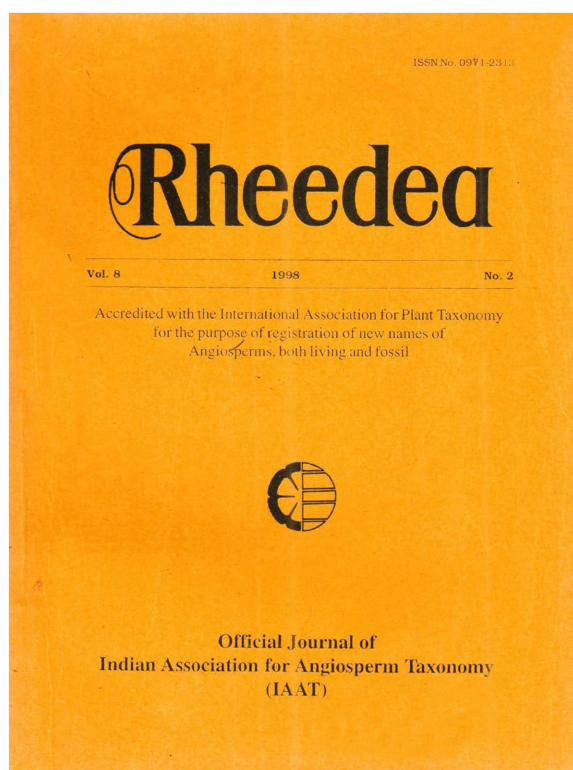




Three new species of *Ischaemum* L. (Poaceae) from Kerala, India

Ravi N., Mohanan N., Shaju T., Kiran Raj M.S. & R. Rajesh



How to cite:

Ravi N., Mohanan N., Shaju T., Kiran Raj M.S. & R. Rajesh. 1998. Three new species of *Ischaemum* L. (Poaceae) from Kerala, India. *Rheedeia* 8(2): 149–158.

<https://dx.doi.org/10.22244/rheedeia.1998.08.02.03>

Published in print: 31.12.1998

Published Online: 01.01.2022



Three new species of *Ischaemum* L. (Poaceae) from Kerala, India

N. Ravi, N. Mohanan, T. Shaju, M.S. Kiran Raj and R. Rajesh

Tropical Botanic Garden and Research Institute, Palode
Thiruvananthapuram - 695 562, Kerala, India

Abstract

Three new species of *Ischaemum* L. viz., *I. kumarakodiensis*, *I. quilonensis* and *I. pappinisseriensis* are described and illustrated.

INTRODUCTION

The authors, while doing plant exploration as part of their project, 'Study of Endemic Plants of Kerala', made an exhaustive collection of the members of the genus *Ischaemum* L. (Poaceae) throughout the State. Detailed studies of these specimens ended up in many interesting findings. Some of the specimens appeared to be distinct from the hitherto known species of the genus. Subsequently, after critical study and consultation with Dr. Thomas A. Cope, Kew, three specimens confirmed to be of new species are described and illustrated here.

Ischaemum L., a tropical genus of grasses of about 70 species of world-wide distribution, has so far been represented in India by about 45 species, of which 28 are represented in Kerala State (Bor 1960, Fischer 1934, Hooker 1896, Sreekumar & Nair, 1991 & Sur, 1987). Of the Kerala species, 12 are reported to be endemic to the State. With the description of the present 3 taxa, Kerala representation of the genus comes to 31.

***Ischaemum kumarakodiensis* Ravi, Mohanan et Kiran Raj, *sp. nov.* (Fig. 1)**

I. elimalayanum Sreekumar et al. affinis, sed differt habitu aquatica, culmis erectis ad decumbentibus ad nodos radicanibus, foliis brevioribus angustioribus usque ad 15 x 0.5 cm, articulis rhachidis pedicellisque sparsim longe ciliatis tantum in angulis exterioribus, glumis inferioribus spicularum sessilium pedicellatorumque glabris, eis prioris anguste alatis in uno latere versus apicem subacutum ad obtusum et parum nodulosum et obscure irregulariter rugosis sine interconnectionibus nodularim in dimidio inferiore, eis posterioris latior, alatis in uno latere. alis 3-5 nervis, et breviter anguste alatis in altera latere versus apicem obtuso-retusum; gluma superiore spiculae sessilis dorsaliter acute carinata.

