

37. ORYZA Linnaeus, Sp. Pl. 1: 333. 1753.

稻属 dao shu

Annual or perennial, tufted or shortly rhizomatous. Culms erect or ascending. Leaf blades mainly cauline, broadly linear, flat; ligule membranous, sometimes long. Inflorescence a panicle, usually many-spiculate, often nodding, lower branches usually whorled, unbranched or sparsely branched, pedicels short. Spikelets with 3 florets, 2 lower florets reduced, sterile, upper floret fertile, strongly laterally compressed, disarticulating below sterile lemmas, persistent in cultivated species; glumes vestigial, remaining after disarticulation as a shallow lobed frill at pedicel apex; sterile florets reduced to 2 narrow lemmas at base of fertile floret; fertile lemma boat-shaped, keeled, leathery, closely papillose, sometimes spinulose, infrequently smooth, prominently 5-veined, apex awnless to long awned; awn straight; palea resembling lemma but narrower, 3-veined, apex beaked. Stamens 6. Caryopsis variable in shape, embryo 1/4 length of caryopsis, hilum linear, as long as caryopsis. $x = 12$.

Twenty-four species: warm parts of Africa, Asia, Australia, and Central and South America; five species (two introduced) in China.

Oryza includes rice, *O. sativa*, the staple cereal crop throughout most of S China and tropical Asia.

The narrow scales at the base of the fertile floret are sometimes regarded as glumes rather than sterile lemmas, the shallow frill at the pedicel apex being then regarded simply as pedicel tissue. However, aberrant forms of *Oryza sativa* have been reported with one or more of the basal scales well developed and even enclosing a grain, which appears to support their derivation from lemmas.

Oryza latifolia Desvaux is a species from Central and South America which has been reported in Beijing.

- 1a. Spikelets 5–6 mm, disarticulating at maturity; ligule 1–4 mm.
 - 2a. Annual; ligule with dense matted hairs on abaxial surface; leaf blades up to 4 cm wide *O. latifolia* (see note above)
 - 2b. Perennial; ligule glabrous on abaxial surface; leaf blades 1–2(–3) cm wide.
 - 3a. Lemma awned; plant 1.5–3 m tall; leaf blades 30–50 cm 1. *O. officinalis*
 - 3b. Lemma awnless; plant 0.3–0.7 m tall; leaf blades 5–20 cm 2. *O. meyeriana*
- 1b. Spikelets 8–10 mm, persistent or disarticulating at maturity; ligule 17–40 mm (if shorter, spikelets persistent).
 - 4a. Plant wild; spikelets disarticulating; anthers 4–6 mm 3. *O. rufipogon*
 - 4b. Plant cultivated; spikelets persistent; anthers 1–2.5 mm.
 - 5a. Ligule of lower leaves up to 40 mm, acuminate; fertile floret papillose and spinulose 4. *O. sativa*
 - 5b. Ligule of lower leaves 3–5 mm, rounded; fertile floret glabrous 5. *O. glaberrima*

1. *Oryza officinalis* Wallich ex Watt, Dict. Econ. Prod. India 5: 501. 1891.

药用稻 yao yong dao

Oryza latifolia Desvaux var. *silvatica* Camus; *O. minuta* Presl var. *silvatica* (Camus) Veldkamp.

Perennial. Culms erect or creeping and rooting at lower nodes, 1.5–3 m tall, 7–10 mm in diam. Leaf sheaths more than 3 times internode length, auricles inconspicuous; leaf blades thick, 30–50 × 2–3 cm, abaxial surface and margins scabrous, adaxial surface scattered villous, midrib stout, lateral veins inconspicuous, base narrowed, puberulous, apex acuminate; ligule 1–4 mm. Panicle loosely contracted, 30–50 cm, base often included in terminal sheath; branches 3–5 at lowest node, axils bearded, longest 10–25 cm, naked in lower half, apices of lowermost branches drooping. Spikelets broadly ovate-oblong, 4–5 mm, length 1.5–2 times width, yellowish green or tinged brownish black, deciduous; sterile lemmas linear-lanceolate, 1.5–2 mm, apex acuminate; fertile lemma papillose, keel and marginal veins with hard glassy hairs; awn 5–10(–25) mm, slender, scabrid. Anthers 1.5–2.5 mm. Caryopsis reddish brown, ca. 3 × 2 mm. $2n = 24$.

