8. Tribe BRYLKINIEAE

扁穗草族 bian sui cao zu

Wu Zhenlan (吴珍兰); Sylvia M. Phillips

Perennial. Leaf sheaths with connate margins; leaf blades linear, transverse veinlets present; ligule very short, membranous. Inflorescence a lax raceme. Spikelets with 1 fertile floret, 2 sterile empty lemmas below and a rachilla extension above, strongly laterally compressed, falling entire together with the pedicel; glumes unequal, narrowly lanceolate, shorter than lemmas, herbaceous, 3–5-veined, apex acuminate to ciliate; lemmas lanceolate, thinly leathery, strongly keeled, 5–7-veined, sterile lemmas acuminate to short-awned, fertile lemma with a straight awn from apex; palea keels closely adjacent. Lodicules 2, free, fairly large, rectangular, hyaline. Stamens 3. Caryopsis narrowly ellipsoid, apex with glossy rounded caplike appendage with central knob from style base, embryo small, hilum linear, slightly shorter than caryopsis. Leaf anatomy: non-Kranz; microhairs absent.

x = 10.

One species: China, Japan, E Russia.

This is a unispecific tribe of uncertain affinity, found in cool, temperate forests.


扁穗草属 bian sui cao shu

Description and distribution as for tribe.


Perennial with slender rhizomes, basal sheaths becoming fibrous. Culms loosely tufted, erect, 50–70 cm tall, 3–5-noded. Leaf sheaths pubescent with retrorse hairs, upper sheaths shorter than internodes; leaf blades flat or margins involute, thin, 20–30 × 0.3–1 cm, abaxial surface glabrous, adaxial surface pubescent or glabrous, slightly narrowed to base, tapering to acuminate apex; ligule 0.2–0.6 mm, thick. Raceme 6–22 cm; spikelets 13–20, distant, divaricate becoming pendulous; axis 4-angled; pedicels 2–7 mm, bent at base, spinulose. Spikelets 1–1.4 cm, greenish; lower glume 5–6 mm, 3-veined, upper glume 6–7.5 mm, 5-veined; sterile lemmas 1–1.4 cm; fertile lemma 1–1.2 cm, narrowly winged along upper keel; awn 0.9–1.5 cm; palea shorter than lemma, membranous, ciliolate along keels. Anthers ca. 4 mm. Fl. and fr. summer. 2n = 40.

Forest glades; below 3000 m. Jilin (Changbai Shan), Sichuan [Japan, Russia (Far East)].

9. Tribe MELICEAE

臭草族 chou cao zu

Wu Zhenlan (吴珍兰); Sylvia M. Phillips

Perennial. Culms usually unbranched. Leaf sheaths tubular, margins fused for most or all of their length; leaf blades linear, transverse veinlets sometimes present; ligule membranous, sometimes tubular and lobed on side opposite blade. Inflorescence an open or contracted panicle, sometimes scatty or racemelike. Spikelets all alike, laterally compressed, of 1 to many fertile florets, upper florets sterile and often gathered into a clump of rudimentary lemmas, usually disarticulating below each floret; glumes persistent, usually shorter than spikelet, often shorter than adjacent lemma, often papery with hyaline margins, 1–5-veined; lemmas herbaceous or becoming leathery, rounded on back, prominently 5–9–(13)-awned, awnless or with straight or curved awn from apex or back; lodicules 2, fused, short, fleshy, truncate. Stamens (2 or)3. Caryopsis ellipsoid; hilum linear. Leaf anatomy: non-Kranz; microhairs absent. x = 9, 10.

Eight genera and ca. 130 species: temperate regions throughout the world; three genera and 34 species (nine endemic) in China.

This small tribe is allied to Poeae, but differs in the closed, tubular leaf sheaths, small, fleshy lodicules, and chromosome number.

1a. Floret callus hairy; lemma awned ................................................................................................................................  57. Schizachne

1b. Floret callus glabrous; lemma awnless.

ma 9–10 mm, loosely pubescent in lower 1/4–1/2; awn 1.3–1.7 cm, stiffly hispid at base, hairs 0.5–0.8 mm, scabrid above. Anthers 2–3 mm. Fl. and fr. Aug–Oct.

Open grassy mountainsides, forest clearings; 2700 m and above.

Sichuan, Xizang, Yunnan [Bhutan, N India, Kashmir, N Myanmar, Nepal].

The long, retrorse spines at the lemma apex are an unmistakable distinguishing feature of this species.

*Glyceria* R. Brown, Prodr. 179. 1810, nom. cons.

甜茅属 甜茅

**Hemibromus** Steudel.

Perennial, usually rhizomatous. Culms erect, ascending or prostrate. Leaf sheaths with margins completely or partially fused; leaf blades linear; ligule membranous. Panicle open or contracted, sometimes racemelike when spikelets few. Spikelets with several to many florets, laterally compressed or terete; rachilla smooth or scabrid, disarticulating below each floret; glumes small to almost as long as adjacent lemma, membranous, 1-veined, apex acute or obtuse; floret callus small, glabrous, obtuse; lemmas overlapping, ovate to lanceolate or oblong, thinly herbaceous or thinly leathery, back rounded, smooth, granular or scaberulous, 5–11-veined, veins conspicuous, parallel, apex usually membranous, acute to broadly obtuse or denticulate; palea as long as, longer, or slightly shorter than lemma, keels sometimes narrowly winged. Stamens 2 or 3. \( x = 10 \).

About 40 species: temperate regions of the world, in wet habitats; ten species (one endemic) in China.

1a. Spikelets linear to narrowly oblong, terete, 1–4.2 cm; palea keels narrowly winged in upper half.

2a. Spikelets 2.5–4.2 cm; palea distinctly longer than lemma .......................................................................................................................... 1. *G. acutiflora*

2b. Spikelets 1–2.5 cm; palea as long as or only slightly longer than lemma.

3a. Leaf blades 2–3 mm wide; lower panicle branches 2 per node, bearing 1(–3) spikelets .......................... 2. *G. chinensis*

3b. Leaf blades 4–10 mm wide; lower panicle branches 3–5 per node, bearing up to 15 spikelets ......... 3. *G. notata*

1b. Spikelets usually ovate to narrowly oblong, laterally compressed, up to 1(–1.4) cm; palea keels wingless.

4a. Culms 20–50 cm tall, tufted or with slender rhizomes; leaf blades 1.5–3.5 mm wide.

5a. Leaf blades linear to narrowly oblong, terete, 1–3.5 cm; palea keels narrowly winged in upper half.

6b. Stamens 2, anthers 0.5–0.8 mm; plants mainly of swampy forest.

7a. Culms hard, 5–8 mm in diam.; leaf blades firm; ligule 0.3–1 mm; spikelets pale green maturing yellowish brown .......................................................................................................................... 6. *G. leptolepis*

7b. Culms soft, 3–5 mm in diam.; leaf blades soft, thin; ligule 2–3 mm; spikelets bright green or purple tinged .................................................................................................................................................. 7. *G. lithuanica*

6b. Stamens 3, anthers 1–2 mm; plants usually of wet meadows and other open wet habitats.

8a. Leaf blades 3–5 mm wide; upper glume 3.5–4.5 mm, 3/4 as long as adjoining lemma or more, acuminate .................................................................................................................................................. 8. *G. spiculosa*

8b. Leaf blades 5–16 mm wide; upper glume 2–4 mm, 3/4 as long as adjoining lemma or less, obtuse or subacute.