N. Ravi et al.

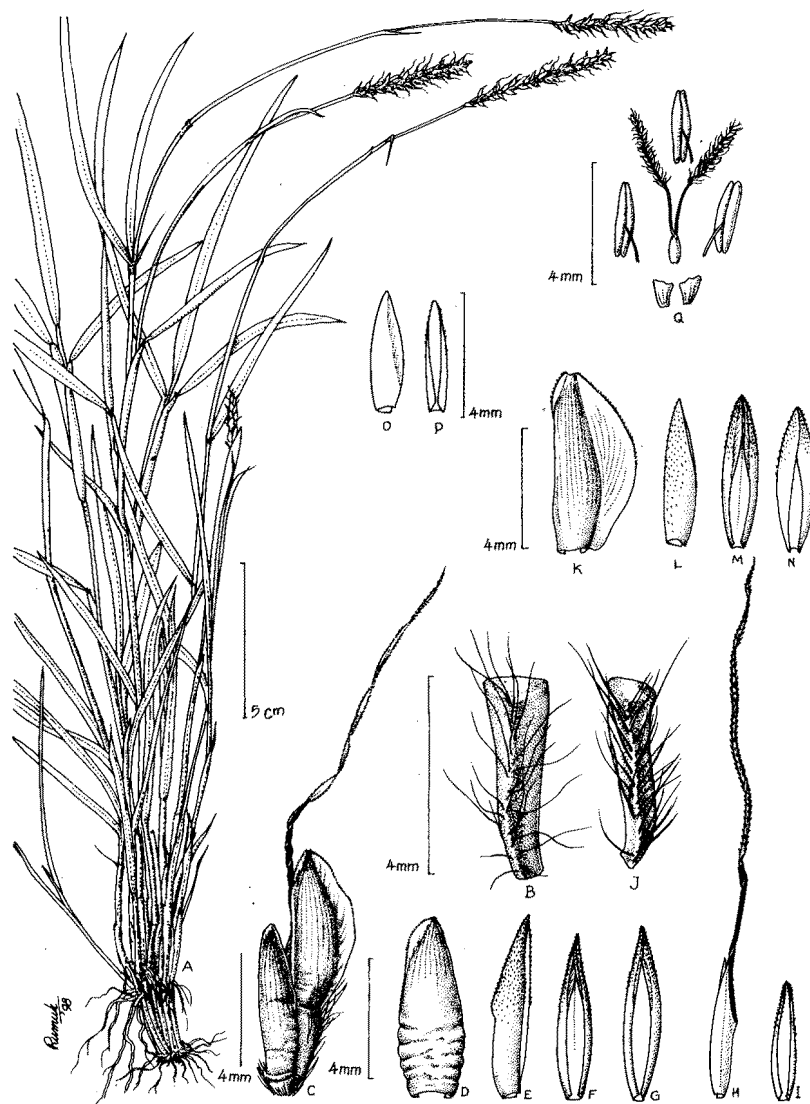


Fig. 1. *Ischaemum kumarakodiensis* Ravi, Mohanan et Kiran Raj.: A. Habit; B. Rhachis joint; C. Spikelet pair; D-I. Sessile spikelet; D. Lower glume; E. Upper glume; F. Lower lemma; G. Lower palea; H. Upper lemma; I. Upper palea; J-P. Pedicelled spikelet; J. Pedicel; K. Lower glume; L. Upper glume; M. Lower lemma; N. Lower palea; O. Upper lemma; P. Upper palea; Q. Lodicules, Stamens and pistil.

Three new species of *Ischaemum* L. (Poaceae)

Type: India, Kerala, Alappuzha Dt., Pallana Dec. 29, 1996 *Ravi TBG & RI 33084* (Holo - TBGT; Iso - K, MH, KFRI).

