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Two new species of *Poaceae* from Kerala, India

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Abstract

Two new species of grasses, one of *Ischaemum* viz., *I. lanatum* and the other of *Chrysopogon* viz., *C. purushothamanii*, are described and illustrated.

INTRODUCTION

The authors, during their study of endemic taxa of the State of Kerala under a project sponsored by the Ministry of Environment and Forests (MoEF), Government of India, came across two interesting species of grasses, a species each of *Ischaemum* L. and *Chrysopogon* Trin.. After critical study and consultation with Dr. Thomas A. Cope of the Royal Botanic Gardens, Kew, they were confirmed as new to botany. They are described and illustrated here.

Ischaemum L.

Ischaemum, a tropical genus of over 75 species is represented by 52 species in India and 35 species in Kerala (Bor, 1960; Fischer, 1933 & 1934; Hooker, 1896; Karthikeyan *et al.*, 1989; Ravi *et al.*, 1998, 2000a, 2000b; Sreekumar & Nair, 1991; Moulik, 1997 & Sur, 1987). The description of the present new taxon increases the representative species of the genus to 53 in India and 36 in Kerala.

***Ischaemum lanatum* Ravi, Mohanan *et* Shaju, *sp. nov.* (Fig. 1).**

Speciebus cognitis non similis, *Ischaemum lanatum* *sp. nov.* *I. semisagittato* Roxb. proxima, sed bene distincta rhachide articulis pedicellis et callo dense albo-lanatis, glumis inferioribus crustaceis ad coriaceis, gluma inferiore spiculae pedicellatae non alata, glumis superioribus hirsute villosis, carinisque paleae scaberulo-ciliatis.

Types: India, Kerala, Kasaragode District, Hosdurg Taluk, Periya, ± 50m, 29 Nov. 1999, Ravi 41535, (*Holo* - TBGT; *Iso* - K, CAL, MH, KFRI, TBGT); *Ibid.*, 29 Nov. 1999, Ravi 41536, (*Para* - TBGT).

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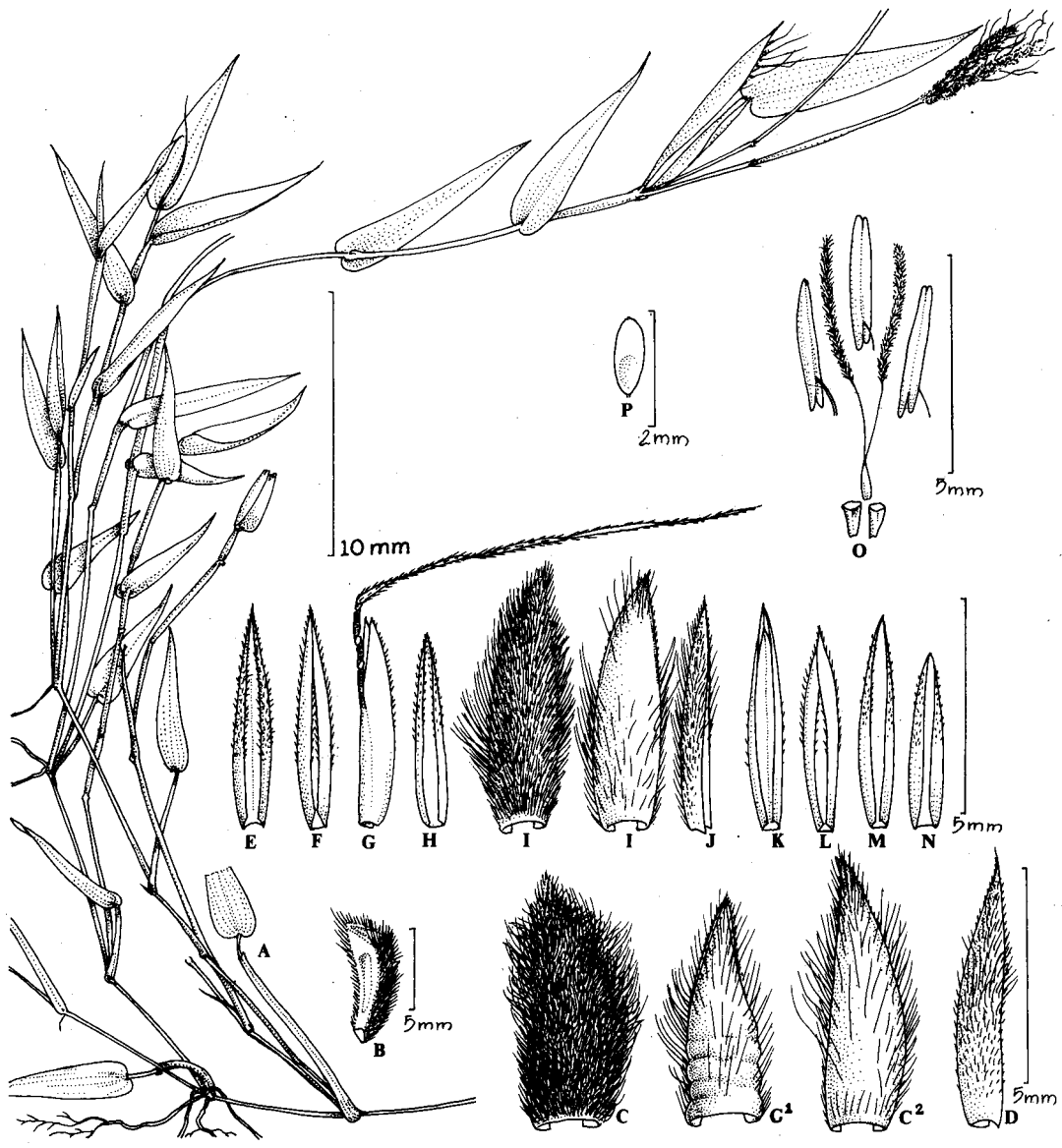