9a. Adaxial surface of leaf blades grayish green, minutely papillose; panicle open, branches spreading; upper glume 2–3 mm .................................................................................................................................................. 9. *G. triflora*

9b. Adaxial surface of leaf blades green, smooth; panicle somewhat contracted, branches obliquely ascending; upper glume 3–4 mm .................................................................................................................................................. 10. *G. maxima*


甜茅 甜茅


Perennial. Culms ascending from long prostrate base, rooting at lower nodes, 40–70 cm tall, 1.5–3 mm in diam. Leaf sheaths keeled, smooth, longer than internodes; leaf blades flat, flaccid, 5–15 cm × 4–5 mm, slightly scaberulous, apex acute; ligule 4–7 mm. Panicle narrow, 15–30 cm, base often included in uppermost leaf sheath; branches 2 at lower nodes, unequal with one very short, erect, unbranched, bearing only one spikelet, panicle racemelike toward apex. Spikelets linear, cylindrical, 2.5–4.2 cm, florets 7–14, pale green; glumes oblong to lanceolate, membranous, 1-veined, lower glume 2.5–4 mm, upper glume 4–6 mm, apex subacute; lemmas lanceolate, 7–9 mm, herbaceous, 7-veined, scaberulous, apex membranous, acute or slightly tridentate; palea longer than lemma by 0.7–1.4 mm, keels thick, narrowly winged, hyaline between keels down midline, exposed apex 2-toothed. Stamens 3, anthers 0.8–1.3 mm. Fl. Mar–Jun. \( 2n = 20 \).

Rice fields, streams, ditches, forming colonies; 400–1000 m. Anhui, Fujian, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang [Japan; Korea; North America].

*Glyceria acutiflora* subsp. *acutiflora* occurs in E North America. It is tetraploid (\( 2n = 40 \)) and can be distinguished morphologically by its...
longer anthers (1.5–1.8 mm), narrower, membranous lemma apex, and frequently longer palea (extended up to 2 mm beyond lemma apex).


中华甜茅 zhong hua tian mao

Perennial. Culms soft, decumbent at base, rooting at lower nodes, 30–60 cm tall, 1.5–2 mm in diam. Leaf sheaths smooth, longer or lower shorter than internodes; leaf blades flat or folded, flaccid, 5–12 cm × 2–3 mm, smooth or adaxial surface scabrid, apex acute; ligule 5–6 mm. Panicle narrow, 15–19 cm, base included in uppermost leaf sheath or shortly exserted; branches 2 at lower nodes, suberect, bearing 1–3 spikelets, panicle racemelike toward apex. Spikelets linear-oblong, 1–1.6 cm, florets 5–9, green; glumes oblong-ovate, membranous, 1-veined, lower glume 1.7–2 mm, apex acute, upper glume 2.7–3 mm, apex obtuse; lemmas lanceolate-oblong, 4–4.5 mm, herbaceous, smooth or scaberulous, 7-veined, veins scaberulous, apex membranous, obtuse; palea as long as or slightly longer than lemma, keels narrowly winged, apex emarginate. Stamens 3, anthers 0.7–1 mm.

● Damp places. SW Guizhou (Xingyi), E Yunnan.


蔗甜茅 zhe tian mao

*Glyceria fluitans* (Linnaeus) R. Brown var. *plicata* Fries; *G. plicata* (Fries) Fries; *G. turcomanica* Komarov.

Perennial, forming loose patches. Culms spongy, ascending from prostrate base, rooting at lower nodes, 30–100 cm tall, 3–6 mm in diam. Leaf sheaths smooth, longer than internodes; leaf blades flat or folded, flaccid, green or gray-green, 6–30 cm × 4–10 mm, abaxial surface smooth or scabrid, adaxial surface scabrid, apex acute; ligule 3–6 mm. Panicle lanceolate at first, ovate at maturity, up to 30 cm; branches 3–5 at lower nodes, finally widely spreading, longer branches bearing up to 15 spikelets. Spikelets linear-oblong, cylindrical or slightly laterally compressed, 1–2.5 cm, florets 5–16, grayish green or purplish; glumes ovate, membranous, 1-veined, lower glume 1.4–2.3 mm, upper glume 2.5–4.5 mm, apex rounded; lemmas broadly elliptic or obovate-oblong, 3.5–4.5 mm, firmly herbaceous, scabrid, 7-veined, apex membranous, broadly obtuse; palea as long as lemma, keels narrowly winged, apex 2-denticulate. Stamens 3, anthers 0.8–1.4 mm. Fl. Jun–Aug. 2n = 40.

Moist grassy places, ditches, shallow water; 700–1900 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Pakistan (Karachi), Russia, Tajikistan, Uzbekistan; N Africa, SW Asia, Europe; introduced in North America and Australia].


卵花甜茅 juan hua tian mao

*Glyceria kashmiriensis* Kelso; *G. ovatiflora* Keng ex P. C. Keng; *G. tonglensis* var. *ovatiflora* (Keng ex P. C. Keng) P. C. Keng.

Perennial, tufted or shortly creeping. Culms ascending, 10–50(–75) cm tall, 1–2 mm in diam. Leaf sheaths slightly keeled, smooth or scaberulous, upper shorter than internodes; leaf blades flat or folded, 6–15 cm × 2–3(–5) mm, smooth or scaberulous, abruptly acute; ligule 0.7–1(–3) mm. Panicle narrow and contracted when young, later open, 10–27 cm; branches 2–4 at lower nodes, erect at first, later spreading or deflexed, smooth, longest bearing up to 14 spikelets. Spikelets narrowly elliptic-oblong, 6–9 mm, florets 4–8, gray-green or tinged purplish brown; glumes ovate to ovate-oblong, membranous, 1-veined, lower glume 1–2 mm, upper glume 1.8–2.8 mm, apex acute; lemmas ovate-oblong, 2.8–3.6 mm, firmly papery, minutely granular, 7-veined, veins scaberulous, apex membranous, obtuse, often slightly crenulate; palea as long as lemma, keels thick, wingless, scabrid. Stamens 3, anthers 0.85–1 mm. Fl. and fr. Jul–Sep.

Marshy ground in forests, wet grassy places under shrubs, streams, ditches; 1500–3600 m. Anhui, Guizhou, Jiangxi, Sichuan, Xizang, Yunnan [Bhutan, India, Kashmir, Myanmar, Nepal].

The name *Glyceria tonglensis* has been misapplied to *G. ischyrophylla* Steudel, which occurs from Japan and S Korea northward to the S Kuril Islands. This is a very similar species, distinguished by its shorter (2–2.8 mm), ovate lemmas, shorter anthers (0.5–0.7 mm), more strongly convex palea keels, and strongly sinuous rachilla. It has been reported in the literature from NE China, but its presence there has not been confirmed.


细根茎甜茅 xi gen jing tian mao


Perennial, rhizomatous; rhizomes filiform. Culms ascending, 20–50 cm tall, 1–2 mm in diam. Leaf sheaths smooth, upper shorter than internodes; leaf blades flat, thin, 7–10 cm × 1.5–3.5 mm, smooth; ligule 1–3 mm. Panicle narrow, contracted, 6–25 cm, base included in uppermost leaf sheath; branches 1–3 per node, erect, appressed to main axis, smooth, bearing 1–4 spikelets. Spikelets linear, 8–14 mm, florets 5–9, pale green or pinkish; glumes ovate-oblong, 1-veined, lower glume 2–3 mm, upper glume 3–4 mm, apex obtuse; lemmas oblong, 3–4 mm, smooth, 7-veined, upper margins and apex narrowly membranous, apex obtuse; palea slightly longer than lemma, keels wingless, apex emarginate. Stamens 3, anthers 1–1.7 mm. Fl. and fr. Jul–Aug. 2n = 20.

River banks, shallow water, swampy grasslands. N Heilongjiang [Russia (Far East, E Siberia)].

Reports of this species in Japan refer to *Glyceria depauperata* Ohwi (*G. leptorhiza* subsp. *depauperata* (Ohwi) T. Koyama), which differs from *G. leptorhiza* in having spikelets to 25 mm, florets 7–15, and anthers 0.5–0.7 mm.


