

Pennisetum Rich. FOUNTAINGRASS

Pennisetum setaceum (Forssk.) Chiov., TENDER FOUNTAINGRASS, CRIMSON

FOUNTAINGRASS. Perennial herb, evergreen (also retaining dead leaves), rhizomatous, fibrous-rooted, many-stemmed at base, cespitose and hemispheric, densely branched at ground level, with erect inflorescences, 35–150 cm tall; andromonoecious; shoots leafy with 6–8 cauline leaves having overlapping leaf sheaths, with a conspicuous prophyll in axil of each lateral branch, pilose on margins of sheath and base of blade, scabrous on blades; rhizomes condensed and hidden by many crowded shoots, with scalelike leaves (cataphylls); adventitious roots 1–several at each node; cataphyll = sheath without blade, appressed triangular, 8–15 mm long, glossy pale brown, papery, glabrous, with veins converging at tip and sometimes slightly raised. **Stems (culms):** ± cylindric, 2.5–3.5 mm diameter, flattened on the lowest internode on side of prophyll, glabrous, internodes comparatively short at base of each shoot, increasing upward to 85 mm long, the lowest internode sheathed by a cataphyll and the rest having bladed leaves; solid with whitish tissue. **Leaves:** alternate distichous, simple with sheath; prophyll strongly compressed, acuminate-triangular in outline, 7–20 × 2.5–5 mm, conspicuously 2-keeled, keels lateral and forming false margins fringed-ciliate base to tip, margins folded back over developing bud, overlapping, membranous, glabrous; sheath of foliage leaves open with overlapping margins, 40–105 mm long, rounded on back, membranous on margins, long-pilose (to 3.5 mm long) for entire length of exposed (overlapping) margin (sometimes the covered margin also pilose and exposed margin glabrous) and immediately below ligule of the outer margin, lacking lobes (auricles) at top but sheath often forming a round shoulder on each side of and continuous with ligule; ligule ciliate-membranous with dense, unequal hairs, the hairs straight, 0.4–1.2(–1.6) mm long, essentially unfused to base (distinct); collar green, pilose-ciliate on margin having hairs to 3.5 mm long with swollen bases; blade linear, 70–700 × 2 mm (flag leaf short), the widest at base, tough, stiffly U-shaped in x-section (never folded) or becoming inrolled (cylindric) when stressed, minutely toothed on margins base to tip and sparsely long-ciliate within 30 mm of base, parallel-veined with thickened midrib and principal veins raised on lower surface, glabrous, not glaucous, remotely toothed along veins on lower surface above midpoint. **Inflorescence:** racemelike panicle of alternate branchlets (fascicles), terminal, partially enclosed in sheath of flag leaf at start of anthesis, eventually completely exerted, when first exerted dense and compact-cylindric (ca. 8 mm diameter) with ascending branchlets, later becoming airy with spreading branchlets and linear-lanceoloid in outline, (80–)110–250 × 40–62 mm, appearing purple-red aging faded rose to pinkish, with 8–10 branchlets per 10 mm of rachis; peduncle to 200 mm long, with many low ridges, mostly glabrous but puberulent just below inflorescence, conspicuously exerted above flag leaf at fruiting; rachis ridged, minutely bracteate, mostly sericeous aging pilose but puberulent at the lowest nodes, the sericeous-pilose hairs slightly thickened at base; bract subtending the lowest branchlet ledgelike or U-shaped, without a blade, with short silky hairs on margins, turning deep purple along edge; branchlet axis 2.3–3.1 mm long, ± hardened and thickened at base, light green with purplish red dots becoming dark purplish red, densely white-pilose at base and decreasing in density upward, bearing many bristles (= reduced, sterile branchlets) and 1–3(–6) spikelets, abscising at base as 1 unit; bristles slender, becoming deep purple before fading to light tan in fruit, generally clustered into 4–5 lateral fascicles along stalk, the

