

25. *Alpinia officinarum* Hance, J. Linn. Soc., Bot. 13: 6. 1873.

高良姜 gao liang jiang

Languas officinarum (Hance) Farwell.

Rhizomes elongate, terete. Pseudostems 40–110 cm. Leaves sessile; ligule lanceolate, entire, 2–3(–5) cm, membranous; leaf blade linear, 20–30 × 1.2–2.5 cm, glabrous, base attenuate, apex caudate. Racemes erect, 6–10 cm; rachis tomentose; bracteoles very small, less than 1 cm. Pedicel 1–2 mm. Calyx 8–10 cm, puberulent, apex 3-toothed. Corolla tube slightly shorter than calyx; lobes oblong, ca. 1.5 cm, central one hoodlike. Labellum white with red streaks, ovate, ca. 2 cm. Filament ca. 1 cm; anther ca. 6 mm. Ovary tomentose. Capsule red, globose, ca. 1 cm in diam. Fl. Apr–Sep, fr. May–Nov. $2n = 48^*$.

- Guangdong, Guangxi, Hainan.

Medicinal.

26. *Alpinia flabellata* Ridley, Philipp. J. Sci. 4: 188. 1909.

扇唇山姜 shan chun shan jiang

Languas flabellata (Ridley) Merrill.

Pseudostems to 3 m. Ligule ovate, entire, ca. 1 cm, margin minutely white hairy. Leaf blade narrowly lanceolate, 30–40 × 4–5 cm, glabrous, margin denticulate near acuminate apex. Panicles 10–20 cm, densely flowered; branches 2 or 3, 9–7 cm; bracts minute, ca. 7 mm; bracteoles absent. Pedicel 2–3 mm, pubescent. Calyx tubular, ca. 8 mm, obtusely ribbed, glabrous, apex 3-lobed. Corolla tube ca. 1 cm; central lobe oblong, ca. 7 × 3.5 mm, apex hooked, minutely mucronate; lateral lobes obovate-oblong, ca. 5 mm. Lateral staminodes 2, at base of labellum. Labellum nearly fan-shaped, ca. 1 cm; claw short; limb subreniform, 4-lobed. Filament linear, short, glabrous; anther oblong, short; connective crestless. Capsule ca. 6 mm in diam., glabrous.

Taiwan (Huoshao Dao and Lan Yu opposite SE coast) [Japan (Ryukyu Islands), Philippines].

27. *Alpinia oxyphylla* Miquel, J. Bot. Neerl. 1: 93. 1861.

益智 yi zhi

Languas oxyphylla (Miquel) Merrill.

Pseudostems 1–3 m. Ligule brownish, 2-cleft, 1–2 cm, rarely longer, membranous, sparsely puberulent; petiole short; leaf blade lanceolate, 25–35 × 3–6 cm, base subrounded, margin hispid, glabrescent, apex attenuate, caudate. Racemes enclosed in bud by a hat-shaped involucre bract deciduous at anthesis; rachis very shortly puberulent. Pedicel 1–2 mm. Calyx tubular, ca. 1.2 cm, split to middle on 1 side, abaxially pubescent, apex 3-toothed. Corolla tube 8–10 mm; lobes oblong, ca. 1.8 cm, central one white, wider than lateral ones, abaxially sparsely puberulent. Lateral staminodes subulate, ca. 2 mm. Labellum white with red stripes, obovate, ca. 2 cm, apical margin crisped. Filament ca. 1.2 cm; anther ca. 7 mm. Ovary densely tomentose. Capsule globose when fresh, fusiform when dry, 1.5–2 × ca. 1 cm, with elevated, vascular stripes, pubescent, apex with persistent calyx. Seeds irregularly obovate; aril brownish. Fl. Mar–May, fr. Apr–Sep. $2n = 48^*$.

- Fujian, Guangdong, Guangxi, Hainan, Yunnan.

Both wild and cultivated plants are used for medicine.

28. *Alpinia japonica* (Thunberg) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 140. 1867.

山姜 shan jiang

Globba japonica Thunberg in Murray, Syst. Veg., ed. 14, 73. 1784; *Alpinia agiokuensis* Hayata; *Languas agiokuensis* (Hayata) Sasaki; *L. japonica* (Thunberg) Sasaki.

Pseudostems 35–70 cm. Ligule 2-cleft, ca. 2 mm, pubescent; petiole to 2 cm; leaf blade lanceolate, oblanceolate, or narrowly long elliptic, 25–40 × 4–7 cm, pubescent especially abaxially, base attenuate, apex acuminate, mucronate. Racemes 15–30 cm; rachis densely tomentose; involucre bracts lanceolate, ca. 9 cm, deciduous at anthesis; bracteoles very small, early deciduous. Flowers usually paired on rachis, often also with degenerate flowers; pedicel ca. 2 mm. Calyx clavate, 1–1.2

cm, pubescent, apex 3-toothed. Corolla tube ca. 1 cm, sparsely puberulent; lobes oblong, ca. 1 cm, abaxially tomentose, central one hoodlike. Lateral staminodes linear, ca. 5 mm. Labellum white marked with red stripes, ovate, ca. 6 mm wide, margin irregularly notched, apex 2-cleft. Stamen 1.2–1.4 cm. Ovary densely tomentose. Capsule salmon red, globose or ellipsoid, 1–1.5 cm in diam., pubescent, apex with persistent calyx. Seeds ca. 5 × 3 mm, many angled, with camphorlike odor. Fl. Apr–Aug, fr. Jul–Dec. $2n = 48^*$.