假鼠妇草 jia shu fu cao

*Glyceria ussuriensis* Komarov.
Perennial, rhizomatous; rhizomes long, thick. Culms robust, hard, 80–110 cm tall, 5–8 mm in diam. Leaf sheaths not prominently keeled, lower sheaths scabrid, with transverse veinlets; leaf blades flat or margins inrolled, firm, up to 40 cm × 5–12 mm, abaxial surface smooth, adaxial surface scabrid, transverse veinlets present, apex abruptly acute; ligule 0.3–1 mm. Panicle ovate in outline, 15–25 cm, exerted, spikelets many; branches 2 or 3 per node, ascending, scabrid. Spikelets elliptic to ovate-oblong, 6–8 mm, florets 4–7, pale green, yellowish brown at maturity; glumes ovate-oblong, membranous, 1-veined, lower glume 1.5–2 mm, upper glume 1.8–2.5 mm, apex obtuse; lemma lanceolate-oblong, thinly herbaceous, 3–3.5 mm, minutely granular, 7-veined, veins finely scabrid, margins and apex membranous, apex subacute; palea as long as or slightly longer than lemma, keels wingless, scaberulous, apex emarginate. Stamens 2, anthers 0.6–0.8 mm. Fl. and fr. Jul–Sep. 2n = 20.

Swampy forests, forest margins, stream-sides; 600–1800 m. Jilin, Liaoning [Japan, Korea, Mongolia, Russia; SW Asia (Caucasus), C and N Europe].

This is a generally more slender species than Glyceria leptolepis, the other species in China with only 2 anthers. The basal culm internodes are not hard and canelike as in G. leptolepis, but flatten on pressing.


### 8. **Glyceria philippiana** (Schmidt) Roshevitz in B. Fedtschenko, Fl. Zabaik. 1: 85. 1929.

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**Glyceria triflora** (Korshinsky) Komarov, Fl. URSS 2: 459. 1934.

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**Glyceria triflora** (Korshinsky) Komarov, Fl. URSS 2: 459. 1934.
Swamps, marshy ground near streams and lakes; 200–3300 m. Hebei, Heilongjiang, Nei Mongol, Shaanxi, Sichuan, Yunnan [Kazakhstan, Korea, Mongolia, Russia (Far East, Siberia); Europe (Ural Mountains)].

This species is an Asian element of the _Glyceria arundinacea_ complex and is sometimes included as a subspecies of the latter. _Glyceria arundinacea_ Kunth s.s. occurs in C Europe and the Caucasus and is distinguished by its densely scabrid adaxial leaf surface and panicle branches, and shorter glumes. The North American species _G. grandis_ S. Watson, with slightly smaller glumes and anthers, also belongs to this complex.

The records from Sichuan and Yunnan have not been confirmed.


水甜茅 shui tian mao


臭草属 chou cao shu

Perennial, tufted or rhizomatous. Culms erect or ascending. Leaf sheaths with fused margins; leaf blades linear; ligule membranous, often cylindrical and then sometimes with lobe on side opposite blade. Panicle spreading or more often contracted, sometimes scanty or racemelike; pedicels drooping, pubescent below spikelet. Spikelets weakly laterally compressed, composed of 1–3 lower fertile florets and a few upper reduced florets, these often compressed into a terminal cluster of rudimentary scales, distilling below lowest floret, tardily between florets, or spikelet falling entire; glumes well developed, broadly lanceolate or ovate, often not keeled, membranous or papery, equal or lower glume shorter, 1–5-veined, apex obtuse or acute; floret callus small, disarticulating below lowest floret, tardily between florets, or spikelet falling entire; glumes developed, broadly lanceolate or ovate, usually herbaceous, sometimes largely membranous, broad rounded, smooth, scabrid or hairy; 5–9(–13)-veined, apex membranous, obtuse, acute, or shallowly 2-lobed; palea usually shorter than lemma, or as long as lemma in upper florets, keels scabrid or ciliolate. Stamens 3, anthers 1.2–1.8 mm. Fl. May–Jul. 2n = 28, 56, 60.

Marshy floodlands, stream and lake banks. Xinjiang [Kazakhstan, Russia (W Siberia westward); Europe; introduced in North America and Australia].

_Glyceria aquatica_ (Linnaeus) J. Presl & C. Presl is a synonym of _Catabrosa aquatica._

About 90 species: temperate and subtropical regions of the world, except Australia; 23 species (eight endemic) in China.

1a. Lowest lemma conspicuously long-hairy from base to apex, on marginal or all veins, hairs 2–5 mm.

2a. Lemmas long-pilose on all veins .............................................................. 1. _M. persica_

2b. Lemmas long-ciliolate on marginal veins only.

3a. Panicle rather lax, often 1-sided, central axis usually visible; all leaf sheaths antrosely scaberulous; leaf blades rolled; lower glume 2/3–4/5 length of upper ................................................................. 2. _M. ciliata_

3b. Panicle dense, cylindrical, central axis not visible; lowermost leaf sheaths antrosely scabrid or pubescent; leaf blades flat; lower glume 1/2–2/3 length of upper ..................................................... 3. _M. transsilvanica_

1b. Lowest lemma glabrous or with short scattered hairs.

4a. Spikelets terminating in 1 sterile lemma, resembling the fertile lemmas but smaller; panicle branches up to 15 cm, often spreading, branches present.

5a. Lowest lemma 6–9 mm; leaf sheaths harshly scabrid ……………………………………….. 4. _M. scaberrima_

5b. Lowest lemma 4–6.5 mm; leaf sheaths smooth, scabrid or pubescent.

6a. Plants with slender rhizomes; panicle narrow, branches erect or ascending.

7a. Ligule 3–5 mm; leaf blades 2–2.5 mm wide; anthers ca. 2 mm .............................. 7. _M. longiligulata_

7b. Ligule 0.3 mm or shorter; leaf blades 2–6 mm wide; anthers 0.5–1 mm .................. 8. _M. przewalskyi_

6b. Plants lacking slender rhizomes; panicle broad at maturity, branches spreading.

8a. Culms up to 150 cm tall; leaf blades 6–14 mm wide; ligule 0.2–0.5 mm .......................... 5. _M. onoei_

8b. Culms up to 80 cm tall (if taller, ligule 1–4 mm); leaf blades 2–6 mm wide.

9a. Panicle with many branches and spikelets; spikelets with purple glumes and green florets; fertile florets 2 or 3 …………………………………………………………………………….. 6. _M. schuetzeana_

9b. Panicle with distant divaricate branches and widely spaced spikelets; spikelets green or gray-green; fertile florets 1 or 2.

10a. Glumes hyaline, shining, upper glume 6–8 mm; pedicels up to 20 mm; anthers 1.8–2 mm …………………………………………………………………………………………….. 9. _M. yajiangensis_
10b. Glumes not conspicuously hyaline and shining, upper glume 5–6 mm; pedicels 3–5 mm; anthers 1–1.25 mm ................................................................. 10. M. taylorii

4b. Spikelets terminating in a globular cluster of rudimentary lemmas; panicle branches usually less than 5 cm, erect, unbranched or almost so, panicle sometimes racemelike (rarely branches longer or branchlets present).

11a. Panicle racemelike, unbranched; spikelets few (3–15), borne directly on main axis.

12a. Spikelets 5–8 mm; glumes purplish red; panicle eventually nodding ........................................ 11. M. nutans

12b. Spikelets 7–10 mm; glumes usually green; panicle erect.

13a. Glumes subequal, ovate, obtuse ................................................................. 12. M. grandiflora

13b. Glumes unequal, lanceolate, acute .......................................................... 13. M. pappiana

11b. Panicle branched; spikelets more than 15, borne on panicle branches.

14a. Culms up to 1.5 m tall; spikelets 8–14 mm; glumes obviously 5–7-veined.

15a. Panicle open, ovate, branches spreading; lemmas hispid below middle .............. 14. M. turczaninowiana

15b. Panicle dense, linear-oblong, branches erect; lemmas glabrous ........................................ 15. M. altissima

14b. Culms less than 1 m tall; spikelets 3.5–8(–11) mm; glumes with short inconspicuous lateral veins.

16a. Glumes unequal, much shorter than florets; lower glume ca. 1/2 length of adjacent lemma ... 16. M. virgata

16b. Glumes subequal, large; lower glume slightly shorter to longer than adjacent lemma.

