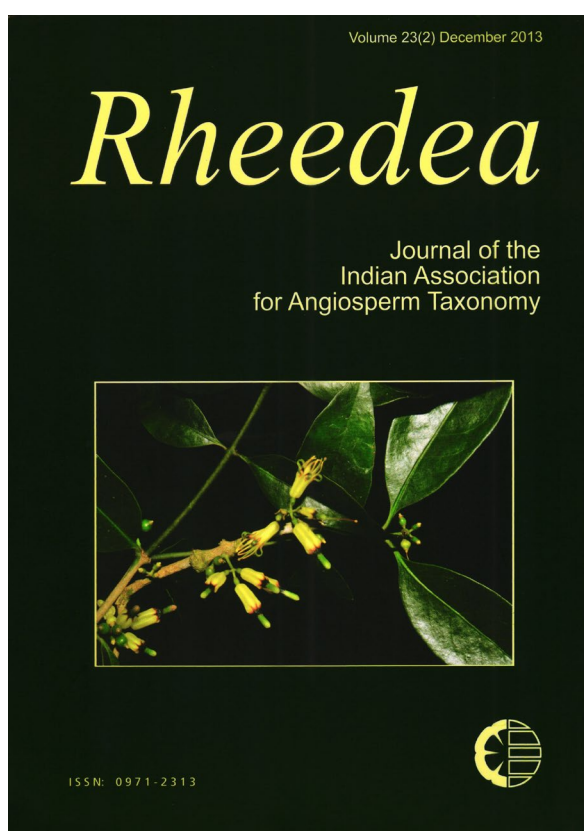




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Panicum laxum (Poaceae): An addition to flora of India

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Abstract

Panicum laxum Sw. (Poaceae) is reported here for the first time for India from northeastern part of India (Assam and Tripura). A detailed description, illustration and photograph are provided here to facilitate easy identification.

Keywords: *Panicum laxum*, Poaceae, new record, India

Introduction

The genus *Panicum* L. comprises c. 300 species (Mabberley, 2008) distributed from tropical to warm temperate regions in varied habitats like desert, savanna, forest and swamp (Clayton & Renvoize, 1989). In India, the genus is represented by c. 55 species (Yadav, 2010).

The genus *Panicum sensu lato* is annual or perennial, caespitose herb. Leaf blades lanceolate to linear-lanceolate; ligule membranous or hairy. Inflorescence open panicle, occasionally lax, sometimes primary or secondary branches appressed to the main inflorescence axis or primary branches respectively. Spikelets on long pedicels; lower glume shorter than upper glume; upper glume and lower lemma sub-equal and with same texture; upper antherium indurate.

In an ongoing taxonomic study on grasses in southern part of Assam (Barak Valley), the authors collected some interesting specimens from Cachar and Hailakandi districts and also came across some unidentified and misidentified specimens (from Assam and Tripura) housed at Assam University Herbarium which after critical analysis identified as *P. laxum* Sw. After perusal of relevant literature (Hooker, 1896; Bor, 1960; Karthikeyan *et al.*, 1989; Shukla, 1996; Moulik, 1997), it was found that this species, a native of tropical America hitherto has not been recorded in Indian Floras. Hence, it is reported here as a new record for India. The species was earlier known from Mexico, West Indies to Paraguay, Argentina, West Africa, Malesia, Singapore, Borneo and Australia. A detailed description with updated nomenclature,

illustration and photograph is provided for easy identification.

According to Zuloaga *et al.* (1992), the species belongs to the subg. *Phanopyrum* (Raf.) Pilg. sect. *Laxa* Hitchc. & Chase ex Pilg. Members of the sect. *Laxa* can easily be identified in having spikelets arranged unilaterally on first or second order racemose branches and presence of a small membranous bract at the first node of the panicle. After inclusion of *P. laxum* in the Indian flora, the sect. *Laxa* is now represented by two species from the country viz., *P. laxum* Sw. and *P. auritum* J. Presl ex Nees. A key for identification of *P. laxum* from *P. auritum* is given below:

1. Leaf blade 4–11 cm long; ligule fimbriate; spikelets 1.2–1.5 mm long; stamens 2 ***P. laxum***

1. Leaf blade 20–40 cm long; ligule entire; spikelets 2–3 mm long; stamens 3 ***P. auritum***

Panicum laxum Sw., Prodr. 23. 1788; Judz., Fl. Guianas, ser. A, Phanerogams 8: 397, t. 71, f. a-c. 1990; Zuloaga *et al.*, Ann. Missouri Bot. Gard. 79: 799. 1992; Duist., Gard. Bull. Singapore 56: 37. 2004. *Steinchisma laxa* (Sw.) Zuloaga, Amer. J. Bot. 90: 817. 2003; B.K. Simon, Austrobaileya 6: 561. 2003. *Cliffordiochloa parvispiculata* B.K. Simon, Austrobaileya 3: 676, t. 3, 4A. 1992. Type: JAMAICA, Jamaica, O. Swartz. s.n. (holo. S., Photo!) **Fig. 1, 2**