Forests. Fujian, Guangdong, Guangxi, Guizhou, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan].

Medicinal.

29. *Alpinia nanchuanensis* Z. Y. Zhu, Bull. Sichuan School Chin. Mat. Med. 8: 16. 1986.

南川山姜 *nanchuan shan jiang*

Pseudostems 55–65 cm. Leaf sheath pubescent; ligule obscurely 2-lobed, 1–1.5 mm; petiole absent to 2 mm; leaf blade ovate-lanceolate or lanceolate, (6–)10–18 × (1.4–)2–3 cm, pubescent especially adaxially, base subrounded or broadly cuneate, margin ciliate, apex long caudate. Racemes 4–5 cm; rachis ca. 4 mm thick; involucre bracts oblong, sparsely pubescent or glabrescent, early deciduous, apex narrowly caudate. Flowers white. Calyx tubular, 8–10 mm, pubescent, apex 3-lobed, lobes rounded. Corolla tube 1.1–1.4 cm, pubescent; lobes oblong, 8–10 mm, central one wider than lateral ones. Lateral staminodes linear, 4–5 mm. Labellum oblong-obovate or oblong, 0.8–1.6 cm, margin crisped, apex 2-lobed or 2-cleft. Stamen 1–1.3 cm. Ovary oblong, ca. 2 mm, glabrous. Fr. May.

• Scrub; ca. 800 m. SE Sichuan (Nanchuan Xian).

30. *Alpinia bambusifolia* C. F. Liang & D. Fang in D. Fang, Acta Phytotax. Sin. 16(4): 77. 1978.

竹叶山姜 *zhu ye shan jiang*

Pseudostems 0.5–1.5 m. Leaf sheath pubescent; ligule 2-cleft, to 3 mm; petiole absent to 3 mm; leaf blade narrowly lanceolate, 3–25 × 0.7–3.5 cm, subglabrous except shortly ciliate at margin, base cuneate, apex caudate. Spikes erect, subsessile, 1.5–6 cm; rachis pubescent; involucre bracts ovate to lanceolate, 2.5–9 × 1–1.8 cm, abaxially pubescent, apex acute, aristate, rarely caudate; bracts very small. Proximal flowers paired on rachis, distal ones solitary; pedicel less than 1 mm, glabrous. Calyx pale purple-red, 0.9–1.1 cm, shallowly split on 1 side, abaxially densely pubescent, apex 3-toothed. Corolla abaxially pubescent; tube ca. 1.2 cm; lobes pale yellow, oblong, hoodlike, ca. 7 × 4–5 mm. Lateral staminodes ca. 3 mm, hairy. Labellum white with red stripes, obovate-oblong, ca. 9 × 6 mm, base hairy, apex 2-lobed. Stamen 1–1.2 cm; connective appendage absent. Ovary glabrous. Capsule ovoid to ellipsoid, 1–1.5 cm × 5–9 mm. Fl. Apr–May, fr. Nov–Dec. $2n = 48^*$.

• Forests in valleys; 1300–1400 m. Guangxi, Guizhou.

31. *Alpinia jianganfeng* T. L. Wu, Novon 7: 441. 1997.

箭杆风 *jian gan feng*

Pseudostems to 1 m. Ligule 2-cleft, ca. 2 mm, margin cili-

ate; petiole absent to 4 cm; leaf blade lanceolate or linear-lanceolate, 20–30 × 2–4(–6) cm, glabrous except hispid at subapical margin, base attenuate, apex narrowly caudate. Spikes erect, 10–20 cm; rachis tomentose; bracteoles very small. Flowers in clusters of 3 on rachis. Calyx cylindrical, abaxially pubescent, apex 3-cleft. Corolla tube subequaling or slightly longer than calyx; lobes oblong, 8–10 mm, abaxially villous. Lateral staminodes linear, ca. 2 mm. Labellum obovate, 0.7–1.3 cm, margin crisped, apex 2-cleft. Stamen longer than labellum; anther ca. 4 mm. Ovary globose, pubescent. Capsule globose, 7–8 mm in diam., pubescent, apex with persistent calyx. Seeds 5 or 6. Fl. Apr–Jun, fr. Jun–Nov. $2n = 48^*$.

• Shaded wet areas in forests. Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Sichuan, Yunnan.

The plants now treated as *Alpinia jianganfeng* were included in FRPS under *A. stachyodes*.

Medicinal.

32. *Alpinia pricei* Hayata, Icon. Pl. Formos. 5: 219. 1915.

短穗山姜 *duan sui shan jiang*

Alpinia sasakii Hayata; *A. tarokoensis* (Sasaki) Hayata; *Languas pricei* (Hayata) Sasaki; *L. sasakii* (Hayata) Sasaki; *L. tarokoensis* Sasaki.

