

Ischaemum kasaragodensis (poaceae-panicoideae), a new species from Western Ghats, India.

Dileep P.* and Geetha G. Nair

Department of Botany, Regional Institute of Education (RIE), Mysore-570 006, Karnataka, India.

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Abstract: A new species of *Ischaemum* from Kasaragod district of Kerala is described here as *Ischaemum kasaragodensis* sp. nov. A detailed description, ecology, biotic association and conservation assessment are provided along with colour photographs.

Key words: Andropogoneae, Ischaeminae, *Ischaemum*, Kerala, New species.

Introduction

Ischaemum L., a tropical genus of about 82 species, belongs to the subtribe Ischaeminae of the tribe Andropogoneae (Clayton *et al.*, 2006). The genus is distributed in the tropical and subtropical regions of the Old World, of which 51 species occur in India (Bor, 1960; Karthikeyan *et al.*, 1989; Sreekumar & Nair, 1991; Ravi *et al.*, 1998, 2000, 2001; Sur, 2001; Sunil & Pradeep, 2005). Among grasses, the genus *Ischaemum* is one of the most complex, diverse, variable and difficult genera showing greatest complexity and diversity in South-East Asia, especially in India (Singh & Rao, 2008). It is noted that large number of species diversity in this genus is found in Peninsular India especially in Western Ghats (Kiran Raj *et al.*, 2003). Jain (1986) estimated that 73% of Indian *Ischaemum* species are endemic to the country.

During the extensive field survey of the grasses in southern Western Ghats of Kerala, the authors collected an interesting specimen of *Ischaemum* from Badiyadukka, Kasaragod district of Kerala. Detailed study perusal of relevant literatures and expert comments confirmed the novelty of the taxon, which is described here as a new species. Detailed description of the new species with other relevant information is provided along with colour photographs.

Ischaemum kasaragodensis Dileep & G.G. Nair sp. nov.

Diagnosis: The new species is closely allied to *I. fischeri* Ravi *et al.* Kiran Raj, but is distinct from it being aquatic and in having erect to decumbent culms, glabrous nodes; shorter narrower leaf blade up to 12 x 0.7 cm long; membranous ligule; oblong-lanceolate, 4.5-4.8 mm long lower glume of sessile spikelet, glabrous pedicel, 1.5-2.5 mm long anther and nerveless lower lemma.

Type: INDIA, Kerala, Kasaragod district, Badiyadukka, on the way to Mangalore, ±250 m, 23 September 2013, P. Dileep 9313 (Holotype, CALI; Isotypes, CMPR, KFRI).

Densely tufted and deep-rooted aquatic annual. Culms smooth, up to 60 cm long, erect to decumbent, pinkish, rooting at lower nodes; nodes glabrous. Leaves all along the culm; blades linear-oblongate, up to 10-12 x 0.5-0.7 cm, lower ones acuminate to tapering with the lowest ones tapering into a short pseudopetiole at the base, acute to

acuminate at the apex, upper ones cuneately rounded at the base towards the culm apex, thickly keeled on mid-vein below and glabrous; ligule ovate, acute, membranous, 2.5-4 mm long, 2-keeled, subacute to truncate at the apex; sheath up to 6 cm long, subcompressed, keeled on the back. Inflorescence terminal, solitary, sometimes 2; racemes 2, 5-7 cm long; joints of rachis oblong-clavate, 2.5-4 mm long, triquetrous, tridentate at the apex and ciliate on the outer angle. Sessile spikelets oblong-elliptic, 4.5-5.5 x 1-1.4 mm; callus 0.5-0.75 (-1) mm long, ciliate. Lower glume oblong-lanceolate, 4.5-4.8 x ca. 1.2 mm, thickly coriaceous below and coriaceous above, laterally keeled and incurved on the margins with the keels thickened and 2 or 3 nodulose in the lower half, laterally flattened and winged unequally above the middle with scabrid margins, acute, hyaline-tipped, often ultimately unevenly notched at the apex, 9-11-nerved, sparsely ciliate in the upper half. Upper glume lanceolate, boat-shaped, 4-4.5 x ca. 1.3 mm, coriaceous, keeled on the back and the keel very shortly and narrowly winged, incurved on margins, 5-7-nerved and scabrid outside in the upper half. Lower lemma elliptic to elliptic-lanceolate, 3.5-4 x ca. 1.25 mm long, hyaline, acute at the apex, nerveless, incurved on the sides and sparsely ciliate outside closer to the margins, glabrous otherwise. Lower palea elliptic to elliptic-lanceolate, 3.5-4 x ca. 1.25 mm long, hyaline, acute at the apex, 2-nerved and incurved along the nerves with the nerves keeled and very narrowly winged. Upper lemma oblong to oblong-elliptic 3-3.5 x ca. 1 mm long, hyaline, deeply cleft to below the middle, awned from the sinus; awn geniculate, up to 21 mm long with a column up to 5.5 mm long. Upper palea oblong-elliptic, 3.5-4 x 1 mm long, hyaline, 2-nerved, incurved on the sides and sub-acute at the apex. Pedicelled spikelets 4.5-5.5 x ca. 1.8 mm; pedicel 1.25-1.75 mm long, triquetrous and glabrous. Lower glume oblong-elliptic, 4.5-5.2 x ca. 1.5 mm, thickly coriaceous, laterally keeled and slightly thickened and somewhat rounded below and 2-3 nodulose or not towards the base on the otherside with the wings scabrid on the margins, acute, hyaline-tipped, sometimes ultimately unevenly notched at the apex, 11-13-nerved. Upper glume, lower lemma, lower palea and upper palea similar to those of the sessile spikelet, sometimes slightly smaller. Upper lemma oblong-elliptic, 3-3.5 x 0.7 mm, hyaline, sometimes very