Fig. 1. *Ischaemum lanatum* Ravi, Mohanan *et* Shaju, *sp. nov.*

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Difficult to ally with any known species, *I. lanatum* comes somewhere near to *I. semisagittatum* Roxb., but is distinct in the densely white wooly joints of rachis, pedicel, callus and crustaceous to subcrustaceous lower glumes, wingless lower glume of pedicelled spikelet, hirsute-villous upper glumes and scaberulous-ciliate keels of palea.

Annuals. Culms slender, erect to decumbent, rooting at lower nodes, up to a meter tall; nodes villous, glabrescent at length. Leaves all along the culm; sheath up to 9 cm long, keeled on the back, striate, hairy with bulbous-based hairs on the sides and margins towards the mouth, glabrous otherwise; ligule coriaceous, triangular-ovate, up to 5 mm long, 2-keeled on the back, truncate to truncate-notched at the apex and hairy on the outside with bulbous-based hairs; blade pseudopetiole at the base with the petiole up to 1 cm long and sessile upwards, membranous, lanceolate, oblong-lanceolate or elliptic-lanceolate, up to 10 x 1 cm, rounded to cordate at the base in the lower ones and cordate to semisagittate in the upper ones and acuminate at the apex, minutely scaberulous on the margins and veins above and below and glabrous to sparsely hairy above and below. Racemes 2, densely wooly, up to 7 cm long; joints of rachis clavate-turbinate, trigonous, 4-6.5 x 2-2.5 mm long, densely white-wooly all over the outside with the hairs up to 2.5 mm long. Sessile spikelets elliptic-lanceolate to oblong-lanceolate, 6-7.5 mm long including the 1-2 mm long densely silky-wooly callus and awned. Lower glume elliptic-lanceolate to oblong-lanceolate, 5-6 x 1.8-2 mm, crustaceous and rounded on the margins in the lower 2/3, thickly coriaceous to subcrustaceous and laterally sharply keeled in the upper with scaberulous keels, acute at apex, 2-3-nodulose and obscurely transversely rugose or not below the middle, 9-11-nerved, densely wooly, so densely as to conceal the outline, on the outside including the incurved sides except towards the extreme apex with the hairs up to 3 mm long. Upper glume oblong-lanceolate in profile, boat-shaped, 5.25-6.5 x 1-1.5 (when folded) mm, thickly coriaceous, faintly to some-what prominently 5-7-nerved, keeled on the back, acuminate-aristate at the apex, shortly incurved on the margins, densely hirsute-villous outside with long and short hairs intermixed and puberulous inside from below the middle upwards. Lower lemma hyaline, elliptic-lanceolate, 4.5-5.5 mm long, acuminate at the apex, inrolled on the margins from below the middle upwards. Lower palea hyaline, linear-elliptic to linear-lanceolate, 4.25-5.5 mm long, acuminate at the apex, 2-nerved, keeled along the nerves, scaberulous-ciliate on the keels and margins from below the middle upwards and sometimes throughout the outside. Upper lemma hyaline, elliptic to oblong-elliptic in profile, 3.75-5 mm long, deeply cleft, with acute to acuminate lobes, awned from the cleft, 3-nerved from below the awn base and sparsely ciliate on the margins; awn 13 to 19 mm