I. kumarakodiensis is allied to *I. elimalayanum* Sreekumar et al., but is distinct from it being aquatic and in having erect to decumbent culms with the latter rooting at nodes, shorter narrower leaves up to 15 x 0.5 cm; joints of rhachis, pedicels and callus less densely long-ciliate on the outer angles and glabrous lower glumes of both sessile and pedicelled spikelets, that of the former narrowly winged on one side towards the subacute to obtuse apex and shallowly nodulose and faintly irregularly wrinkled without nodular inter connections in the lower half, that of the latter more broadly winged on one side with the wing 3-5-nerved and shortly and narrowly winged on the other towards the obtuse-retuse apex and the upper glume of the sessile spikelet sharply keeled on the back.

Densely tufted and deep-rooted perennial. Culms smooth, up to 75 cm long, erect to decumbent, the lower longer ones often rooting at lower nodes; nodes glabrous to bearded. Leaves all along the culm; sheath up to 8 cm long, subcompressed, keeled on back towards apex, rounded below and glabrous; blade linear-oblancoate, up to 15 x 0.5 cm, gradually cuneate, non-petiolate, abruptly acuminate at apex, minutely scaberulous on margins towards the apex, thickly keeled on mid-vein below and glabrous; ligule coriaceous, 3-4 mm long, 2-keeled on back, subacute to unevenly truncate at apex and short-ciliate without towards base. Inflorescence terminal; racemes 2, 4-7 cm long; joints of rhachis clavate, triquetrous, 3-4 x 1 mm long, ciliate on the outer angle. Sessile spikelet elliptic, up to 5 mm long including the 0.5-0.75 mm long ciliate callus. Lower glume elliptic-oblong to lance-oblong, 4.5-5 x 1.5 mm, subacute to obtuse at apex, subcrustaceous below and coriaceous above, weakly 9-11-nerved, weakly nodulose on sides and faintly and irregularly wrinkled in the lower half and keeled on margins above and the keel sharply angled and narrowly winged on one side towards apex and minutely and sparsely scaberulous without and scaberulous on the margin of the wing. Upper glume coriaceous, oblong-elliptic in profile, boat-shaped, 4.5 - 5 mm long, subacute at apex, 5-nerved with faint laterals, incurved on margins, sharply keeled on back and humped below middle with the keel shortly raised and scabrid towards apex, minutely scaberulous without and sparsely and shortly ciliate on the incurved margins. Lower lemma hyaline, elliptic-lanceolate, 4.5 x 1 mm (when folded), acute at apex, 3-nerved, incurved along the laterals, minutely and sparsely scaberulous without towards apex and thinly hyaline on margins towards apex and fertile and male. Lower palea hyaline, elliptic lanceolate, 4.25 x 1 mm (when folded), acute at apex, 2-nerved and incurved along the nerves, minutely and sparsely scaberulous without towards apex and thinly hyaline along margins above the middle. Upper lemma hyaline, elliptic-lanceolate in profile, c 3.5 mm long, cleft to the middle and awned from the sinus, acute to subacute at apex of the lobes, 3-nerved and thickened along the back below the insertion of the awn; awn up to 14 mm long, geniculate with a column 4-6.5 mm long, scaberulous except on the column and fertile and bisexual. Upper palea hyaline, linear-lanceolate, 3 x 0.75 mm (when folded), subacute to obtuse at apex, 2-nerved, infolded along the nerves, thinly hyaline on margins above the middle, minutely and sparsely scaberulous without towards the apex and sparsely ciliolate on the hyaline margins. Pedicelled spikelet obliquely ovoid and 4 - 5 x 2 mm;