17a. Lemma apex obtuse or acute.

18a. Panicle with many crowded spikelets, 20–50 on lower branches (including branchlets); leaf blades flat, 2–7 mm wide ........................................ 17. M. scabra

18b. Panicle with few spikelets, 1–6 on lower branches (branchlets absent); leaf blades usually rolled, 1–3 mm wide.

19a. Plant tufted; ligules ca. 0.5 mm; lemmas coarsely tubercular-scabrid .......... 18. M. radula

19b. Plant rhizomatous; ligule 2–5 mm; lemmas scaberulous ............................. 19. M. secunda

17b. Lemma apex very broad, denticulate-erose, usually 2-lobed or emarginate.

20a. Panicle lax; ligules with ca. 3 mm lobe on side opposite blade; anthers 1.2–2.2 mm ............................................................... 20. M. kozlovi

20b. Panicle very dense; ligules without lobe on side opposite blade; anthers 0.6–1 mm.

21a. Spikelets silvery green; lemmas narrowly membranous at apex; ligule abaxially glabrous ................................................................. 21. M. tangutorum

21b. Spikelets purple or yellow; lemmas membranous and slightly enlarged in upper 1/3; ligule abaxially pubescent.

22a. Panicle purple; spikelets 5–8 mm; ligules 0.8–1.5 mm ..................... 22. M. tibetica

22b. Panicle yellow; spikelets 8–11 mm; ligules 2–4 mm .......................... 23. M. subflava


伊朗臭草yi lang chou cao

Perennial, forming dense tussocks, with wiry rhizomes. Culms 15–50 cm tall, ca. 1 mm in diam. Leaf sheaths glabrous, scabrid or retrorsely pubescent; leaf blades flat or rolled, 5–15 cm × 1–3 mm, glabrous to densely pubescent on one or both surfaces; ligule 0.5–5 mm. Panicle spikelike, 5–12 cm, lax and 1-sided to densely cylindrical. Spikelets gaping, 5–11 mm, pallid or purplish, fertile florets 1 or 2, terminal sterile lemmas gathered into globular cluster; lower glume broadly lanceolate, 1/3–3/4 length of upper, 3-veined, upper glume lanceolate, as long as spikelet, 5-veined, both acute; lemmas elliptic, lowest 4–7.5 mm, granular-scaberulous, 7–9-veined, densely hairy with 3–5 mm hairs along all veins, apex acute or 2-toothed, second lemma (when present) shorter, glabrous; palea keels shortly ciliolate. Anthers 1–1.8 mm. Fl. and fr. May–Aug. 2n = 18.

Grassy hillsides. Gansu, Jilin, Sichuan, W Xizang [Afghanistan, NW India, Kashmir, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; NE Africa (Egypt), SW Asia].

Melica persica s.l. comprises a perplexing complex of forms, extending from the E Mediterranean through C Asia. Variable characters include hairiness of the leaf sheaths and blades, angle of the leaf blades, panicle density, spikelet length and color, and the relative length of the glumes. A particularly hairy variant, present in Xizang, is recognized at subspecific rank here. The other Chinese records are based on plants described as having sparsely pubescent lemmas with ca. 1 mm hairs. This is atypical for M. persica s.s. and is also a big extension eastward from its known range. It has not been possible to confirm their identity.

1a. Leaf sheaths and blades glabrous to pubescent; spikelets 5–11 mm ..................... 1a. subsp. persica

1b. Leaf sheaths and blades densely pubescent; spikelets 6–8 mm, crowded ............... 1b. subsp. canescens

1a. Melica persica subsp. persica s.l.

伊朗臭草(原亚种)yi lang chou cao (yu’an ya zhong)

*Melica inaequiglumis* Boissier; *M. jacquemontii* Decaisne; *M. vestita* Boissier.

Leaf sheaths and blades glabrous to pubescent; spikelets 5–11 mm.

Grassland on stony hillsides. Gansu (Wudu), Jilin (Changbai Shan), Sichuan (Baishui) [Afghanistan, NW India, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; NE Africa (Egypt), SW Asia].

The presence of *Melica persica* in China, apart from subsp. *canescens*, has not been confirmed (see the comment under the species).

毛鞘臭草 *Mao qiao chou cao*


Leaf sheaths and blades densely pubescent with retrorse hairs; spikelets 6–8 mm, crowded.

Gravel banks; ca. 3500 m. Xizang [Afghanistan, NW India, Kashmir, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan; SW Asia (Iran, E Turkey)].


小穗臭草 *Xiao sui chou cao*

*Melica ciliata* subsp. *taurica* (K. Koch) Tzvelev; *M. ciliata var. taurica* (K. Koch) Grisebach; *M. ciliata* K. Koch.

Perennial, densely tufted, shortly rhizomatous. Culms 20–80 cm tall, 1–2 mm in diam. Leaf sheaths scabrid with upwardly directed teeth; leaf blades usually rolled, 6–10 cm × 1–4 mm, abaxial (outer) surface smooth or scabrid; ligule 1–4 mm. Panicle spike-like, 2.5–8 cm, dense or rather lax, strongly to indistinctly 1-sided, sometimes lobed below, main axis usually visible. Spikelets 4–8 mm, green or purplish, fertile floret 1, terminal sterile lemmas gathered into globular cluster; glumes ovate, papery, 5-veined, lower glume 3/4–4/5 length of upper, upper glume as long as spikelet, both acute; lemma lanceolate, 2.5–3.2 mm, granular-scabrous, 7–9-veined, densely ciliate along marginal veins with 2–3 mm hairs, apex acute; palea keels ciliolate. Anthers 0.8–1.5 mm. Fl. May–Jul. 2n = 18.

Grassy places in rock gullies; ca. 1500 m. Xinjiang [Kazakhstan, Russia, Turkmenistan; SW Asia (Caucasus, N Iran), Europe].

This is an extremely variable species, variants differing in the number of culm nodes, degree and position of roughness on the leaves, panicle shape and density, and spikelet color and length. This variation is often partitioned among several ill-defined subspecies. *Melica ciliata* subsp. *taurica* has been reported from Xinjiang (as *M. taurica*). This variant is distinguished by scabrid leaf sheaths, scabrid abaxial surface of leaf blades, and a rather dense, almost cylindrical panicle of many pale green, 4–6 mm spikelets.


德兰臭草 *De lan chou cao*

*Melica altissima* Linnaeus var. *transsilvanica* (Schur) Schur; *M. caricina* Dumont d’Urville; *M. ciliata* Linnaeus subsp. *transsilvanica* (Schur) Čelakovský; *M. ciliata var. transsilvanica* (Schur) Hackel.

Perennial, loosely tufted. Culms 30–100 cm tall, 2–3 mm in diam., scabrid below panicle. Leaf sheaths at base retrorsely scabrid or pubescent; leaf blades usually flat, 10–20 cm × 3–6 mm, abaxial surface scabrid, adaxial surface pubescent, midrib prominent; ligule 2–5 mm. Panicle spike-like, 5–11 cm, dense, cylindrical, sometimes lobed below, main axis hidden. Spikelets 4.5–9 mm, pallid, fertile florets 1 or 2, terminal sterile lemmas gathered into globular cluster; glumes papery, 5-veined, scabrid, lower glume ovate, 1/2–2/3 length of upper, sharply acute, upper glume lanceolate-oblong, as long as spikelet, abruptly acuminate; lemma lanceolate, 5–5.5 mm, granular-scabrous, 7-veined, densely ciliate along marginal veins with ca. 3 mm hairs, apex subacute, second lemma (when present) shorter, glabrous. Anthers 0.6–1.2 mm; palea shorter than lemma. Fl. May–Aug. 2n = 18.

Deciduous broad-leaved forests, hills in steppe, dry places; 800–2000 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia (N Iran), Europe].


