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, shortly appressed racemes, and scaberulous lower glumes with a truncate apex. 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, shortly appressed racemes and scaberulous and coriaceus 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.


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 coriaceus 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 sub sessile. 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 bissexual, lemma hyaline, mucronate or awned. Stamens 3. Caryopsis obovate.

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

*Miscanthus paniculato affinis*, sed panicula axe villoso, callis pilis longioribus, lemmatibus inferioribus lanceolatis, lemmatum 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 sub sessile, 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 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 1. Photograph of the holotype (at YUKU) of *Miscanthus villosus* sp. nov.

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.
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.

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

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

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References


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