Low hills, alluvial plains, ditch banks; below 1000 m. Guangdong, Guangxi, Hainan, Yunnan [Bhutan, Cambodia, India, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam].

The name *Oryza latifolia* Desvaux has sometimes been misapplied to this species in Asian literature.

Oryza officinalis is normally diploid, with the genome CC. It is closely related to the tetraploid *O. minuta* Presl from the Philippines (genome BBCC), and is sometimes placed as *O. minuta* var. *silvatica*. *Oryza minuta* differs only slightly morphologically, the lowermost panicle branches having a shorter naked portion and ascending at the tip. It also has proportionately narrower spikelets with length 2–2.7 × width.

2. *Oryza meyeriana* (Zollinger & Moritzi) Baillon subsp. ***granulata*** (Nees & Arnott ex Watt) Tateoka, Bot. Mag. (Tokyo) 75: 460. 1962.

疣粒稻 you li dao

Oryza granulata Nees & Arnott ex Watt, Dict. Econ. Prod. India 5: 500. 1891; *O. meyeriana* var. *granulata* (Nees & Arnott ex Watt) Duistermaat; *O. meyeriana* subsp. *tuberculata* W. C. Wei & Y. G. Lu.

Perennial, loosely tufted or sometimes shortly stoloniferous. Culms erect or ascending, 30–70 cm tall, ca. 1.5 mm in diam. Leaf sheaths shorter than internodes, auricles ciliate; leaf blades thin, 5–20 × 0.6–2 cm, inrolled when dry, abaxial surface smooth, adaxial surface scabrid along veins, margins scabrid, base rounded, narrowed at insertion, apex acuminate; ligule 1–2 mm. Panicle narrow, erect, 3–15 cm; branches 2–5, inserted singly, 2–6 cm, unbranched, ascending, bearing few

spikelets. Spikelets elliptic-oblong, 5–6.5 mm, length 2–3 times width, light green or gray; sterile lemmas narrowly lanceolate, slightly unequal, ca. 1 mm; fertile lemma irregularly granular, flanks sulcate, apex obtuse or shortly 3-toothed, awnless. Anthers 3.5–4.5 mm. Caryopsis brown, 3–4 mm. Fl. and fr. Oct–Feb. $2n = 24$.

Hill forests, on well drained soils and damp places by streams; (below 100–)500–1000 m. Guangdong, Guangxi, Hainan, Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand].

The typical subspecies occurs in Indonesia and the Philippines. It has longer, (6–)7–10 mm spikelets, with length 3–6 × width. The two subspecies grade into each other. *Oryza meyeriana* is easily distinguished, as it is the only wild rice in China without awns. It is unlike other members of the genus, both in its low stature and shady upland habitat requirements. Phylogenetically this species has been shown to be basal in the genus, with genome GG.

3. *Oryza rufipogon* Griffith, Not. Pl. Asiat. 3: 5. 1851.

野生稻 ye sheng dao

Oryza sativa Linnaeus subsp. *rufipogon* (Griffith) de Wet; *O. sativa* var. *rufipogon* (Griffith) G. Watt.