Plants annual or perennial, 15–60 cm long, caespitose or single, rooting from lower nodes, simple or branched, erect when short, rambling when long; rhizomes and cataphylls absent. Nodes

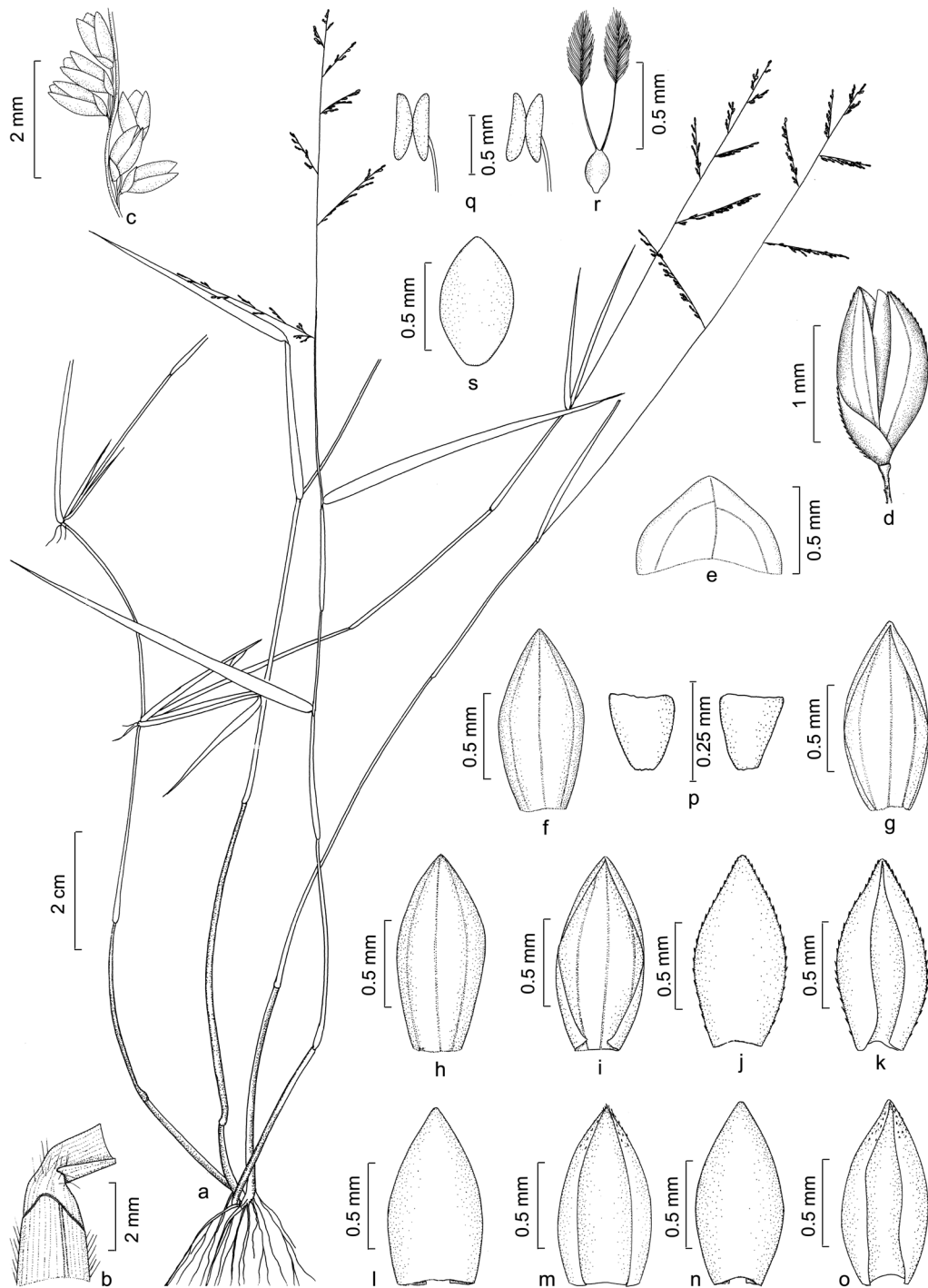


Fig. 1. *Panicum laxum* Sw.: **a.** Habit; **b.** Ligule; **c.** Part of inflorescence; **d.** Spikelet; **e.** Lower glume; **f.** Abaxial view of upper glume; **g.** Adaxial view of upper glume; **h.** Abaxial view of lower lemma; **i.** Adaxial view of lower lemma; **j.** Abaxial view of lower palea; **k.** Adaxial view of lower palea; **l.** Abaxial view of upper lemma; **m.** Adaxial view of upper lemma; **n.** Abaxial view of upper palea; **o.** Adaxial view of upper palea; **p.** Lodicules; **q.** Stamens; **r.** Pistil; **s.** Caryopsis.