糙臭草 *Cao chou cao*


Perennial. Culms 90–200 cm tall, 2–3 mm in diam., many-noded. Leaves all cauleine, leaf sheaths as long as or longer than internodes, harshly retrorsely scabrid on veins, teeth sometimes elongated into short bristles; leaf blades thin, 15–25 cm × 3–7 mm, abaxial surface scabrid, adaxial surface smooth, glabrous or sparsely hispid; ligule 1–2.3 mm. Panicle open, 15–30 cm; branches 2 or 3 per node, distant, eventually divaricate, usually branched, up to 15 cm, spikelets often clustered on the branchlets. Spikelets narrowly elliptic, 10–14 mm, green, fertile florets 2 or 3, 1 or 2 similar but smaller sterile florets raised on elongate internodes; glumes unequal, clearly shorter than adjacent florets, lower glume narrowly ovate, 2.6–5.2 mm, upper glume lanceolate, 3.8–6.5 mm, both acute; lemmas narrowly lanceolate, lowest 6–9 mm, granular-scabrous, 5–7-veined, upper margins and apex membranous, apex subacute; palea keels scabriform-ciliolate. Anthers ca. 2 mm. Fl. Jul.–Aug.

Forest fringes, grassy places on mountain slopes; 2800–4000 m. Xinjiang, NW Yunnan (Dêqên, Zhongdian) [NW India, Kashmir, W Nepal, N Pakistan].

This is a tall species with a large panicle, only likely to be confused with *Melica onoei*, from which it can be distinguished by its narrower, thinner leaf blades, longer ligules, and spikelets with more florets, in addition to the key characters. It is a species of the W Himalayas. Specimens reported from China have not been seen.


广序臭草 *Guang xu chou cao*

*Melica matsumurae* Hackel; *M. kumana* Honda; *M. scaberrima* (Nees ex Steudel) J. D. Hooker var. *micrantha* J. D. Hooker.

Perennial, tufted. Culms few, 75–150 cm tall, 2–2.5 mm in diam., many-noded. Leaves all cauleine; leaf sheaths much longer than internodes, scabrous or puberulous, lower sheaths with reduced blades, often retrorsely setose; leaf blades broadly linear, 10–25 cm × 6–14 mm, abaxial surface smooth, adaxial surface hispid or pilose, often sparsely; ligule 0.2–0.5 mm. Panicle lax, 15–35 cm; branches 2 or 3 per node, ascending or spreading, branched, up to 15 cm, spikelets diffuse. Spikelets linear-lanceolate, 5–9.5 mm, green, fertile florets 1 or 2, 1 smaller sterile floret raised on ca. 2 mm internode; glumes unequal, clearly shorter than adjacent florets, lower glume nar-
**POACEAE**

rowly ovate, 2.5–3.5 mm, upper glume lanceolate-oblong, 4–5 mm, both obtuse to acute; lemmas lanceolate-oblong, lowest 4.8–5.5 mm, herbaceous, granular-scaraberial, 7-veined, additional weaker veins sometimes present, upper margins and apex broadly membranous, apex obtuse; palea keels scaraberial near apex, otherwise smooth. Anthers 0.8–1.5 mm. Fl. and fr. May–Oct. 2n = 18.

Woodlands, damp shady places on hillsides, gullies, roadsides; 400–2500 m. Anhui, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Japan, Kashmir, Korea, N Pakistan].

This species is mainly distributed from Japan to Yunnan, but a few gatherings are known from the W Himalayas. The combination of broad leaf blades, short ligule, narrow, green spikelets and smooth palea keels distinguishes it from other Chinese *Melica* species with a large, open panicle.

*Melica onoei* var. *pilosula* Papp (Acad. Romana, Mem. Sect. Sti., ser. 3, 12: 242. 1937) was described as having a simple, contracted panicle, smooth leaf sheaths, a long pilose adaxial leaf surface, and a pointed, ca. 5 mm ligule. The panicule and ligule definitely exclude it from *M. onoei*. It is based on a specimen from Beijing that has not been seen.


This is a delicate species, with very slender culms and narrow leaf blades. The long ligule resembles that of the more robust *Melica schuetzeana*, which has similar spikelets with purple glumes and green florets, but slightly longer spikelet parts. Both these species are known from very few gatherings.


**甘肃臭草** gan su chou cao
*Melica polyantha* Keng.

Perennial, loosely tufted, with slender rhizomes. Culms 40–90 cm tall, 1.5–2 mm in diam., scabrid below panicle, several-noded. Leaves all cauline; leaf sheaths densely pubescent at base, scaraberial upward; leaf blades flat or loosely involute when dry, 8–22 cm × 2–6 mm, abaxial surface scarbid, adaxial surface puberulous, sometimes sparsely pilose; ligule ca. 0.3 mm or almost absent. Panicle narrow, 12–30 cm; branches 2–4 per node, erect or ascending, longest 6–15 cm. Spikelets linear-lanceolate, 5–9(–11) mm, usually purple tinged, fertile florets 2–3(–4), 1 very small sterile floret raised on 2–3 mm internode; glumes membranous, lower glume 2.5–3.5 mm, upper glume 3–5 mm, both acute; lemmas lanceolate, lowest 4–6 mm, minutely scaraberial upward, apex membranous, obtuse; palea keels scabrid to ciliolate. Anthers 0.5–1 mm. Fl. Jun–Aug.

● Rocky slopes, moist ground, roadsides; 2300–4200 m. Gansu, Guizhou, Hubei, Qinghai, Shaanxi, Sichuan, Xizang.


**雅江臭草** ya jiang chou cao

Perennial, loosely tufted. Culms 55–75 cm tall, 1–2 mm in diam., 4–5-noded. Lower leaf sheaths pilose, longer than internodes, upper sheaths glabrous, shorter than internodes; leaf blades narrowly linear, up to 27 cm × 2–3 mm, abaxial surface smooth, adaxial surface ribbed, ribs scarbid; ligule 0.3–0.5 mm. Fl. Aug–Sep.
This species is apparently known only from the type. The panicle with paired, divericate branches resembles that of *Melica taylorii*, but the glistening, long-glumed spikelets on long, very fine pedicels are distinctive.


*Gao shan chou*  

Perennial, tufted; roots woolly. Culms 55–80 cm tall, 0.5–2 mm in diam., 4–5-noded. Leaf sheaths longer than internodes, basal sheaths membranous, short, bladeless, retrorsely scabrid-pubescent on veins, upper sheaths smooth, glabrous, pilose at collar; leaf blades thin, 10–18 cm × 3–6 mm, abaxial surface scaberulous, adaxial surface slightly scaberulous; ligule 1–1.5 mm. Panicle open, ca. 14 cm; branches 2 per node, finally horizontally spreading, slender, not or scarcely branched, bearing relatively few distant spikelets; pedicels 3–5 mm. Spikelets 5–7.5 mm, greenish brown, fertile florets 1 or 2, 1 smaller sterile floret raised on 2–2.5 mm, scabrid internode; glumes unequal, shorter than adjacent floret, narrowly lanceolate, lower glume 3.8–5.8 mm, upper glume 5–6 mm, both acute; lemmas narrowly lanceolate-oblong, purple tinged, lowest 5–6 mm, herbageous, granular-saberulous, 5–7-veined, upper margins and apex narrowly membranous, apex subacute; palea keels ciliolate. Anthers 1–1.25 mm. Fl. Jul–Sep.

- Mountain slopes, in Picea or Quercus forests; 4000–4500 m. Xizang.