N. Ravi et al.

pedicel like the rhachis joints, 2.5 - 3 mm long and long-ciliate on the outer angle. Lower glume thickly coriaceous, obliquely ovate, 4- 5 x 2 mm, obtuse-notched at apex, broadly winged on one side with the wing broadest and rounded in the middle, almost straight on the other and shortly and narrowly winged towards apex, 9-11-nerved on the body and 3-5 - nerved on the wing and minutely and sparsely scaberulous without. Upper glume coriaceous, 3.75-4.5 mm long, keel not sharply angled and not humped, similar to that of the sessile in other respects. Lower lemma 3.75 - 4 x 0.75 mm, less scaberulous without, similar to that of the sessile in other respects. Lower palea 3.75 - 4 x 0.75 mm, less scaberulous without, similar to that of the sessile in other respects. Upper lemma hyaline, elliptic-lanceolate, 3 - 3.5 x 0.75 mm, subacute at apex, 3-nerved, incurved along the laterals and thinly hyaline on margins from the middle upwards and sparsely scaberulous without towards apex, fertile and bisexual. Upper palea hyaline, linear-lanceolate, 2.75 - 3 mm long, 2-nerved, narrowly infolded along the nerves and subacute to obtuse at apex, and minutely scaberulous without towards apex. Lodicules 2, c 0.5 mm long. Stamens 3; anthers 1.25 - 2.5 mm long, yellow, turning brown. Ovary 0.5 - 0.75 mm long; styles 1-2 mm long; stigmas 1.25 - 2 mm long, brown.

The specific epithet is derived from the type locality Kumarakodi, in Pallana, Alappuzha Dist., Kerala. The locality is so named after the famous Malayalam poet and social reformer Sri Kumaran Asan who died in a boat capsized at the place where his mortal remains were buried and a memorial constructed in his name.

This perennial species forming thick tufts on the banks of Pallana River is scarce in the locality.

Fl. & Fr. : September to March.

Ischaemum quilonensis Ravi et Shaju, *sp. nov.* (Fig. 2)

Ischaemum barbatum Retz. et *I. mangaluricum* (Hack.) Stapf ex C.E.C. Fischer affine, a priore differt culmis repentibus perennibus radicanibus tegetes formantibus perennibus, lamina brevior usque ad 20 cm longa, lineari-lanceolata ad lineari-oblongolata vel lanceolata, apice acuta, basi cuneata ad longe cuneata vel cuneatim rotundata, gluma inferior spiculæ sessilis pertenuiter ad anguste alata, a posteriore differt pedicellis callis articulisque rhachidis glabris ad perspersim breviterque ciliatis, gluma inferior spiculæ sessilis non auriculata et tenuiter ad anguste alata.

Type : India, Kerala, Kollam (Quilon) Dt., Perumkulam Ela near Kollam Town. Oct. 27, 1996. *Ravi TBG & RI 24098* (Holo - TBGT; Iso - K, MH, KFRI).

Ischaemum quilonensis is allied to *I. barbatum* Retz. and *I. mangaluricum* (Hack.) Stapf ex C.E.C. Fischer, but is distinct from the former in having creeping, rooting and mat-forming culms, shorter up to 20 cm long linear-lanceolate to linear-oblongolata or lanceolate blade acute at apex and long-cuneate to cuneate or cuneately rounded at base and lower glume