Pseudostems ca. 1 m. Ligule oblong, ca. 5 mm, margin ciliate, apex obtuse; petiole ca. 1 cm; leaf blade linear-lanceolate, ca. 30 × 2–3 cm, glabrous or abaxially pubescent, base attenuate, apex acuminate. Racemes ca. 10 cm; rachis pubescent. Pedicel ca. 2 mm, hirsute. Calyx campanulate, ca. 1 cm, split on 1 side, abaxially hirsute. Corolla tube campanulate, ca. 6 mm, adaxially hirsute, abaxially glabrous, apex ca. 4 mm wide; central lobe obovate, ca. 2 × 1 cm, margin ciliate; lateral lobes narrower than central one. Lateral staminodes absent. Labellum obovate, ca. 2 × 2 cm, base cuneate, margin contracted above middle, crenate, apex shortly 2-cleft. Filament flattened, ca. 1.2 cm, glabrous; anther ca. 7 mm. Ovary globose, ca. 1.5 mm in diam., villous. Fl. Mar.

• Taiwan.

33. *Alpinia graminifolia* D. Fang & J. Y. Luo in D. Fang, Acta Phytotax. Sin. 16(4): 78. 1978.

狭叶山姜 *xia ye shan jiang*

Pseudostems 70–100 cm. Leaves usually sessile; ligule 3–5 mm, pubescent, apex concave; petiole rarely to 2 cm; leaf blade linear, 10–50 × (0.3–)0.9–1.5 cm, subglabrous, base cuneate, margin ciliate, apex long acuminate. Racemes erect, 4–10 cm; rachis densely pubescent; bracteoles very small, to 1 mm. Flowers solitary or paired on rachis, yellow. Calyx 0.9–1.2 cm, shallowly split on 1 side, abaxially puberulent, apex 3-toothed. Corolla tube subequaling calyx; lobes oblong, ca. 1 cm × 4 mm, puberulent. Lateral staminodes linear, 8–9 mm. Labellum ovate, ca. 2 cm, glandular, apex emarginate. Stamen ca. 1.5 cm; connective appendage triangular, ca. 1 mm. Ovary pubescent. Fl. May–Jun.

• Forests in valleys; 800–900 m. Guangxi.

34. *Alpinia brevis* T. L. Wu & S. J. Chen, Acta Phytotax. Sin. 16(3): 36. 1978.

小花山姜 xiao hua shan jiang

Pseudostems 1–2 m. Leaves sessile; leaf sheath sparsely villous at margin; ligule ca. 4 mm, densely villous, apex cuneate; leaf blade linear-lanceolate, 18–25 × 3–5 cm, glabrous or abaxially sparsely villous especially along main veins, base obtuse or attenuate, apex narrowly long caudate. Racemes 4–8(–12) cm; rachis ca. 2 mm thick, slender, glabrous or pubescent; bracteoles absent. Flowers white slightly tinged with pink; pedicel 1–1.5 cm, pubescent. Calyx tubular, 0.8–1.2 cm, glabrous or pubescent. Corolla tube subequaling calyx; lobes oblong, 5–6 × ca. 2 mm. Lateral staminodes triangular, ca. 1 mm. Labellum red striped, ovate, ca. 7 × 5 mm, margin irregularly notched. Filament ca. 4 mm; anther ca. 2.5 mm. Ovary globose, ca. 1 mm in diam., densely villous. Capsule globose, 6–8 mm in diam. Seeds 4–5 mm in diam., many angled. Fl. Aug, fr. Oct–Dec.

• Dense forests in mountains; 700–2000 m. Guangdong, Guangxi, Yunnan.

35. *Alpinia sichuanensis* Z. Y. Zhu, Bull. Sichuan School Chin. Mat. Med. 8: 15. 1986.

四川山姜 si chuan shan jiang

Pseudostems 70–120 cm. Ligule 2-lobed, 2–3 mm, pubescent; petiole 0.5–3 cm; leaf blade oblong-lanceolate, 15–35 × 3–7 cm, glabrous on both surfaces, base cuneate, margin entire or ciliate, apex acuminate or caudate. Racemes 9–22 cm; bracts 2, linear, 6–20 cm; bracteoles semiorbicular, early deciduous. Pedicel 1–2 mm, pubescent. Calyx tubular, 1.2–1.5(–1.7) cm, pubescent, apex 2- or 3-lobed or 3- or 4-toothed. Corolla tube subequaling calyx, glabrous; lobes oblong, 6–7 mm, apex densely pubescent. Lateral staminodes purple, linear, 3–4 mm. Labellum yellow-white with purple stripes, ovate-orbicular or broadly ovate, 5–6 × ca. 6 mm, margin rounded toothed. Filament 4–6 mm; anther 4–6 mm. Capsule red, globose, 8–9 mm in diam., apex with persistent calyx. Seeds 9–12. Fl. May–Jun, fr. Aug–Nov.

• Forests; 700–900 m. C Sichuan (Emei Shan).

36. *Alpinia oblongifolia* Hayata, Icon. Pl. Formos. 5: 215. 1915.

华山姜 hua shan jiang

Alpinia suishaensis Hayata; *Languas oblongifolia* (Hayata) Sasaki; *L. suishaensis* (Hayata) Sasaki.