Explanation to Fig. 1. *Ischaemum lanatum* Ravi, Mohanan et Shaju, *sp. nov.*: A. Habit; B. Joint of rachis; C-H. From sessile spikelet: C. Lower glume; C¹ & C². Lower glume from different spikelets - after removal of most of the hairs; D. Upper glume; E. Lower lemma; F. Lower palea; G. Upper lemma; H. Upper palea; I-N. From pedicelled spikelet: I. Lower glume; I¹. Lower glume after removal of most of the hairs; J. Upper glume; K. Lower lemma; L. Lower palea; M. Upper lemma; N. Upper palea; O. Lodicules, stamens & Pistil; P. Grain.

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long with a column (3.5-) 5-8.5 mm long. Upper palea hyaline, linear-lanceolate, 3.5-4.5 mm long, 2-nerved, keeled along the nerves, infolded on the sides, sparsely scaberulous to short ciliate on keels, sometimes hairy on the infolded sides from below the middle upwards. Pedicelled spikelet: *Pedicel* 1.5-2.5(-3) mm long and densely silky-villous. Lower glume oblong-lanceolate, 4.5-6.5 x 1.5 mm, crustaceous to subcrustaceous and rounded on the sides below, coriaceous and laterally sharply keeled above with scaberulous keels, acute at the apex, 7-11-nerved, densely silky-wooly, so densely as to conceal the outline, on the outside including the incurved sides except towards the extreme apex with the hairs up to 3 mm long. Upper glume subcoriaceous, 4.5-7 x 1 mm, similar to that of the sessile spikelet in other respects. Lower lemma 4.25-5.5 mm long, similar to that of the sessile spikelet in other respects. Lower palea 3.75-4.75 mm long, similar to that of the sessile spikelet. Upper lemma hyaline, linear-elliptic-lanceolate, 4.25-4.75 mm long, acuminate at the apex, 3-nerved, incurved on the sides and sparsely scaberulous outside including the margins from below the middle upwards. Upper palea 3.5-4.25 mm long, similar to that of the sessile spikelet in other respects. Lodicules 2, 0.75-1 mm long, cuneate at the base and truncate at the apex. Stamens 3; anthers c. 3 mm long and yellow. Ovary 0.75-1 mm long; styles 2-2.5 mm long; stigmas 3-3.5 mm long, purplish to brownish purple. Grains obovoid, c. 1.8 x 0.6 mm, biconvex and brown.

The specimens of the taxon were collected from a black loamy soil in a shady location in a rocky grassy hill.

Flowering and fruiting: October-January.

Etymology: The specific epithet *lanatum* is after the woolly nature of racemes, joints of rachis, pedicels and lower glumes of spikelets.

Chrysopogon Trin.

Chrysopogon Trin., a genus of tropical and warm temperate regions of the world, is represented by 26 species world-wide (Clayton & Renvoize, 1986) of which 16 are recorded from India. In Kerala this genus has so far been represented by only 5 species (Sreekumar & Nair, 1991). The present new taxon is an addition to the Kerala representatives of the genus.

***Chrysopogon purushothamanii* Ravi, Mohanan *et* Kiran Raj, *sp. nov.* (Fig. 2).**

C. polyphyllo Blatter *et* Mc Cann, affinis, sed distincta callo omnino dense barbato, callo pedicellisque cum pilis brunneolis, gluma superiore spiculae sessili manifeste aristata, arista usque ad 8 mm longa, et arista lemmatis superioris spiculae sessilis longiore usque ad 35 mm longa, cum columna usque ad 18 mm longa.

Explanation to Fig. 2. *Chrysopogon purushothamanii* Ravi, Mohanan *et* Kiran Raj, *sp. nov.*: A. Habit; B. Sessile spikelet; C. Pedicelled spikelet; D-G. From sessile spikelets: D. Lower glume; E. Upper glume; F. Lower lemma; G. Upper lemma; H-K. From pedicelled spikelets: H. Lower glume; I. Upper glume; I¹. Upper glume (front view); J. Lower lemma; K. Upper lemma; L. Lodicules, stamens & pistil.