3–4, glabrous; internodes 1.5–8 cm long, glabrous. Leaf sheath loose, striate, glabrous on surface, ciliate at margin. Ligule membranous, fimbriate. Leaf blade linear-lanceolate, 4–11 × 0.2–0.5 cm, rounded to truncate at base, acute at apex, glabrous on both surfaces. Inflorescence panicle with a small membranous bract at the first node. Main axis and branches of inflorescence scabrous, spikelets arranged on second order racemose branches; secondary branches generally compressed to primary branches or occasionally expanded. Spikelets paired, narrowly elliptic, acute to obtuse, 1.2–1.5 × c. 0.6 mm, green with occasionally purplish tinge, 2-flowered, blunt at apex. Glumes 2; lower glume broadly ovate, 0.5–0.7 mm long, broadly acute, 3-nerved, middle nerve scabrous towards apex, membranous; upper glume narrowly ovate, c. 1 mm long, 5-nerved, membranous; middle nerve scabrous towards apex. Lower floret sterile. Lower lemma narrowly elliptic, 1–1.1 mm long, 3-nerved, membranous, minutely scabrous on abaxial surface at apex. Lower palea hyaline, narrowly elliptic, c. 1

mm long, membranous, 2-keeled; keels scabrous. Upper floret hermaphrodite. Upper lemma elliptic-oblong, c. 1 mm long, smooth, shiny, glabrous, indurate at maturity, scabrous on abaxial surface at apex. Upper palea with same texture as upper lemma, elliptic-oblong, c. 1 mm long, 2-keeled, scabrous on abaxial surface at apex. Lodicules 2, c. 0.2 mm long, fleshy, hyaline, truncate at apex, glabrous. Stamens 2; anther c. 0.5 mm long; filament glabrous. Ovary ovate, c. 0.25 mm long, glabrous; styles 2, glabrous; stigma 2, plumose. Caryopsis elliptic, c. 0.7 mm long, yellowish, glabrous.

Flowering & Fruiting: July – January.

Habitat: The species grows gregariously mainly near marshy areas of wetlands forming patches. It also grows in open, sunny pastures and along forest margins and roadsides.

Specimens examined: INDIA, **Assam**, Barak Valley, Karimganj district, Karimganj town, Azad-Sagar, 18.12.2001, K. Chakravarty 4; Cachar district, Itkhola, 16.10.2005, H. Begum 19; s.loc., 21.03.2006, A. Sultana s.n.; s.loc., S. Gope 168; Rosekandy, Karbala wetland, 15.07.2011, M. Devi 10712; Rosekandy, along roadside, 15.07.2011, M. Devi 10716; Durgakona, Assam University Silchar Campus, near Life Science Department, 02.09.2012, M. Devi & D. Bhattacharyya 10947; Assam University Silchar Campus, on way to Biotechnology Department, roadside-margin of 'Ecoforest', 11.12.2012, M. Devi & D. Bhattacharyya 10961; near Assam University Administrative Building, 01.01.2013, M. Devi & D. Bhattacharyya 10986; Hailakandi district, Bondukmara, near roadside, 25.01.2013, M. Devi & D. Bhattacharyya 10995. **Tripura**, Kumarghat, 19.02.2005, S. Das 38 (Herbarium Assam University, Silchar).

Distribution: India (Assam, Tripura) (Present report), Borneo, Singapore, Malesia, Australia, West Africa, Mexico, West Indies to Paraguay, Argentina.

Notes: According to Aliscioni *et al.* (2003), *Panicum* sect. *Laxa* is polyphyletic and they treated *P. laxum* Sw. under the genus *Steinchisma* Raf. to make that genus monophyletic. The treatment of *P. laxum* Sw. as *Steinchisma laxa* (Sw.) Zuloaga is found doubtful as the genus *Steinchisma* as currently circumscribed is mainly a South American taxon (Christin *et al.*, 2009), a fact also supported by Duistermaat (2004). The species of the genus are C_3 or nearly so; the type species *S. hians* (Elliott) Nash is an intermediate between C_3 and C_4 (Duvall *et al.*, 2003).



Fig. 2. *Panicum laxum* Sw.

The species can easily be identified in having two stamens instead of typically three present in the genus *Panicum*. The plants growing in moist shady places are green with characteristic tinged purple spikelets. Open sunny plants exhibit purple-green colour throughout.

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