Pseudostems ca. 1 m. Ligule 4–10 mm, membranous, margin ciliate; petiole ca. 5 mm; leaf blade oblong, ovate-lanceolate, or lanceolate, 20–30 × 3–10 cm, glabrous, base rounded or attenuate, apex acuminate or caudate-acuminate. Panicles narrow, 15–30 × 2–2.5 cm; branches 3–10 mm, 2–4-flowered; bracteoles 1–3 mm, deciduous. Pedicel to 1 mm. Calyx tubular, 5–7 mm, apex 3-toothed. Corolla tube slightly longer than calyx; lobes oblong, 6–7 mm. Lateral staminodes subulate, 1–2 mm. Labellum white with 2 red stripes from base to middle, ovate, 6–8 mm, apex 2-lobed. Filament ca. 5 mm; anther ca. 3 mm. Ovary glabrous. Capsule red, globose, 5–8 mm in diam. Seeds 5–8. Fl. May–Jul, fr. Jun–Dec. $2n = 48^*$.

Forests; 100–2500 m. Fujian, Guangdong, Guangxi, Hainan, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Laos, Vietnam].

The Chinese plants named *Alpinia chinensis* (Retzius) Roscoe in FRPS are referable to *A. oblongifolia*. They were treated as *A. suishaensis* by Smith (Edinburgh J. Bot. 47: 63. 1990), who noted that the correct application of the name *A. chinensis* is uncertain. Moo (in Li et al., Fl. Taiwan 5: 836. 1978) treated *A. suishaensis* as a synonym of *A. oblongifolia*.

37. *Alpinia galanga* (Linnaeus) Willdenow, Sp. Pl. 1: 12. 1797.

红豆蔻 hong dou kou

Rhizomes tuberous. Pseudostems ca. 2 m. Ligule suborbicular, ca. 5 mm; petiole ca. 6 mm; leaf blade oblong or lanceolate, 25–35 × 6–10 cm, glabrous or abaxially pubescent, base attenuate, apex acute or acuminate. Panicles ca. 20 × 30 cm; rachis glabrous or pubescent; branches many, 2–4 cm, 3–6-flowered; bracts and bracteoles persistent; bracteoles lanceolate, 5–8 mm. Flowers green-white, fragrant. Calyx tubular, 6–10 mm, persistent. Corolla tube 6–10 mm; lobes oblong, 1.6–1.8 cm. Lateral staminodes purple, subulate or linear, 2–10 mm. Labellum white with red lines, obovate-spatulate, ca. 2 cm, apex deeply 2-cleft. Filament ca. 1 cm; anther ca. 7 mm. Capsule brown or red when dry, oblong, slightly contracted at middle, 1–1.5 cm × ca. 7 mm, thin, glabrous. Seeds 3–6. Fl. May–Aug, fr. Sep–Nov.

Forests, scrub, grasslands; 100–1300 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [India, Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

- 1a. Leaf blade and panicle rachis glabrous 37a. var. *galanga*
 1b. Leaf blade abaxially and panicle rachis pubescent 37b. var. *pyramidata*

37a. *Alpinia galanga* var. *galanga*

红豆蔻(原变种) hong dou kou (yuan bian zhong)

Maranta galanga Linnaeus, Sp. Pl., ed. 2, 1: 3. 1762; *Amomum galanga* (Linnaeus) Loureiro; *A. medium* Loureiro; *Languas galanga* (Linnaeus) Stuntz.

Leaf blade and panicle rachis glabrous.

Forests, scrub, grasslands; 100–1300 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [India, Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

Cultivated throughout SE Asia; medicinal.

37b. *Alpinia galanga* var. *pyramidata* (Blume) K. Schumann in Engler, Pflanzenr. 20(IV. 46): 316. 1904.

毛红豆蔻 mao hong dou kou

Alpinia pyramidata Blume, Enum. Pl. Javae 1: 58. 1827.

Leaf blade abaxially and panicle rachis pubescent.

Forests, scrub, grasslands; 100–1300 m. Guangdong, Guangxi, Yunnan [Indonesia (Java)].

38. *Alpinia polyantha* D. Fang, Acta Phytotax. Sin. 16(4): 78. 1978.

多花山姜 duo hua shan jiang

Rhizomes creeping, thick. Pseudostems to 6 m. Leaf sheath longitudinally rough lined, densely tomentose; ligule 2-cleft, 1–2 cm, tomentose; petiole 1–9 cm, tomentose; leaf blade lanceolate or elliptic, to 1 m × 25 cm, glabrous or abaxially tomentose, base cuneate, margin long ciliate, apex acuminate. Panicles erect, 35–60 × 7–9 cm, tomentose; branches 0.5–3 cm, 5–8-flowered; involucre bracts oblong-lanceolate, ca. 27 × 5.5 cm; bracteoles oblong to oblanceolate, ca. 1.2 cm × 3–7 mm, membranous. Pedicel 1–10 mm. Calyx red, 0.9–1.4 cm, split on 1 side, apex 3-toothed. Corolla tube equaling calyx; lobes oblong, 1.3–1.7 cm × ca. 5 mm. Lateral staminodes red, horn-shaped, ca. 6 mm. Labellum suborbicular to oblong, ca. 2.3 × 1.8–2.2 cm, midvein yellowish, with a few purple lines on both sides near base, apex acute, 2-toothed. Stamen ca. 2.8 cm; anther 8–9 mm; connective appendage tongue-shaped, ca. 2 mm. Ovary densely hirsute. Capsule globose, 0.9–1.4 cm in diam., hairy, apex with persistent calyx. Fl. May–Jun, fr. Oct–Nov. $2n = 48^*$.