*Corresponding Author:

Mr. Dileep P.,

Research Scholar,

Regional Institute of Education (NCERT),

Manasagangothri, Mysore – 570006,

Karnataka, INDIA.

reduced, mostly entire and acute at the apex, sometimes shortly bifid with subacute to obtuse lobes and aristate or imperfectly awned or deeply cleft and geniculately awned; when awned, awn usually shorter than that of the sessile spikelet. Lodicules 2, cuneate at the base and truncately lobed at the apex, 0.5-0.75 mm long. Stamens 3; anthers 1.5-2.5 mm long. Ovary 0.5-0.8 mm long; styles ca. 1.75 mm long; stigma glassy-white, turning to brown. Grains ellipsoid to oblong-ellipsoid, 2-2.5 × 0.6-0.8 mm, pale brown to brown.



Figure 01. *Ischaemum kasaragodensis* Dileep & G.G. Nair sp. nov. A. Habit; B. Raceme; C. Close up of raceme showing lower glume with side nodules; D. Root system; E. Glabrous nodes.

Flowering & Fruiting: September-December.

Habitat & Ecology: The new species is naturally growing in aquatic condition along with other grass species viz. *Oryza rufipogon* Griff., *Leersia hexandra* Sw. at an altitude range of 250-300 m.

Distribution: So far collected only from the type locality at Badiyadukka area in Kasaragod district of Kerala, India. Endemic.

Etymology: The specific epithet 'kasaragodensis' indicates the type locality of the taxon, from 'Kasaragod' district of Kerala, India.

Conservation status: The new species is rare at the locality, we could locate only a few populations with ca. 50 individuals. The extent of occurrence is estimated to be less than 2 km². The status is assessed here as Data Deficient (DD) pending further study (IUCN, 2012).

Table 1. Diagnostic morphological comparison of *Ischaemum kasaragodensis* with *I. fischeri*

Characters	<i>I. fischeri</i>	<i>I. kasaragodensis</i> sp. nov.
Habit	Terrestrial or marshy, perennials	Aquatic, rooted emergent, annuals
Culms	Creeping and mat forming; nodes sparsely ciliate	Erect to decumbent and pinkish; nodes glabrous
Leaf blade	Elliptic-lanceolate; ligule subcoriaceous	Linear-oblongate; ligule membranous
Lower glume of sessile spikelet	Oblong-elliptic, up to 6 mm long	Oblong-lanceolate, up to 4.8 mm long
Lower lemma of sessile spikelet	3-nerved	Nerveless
Awns of upper lemma of sessile spikelet	10-15 mm long	15-21 mm long
Pedicel	Ciliate	Glabrous
Anther	2.5-3.0 mm long	1.5- 2.5 mm long

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References

- Bor NL. 1960. *The grasses of Burma, Ceylon, India and Pakistan*. Pergamon Press, London.
- Clayton WD and Renvoize SA. 1986. *Genera Graminum: Grasses of the World*. [Kew Bulletin, Additional Series 13.] Her Majesty's Stationary Office, London.
- Clayton WD, Vorontsova MS, Harman KT and Williamson H. 2006. Grass Base – The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>. Retrieved on 2 March 2015.
- IUCN. 2012. *IUCN Red List Categories and Criteria: Version 3.1*. Second Edn. International Union for Conservation of Nature and Natural Resources. Gland, Switzerland and Cambridge, UK 1–32.
- Jain SK. 1986. The grass genera of India – A synoptic account of uses and phytogeography. *Bull. Bot. Surv. India* 28: 229–240.
- Karthikeyan S, Jain K, Nayar MP and Sanjappa M. 1989. *Florae Indicae Enumeratio: Monocotyledonae*. Botanical Survey of India, Calcutta.
- Kiran Raj MS, Sivadasan M and Ravi N. 2003. Grass diversity of Kerala – Endemism and its phytogeographical significance. In: M. K. Janardhanam & D. Narasimhan (Eds.), *Plant diversity, human welfare and Conservation*, pp. 8-30. Goa University, Goa, India.
- Rajeev Kumar Singh and Rao PSN. 2008. The genus *Ischaemum* L. (Poaceae) in India. *J. Econ. Taxon. Bot.* 32 (4): 797-826
- Ravi N, Mohanan N, Shaju T, Kiran Raj MS and Rajesh R. 1998. Three new species of *Ischaemum* L. (Poaceae) from Kerala, India. *Rheedea* 8 (2): 149–158.

10. Ravi N, Mohanan N, Kiran Raj MS, Shaju T and Rajesh R. 2000. Another new species of *Ischaemum* L. from Kerala, India. *Rheedea* 10 (1): 49–53.
11. Ravi N, Mohanan N, Shaju T, Kiran Raj MS and Rajesh R. 2001. Three more new species of *Ischaemum* L. (Poaceae) from Kerala, India. *Bot. Bull. Acad. Sin.* 42: 223–230.
12. Sreekumar PV and Nair VJ. 1991. *Flora of Kerala-grasses*. Botanical Survey of India, Calcutta. pp. 118– 171.
13. Sunil CN and Pradeep AK. 2005. *Ischaemum glabriglaucum* Sunil (Poaceae), a new species from India. *Candollea* 60 (2): 387-391.
14. Sur PR. 2001. A revision of the genus *Ischaemum* Linn. (Poaceae) in India. *J. Econ. Taxon. Bot.* 25 (2): 407-438.

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