*Bei chou*  

Perennial, with slender creeping rhizomes. Culms scattered, 25–970 cm tall, 1–2 mm in diam. Leaf sheaths keeled, very narrowly winged, wing margin and sometimes veins scabrid, glabrous or sparsely pubescent at junction with blade, lower sheaths purplish; leaf blades flat, thin, 10–26 cm × 2–5 mm, abaxial surface smooth, adaxial surface puberulent, sometimes sparsely pilose, transverse veins present; ligule ca. 0.3 mm or almost absent. Panicle lax, 4–15 cm, racemelike, 1-sided, eventually nodding; spikelets 5–15, mostlly borne in pairs or singly directly on main axis, lowest branch sometimes bearing 2 or 3 spikelets. Spikelets obovate, 5–8 mm, glumes purple, florets green, fertile florets 2(or 3), terminal sterile lemmas gathered into globular cluster; glumes broadly ovate, subequal, 4–6 mm, margins broadly membranous, 3–7-veined, both obtuse; lemmas broadly elliptic, lowest 5–7 mm, leafy, 7–9-veined, additional intermediate veins in lower part, scaberulous or puberulous, apex obtuse; palea keels ciliolate. Anthers 1–1.5 mm. Fl. May–Jul. 2n = 18.

Hill slopes, shady places; 1500–2300 m. Heilongjiang, Xinjiang [Japan, Kashmir, Kazakhstan, Korea, Kyrgyzstan, Russia, Tajikistan, Uzbekistan; SW Asia (Caucasus), Europe].


*Da hua chou*  

*Melica komarovii* Luchnik; *M. nutans* subsp. *grandiflora* (Koidzumi) T. Koyama; *M. nutans* var. *argyrolepis* Komarov.

Perennial, with slender creeping rhizomes. Culms 20–60 cm, 1–2 mm in diam. Leaf sheaths keeled, keel broadly winged, wing margin scabrid, otherwise smooth, glabrous or pubescent at junction with blade, lower sheaths purplish; leaf blades flat, thin, 6–15 cm × 2–5 mm, abaxial surface smooth, adaxial surface puberulent or scaberulous, transverse veinlets present; ligule 0.2–0.7 mm. Panicle lax, 3–10 cm, racemelike, 1-sided, erect (not nodding); spikelets 3–12, mostly borne in pairs or singly directly on main axis, lowest branch sometimes bearing 2 or 3 spikelets. Spikelets ovoate, 7–10 mm, pale green or infrequently glumes pale purplish, fertile florets 2(or 3), terminal sterile lemmas gathered into globular cluster; glumes subequal, ovate, margins broadly membranous, lower glume 4–6 mm, 3–7-veined, upper glume 5–7 mm, 5–7-veined, both obtuse; lemmas lanceolate-oblong, lowest 6–10 mm, leafy, prominently 7–9-veined, additional intermediate veins in lower half, scaberulous or puberulous, apex obtuse; palea keels ciliolate. Anthers 1.2–1.7 mm. Fl. and fr. Apr–Jul.

Mountain slopes, forests, among shrubs, grassy roadsides, damp places; 500–3200 m. Anhui, Heilongjiang, Henan, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shandong, Shanxi, Zhejiang [Japan, Korea].

The name *Melica komarovii* has been applied to a form with a more than usually densely pubescent leaf sheath/blade junction.


*Bei chou*  


Plants tufted. Culms slender, basal internodes swollen, 40–60 cm tall. Leaf sheaths glabrous; leaf blades flat, 4–15 cm × 1–3 mm, glabrous or adaxial surface pubescent, transverse veinlets present; ligule 0.5–1.5 mm. Panicle racemelike, 5–6 cm, erect; spikelets 3–4; pedicels 0.4–1.5 cm, scabrid. Spikelets ca. 7 mm, glumes purplish red, florets green, fertile florets 2, terminal sterile lemmas gathered into clavate cluster; glumes unequal, lanceolate, lower glume 4.5–5.5 mm, upper glume 6.5–7.5 mm, 5-veined, acute; lemmas ovate-lanceolate, lowest 6–10 mm, leafy, prominently 7–9-veined, additional intermediate veins in lower half, scaberulous or puberulous, apex obtuse; palea keels ciliolate. Fr. Jul.

- Open *Larix* forests, grassy mountain slopes; 500–2000 m. Jilin (Changbai Shan), Shanxi (Ningwu).

This little-known species is based on an over-mature specimen in which the florets have been shed. It appears close to *Melica grandiflora*, but is excluded from that species by the unequal, acute glumes. The name cited in the protologue is a specimen of *M. turczaninowiana*.


*Da chou*  

Perennial, tufted. Culms 40–130 cm tall, ca. 1.5 mm in diam. Leaf sheaths glabrous, lower sheaths tinged purplish brown; leaf blades flat, 6–18 cm × 3–7 mm, abaxial surface strongly scabrid on veins, adaxial surface shortly pilose; ligule 2–4 mm. Panicle open, ovate in outline, 10–20 cm; branches 2–3 per node, flexuously ascending or spreading, up to 9 cm, unbranched, spikelets spaced on 3–7 mm pedicels. Spikelets broadly elliptic, 8–13 mm, fertile florets 2 or 3, terminal sterile lemmas gathered into elongate cluster; glumes brownish purple or blackish, elliptic-oblong, subequal, 8–11 mm, papery, 5–7-veined with connecting veins, both obtuse; lemmas lanceolate-oblong, lowest 9–11 mm, 7-veined, additional intermediate veins in lower half, scaberulous-puberulous, hispid on veins below middle with stiff, ca. 1 mm, yellowish hairs, apex obtuse, sometimes shortly split; palea 1/2–2/3 lemma length, keels ciliolate. Anthers 1.5–3.5 mm. Fl. and fr. Jun–Aug. 2n = 18.

Fringes of conifer and Betula japonica forests in mountainous regions, meadows on N slopes; 700–2200 m. Hebei, Heilongjiang, Henan, Nei Mongol, Shanxi [N Korea, Mongolia, Russia (Far East, E Siberia)].


高臭草  gao chou cao

Melica altissima var. atropurpurea Papp; M. altissima var. interrupta Reichenbach; M. sibirica Lamarck.

Perennial, loosely tufted, with long creeping rhizomes. Culms 50–150 cm tall, 2–3 mm in diam. Leaf sheaths scabrid on veins; leaf blades flat, thin, 10–20 cm × 4–12 mm, abaxial surface strongly scabrid on veins, adaxial surface smooth; ligule 2–5 mm. Panicle linear-oblong in outline, very dense with many crowded spikelets, interrupted below, 10–20 cm, 1-sided; branches erect, appressed to main axis, up to 5 cm. Spikelets broadly elliptic to obovate, 10–14 mm, fertile florets 2 (or 3), terminal sterile lemmas gathered into globular cluster; glumes dark purple or white at maturity, oblanceolate-oblong to ovate, subequal, 7–11 mm, papery, 5–7-veined with connecting veins, both acute or obtuse; lemmas oblanceolate-oblong, lowest 8–11 mm, 7-veined, additional intermediate veins in lower half, scaberulous, apex obtuse, acute or minutely mucronate; palea 2/3 lemma length, keels ciliolate. Anthers 1.8–2.5 mm. Fl. and fr. Jun–Aug. 2n = 18.

Woodland fringes, among shrubs; 800–1400 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Uzbekistan; SW Asia (Caucasus, N Iran), C and E Europe]

This is a tall, robust species with a showy, dense panicle of large, papery spikelets. It is closely related to the E Asian Melica turczaninowiana by its spikelet structure and by the strongly scabrid abaxial surface of the leaf blade. However, the two species are completely different in panicle structure.


抱草  bao cao

Perennial, tufted, old basal sheaths becoming fibrous. Culms wiry, 30–80 cm tall, 0.6–1.4 mm in diam. Leaf sheaths smooth; leaf blades usually rolled, 7–15 cm × 2–4(–6) mm, smooth, abaxial surface green, adaxial surface grayish green; ligule 0.7–1 mm, ca. 1.5 mm lobe on side opposite blade. Panicle linear, 10–25 cm; branches clustered at nodes, erect, flexuous, 1–2 cm, distant or slightly overlapping, bearing 1–5 spikelets. Spikelets ovate-oblong, 3.5–6.5 mm, purple or straw-colored, fertile florets 2 or 3, terminal sterile lemmas gathered into globular cluster; glumes unequal, much shorter than florets, lower glume ovate, 1.5–3.5 mm, 3–5-veined, upper glume broadly lanceolate, 2.5–4.2 mm, 5-veined, both acute; lemmas elliptic-oblong, lowest 3–5 mm, herbaceous, 7-veined, granular-scabrid, usually sparsely hirsute at middle back with stiff, 0.3–0.6 mm hairs along veins, rarely glabrous, apex obtuse or acute; palea as long as lemma, keels scaberulous. Anthers 1–1.8 mm. Fl. and fr. May–Jul.