- Forests. Guangxi, Yunnan.

Medicinal.

39. *Alpinia maclurei* Merrill, Philipp. J. Sci. 21: 338. 1922.

假益智 *jia yi zhi*

Languas maclurei (Merrill) Merrill.

Pseudostems 1–2 m. Ligule 2-cleft, 1–2 cm, tomentose; petiole 1–5 cm; leaf blade lanceolate, 30–50(–80) × 8–10(–20) cm, abaxially pubescent, base attenuate, apex caudate-acuminate. Panicles erect, 30–40 cm, gray pubescent, many flowered; branches 1.5–3 cm, rarely longer, apically 3–5-flowered; bracteoles oblong, ca. 8 mm, pubescent, deciduous, apex cucullate. Pedicel very short. Calyx tubular, 6–10 mm, pubescent, apex 3-toothed, teeth subrounded. Corolla tube ca. 1.2 cm; lobes oblong, ca. 1 cm, apex cucullate. Lateral staminodes ca. 5 mm. Labellum reflexed at anthesis, oblong-ovate, 1–1.2 cm × 6–7 mm. Filament ca. 1.4 cm; anther 3–4 mm. Ovary ovoid, 1.5–1.8 mm, pubescent. Capsule globose, ca. 1 cm in diam., glabrous; pericarp fragile. Fl. Mar–Jul, fr. Apr–Oct. $2n = 48^*$.

Forests in mountains. Guangdong, Guangxi, Hainan, Yunnan [Vietnam].

40. *Alpinia intermedia* Gagnepain, Bull. Soc. Bot. France 48: lxxxiii. 1902.

光叶山姜 *guang ye shan jiang*

Alpinia hokutensis Hayata; *A. kelungensis* Hayata; *A. kumatake* Makino; *Languas hokutensis* (Hayata) Sasaki; *L. intermedia* (Gagnepain) Sasaki; *L. kelungensis* (Hayata) Sasaki.

Pseudostems ca. 1 m. Ligule 5–6 mm, dry membranous, margin ciliate; petiole to 2.5 cm; leaf blade oblong or lanceolate, 20–50 × 5–12 cm, glabrous, base attenuate, apex acuminate. Panicles erect or pendent, 10–15 × 2–4 cm, glabrous; branches 0.8–1.3 cm, apically 3–5-flowered; bracteoles oblong, 7–10 mm, deciduous. Flowers white, glabrous. Calyx tubular, 3.5–4.5 mm, apex crenate. Corolla tube shorter than calyx; lobes narrow. Lateral staminodes horn-shaped. Labellum ovate, ca. 1.8 cm, base attenuate, apex acute, 2-cleft. Anther ovate,

slightly hairy. Fl. Jun. $2n = 48^*$.

Forest floors, scrub; 300–1000 m. Guangdong, Taiwan [Japan, Philippines].

41. *Alpinia guangdongensis* S. J. Chen & Z. Y. Chen, Guihaia 8: 317. 1988.

光叶假益智 *guang ye jia yi zhi*

Pseudostems 1.5–2.5 m. Leaf sheath pubescent; ligule 2-lobed, ca. 1 cm, densely hairy; petiole ca. 4.5 cm; leaf blade lanceolate, 20–50 × 7–12 cm, glabrous except pubescent at margin, base cuneate, apex caudate. Panicles 20–25 cm, winding, pubescent; branches ca. 1.5 cm, apically 1–3-flowered; bracteoles white, boat-shaped, early deciduous, base glabrous, apex pubescent. Pedicel ca. 1 mm. Calyx tubular, ca. 8 mm, pubescent, apex 3-toothed. Corolla tube ca. 1.4 cm; lobes oblong, 8–10 mm. Lateral staminodes red, ca. 4 mm. Labellum reflexed at anthesis, ovate, 1.5–2 × ca. 1.6 cm. Filament white, ca. 2.5 cm; anther red, ca. 4 mm. Ovary green, globose, glabrescent. Fr. Jun.

- Forests; ca. 100 m. Guangdong (Huidong Xian).

42. *Alpinia globosa* (Loureiro) Horaninow, Prodr. Monogr. Scitam. 34. 1862.

脆果山姜 *cui guo shan jiang*

Amomum globosum Loureiro, Fl. Cochinch. 1: 4. 1790.

