

## XYRIDACEAE

黄眼草科 huang yan cao ke

Wu Guofang (吴国芳 Wu Kuo-fang)<sup>1</sup>; Robert Kral<sup>2</sup>

Herbs perennial or rarely annual. Roots fibrous. Leaves mostly basal, distichous or sometimes polystichous, sheathing; leaf blade ensiform, linear, or filiform. Scapes or peduncles usually numerous. Inflorescence terminal, a globose to cylindrical head or dense spike; bracts conspicuous, spirally imbricate or decussate, persistent or sometimes caducous in fruit. Flowers bisexual, 3-merous. Sepals 3, sometimes median sepal reduced or absent, lateral sepals 2, chaffy-scarious, keeled. Corolla actinomorphic or rarely zygomorphic, usually ephemeral; petals 3, yellow, less often white or blue, free, base clawed or sometimes connate, or forming a long tube. Stamens usually 3, inserted opposite petals; filaments short, adnate to petals, rarely free; anthers 2-loculed, dehiscing longitudinally. Staminodes present or absent. Ovary superior. Style filiform, apex 3-branched or simple. Capsule oblong, 3-valved, loculicidal. Seeds with copious and  $\pm$  mealy endosperm; embryo small.

About five genera and ca. 300 species: widespread in tropical and subtropical regions; one genus and six species (one endemic) in China.

Wu Kuo-fang. 1997. Xyridaceae. In: Wu Kuo-fang, ed., Fl. Reipubl. Popularis Sin. 13(3): 11–19.

### 1. XYRIS Linnaeus, Sp. Pl. 1: 42. 1753.

黄眼草属 huang yan cao shu

Herbs perennial or rarely annual. Leaves equitant; leaf sheath sometimes with a short ligule; leaf blade linear to ensiform, smooth, papillose, rugose, or scaberulose. Peduncle scapelike, terete to compressed, sometimes winged or ribbed. Spikes few to many flowered; bracts brownish yellow to blackish brown, dull or shining, conchiform, rigid, abaxially minutely papillose toward apex when young, midvein conspicuous, margin scarious, entire, ciliate, fimbriate, or lacerate, apex emarginate, rounded, or acute. Sepals 3; lateral sepals with keel entire, dentate, or ciliate, wings membranous; median (anterior) sepal enclosing corolla or sometimes  $\pm$  reduced or obsolete, thin and membranous, 1–3(–5)-veined. Petals 3, free; limb obovate; claw long and narrow. Stamens usually 3; filaments flattened; anthers basifixed, extrorse, dehiscing by vertical slits. Staminodes 3 or rarely absent, alternate with petals, often clawed, 2-cleft or 2-brachiate and branches with penicillate hairs. Ovary usually sessile, 1- or 3-loculed or imperfectly 3-loculed. Style filiform, apex 3-branched; stigmas usually U-shaped. Seeds obovoid to ellipsoid, longitudinally striate, apex usually apiculate.

About 280 species: mainly in tropical and subtropical America, some species in Africa, Asia, and Australia; six species (one endemic) in China.

- 1a. Leaf blade usually 4–6 mm wide, with numerous, prominent, transverse ribs connecting longitudinal veins ..... 1. *X. indica*  
1b. Leaf blade 1.5–3.5 mm wide (rarely to 5 mm in *X. capensis*), without transverse ribs.  
2a. Young bracts not papillose abaxially ..... 2. *X. capensis*  
2b. Young bracts papillose abaxially.  
3a. Leaf blade rigid, margin thickened ..... 3. *X. complanata*  
3b. Leaf blade soft, margin not thickened.  
4a. Median bracts orbicular and sparsely lacerate-fimbriate at apex; leaf blade acute at apex ..... 4. *X. bancana*  
4b. Median bracts spinulose and with a papillose triangle at apex; leaf blade emarginate to obtuse or acuminate at apex.  
5a. Median sepal ca. 3.5 mm; stamens 0.9–1.3 mm; inner anther locule shorter than outer one; staminodes shorter than stamens ..... 5. *X. pauciflora*  
5b. Median sepal ca. 2.5 mm; stamens ca. 0.4 mm; inner anther locule longer than outer one; staminodes longer than stamens ..... 6. *X. formosana*

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**1. *Xyris indica*** Linnaeus, Sp. Pl. 1: 42. 1753.

黄眼草 huang yan cao

*Xyris calocephala* Miquel; *X. capito* Hance; *X. paludosa* R. Brown; *X. robusta* Martius.

