

178. **CENCHRUS** Linnaeus, Sp. Pl. 2: 1049. 1753.

蒺藜草属 *ji li cao shu*

Chen Shouliang (陈守良); Sylvia M. Phillips

Annuals or perennials. Culms usually branched near the base. Leaf blades usually flat; ligule a ciliate rim. Inflorescence spike-like, cylindrical, composed of spiny or bristly deciduous burrs arranged along an angular, often sinuous rachis; burrs sessile or with an obconical basal stipe, each composed of 1 or more sessile spikelets surrounded by an involucre of spines and bristles; bristles flexuous or more often spinous, \pm flattened, grooved on the outer face, united below, the degree of union varying from a small basal disk to a deep cupule, inner spines or bristles often ciliate around spikelets. Spikelets lanceolate, acute; glumes unequal, shorter than spikelet, lower sometimes suppressed; lower floret membranous, staminate or neuter; upper floret firmer, protogynous. Lodicules absent.

Twenty-three species: tropical and warm-temperate regions of the world; four species (all introduced) in China.

- 1a. Inner spines of burr extended beyond spikelets as long, slender bristles, connate only at base; outer bristles often longer than spikelets, numerous 1. *C. ciliaris*
1b. Inner spines of burr stiff, flattened, connate to form a deep cupule; outer bristles shorter than inner spines or absent.
2a. Burr consisting of several whorls of connate, flattened spines, free tips emerging at irregular intervals over body of burr 2. *C. incertus*
2b. Burr consisting of 1 whorl of connate, flattened spines, usually surrounded by whorls of smaller, finer bristles.
3a. Spines of burr retrorsely barbed, tenaciously prickly; outer bristles many 3. *C. echinatus*
3b. Spines of burr antrorsely barbed; outer bristles few or absent 4. *C. setigerus*

1. **Cenchrus ciliaris** Linnaeus, Mant. Pl. 2: 302. 1771.

光梗蒺藜草 *guang geng ji li cao*

水牛草 *shui niu cao*

Pennisetum ciliare (Linnaeus) Link.

Annual or short-lived perennial. Culms geniculate, decumbent or erect, 40–100 cm tall. Leaf sheaths keeled, loose, glabrous or pilose near margins; leaf blades linear or narrowly lanceolate, 3–20 \times 0.2–0.6 cm, glabrous on both surfaces; ligule 0.5–1.5 mm. Inflorescence 1.5–6.5 \times ca. 1 cm, open or compact, rachis scabrous. Burrs variable, globose or ovoid, ca. 1 cm, stipe glabrous, spines retrorsely barbed, connate for much of their length, spiny tips diverging irregularly throughout body of burr, involucre cleft on 2 sides, pubescent, spines rigid, long and slender to short and broad. Spikelets 2–3 in burr, 3.5–6 mm; lower glume 1/3–1/2 spikelet length; upper glume 3/4 spikelet length. Fl. and fr. autumn.

Seashore sand dunes. Liaoning [native to America].

This native of America is now widespread as a weed.

Perennial, tufted or shortly rhizomatous. Culms erect or ascending from a decumbent or stoloniferous base, slender to moderately stout, sometimes much branched, up to 1 m tall. Leaf sheaths glabrous or pubescent; leaf blades linear, green or grayish, 10–50 \times 0.4–0.8 cm, with scattered, tubercle-based hairs; ligule 0.5–3 mm. Inflorescence 3–15 cm, densely bristly, burrs contiguous, rachis puberulous. Burrs composed of many bristles; bristles antrorsely barbed; inner bristles 7–14 mm (one stouter and slightly longer), connate at extreme base to form a shallow disc 0.5–1.5 mm wide, somewhat flattened around spikelets, grooved on outer face, ciliate on inner margins, tips extended into flexuous bristles clearly exceeding spikelets; outer bristles numerous, shorter, slender. Spikelets 1–4 in burr, 3–5 mm; lower glume 1/3–1/2 spikelet length; upper glume ca. 1/2 spikelet length. $2n = 36$.

Pastures and weedy places, introduced. Taiwan [native to India, Pakistan; Africa, SW Asia; introduced in America and Australia].

This is a polymorphic species occurring naturally from Africa to India. Some superior strains have been selected and distributed in warm parts of the world for pasture and fodder in dry areas (Buffel Grass), and the grass has become a widespread weed. It was introduced to Taiwan as a pasture grass, and is now naturalized in the south of that island.

Cenchrus ciliaris may easily be mistaken for a species of *Pennisetum*, as the basal fusion of the bristles is rather slight. However, the flattening and grooving of the bristles around the spikelets is a characteristic feature of *Cenchrus* and is not found in *Pennisetum*.

3. **Cenchrus echinatus** Linnaeus, Sp. Pl. 2: 1050. 1753.

蒺藜草 *ji li cao*

Annual. Culms geniculate, usually rooting at basal nodes, 15–90 cm tall. Leaf sheaths keeled, usually imbricate at base; leaf blades linear or linear-lanceolate, 5–20(–40) \times 0.4–1 cm, glabrous to pubescent; ligule ca. 1 mm. Inflorescence 3–10 \times

2. **Cenchrus incertus** M. A. Curtis, Boston J. Nat. Hist. 1: 135. 1837.

ca. 1 cm, burrs contiguous, rachis scabrous. Burrs globose, 0.4–1 cm, truncate, stipe pubescent, all spines and bristles retrorsely barbed; inner spines connate for $1/3$ – $1/2$ their length forming a globose cupule, the flattened free tips triangular, erect or bent inward, cupule and tips pubescent, outer spines in 2 divergent whorls, a median whorl of stout rigid spines equaling the inner teeth, and an outermost whorl of relatively few short, slender bristles. Spikelets 2–4 in burr, 4.5–7 mm; lower glume $1/2$ spikelet length; upper glume $2/3$ – $3/4$ spikelet length. Fl. and fr. summer. $2n = 34, 68$.

Seashore sand dunes, roadsides, waste places. Fujian, Hainan, Guangdong, Taiwan, Yunnan [native to America; now a widespread weed of the tropics and subtropics].

The name *Cenchrus caliculatus* Cavanilles has been misapplied to this species in China. *Cenchrus caliculatus* is a larger species with culms to 2 m tall and an inflorescence to 24 cm. It is further distinguished by its burrs, which have only a shallow basal cupule. It occurs in Indonesia, Australia, and the S Pacific Islands.

4. *Cenchrus setigerus* Vahl, Enum. Pl. 2: 395. 1805.

倒刺蒺藜草 dao ci ji li cao

Perennial. Culms somewhat bulbous at base, geniculately ascending, 20–60 cm tall. Leaf sheaths keeled, scabrous; leaf blades linear, 2 – 20×0.4 – 0.8 cm, adaxial surface pilose with long scattered hairs; ligule ca. 0.5 mm. Inflorescence rather stiff, 4 – 12×0.6 – 0.7 cm, burrs overlapping by about half their length, rachis scabro-puberulous. Burrs broadly oblong with rounded base, 0.3–0.7 cm, sessile; inner spines connate for $1/4$ – $1/2$ their length forming a tough cupule, flattened free tips narrowly triangular, erect, antrorsely scaberulous with a broad green groove on outer face, inner face shortly ciliate; outer spines very short or almost suppressed, reduced to bristles around periphery of cupule. Spikelets 1–4 in burr, 3.5–5 mm; lower glume $1/2$ spikelet length; upper glume $4/5$ spikelet length. $2n = 34, 36$.

Introduced and cultivated for fodder. Yunnan (Honghe) [native to NW India, Pakistan; E and NE Africa, SW Asia].

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