Pseudostems ca. 1.5 m. Ligule 2-cleft, 1–2 cm, villous; petiole 5–6 cm; leaf blade oblong, 45–70 × 10–14 cm, glabrous, base attenuate, margin scabrous, ciliate, apex acuminate. Panicles cylindrical, ca. 30 × 5 cm, pubescent; branches numerous, 1.5–3.5 cm, apically 4–8-flowered; bracts very small or absent; bracteoles oblong, ca. 1 cm × 4 mm, membranous. Pedicel 2–3(–8) mm. Calyx ca. 9 mm, apex 3-toothed. Corolla tube equaling or slightly longer than calyx; lobes linear, ca. 1 cm × 2 mm. Lateral staminodes subulate. Labellum white with purple stripes, oblong or elliptic, ca. 1.2 × 1 cm, base slightly contracted, apex emarginate or entire. Filament 1.2–1.5 cm; anther ca. 6 mm. Ovary globose, pubescent. Capsule red, globose, 7–10 mm in diam.; pericarp thin, fragile. Seeds 5–7. Fl. Apr, fr. Jun.

Forests; 100–300 m. S Yunnan [Vietnam].

43. *Alpinia tonkinensis* Gagnepain, Bull. Soc. Bot. France 48: lxxxv. 1902.

滑叶山姜 *hua ye shan jiang*

Pseudostems stout. Leaf sheath longitudinally lined; ligule 1.5–2 cm, leathery, apex obtuse; petiole 3–6 cm; leaf blade linear-lanceolate, ca. 60 × 7 cm, leathery, glabrous, base attenuate, apex acuminate. Panicles erect, 40–50 × ca. 4 cm, proximally glabrous, distally densely villous; branches apically 3–5-flowered; bracts ovate, ca. 1.5 cm, leathery, deciduous; bracteoles similar to bracts but smaller. Pedicel very short. Calyx subcampanulate, 9–10 mm, split to middle on 1 side, apex irregularly crenate. Corolla tube 7–8 mm; lobes oblong, 1.5–1.8 cm, concave, central one ciliate at proximal margin, apex apiculate. Lateral staminodes linear, very short. Labellum orbicular or ovate, ca. 1.4 × 1–1.2 cm, base slightly contracted, apex

emarginate. Filament 4–5 mm; anther ca. 6 mm. Ovary globose, sericeous. Fl. Feb. $2n = 48^*$.

Forests. Guangxi, Hainan [Vietnam].

Medicinal and used as a condiment.

44. *Alpinia strobiliformis* T. L. Wu & S. J. Chen, Acta Phytotax. Sin. 16(3): 33. 1978.

球穗山姜 qiu sui shan jiang

Pseudostems 0.8–1.2 m. Ligule 2-cleft, lobes orbicular, 1–3 mm; petiole absent to 1 cm; leaf blade linear, 25–50 × 2.5–5 cm, abaxially densely velvety or glabrous, midvein pubescent, base attenuate, apex caudate-mucronate. Spikes conelike, 4.5–9 × 3–4 cm, 5.5–6 × ca. 2.5 cm in fruit; bracts densely imbricate, brownish when dry, ovate, 1.7–2.2 × 1–1.5 cm, densely villous on both surfaces; bracteoles ovate, ca. 1.2 cm, golden sericeous abaxially. Flowers white. Calyx tubular, ca. 1 cm, apex 2-toothed, ciliate. Corolla tube ca. 1.1 cm; lobes ovate, ca. 7 × 3 mm. Lateral staminodes absent. Labellum oblong, subequaling corolla lobes, apex 2-cleft. Filament ca. 5 mm; anther ca. 4 mm. Style linear; stigma exceeding anther. Capsule concealed by persistent bracts, red, globose, ca. 8 mm in diam. Fl. May–Jun, fr. Aug–Oct.

• Forests; 1000–1700 m. Guangxi, Yunnan.

1a. Leaf blade abaxially velvety 44a. var. *strobiliformis*

1b. Leaf blade abaxially glabrous except pubescent along midvein 44b. var. *glabra*

44a. *Alpinia strobiliformis* var. *strobiliformis*

球穗山姜(原变种) qiu sui shan jiang (yuan bian zhong)

Leaf blade abaxially velvety.

• Forests; 1000–1700 m. Guangxi, Yunnan.

44b. *Alpinia strobiliformis* var. *glabra* T. L. Wu in T. L. Wu & S. J. Chen, Acta Phytotax. Sin. 16(3): 34. 1978.

光叶球穗山姜 guang ye qiu sui shan jiang

Leaf blade abaxially glabrous except pubescent along midvein.

• Forests. SW Guangxi (Shangsi Xian).

45. *Alpinia pinnanensis* T. L. Wu & S. J. Chen, Acta Phytotax. Sin. 16(3): 34. 1978.

柱穗山姜 zhu sui shan jiang

Pseudostems ca. 1.5 cm. Ligule 2-cleft, abaxially villous, lobes deltoid, 2–4 mm; petiole 2.5–4.5 cm; leaf blade lanceolate, 30–60 × 5–9 cm, glabrous except golden velvety along midvein abaxially and at margin, base attenuate, apex acuminate, caudate-mucronate. Spikes pendent, cylindric, 7–9 × 1.5–2.5 cm; bracts ovate, less than 8 mm, densely golden velvety; bracteoles ca. 5 mm, densely golden velvety. Flowers yellow. Calyx ca. 3 mm, split to base on 1 side. Corolla tube ca. 5 mm, pubescent at throat; lobes ovate-oblong, ca. 6 mm, central one larger than lateral ones. Labellum subequaling corolla lobes, narrow, apex 2-cleft. Filament ca. 4 mm; anther ca. 3 mm. Ovary obconical, ca. 1 mm. Capsule red, globose, ca. 1.2 cm in diam., dry and brittle. Fl. Jul, fr. Sep–Nov.