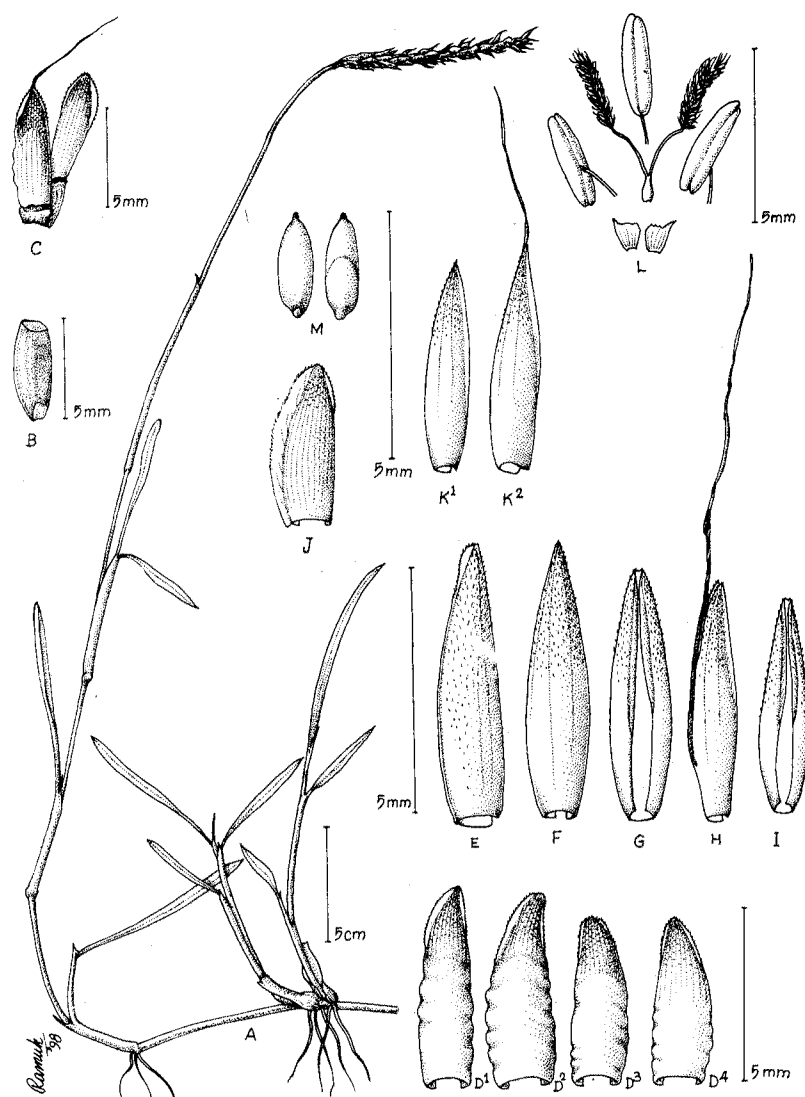
Three new species of *Ischaemum* L. (Poaceae)

Fig. 2. *Ischaemum quilonensis* Ravi et Shaju: A. Habit; B. Rhachis joint; C. Spikelet pair; D1-I. Sessile spikelet; D1, D2, D3, D4. Lower glume from different spikelets; E. Upper glume; F. Lower lemma; G. Lower palea; H. Upper lemma; I. Upper palea; J-K2. Pedicelled spikelet; J. Lower glume; K1 & K2. Upper lemma from different spikelets; L. Lodicules; Stamens and pistil; M. Grains.

N. Ravi et al.

of the sessile spikelet very slenderly to narrowly winged and from the latter in having glabrous to very sparsely and shortly ciliate joints of rhachis, pedicels and callus and non-auriculate slenderly to narrowly winged lower glume of the sessile spikelet.

