

Miscanthus subgen. *Rubimons* subgen. nov. (Poaceae) and *Miscanthus villosus* sp. nov. from southwest Yunnan, China

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Miscanthus subgen. *Rubimons* (B. S. Sun) Y. C. Liu et H. Peng, a new subgenus of *Miscanthus* Anderss. (Poaceae) is established and *Miscanthus (Rubimons) villosus* Y. C. Liu et H. Peng, a new species of this subgenus from southwest Yunnan, China, is described and illustrated. It is closely related to *M. paniculatus* (B. S. Sun) S. L. Chen & Renvoize, but differs mainly by its villous panicle axis, long callus hair, lanceolate lower lemma and the consistently longer awn of the upper lemma.

Miscanthus Anderss. was established in 1855 and includes fourteen species. Most are found in southeast Asia and the Pacific Islands, with a few species extending into tropical Africa. Seven species are distributed in China, two of which are endemic (Clayton and Renvoize 1986, Chen and Renvoize 2006).

Rubimons B. S. Sun was described in 1997 based on several specimens with condensed panicle, short appressed racemes, a callus lacking a bearded involucre and dorsally flattened lower glume. The type of this monotypic genus is *Rubimons paniculatus* B. S. Sun (Sun and Wang 1997). Later, Chen and Renvoize argued that the specimens conformed to the concept of *Miscanthus* because the inflorescence was paniculate and racemose with a tough rachis, the spikelets were similar and paired with each pedicelled spikelet, the callus was bearded, and the glumes were dorsally flattened (which is a feature of several species of *Miscanthus*). Thus, they concluded that *Rubimons* should be included in *Miscanthus*, and *Rubimons paniculatus* was recombined as *Miscanthus paniculatus* (B. S. Sun) S. L. Chen & Renvoize (Chen and Renvoize 2005).

While recently revising Saccharinae specimens, we found four sheets in (YUKU), one of which was labeled '*Rubimons yunnanensis* sp. nov.' by B. S. Sun – a herbarium name that was never published and therefore is invalid according to Art. 32 of the ICBN (McNeill et al. 2006). After careful measurements and comparison with other species, we believe these specimens, all of the same collection number, do represent a new species. Moreover, this species was collected in southwest Yunnan, while its related species *Miscanthus paniculatus* is only found in northern Yunnan (Zhaotong City, Eryuan and Jianchuan Counties), the locations separated by 292 kilometers.

On 19 Oct 2009, we went to the Mingxinba Village of Yongde County (the locality of this new species) to observe it in the wild. However, we did not find any plant, not even after consultation with Prof. Yang-Cai Wang who collected these specimens 22 years ago. What is worse, the local people had turned several sites on the hills around the village into arable land cultivating *Zea mays* L., and the original environment had been changed. However, although it might already have gone extinct, we feel responsible to report this new species and ensure that it is given a name, in case more localities are found in the future.

The new species shares several characteristics with *Miscanthus paniculatus*: condensed panicles, short appressed racemes and scaberulous and coriaceous lower glumes with a truncate apex (Sun and Wang 1997). Although we agree that *Rubimons* is an unnecessary generic split from *Miscanthus* (Chen and Renvoize 2005), a subgeneric status would be useful to align the new species with *Miscanthus paniculatus*. Therefore, we establish a new subgenus and a new species here.

Miscanthus subgen. *Rubimons* (B. S. Sun) Y. C. Liu et H. Peng comb. et stat. nov.

Basionym: *Rubimons* B. S. Sun (1997, p. 239).

Type: *Miscanthus paniculatus* (B. S. Sun) S. L. Chen & Renvoize.

Notes: similar to *Miscanthus* Anderss. subgen. *Miscanthus*, but differing in the contracted and spiciform panicle, shortly appressed and simple racemes, and the coriaceous and scaberulous lower glume with a truncate apex.

Rhizomatous perennials. Culms erect. Leaf blades linear, flat; ligule a ciliate membrane. Inflorescence a contracted

spiciform panicle of appressed and simple racemes arranged on a long axis; raceme axis erect and tough, glabrous or villous; spikelets paired, both spikelets pedicelled, or one subsessile. Spikelets similar and fertile, dorsally compressed; callus hair shorter than the spikelets; glumes scaberulous and coriaceous, lower glume truncate; lower floret represented by a hyaline sterile lemma; upper floret bisexual, lemma hyaline, mucronate or awned. Stamens 3. Caryopsis obovate.

***Miscanthus villosus* Y. C. Liu et H. Peng sp. nov.**
(Fig. 1–2)

Miscantho paniculato affinis, sed panicula axe villosa, callis pilis longioribus, lemmatibus inferioribus lanceolatis, lemma-tum superiorum aristis longioribus differt.

Type: China. Yunnan Province, Yongde County, Mingxinba Village, grass slope, 2000 m a.s.l., 6 Sep 1987, Sun, B. S. and Wang, Y. C. 87245 (holotype: YUKU, isotype: KUN).