• Forests. Guangxi.

46. *Alpinia pumila* J. D. Hooker, Bot. Mag. 111: t. 6832. 1885.

花叶山姜 hua ye shan jiang

Amomum vittatum Hance.

Rhizomes horizontally creeping. Pseudostems not developed. Leaves 2 or 3, erect; leaf sheath red-brown; ligule 2-lobed, short; petiole ca. 2 cm; leaf blade adaxially green with deep green stripes along veins, elliptic, oblong, or oblong-lanceolate, ca. 15 × 7 cm, glabrous, base acute, apex acuminate. Racemes with ca. 33 cm long peduncle; bracts oblong, ca. 2 cm, 2-flowered, late deciduous; bracteoles absent. Calyx purple, tubular, 1.3–1.5 cm, pubescent, apex 3-toothed. Corolla white; tube ca. 1 cm; lobes oblong, slightly longer than tube. Lateral staminodes subulate, 3–4 mm. Labellum white with red stripes, ovate, ca. 1.2 cm, margin crenate, apex reflexed, 2-cleft. Filament 5–10 mm; anther 5–8 mm. Ovary sericeous. Capsule globose, ca. 1 cm in diam., apex with persistent perianth ca. 1 cm. Fl. Apr–Jun, fr. Jun–Nov.

• Shady and humid places in mountain valleys; 500–1100 m. Guangdong, Guangxi, Hunan, Yunnan.

47. *Alpinia psilogyna* D. Fang, Acta Phytotax. Sin. 16(4): 80. 1978.

矮山姜 ai shan jiang

Pseudostems 13–24 cm. Leaves 1–4, usually 3; ligule 2-cleft, 3–5 mm, margin ciliate; petiole 0.3–4.5 cm, pubescent; leaf blade adaxially uniformly green, long elliptic or oblanceolate, 14–40 × 3–7 cm, leathery, glabrous except pubescent along midvein and at margin, base obliquely cuneate, apex acute. Spikes erect, 5–9 cm, densely pubescent; peduncle 1–5 cm; involucre bract oblong or linear-lanceolate, 3.5–14 cm, puberulent; bracts pale green, oblong-elliptic, boat-shaped, 1–2.5 cm, 2- or 3-flowered, persistent. Calyx white, ca. 1.5 cm, slightly split on 1 side, puberulent, apex 2- or 3-toothed. Corolla tube white, equaling calyx; lobes yellowish, oblong, ca. 9 × 5 mm. Lateral staminodes red, linear, ca. 4 mm. Labellum yellowish with red stripes, broadly obovate, ca. 7 mm wide, margin toothed, apex 2-cleft. Stamen ca. 1.5 cm; connective emarginate, rarely with deltoid appendage. Ovary glabrous. Capsule red, ovoid to ellipsoid, ca. 1.5 × 1 cm. Fl. May, fr. Oct–Nov.

• Forests. W Guangxi (Debao Xian).

Medicinal.

48. *Alpinia coriacea* T. L. Wu & S. J. Chen, Acta Phytotax. Sin. 16(3): 31. 1978.

革叶山姜 ge ye shan jiang

Pseudostems 50–60 cm. Ligule orbicular, 2-cleft, ca. 3 mm, margin ciliate; petiole 5–7 mm; leaf blade deep green, elliptic or ovate-elliptic, 10–15 × 5–8 cm, leathery, glabrous, apex acuminate, with caudate tip ca. 1 cm. Spikes ca. 4 cm; bracts densely imbricate, lanceolate, 1–1.5 cm, 2-flowered, persistent; bracteoles pale green, ovate, ca. 1.2 cm, densely pilose. Calyx ca. 1 cm, densely pilose, apex 3-toothed. Corolla tube white, ca. 1.2 cm; lobes oblong, central one ca. 8 × 4 mm, puberulent, margin ciliate, apex slightly concave, lateral ones nar-

rower. Lateral staminodes oblong, ca. 3.5 mm. Labellum pale green with red stripes, oblong, ca. 1 cm × 7 mm, apex emarginate. Filament ca. 5 mm; anther ca. 3 mm; connective appendage absent. Capsule ovoid, ca. 1 cm. Fl. and fr. Jun–Aug. $2n = 48^*$.

- Forests. E Hainan (Wanning Xian).

49. *Alpinia coriandriodora* D. Fang, Acta Phytotax. Sin. 16 (4): 79. 1978.