Perennial, aquatic, tufted or stoloniferous. Culms decumbent, rooting and tillering at nodes, sometimes floating, lower part spongy, 0.7–1.5 m or more tall. Leaf sheaths slightly inflated below, upper sheaths tight, glabrous, auricles conspicuous, glabrous or ciliate; leaf blades up to 40 × 1–2 cm, margins and midrib scabrid, apex acuminate; ligule up to 17 mm. Panicle spreading, 12–30 cm, eventually nodding; branches 1–5 at lowest node, longest 2.5–12 cm, axils bearded or glabrous. Spikelets oblong, 8–11 mm, length 2.7–4.5 times width, yellowish green with reddish apex, deciduous; sterile lemmas lanceolate, ca. 2.5 mm, apex acuminate; fertile lemma finely reticulate with scattered short glassy hairs, flanks slightly sulcate, keel stiffly ciliate, apex acuminate; awn 5–40 mm or more, stout, scaberulous. Anthers 4–6 mm. Caryopsis reddish brown, 5–7 mm. Fl. and fr. Apr–May and Oct–Nov. $2n = 24$.

Riversides, ponds, streams, lotus ponds, rice fields, ditches, marshes; below 700 m. Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Bangladesh, Cambodia, India, Indonesia, Malaysia, Myanmar, New Guinea, Sri Lanka, Philippines, Thailand, Vietnam; Australia (Queensland)].

This is a member of the AA genome complex, which includes cultivated rice, of which it is a progenitor. Members of this group hybridize quite easily and have contributed to the development of rice cultivars. *Oryza rufipogon* is perennial, but the most important difference from cultivated rice is the possession of readily deciduous spikelets.

4. *Oryza sativa* Linnaeus, Sp. Pl. 1: 333. 1753.

稻 dao

Oryza formosana Masamune & Suzuki; *O. sativa* var. *formosana* (Masamune & Suzuki) Yeh & Henderson.

Annual, aquatic, tufted. Culms erect, rooting at lower submerged nodes, 0.5–1.5 m tall. Leaf sheaths slightly inflated below, upper sheaths tight, glabrous, auricles falcate, ciliate; leaf blades 25–60 × 0.5–2 cm, glabrous, smooth or scabrid on both sides, margins scabrid, apex acuminate; ligule 10–40 mm.

Panicle loosely contracted, up to 30 cm, nodding at maturity; branches 1–3 at lowest node, longest 2–12 cm, axils bearded or glabrous. Spikelets oblong to oblong-lanceolate, 7–10 mm, length 2–3.5 times width, persistent; sterile lemmas lanceolate, 1.5–4 mm, apex acuminate; fertile lemma papillose, spinulose, apex acuminate; awn very variable, slender or stout, up to 60 mm or more, scaberulous, sometimes absent. Anthers 1–3 mm. Caryopsis ovate or elliptic to cylindrical, 5–7 mm, whitish yellow to brown or blackish. $2n = 24$.

Cultivated, mainly in flooded fields. Throughout most of China [domesticated in SE Asia].

This is the staple cereal rice, widely cultivated in tropical and warm-temperate parts of the world, and with many different cultivated races. It has the AA genome, and where *Oryza rufipogon* occurs as a weed in rice fields, intermediates may occur.

5. *Oryza glaberrima* Steudel, Syn. Pl. Glumac. 1: 3. 1853.

光稈稻 guang fu dao

Annual. Culms erect, spongy, up to 1 m tall. Leaf sheaths glabrous, leaf blades up to 30 × 1–1.5 cm, glabrous, margins scabrid; ligule 3–5 mm. Panicle loosely contracted, 20–25 cm; branches long, mostly simple. Spikelets obliquely inserted on pedicels, oblong, 7–9 mm, length twice width, yellow or dark brown, persistent; sterile lemmas lanceolate, 1.5–3 mm, margins sparsely ciliate, apex acuminate; fertile lemma smooth, glabrous or keel ciliate, apex with acute beak, usually awnless. Anthers ca. 1.5 mm. Caryopsis oblong, 5–6 mm. $2n = 24$.

Cultivated, in flooded fields. Hainan, Yunnan [domesticated in W tropical Africa].

This African rice is the other cultivated species in *Oryza*, but its cultivation is much less widespread than that of *O. sativa*. It belongs to the AA genome complex, but can be clearly distinguished from *O. sativa* and others of this complex in China by its much shorter, rounded ligule.

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