Herbs perennial, robust. Leaf sheath 7–20(–25) cm; leaf blade ensiform-linear, 15–60 cm × 4–8 mm, glabrous, veins indistinct when dry, connected by numerous, prominent, transverse ribs, apex acute to obtuse. Peduncle 15–65 cm, veins prominent. Spikes ovoid, oblong-ovoid, or ellipsoid, 1.2–3.5 × 1–1.5 cm; bracts yellowish brown, suborbicular, obovate, or conchiform, 5–8 × 5–7 mm, minutely papillose on apical 1/3, base obtuse to truncate, margin gold-colored, membranous, apex entire or emarginate. Lateral sepals linear-spatulate, 5–7 × 0.8–1.4 mm, keel denticulate, apex obtuse; median sepal hooded, 4–6 × 2–2.5 mm, 1-veined. Petals yellowish to yellow; limb obovate to suborbicular, 3–4.5 × 3–4 mm, margin serrulate; claw 3.5–5 × ca. 0.5 mm. Stamens ca. 4 mm; anthers ovate, apex broadly incised, with a short mucro in incision. Staminodes 2–3 mm. Ovary obovoid, 1-loculed. Capsule globose to obovoid, 3–4 mm. Seeds ovoid, ca. 0.5 mm. Fl. Sep–Nov, fr. Oct–Dec.

Wet grasslands, inundated rice fields, mountain valleys. Fujian, Guangdong, Hainan [Cambodia, India, Indonesia, Laos, Malaysia, Philippines, Sri Lanka, Thailand, Vietnam; Australia].

This species probably occurs in other provinces in S China.

**2. *Xyris capensis*** Thunberg var. ***schoenoides*** (Martius) Nilsson, Kongl. Svenska Vetenskapsakad. Handl. 24(14): 41. 1892.

南非黄眼草 nan fei huang yan cao

*Xyris schoenoides* Martius in Wallich, Pl. Asiat. Rar. 3: 30. 1831; *X. capensis* f. *schoenoides* (Martius) Nilsson; *X. melanocephala* Miquel; *X. novoguineensis* Hatusima; *X. semifuscata* Bojer ex Baker; *X. sumatrana* Malme.

Herbs tufted. Leaf sheath 0.6–1.5 cm; ligule 0.5–1 mm; leaf blade ensiform-linear, 10–40 cm × 0.5–5 mm, rigid, apex falcate, obtuse to acute. Peduncle brownish red at base, 25–50 cm × 1.2–3 mm, terete to subcompressed. Spikes subglobose to obovoid, 6–11 mm in diam.; basal bracts suborbicular, median ones elliptic, sometimes boat-shaped, 5.3–7 mm, not papillose abaxially, veins 5–7, margin membranous, apex obtuse. Lateral sepals boat-shaped, 5–6.5 × 1–1.5 mm, keel narrow, margin entire, apex obtuse; median sepal hooded, ca. 5 × 2 mm, apex obtuse. Petals yellow; limb obovate, 4–5 mm; claw 6–6.5 mm. Stamens 3; filaments ca. 0.5 mm; anthers oblong, 1.2–1.4 mm, apex obtusely incised; locules with 2 teeth at apex. Staminodes 2-cleft, slightly shorter than stamens. Ovary 1-loculed, with 3 parietal placentas. Style 2.6–3.2 mm, branches ca. 2 mm; stigma funnelform. Capsule obovoid. Seeds narrowly ovoid, ca. 0.8 mm. Fl. Jul–Sep, fr. Aug–Oct.

Wet places in mountain valleys and swamps; 1600–2000 m. Sichuan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Nepal, New Guinea, Thailand, Vietnam; Africa, South America].

*Xyris capensis* var. *capensis* occurs in Africa.

**3. *Xyris complanata*** R. Brown, Prodr. 256. 1810.

硬叶葱草 ying ye cong cao

*Xyris elongata* Rudge; *X. malaccensis* Steudel; *X. walkeri* Kunth.

Herbs perennial. Leaf sheath narrow, 3.5–7.5 cm; leaf blade linear, (5–)10–25(–40) cm × 1–3.5 mm, rigid, thick, striate when dry, margin thickened and with a stout vein, apex acute. Peduncle erect, 10–40(–60) cm × 1.2–2.5 mm, distinctly compressed, usually twisted leftward, margin with a stout, scabrous rib. Spikes oblong-ovoid to cylindrical, 8–20 × 5–8 mm; bracts brownish, suborbicular to broadly obovate, 5–5.5 × 4–5 mm, sometimes with a prominent keel, abaxially subspinulose at center, apical part with a triangular, papillose patch, apex obtuse. Lateral sepals boat-shaped, 3.8–4.5 × 1–1.5 mm, keel lacerate-fimbriate in apical 1/2; median sepal hooded, 3–3.5 mm, veins 1 or 3. Petals yellow; limb obovate to obtriangular, 5–6 mm, apical margin lacerate; claw narrow. Stamens 3; filaments ca. 1 mm; anthers 1–1.5 mm, apex deeply incised; locules mucronulate at base, apex with 2 acute points. Staminodes 2-cleft, ca. 1.5 mm. Ovary obovoid. Style 3–5 mm; stigma funnelform, margin lacerate. Capsule ovoid, 3–3.5 mm. Seeds ovoid to ellipsoid, ca. 0.4 mm. Fl. Aug–Sep, fr. Sep–Oct.