lower 2 or 3 clusters composed of all or mostly outer bristles, the penultimate cluster of both outer and inner bristles and sometimes a spikelet, the ultimate cluster of only inner bristles, 1 terminal (primary) bristle, and at least 1 spikelet; outer bristles 21–57(–65), 0.9–1.9 mm long, minutely scabrous with upward-pointing teeth, without long hairs, inner bristles (8 –)11–21, 12–21 mm long, > outer bristles, feathery (plumose) below midpoint with ascending, fine, silky hairs; terminal (primary) bristle arising just below upper glume of bisexual spikelet, thicker than inner bristles, slightly flattened and wider at base, 21–27(–34) mm long, distinctly longer (4+ mm) than other bristles, often green basally, plumose on basal 4.5–7 mm with pilose hairs becoming ± blisterlike at base and scabrous above; stalk of spikelets < 1.3 mm long (terminal spikelet ± sessile). **Spikelets:** neuter, staminate, and bisexual, lanceoloid, 4.5–6.7(–7) mm long, with 2 florets, the lower floret sterile (or staminate, rarely bisexual), the upper floret fertile and bisexual or occasionally staminate, lacking awns; **glumes** 1 or 2 and unequal, lower glume absent or inconspicuous, < 0.4 mm long; upper glume lanceolate to narrowly ovate, 1.2–3.6 mm long, purplish, membranous, veinless or weakly 1-veined; **lemma** lanceolate, 4–6.7 mm long, after flowering deep purple at least above midpoint, slender at tip, 3-veined (lower lemma) or 3-veined or 5-veined (upper lemma), the veins of the lower lemma typically raised; **palea** (typically absent in neuter floret) to 4.4–5 mm long, rounded on back (not keeled) and wrapped around flower, 2-veined with veins converging to 2-toothed tip, upper portion often deep purple. **Fertile flower:** protogynous; **perianth (lodicules)** absent or 2, trapeziform, 0.35 × 0.25 mm, colorless, irregularly 2-toothed, glabrous; **stamens** 3, free, exerted from tip of palea (staminate flower) or included to slightly exerted (bisexual flower); filaments threadlike, 4.2–6 mm long (staminate flower) or 3.5–4 mm long (bisexual flowers), whitish; anthers ± basifixed, dithecal, sacs linear, 2.1–3.4 mm long, light yellow to yellow, laterally united in middle but free and slightly divergent at base and tip for 0.7–1 mm, longitudinally dehiscent; pollen yellow; **pistil** 1, 10–13 mm long, with persistent, erect, exerted style; ovary superior, narrowly ellipsoid or lanceoloid, ca. 0.5 mm long, light green to pale yellow, glabrous, 1-chambered with 1 ovule; style 2-branched, united portion ± 2.7 mm long, greenish white, often flattened below fork, glabrous basally becoming pubescent with ascending hairs or sometimes villous approaching tip, the branches 7–7.2 mm long, exerted from tip of lemma, golden tan to deep yellow, densely villous-stigmatic. **Fruit:** achene (caryopsis), concealed by bracts and bractlets of terminal spikelets and dispersed with branchlet and bristles; achene obovoid slightly compressed front-to-back, 2–2.7 × 0.8–1.1 mm, short-beaked (persistent style base), tan with blackish embryo. Mid-February–late October.

Naturalized. Perennial, clump-forming bunchgrass, widely cultivated in range and commonly escaped along roadsides and neighboring slopes, but occasionally also found along trails in wilderness areas. *Pennisetum setaceum* has tough leaves that can hurt the hand if pulled too quickly because of sharp, small teeth on the blade margins, which are better developed than on most grasses. In flower and early fruit development, the panicle is colorful, being deep purple on most parts, which is one reason the plant is used in horticulture, but color intensity fades, and at maturity the spikelet containing the fruit is typically colorless or tannish. Also in cultivation is PURPLE FOUNTAINGRASS, *P. advena*, which additionally has burgundy leaves. *Pennisetum setaceum* has dozens of “bristles” (sterile branchlets, in the literature referred to as fascicles); no other species in range has so

many sterile bristles. The two-flowered spikelet of *P. setaceum* is difficult to interpret because parts are missing, including typically the lower palea and often the lower glume, so that only four structures are obvious, the upper glume (sometimes veinless), lemmas of the two florets, and a two-veined palea of the upper floret, all of which are in part deep purple during some phase of growth.

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