Rhizomatous plant. Culms 1.15–1.33 m tall, 3–5 mm in diameter, 3–4-noded, nodes puberulous. Leaf sheaths slightly compressed, longer or shorter than internodes, glabrous, ciliate at apex; leaf blades linear, flat, 10–45 × 0.2–0.7 cm, adaxially thinly pilose along midrib, abaxially glabrous, narrowed to midrib toward base, apex acuminate; ligule 2–4 mm, ciliate, obtuse. Panicle 19–23 × 1–2 cm, axis villous. Racemes 2–6 cm, appressed. Spikelets pedicelled, or one subsessile, lanceolate, 5 mm, awned; callus hairs 3–4 mm; glumes subequal; lower glume 4.8 mm, abaxial surface scabrid, pilose, obscurely 2–3-veined between the 2 keels, or veinless, keels hispidulous, upper margin pilose, apex truncate, emarginate; upper glume 5 mm, weakly 1-keeled, margin ciliate, apex acuminate; lower lemma lanceolate, 5 mm, 3-veined, margin ciliate except in lower



Figure 1. Photograph of the holotype (at YUKU) of *Miscanthus villosus* sp. nov.

1/3; upper lemma 4 mm, apex entire, narrowed into the awn; awn 5–6 mm, straight; upper palea 3 mm, apex long acuminate. Caryopsis obovate, dark brown.

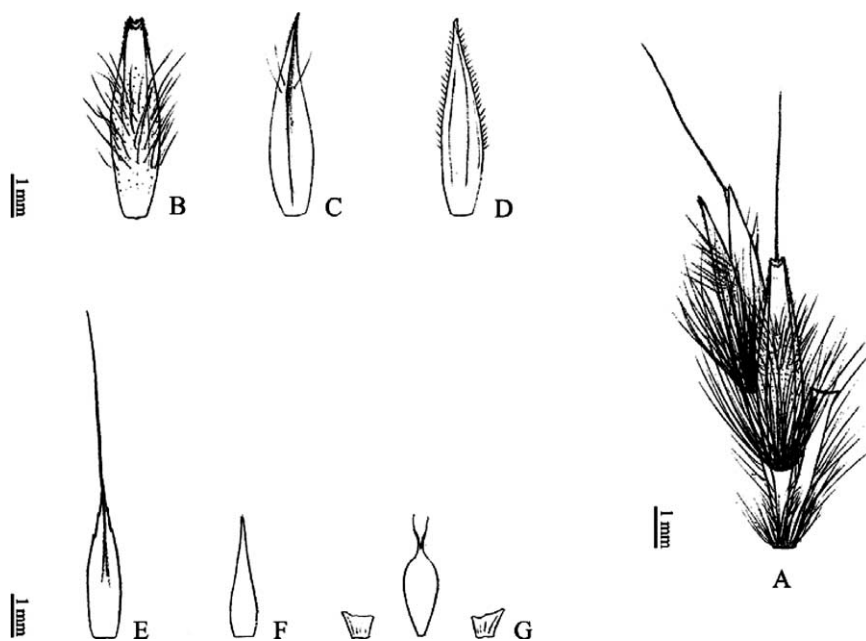


Figure 2. Floral parts of *Miscanthus villosus* sp. nov. (A) spikelet pairs, (B) lower glume, (C) upper glume, (D) lower lemma, (E) upper lemma, (F) upper palea, (G) caryopsis and lodicules. Drawn by Yanchun Liu from the isotype.

Table 1. Summary of diagnostic differences between *Miscanthus villosus* sp. nov. and *M. paniculatus*.

	<i>M. villosus</i>	<i>M. paniculatus</i>
Culm height (cm)	115–133	30–100
Ligule (mm)	2–4	0.8–1.5
Panicle (cm)	19–23	5–15
Panicle axis	villous	glabrous
Callus hairs (mm)	3–4	0.5–2.0
Lower lemma	lanceolate, margin ciliate except in lower 1/3	linear lanceolate, margin ciliate only in upper 1/3
Upper lemma	with a straight awn, 5–6 mm	mucronate or with an awn up to 2 mm

Distribution, ecology, etymology and conservation status

Miscanthus villosus is found on the grassy slopes at 2300 m a.s.l. in southwest Yunnan (Yongde). This species is rare or possibly extinct, and is only known from one extinct wild population in Mingxinba village, Yongde County. We did not find any plant of *M. villosus* in southwest Yunnan or northern Myanmar when carrying out field studies in the past few years. However, because local floras are lacking, information about some taxa is not perfect (Peng 2007). Here we would like to assess *M. villosus* as 'Vulnerable' using the criteria of IUCN (2001).

The specific epithet of the new species refers to its villous panicle axis.

Similar species

Miscanthus villosus is closely related to *M. paniculatus*; the major differences between them are outlined in Table 1.

We would like to correct some mistakes in the illustration of *M. paniculatus* (Sun and Wang 1997, Fig. 1) and add one characteristic. After examining the type specimens in (YUKU), we determined that the upper glume is weakly one-keeled on the back, not round as drawn in the illustration. In addition, the apex of the upper palea is actually long acuminate rather than acute, and we note that the upper 1/3 of the margin of the lower lemma, which was not previously described, is ciliate.

Acknowledgements – We express our gratitude to NSCF (grant no. 30670143) for financial support. We thank the workers and managers in (YUKU) for the specimen loan. We are also grateful to Prof. Yang-Cai Wang for telling us the right direction near the village when we were in field.

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