香姜 *xiang jiang*

Plants with odor of coriander (*Coriandrum sativum* Linnaeus). Rhizomes purple-red, short. Pseudostems 0.5–2 m. Leaves 15–25, subsessile; ligule shallowly 2-cleft, 3–8 mm, margin often ciliate; leaf blade elliptic-lanceolate, 8–13 × 1.2–5 cm, glabrous, base cuneate, margin shortly hispid, glabrescent, apex long caudate. Spikes 5–10 cm; rachis densely pubescent; involucre bract elliptic-lanceolate, 4.5–12 cm, puberulent, apex caudate; bracts 1.5–5 cm × 4–6 mm, early deciduous; bracteoles elliptic, 5–9 mm, flat, puberulent, deciduous. Proximal flowers in clusters of 3 on rachis, distal ones solitary; pedicel ca. 1 mm, densely pubescent. Calyx 6–9 mm, shallowly split on 1 side, apex 3-toothed. Corolla tube subequalling calyx; lobes oblong, ca. 7 × 4 mm, abaxially densely appressed pubescent. Lateral staminodes linear, ca. 4 mm, minutely glandular hairy. Labellum purple-red striped, subovate, 6–7 mm wide, velvety, apex shallowly 2-cleft. Stamen ca. 1.1 cm; connective appendage triangular or tongue-shaped, ca. 2 mm. Ovary densely pubescent. Capsule red, globose, 0.8–1.4 cm in diam., sparsely velvety, apex with persistent calyx. Fl. Apr–May, fr. Sep–Oct. $2n = 48^*$.

- Guangxi.

Medicinal and used as a condiment.

50. *Alpinia stachyodes* Hance, J. Linn. Soc., Bot. 13: 126. 1873.

密苞山姜 *mi bao shan jiang*

Pseudostems 1–1.5 m. Leaf sheath tomentose; ligule orbicular, 2-cleft, ca. 1 cm, tomentose, margin ciliate; petiole 0.5–2 cm, tomentose; leaf blade oblong-lanceolate, 20–40 × 4–7 cm, leathery, glabrous except tomentose at margin and apex, or abaxially tomentose especially on median veins, base attenuate, apex acuminate, with caudate tip ca. 2.5 cm. Spikes erect, subsessile, cylindrical, 10–16 cm; involucre bract linear, 8–9 cm × 8–10 mm; bracts ovate or lanceolate, 1.5–2.5 cm, densely imbricate, tomentose, 3-flowered, persistent; bracteoles lanceolate, 5–10 mm, tomentose, persistent. Flowers fragrant, tomentose. Calyx tubular, 1–1.5 cm, apex 3-toothed. Corolla tube ca. 1.2 cm; lobes oblong, ca. 6 mm, concave. Lateral staminodes linear, ca. 2 mm. Labellum striped at center, rhomboidal-ovate, obscurely 3-lobed, ca. 7 × 3 mm, margin undulate, apex 2-cleft. Filament ca. 5 mm; anther ca. 4 mm. Ovary densely hirsute. Capsule globose, ca. 1 cm in diam., apex with persistent calyx. Fl. and fr. Jun–Aug. $2n = 48^*$.

- Forests, roadsides; 600–700 m. Guangdong, Guangxi, Guizhou, Jiangxi, Yunnan.

- 1a. Leaf blade glabrous except tomentose at margin and apex 50a. var. *stachyodes*
- 1b. Leaf blade abaxially tomentose especially

on median veins 50b. var. *yangchunensis*

50a. *Alpinia stachyodes* var. *stachyodes*

密苞山姜(原变种) *mi bao shan jiang* (*yuan bian zhong*)

Alpinia densibracteata T. L. Wu & S. J. Chen.

Leaf blade glabrous except tomentose at margin and apex.

- Dense forests. Guangdong, Guangxi, Guizhou, Jiangxi, Yunnan.

50b. *Alpinia stachyodes* var. *yangchunensis* Z. L. Zhao & L. S. Xu in Z. L. Zhao et al., Acta Phytotax. Sin. 36: 551. 1998.

阳春山姜 *yang chun shan jiang*

Leaf blade abaxially tomentose especially on median veins.

- Forests, roadsides; 600–700 m. Guangdong.

51. *Alpinia jingxiensis* D. Fang, Acta Phytotax. Sin. 18: 224. 1980.

靖西山姜 *jing xi shan jiang*

Pseudostems 50–60 cm. Ligule 2-cleft, 3–4 mm, thick, densely pubescent; petiole 0.3–2 cm; leaf blade elliptic-lanceolate, 28–50 × 5–9 cm, adaxially glabrous, abaxially densely pubescent, base cuneate, apex caudate. Spikes sessile, 7–9 cm; rachis pubescent; involucre bracts 2, ovate-lanceolate, 4.5–13 cm; bracts red, ovate-deltoid, 2.4–3 cm, sericeous, 3-flowered; bracteoles ovate-deltoid, 1.5–1.8 cm, sericeous. Calyx pale red, slightly split on 1 side, sericeous, apex 2-toothed. Corolla tube ca. 2 cm, pubescent; lobes oblong, ca. 1 cm × 4 mm, central one larger than lateral ones, sericeous. Lateral staminodes subulate, ca. 2 mm, densely glandular hairy. Labellum red striped, ovate, ca. 7 mm wide, apex 2-cleft. Filament ca. 5 mm; anther ca. 4 mm, densely and shortly glandular hairy. Ovary glabrous. Capsule subglobose, ca. 8 mm in diam., apex with persistent calyx. Fl. Jun–Jul.

- Forests; 1400–1500 m. W Guangxi (Jingxi Xian).

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