Wastelands, fields, moist sandy soil in coastal areas. Fujian, Hainan [Cambodia, India, Indonesia, Laos, Malaysia, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Australia].

This species probably occurs in other provinces in S China.

**4. *Xyris bancana*** Miquel, Fl. Ned. Ind., Eerste Bijv. 608. 1861.

中国黄眼草 zhong guo huang yan cao

*Xyris chinensis* Malme; *X. ridleyi* Rendle.

Herbs tufted. Leaf sheath 1/5–1/4 as long as blade; leaf blade narrowly ensiform-linear, 9–15(–17) cm × 1.5–2 mm, smooth or minutely and transversely rugulose, nervose-striate, apex acute. Peduncle (15–)25–40(–50) cm × ca. 0.8 mm, subterete, smooth, basally subtended by a sheath. Spikes subglobose to obovoid, 5–7 mm, few flowered; basal bracts oblong-ovate, ca. 4 mm, indistinctly keeled, apex rounded and usually emarginate; median bracts obovate, ca. 5 × 3.5 mm, conchiform, not keeled, apex rounded and few lacerate-fimbriate. Lateral sepals free, subequilateral, linear to narrowly obovate, curved, 4.5–5 mm, less than 1 mm wide, margin few lacerate-fimbriate, keel narrow and entire at base and apex but central portion slightly wider and denticulate. Fl. Aug–Sep.

Swamps. Hong Kong [Cambodia, Indonesia, Malaysia, New Guinea, Thailand, Vietnam].

**5. *Xyris pauciflora*** Willdenow, Phytographia 1: 2. 1794.

葱草 cong cao

*Xyris pauciflora* var. *oryzeterum* Miquel.

Herbs tufted. Leaf sheath 1.5–6 cm; leaf blade narrowly linear, 8–22 cm × 1–3 mm, striate when dry, margin sparsely papillose, apex acute to acuminate. Peduncle 5–35 cm × 1–1.5 mm, subterete. Spikes globose to ovoid, 6–13 × 6–11 mm; basal bracts elliptic, papillose along apical 1/2 of midvein, apex emarginate to obtuse; median bracts suborbicular to broadly obovate, 3–5 × 3–4 mm, apical 1/3 with a triangular, papillose patch, midvein dark brown, thickened, margin membranous,

apex spinulose. Lateral sepals boat-shaped, 3.5–4.5 × ca. 1.5 mm, membranous, keel narrow, coarsely serrulate, apex subacute; median sepal hooded, ca. 3.5 mm. Petals yellow; limb obovate, 2.5–3.5 mm; claw 3–4 mm. Stamens 0.9–1.3 mm; anthers broadly ovate; inner locule shorter than outer one; connective widened, apex obtuse. Staminodes 2-brachiate, shorter than stamens. Ovary obovoid. Style 1.2–2 mm; stigma capitate. Capsule ovoid to ellipsoid, 4–5 mm. Seeds 0.4–0.5 mm. Fl. Sep–Nov, fr. Oct–Dec.

Mountain valleys, swamps, fields, damp sandy soils; 300–900 m. Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Australia].

**6. *Xyris formosana*** Hayata, Icon. Pl. Formos. 5: 237. 1915.

台湾黄眼草 tai wan huang yan cao

Herbs tufted. Leaf sheath keeled; leaf blade narrowly linear, laterally flattened, striate when dry, margin minutely papillose, apex acuminate. Peduncle terete to subterete. Spikes subglobose; basal bracts elliptic, papillose along apical 1/2 of midvein, apex emarginate; median bracts broadly elliptic, papillose on apical, deltoid part, veins 5–7, descendent, midvein dark brown, thick, margin membranous, apex spinulose. Lateral sepals curved, 4–6 × 1.4–2 mm, membranous, hyaline, keeled, base unequally tapering, apical margin usually serrulate, apex subacute to acute; median sepal hooded, ca. 2.5 mm, very thin, hyaline, 1-veined, apex obtuse. Petal limb obovate, 3-veined. Stamens ca. 0.4 × 0.1 mm; inner anther locule longer than outer one; connective with membranous wing, apex obtuse. Staminodes 2-brachiate, ca. 4 mm. Ovary obovoid, 3-sided, ca. 2.5 mm in diam.

- Emerged in marshes; near sea level to 100 m. N Taiwan.

This species may be no more than a slightly smaller, insular form of *Xyris pauciflora*, which it closely resembles.