Stony and grassy mountain slopes, rocky gullies; 1000–3900 m. Gansu, Hebei, Nei Mongol, Ningxia, Qinghai, Sichuan, Xizang [Mongolia, Russia (SE Siberia)].

This species has unusually short glumes, much shorter than the florets, and is also distinguished by its hirsute lemmas and short, clustered panicle branches. A specimen found in Jiangsu (Nanjing) was presumably a chance introduction.


臭草  chou cao

Melica scabrosa var. limprichtii Papp; M. scabrosa var. puberula Papp.

Perennial, tufted. Culms 20–90 cm tall, 1–3 mm in diam. Leaf sheaths usually glabrous, lower occasionally sparsely to densely pilose; leaf blades usually flat, 6–15 cm × 2–7 mm, abaxial surface smooth, keeled, adaxial surface scaberulous or sparsely pilose; ligule 1–3 mm, often extended into 2–4 mm acuminate lobe on side opposite blade. Panicle linear or linear-oblong in outline, lax to moderately dense, 8–22 cm; branches erect or obliquely ascending, branched in vigorous specimens, up to 5 cm, 1-sided, bearing 20–50 crowded spikelets. Spikelets ovate, 5–8 mm, pale greenish brown or milky white, fertile florets 2–4(–6), terminal sterile lemmas gathered into globular cluster; glumes keeled, lanceolate in side view, subequal, 4–8 mm, slightly shorter to slightly longer than florets, 3–5-veined, keel usually ciliolate, both acuminate; lemmas ovate-oblong, lowest 4–8 mm, herbaceous with membranous upper margins and apex, 7-veined, coarsely tubercular-scabrid, apex acute to obtuse; palea keels ciliolate. Anthers 0.8–1.3 mm. Fl. and fr. May–Aug.

Rocky slopes, river gravel banks; 200–3300 m. Anhui, Hebei, Heilongjiang, Henan, Hebei, Jiangsu, Nei Mongol, Ningxia, Qinghai, Shannxi, Shanxi, Xixiang, Xizang [Korea, Mongolia].


细叶臭草  xi ye chou cao

Melica scabrosa Trinius var. radula (Franchet) Papp; M. sinica Ohwi.

Perennial, tufted. Culms 30–45 cm tall, 1–2 mm in diam. Leaf sheaths smooth or scabrid; leaf blades usually rolled, 5–12 cm × 0.8–2 mm (flattened), abaxial surface scabrid at least
toward apex, adaxial surface shortly but densely pubescent; ligule ca. 0.5 mm. Panicle linear in outline, 6–15 cm; branches few, single, mostly erect, unbranched, laxly bearing 3–6 spikelets. Spikelets ovate, 5–8 mm, whitish green, fertile florets (1–)2(–3), terminal sterile lemmas gathered into globular cluster; glumes keeled, narrowly oblong-lanceolate in side view, subequal, 4–7 mm, slightly shorter than florets, lower glume 1–3-veined, upper glume 3–5-veined, keel scaberulous, both subacute; lemmas lanceolate-oblong, lowest 4.5–7 mm, herbaceous with narrowly membranous upper margins and apex, 7-veined with additional intermediate veins in lower half, coarsely tubercular-scabrid, apex obtuse; palea 2/3 lemma length, keels ciliolate. Anthers 1–2 mm. Fl. and fr. May–Aug.

- Mountain slopes, stream banks, field margins; 300–2100 m. Gansu, Hebei, Henan, Hubei, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang [E Afghanistan, NW India, Kashmir, Pakistan].

The spikelets are much like those of Melica scabrosa, but the habit is more slender, with narrower leaf blades, pubescent on the adaxial surface, and a scanty panicle with markedly fewer spikelets.


藏臭草  pian sui chou cao

Melica gracilis Aitchison & Hemsley.

Perennial, tufted, with creeping rhizomes. Culms 40–80 cm tall, 1–2 mm in diam. Leaf sheaths smooth, glabrous; leaf blades flat or rolled, 12–18 cm × 1.5–3 mm, abaxial surface smooth except near apex, adaxial surface scabrous; ligule 2–5 mm, extended into acuminate lobe on side opposite blade. Panicle linear in outline, lax, usually 1-sided, 10–18 cm; branches erect or almost so, unbranched, up to 2 cm, bearing 1–6 spikelets. Spikelets ovate, 5–8.5 mm, silvery green, sometimes purple tinged, fertile florets (1–)2(–4), usually 3rd floret smaller and enclosing terminal sterile globular cluster; glumes subequal, 5.5–7 mm, mainly hyaline, herbaceous around veins in lower part, lower glume lanceolate, 1–3-veined, upper glume elliptic, 3–5-veined, both acute; lemma hyaline-oblanceolate, lowest 5–6.5 mm, 7–9-veined, scaberulous, apical hyaline, obtuse-erose; palea ca. 3/4 lemma length, keels ciliolate. Anthers 1.1–1.5 mm. Fl. and fr. May–Aug.

Grassy mountainsides, stony and gravel slopes; 2400–3300 m. Gansu, Sichuan, Xinjiang, Zizang [E Afghanistan, NW India, Kashmir, Kazakhstan (Tien Shan), Kyrgyzstan, Tajikistan, Uzbekistan].

The name “Melica secunda var. interrupta Hackel” (Trudy Imp. S.-Peterburgsk. Bot. Sada 26: 58. 1906) was not validly published because it was merely cited as a synonym.


迭台木臭草  chai da mu chou cao

Perennial, loosely tufted, with short rhizomes, basal sheaths finally fibrous. Culms 20–60 cm tall, ca. 1 mm in diam., scabrid below panicle, 2–3-noded. Leaf sheaths scabrid or pubescent; leaf blades flat or slightly rolled, 5–10 cm × 1–2.7 mm, abaxial surface scabrid, adaxial surface scabrid to pubescent; ligule 0.5–1.5 mm, lobe on side opposite blade ca. 3 mm, this soon splitting. Panicle lax, narrow, 6–16 cm; branches suberect or spreading, 1–2 cm, 1-sided, bearing 1–5 spaced spikelets. Spikelets ovate, 6.8–8.3 mm, flushed grayish purple, fertile florets 2 or 3, terminal sterile lemmas gathered into globular cluster; glumes membranous, lower glume elliptic to broadly ovate, 5–7 mm, 3–5-veined, upper glume oblong, 6–8.2 mm, 5–9-veined, obtuse or acute; lemma broadly oblong, lowest 5–8 mm, herbaceous, 7–9-veined, tuberculate-scabrid, a very few ca. 0.5 mm hairs sometimes present at middle back, apex broadly membranous, obtuse or weakly emarginate; palea keels ciliolate. Anthers 1.2–2.2 mm. Fl. and fr. May–Aug.

Rocky slopes, mountain valleys; 2000–3900 m. Gansu, Qinghai, Shanxi [Mongolia].


青甘臭草  qing gan chou cao

Perennial, loosely tufted. Culms 30–80 cm tall, 1–2 mm in diam., scabrid below panicle, 3–4-noded. Leaf sheaths scabrid; leaf blades flat or slightly rolled, 10–15 cm × 1–4 mm, scabrid on both surfaces; ligule 2–6.5 mm. Panicle narrow, fairly dense, 10–20 cm, slightly 1-sided, spikelets many; branches short, erect. Spikelets 4–7 mm, silvery green, fertile florets 2 or 3, terminal sterile lemmas gathered into globular cluster; glumes elliptic, papery, scabrid, lower glume 4–5 mm, 3–5-veined, upper glume 4–7 mm, 5–7-veined, both obtuse; lemma obovate-oblong, lowest 3–4.5 mm, firmly herbaceous, 7–9-veined, granular scabrid, apex narrowly membranous, emarginate or shortly 2-lobed; palea keels ciliolate. Anthers 0.7–1 mm. Fl. and fr. May–Sep.