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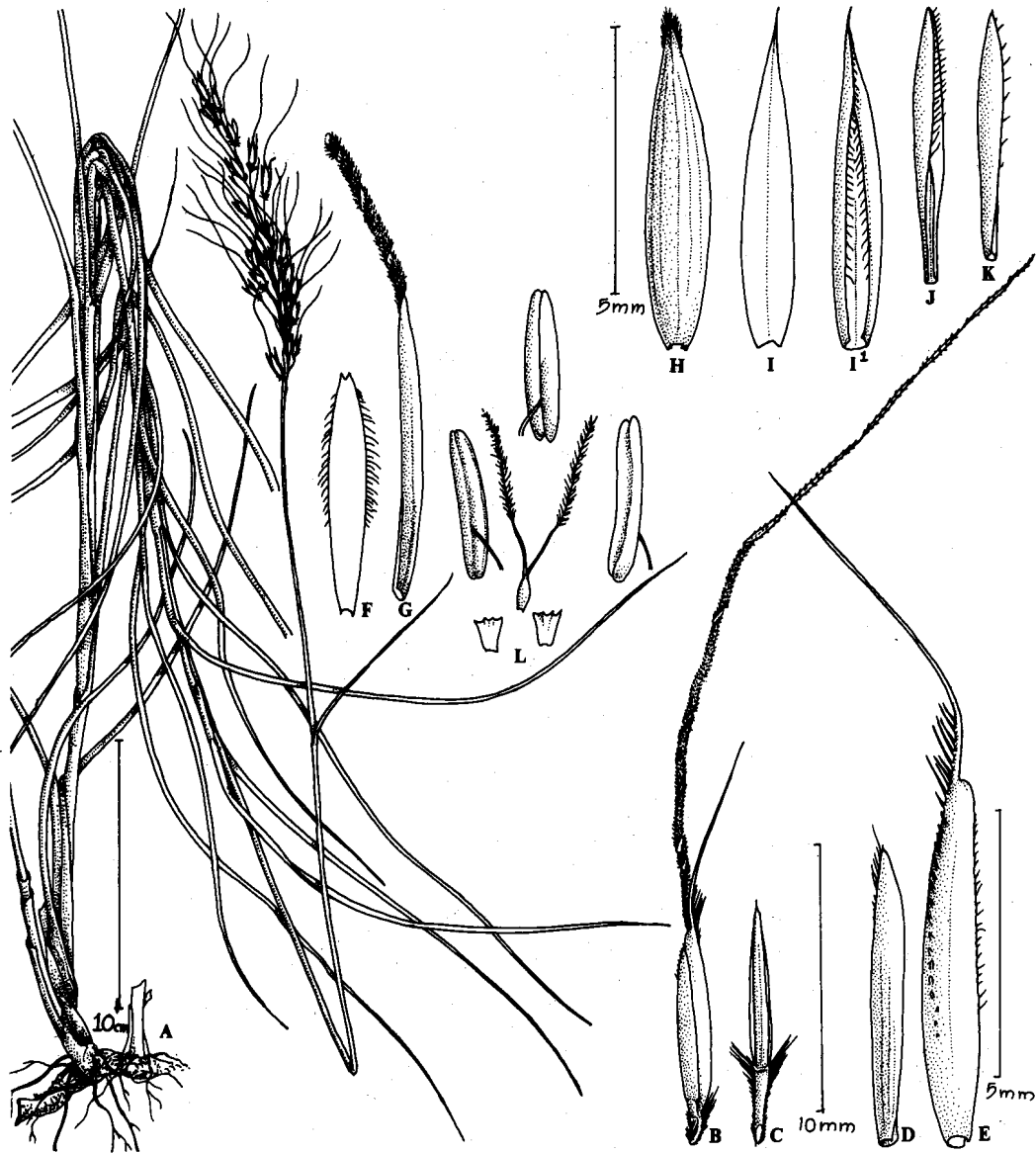


Fig. 2. *Chrysopogon purushothamanii* Ravi, Mohanan et Kiran Raj, *sp. nov.*

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Types: India, Kerala, Pathanamthitta District. Kozhanchery Taluk, Kokkathode, Kattathipara, ± 150 m, 25 Nov. 2000, Ravi 44811, (*Holo* - TBGT; *Iso* - CAL, MH, KFRI, TBGT); *Ibid:* 25 Nov. 2000, Ravi 44810, 44812 & 44813 (*Para* - TBGT); *Ibid:* 26 Nov. 1999, Ravi 41927 (*Para* - K, TBGT); *Ibid:* 26 Nov. 1999, Ravi 41928 (*Para* - TBGT).

Chrysopogon purshothamanii sp. nov. is allied to *C. polyphyllus* Blatter & Mc Cann., but is distinct from it in having a callus densely bearded throughout, brownish hairs on the pedicel and callus, distinctly awned upper glume of the sessile spikelet with the awn 4-8 mm long; and longer awn for the upper lemma up to 35 mm long with a column up to 18 mm long.

Perennial. *Culms* many in a close patch, erect from branched creeping root-stock, up to 1.5 m long, moderately slender, c. 3 mm wide at the base, terete and glabrous. *Leaves* distichous, more or less equally spaced out below and crowded from the middle upwards; sheath up to 8 cm long, rounded, keeled on the back upwards, striate and glabrous; ligule c. 0.5 mm long, membranous and densely fimbriate at the apex; blade continuous with the sheath, up to 50 cm x 6 mm, broadest at the base, tapering to a caudate-acuminate apex, sharply keeled on the midrib below and depressed above, sparsely pilose above and below, especially on the margins towards the base with long bulbous-based hairs, often ultimately glabrescent, scaberulous on the margins and midrib below towards the apex. Inflorescence more or less contracted, ovate to lanceolate panicle, up to 12 x 5 cm and 3-4-noded; branches filiform, dilated into an oblique cupuliform apex fringed with dense short brownish hairs, mostly whorled, up to 4 cm long and ascending. Sessile spikelet 6-8 mm long including the 1-1.5 (-2) mm long callus densely bearded with brownish hairs. Lower glume thickly coriaceous, more or less oblong-elliptic in profile, 5-6 x 0.5 mm (when folded), thickened and rounded on the back, acute at the apex, ciliate on the back towards the apex and faintly 7-nerved. Upper glume thickly coriaceous, oblong-lanceolate to oblong-elliptic in profile, boat-shaped 5.5-6.5 x 1.5 mm (when folded), awned from the notched apex, thickened and rounded on the back, thinner towards the sparsely ciliate hyaline margins, sparsely papillose to spinulose usually in two rows, closer to the back, one on either side, sometimes one on the back, mostly from the middle or from the middle upwards, often those towards the apex continued into the base of the awn as short cilia; awn 4-8 mm long sparsely pubescent to scaberulous from the base upwards. Lower lemma hyaline, oblanceolate, 4.5-5 x 1 mm apically notched, long ciliate on the margins except towards the base and apex, epaleate and empty. Upper lemma hyaline, 5.5-6 mm long, shortly notched at the apex and awned from the notch, 3-nerved, epaleate but bisexual; awn up to 35 mm long with a column up to 18 mm long, densely scaberulous-pubescent on the column and scaberulous upwards. Pedicelled spikelet elliptic, 5-6 x 1.25 mm; pedicel 2-2.5 mm long, ciliate on the sides with brownish hairs, progressively longer upwards. Lower glume subcoriaceous to chartaceous, elliptic, 5-6 x 1.25 mm, broadly rounded on the back, shortly inrolled on the margins, 9-nerved with the mid-nerve slightly raised on the outside into a short keel at the acute to shortly acuminate apex, sparsely bristly ciliate on the margins towards the apex and on the short keel, glabrous otherwise. Upper glume subcoriaceous to chartaceous, linear-lanceolate, up to 6 x 1.5 mm (when spread), 3-nerved with the mid-nerve slightly raised on the outside at the acuminate

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apex, incurved along the lateral nerves, thinly hyaline and sparsely long-ciliate on the margins except towards the base. Lower lemma linear-oblongate to linear-elliptic-oblongate, 5-5.5 mm long, subcoriaceous; to subhyaline towards the base and hyaline upwards, acute-notched at the apex, 3-nerved, incurved along the lateral nerves and long-ciliate on the margins from the middle upwards, epaleate and empty. Upper lemma hyaline, elliptic-lanceolate, c 4.5 mm long, acute-notched at the apex, 3-nerved, incurved along the faint lateral nerves, epaleate but male. Lodicules 2, c 0.65 mm long, cuneate at the base and truncate-lobed at the apex. Stamens 3; anthers 2-3 mm long yellow to reddish-brown. Ovary c 0.4 mm long; styles short, c 1 mm long; stigmas c 2 mm long and brown.

The specimens of the new taxon were collected from a rocky hill top associated with other grasses like *Chrysopogon hackelii* (Hook. f.) C. E. C. Fisch. and *Heteropogon contortus* (L.) P. Beauv. ex Roem. & Schult.

Flowering and fruiting: September-January.

Etymology: The specific epithet *purushothamanii* is in honour of the first author's senior Professor, P.K.G. Purushothaman who has always been a source of encouragement to his taxonomic studies.

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