Rocky mountain slopes, river gravel banks, or under shrubs; 1500–3200 m. Gansu, Qinghai, Sichuan [Mongolia].


藏臭草  zang chou cao

Perennial, tufted. Culms erect or inclined at base, 15–60 cm tall, ca. 2 mm in diam., 3–6-noded, scabrid below panicle. Leaf sheaths keeled, harshly scabrid on veins; leaf blades flat or folded, 10–20 cm × 3–6 mm, abaxial surface scabrid, adaxial surface puberulous; ligule 0.8–1.5 mm, truncate, backside (blade side) pubescent. Panicle broadly linear in outline, 6–18 cm, dense, spikelets many; branches erect, appressed to main axis. Spikelets broadly ovate, 5–8 mm, purplish, fertile florets (1–)2(–3), terminal sterile lemmas gathered into globular cluster; glumes as long as spikelet, papery, slightly unequal, lower glume broadly elliptic, (4–)5–7 mm, 1–3-veined, upper glume broadly oblanceolate, 5–8 mm, 3–5-veined, both acute or obtuse; lemma oblong, lowest 3.5–6 mm, lower part herbaceous, pallid, 5–7-veined, minutely hispidulous or granular-scabrid, upper 1/3 slightly enlarged, membranous, purple; apex shallowly 2-lobed, erose; palea as long as herbaceous part of lemma, keels ciliolate. Anthers 0.6–1 mm. Fl. and fr. Jul–Sep.

- Alpine meadows, usually under shrubs; 3500–4300 m. Nei Mongol (Alxa Youqi), Qinghai, Sichuan, Xizang.


黄甘臭草  huang sui chou cao
Perennial, densely tufted. Culms slender, arching, unbranched. Leaf blades narrowly lanceolate, transverse veinlets present (visible on abaxial surface), narrowed to base; ligule thickly membranous. Inflorescence an open or contracted panicle, sparingly branched. Spikelets all alike, florets 2–5(–7) with uppermost floret reduced, laterally compressed, disarticulating below each floret; glumes lanceolate or ovate, unequal, much shorter than lemmas, membranous, 1–3-veined; lemmas ovate or ovate-lanceolate, softly 2-toothed, awned from just below teeth; awn straight or slightly recurved, usually longer than lemma body; palea 2/3–3/4 lemma length, keels ciliolate. Anthers 2. Caryopsis oblong, free from lemma and palea. Chromosomes x = 10.

One species: E Europe to E Asia, North America.


1. Schizachne purpurascens

Perennial, densely tufted. Culms erect or inclined at base, 50–80 cm tall, 2–4 mm in diam., 3–5-noded, scabrid below panicle. Leaf sheaths keeled, scabrid on veins; leaf blades flat or folded, 10–22 cm × 3–6 mm, both surfaces scabrous; ligule 2–4 mm, truncate, back pubescent. Panicle broadly linear in outline, 6–12 cm, dense, interrupted below, weakly 1-sided, spikelets many; branches laxly erect. Spikelets broadly ovate, 8–11 mm, yellow, fertile florets 2–4, terminal sterile lemmas gathered into globular cluster; glumes as long as spikelet, papery, slightly unequal, obovate-oblong or oblong-lanceolate, lower glume 6–8 mm, 1–3-veined, upper glume 7–11 mm, 3-veined, both acute; lemmas oblong, lowest 5.5–7 mm, lower part herbaceous, 5–7-veined, upper 1/3 slightly enlarged, membranous, apex 2-lobed, lobes rounded; palea as long as herbaceous part of lemma, keels cicatriced. Anthers ca. 1 mm. Fl. Jul–Aug.

- Grassy mountain slopes; ca. 3600 m. Qinghai.


裂稃茅属 lie fu mao shu

Perennial. Culms slender, erect. Leaf sheaths with margins fused in lower part; leaf blades linear. Panicle little branched, often racemelike, spikelets few. Spikelets elliptic, florets several, upper 1 or 2 sterile; rachilla scabrid, disarticulating below each floret; glumes broadly lanceolate, shorter than first floret, unequal with lower glume shorter, membranous, lower glume 1–3-veined, upper glume 5-veined, apex subacute; floret callus oblong, bearded, obtuse; lemmas lanceolate, thickly herbaceous, back rounded, 7-veined, apex shallowly 2-toothed, awned from just below teeth; awn straight or slightly recurved, usually longer than lemma body; palea 2/3–3/4 lemma length, keels cicatriced above middle. Stamens 3. Caryopsis oblong, free from lemma and palea. Chromosomes small. x = 10.

One species: E Europe to E Asia, North America.


1. Schizachne purpurascens

Perennial, shortly rhizomatous. Culms loosely tufted, 20–50 cm tall, 0.7–1.5 mm in diam., scabrid below panicle. Leaf sheaths longer than internodes, lower sheaths scabrous; leaf blades narrowly linear, flat or margins inrolled, 5–20 cm × 1–1.5 mm, abaxial surface glabrous, adaxial surface scaberulous and sparsely pilose; ligule 1–2 mm. Panicle lanceolate in outline, 6–8 cm, laxly bearing 4–6(–10) spikelets; branches slender, scabrid, up to 1.5 cm, unbranched and tipped by a single spikelet. Spikelets 10–14 mm, florets 3–4(–5), pale green tinged brownish purple; lower glume 4–5 mm, upper glume 5–7 mm; callus hairs 1–1.5 mm; lemmas 7–9 mm, veins scaberulous, margins broad, scarios, apical teeth acute, ca. 1.5 mm; awn 1.5 cm, straight or almost so. Anthers 1.5–2 mm. Fl. and fr. Jun–Jul. 2n = 20.

Forest undergrowth, moist grassy places; 800–2000(–3500) m. Hebei, Heilongjiang, Henan, Jilin, Liaoning, Shanxi, Yunnan (Hengduan Shan) [E Kazakhstan, Korea, Japan, Mongolia, Russia; Europe (Ural Mountains)].

This is a forage grass of forest pastures. It has been reported to occur at 2800–3500 m in Yunnan, based on “Schizachne hengduanensis L. Liou,” which name was not validly published.

Schizachne purpurascens subsp. purpurascens occurs in North America and NE Russia (Kamchatka). It has broader leaf blades 2–5 mm wide, larger panicles with up to 20 spikelets, the lower branches longer and subdivided, and spikelets with more definitely recurved awns.

10. Tribe DIARRHENEAE

龙常草族 long chang cao zu

Liu Liang (刘亮); Sylvia M. Phillips

Perennials with short scaly rhizomes. Culms slender, arching, unbranched. Leaf blades narrowly lanceolate, transverse veinlets present (visible on abaxial surface), narrowed to base; ligule thickly membranous. Inflorescence an open or contracted panicle, sparingly branched. Spikelets all alike, florets 2–5(–7) with uppermost floret reduced, laterally compressed, disarticulating below each floret; glumes lanceolate or ovate, unequal, much shorter than lemmas, membranous, 1–3-veined; lemmas ovate or ovate-lanceolate, herbaceous to thinly leathery, rounded on back, 3(–5)-veined, apex obtuse to cuspidate; palea subequal to lemma, keels smooth or ciliate; lodicules 2, large, membranous; stamens 2 or 3. Caryopsis obliquely ellipsoid; pericarp thick, enlarged at apex into a conspicuous pallid knob or beak bearing 2 terminal stigmas, softening and peeling away when wet. Leaf anatomy: non-Kranz; microhairs obscure; fusoid cells absent. x = 10.

One genus and four species: three species in E Asia and one in the United States; three species in China.

This is a small tribe found in warm-temperate forests.