Perennial. Culms tufted, terete and smooth, creeping and rooting at nodes and mat-forming, flowering culms decumbent, up to 80 cm long; nodes glabrous. Leaves all along the culm; sheath up to 12 cm long and glabrous; blade membranous, linear-lanceolate to linear-ob lanceolate or lanceolate, up to 20 x 1 (1.2) cm, acute at apex, lower ones cuneate to cuneately rounded at base and upper ones often long-cuneate into a short or long petiole up to 3.5 cm long and glabrous; ligule triangular-ovate, up to 5 mm long, unequally notched at apex, 2-keeled on back and glabrous. Racemes 2, very rarely 3, up to 10 cm long; joints of rhachis coriaceous, broadly clavate, 4.5 - 5.5 x 2 - 2.25 mm, mostly glabrous, sometimes sparsely and shortly ciliate on the outer angle. *Sessile spikelet* ovate - oblong, 5-7 x 2 - 2.25 mm; callus c. c. 0.75 mm long, glabrous to rarely sparsely and shortly ciliate at base. Lower glume oblong-lanceolate to ovate-oblong or almost oblong, 5-7 x 2-2.5 mm, laterally keeled and incurved on margins, subacute to truncate-obtuse or truncate-retuse at apex, flatly rounded on back, thickly coriaceous and faintly to prominently 3-5 nodulose on sides from above the middle downwards, herbaceous-coriaceous above and very slenderly to narrowly winged on one side and very slenderly winged on the other above and 11-13-nerved with the nerves anastomosing towards apex. Upper glume coriaceous, lance-elliptic in profile, 5-6 mm long, boat shaped, keeled on back with the keel scaberulous and shortly winged towards the acute apex, shortly incurved on margins with the margins thinly and narrowly hyaline and sparsely ciliate, 3-5-nerved and finely scaberulous to sparsely short-ciliate without except towards base. Lower lemma subhyaline, lance-elliptic, 5 - 5.5 x 1.25 - 1.5 mm, acute at apex, flatly rounded on back, incurved along the sides, finely scaberulous without from below the middle upwards, thinly hyaline on margins towards apex, 3-5-nerved, paleate and male. Lower palea subhyaline, lance-elliptic, 4.5 - 5 x 1.25 - 1.5 mm, shortly notched at apex, flat on back, 2-nerved and keeled along the nerves, thinly hyaline on margins and finely scaberulous without in the upper half. Upper lemma hyaline, elliptic in profile, 4.5 - 5 x 1.25 mm (when folded), deeply cleft at apex with the lobes subacute to acute at apex and awned from the sinus, very rarely only cleft without an awn, thinly hyaline on margins in the upper half and finely scaberulous without in the upper half, 3-5-nerved, paleate and bisexual; awn up to 10 mm long with a column up to 5 mm long, rarely awn poorly developed without a column. Upper palea hyaline, lanceolate in profile, c. 4 x 1 mm, slightly notched at apex, 2-nerved, flat on back, incurved along the nerves, thinly hyaline on margins from below the middle upwards and finely scaberulous without except towards base. *Pedicelled spikelet* obliquely oblong-elliptic, 4.5 - 6 x 2.5 mm, straight on one side, and rounded on the other; pedicel triquetrous, 1.5 - 2 x 1 - 1.5 mm, and glabrous to rarely sparsely and shortly ciliate on the outer angle. Lower glume thickly coriaceous, obliquely oblong-elliptic, as long and broad as the spikelet, straight on one side and rounded on the other, thickly keeled on sides and incurved on margins, subacute at apex, 11-13-nerved and the nerves anastomosing towards apex, one of the keels broadly winged all long with the wing broadest in the middle, nerved and scaberulous on margin and the other slenderly winged towards apex. Upper glume similar to that of the sessile, slightly smaller and 5-7-nerved. Lower lemma

Three new species of *Ischaemum* L. (Poaceae)

similar to that of the sessile, slightly smaller, 3-nerved, palcate and male. Lower palea similar to that of the sessile and smaller. Upper lemma hyaline, oblong elliptic in profile, 4-5 x 1 mm (when folded), boat-shaped, mucronate to aristate or shortly awned with the awn poorly developed and up to 4 mm long, faintly 3-5-nerved, thinly hyaline on margins except towards base and finely scaberulous without except towards base and paleate and bisexual. Upper palea similar to that of the sessile spikelet. Lodicules 2, c 1 mm long, horned at apex and broadly cuneate at base. Stamens 3; anthers 2.5 - 3 mm long, creamy white. Ovary c 0.75 mm long; styles 1.75 - 2 mm long and stigmas 2-3 mm long and purple. Grain oblong-elliptic, 3 x 1 mm, apiculate at apex and brown.

The specific epithet is derived from the English name of the District of the type locality viz. Quilon (Kollam).

Common in marshy lands, fallow fields, roadside pools and bunds of paddy fields.

Fl. & Fr.: August to March.

Ischaemum pappinisseriensis Ravi, Mohanan et Rajesh, *sp. nov.* (Fig. 3)

Unicum, sine specie proxime affine, spiculis sterilibus pedicellatis, cum pedicello bene evoluto plus quam 1/3 longitudine sessilium, et tantum glumis duabus, quarum gluma inferiore 2.5 - 3 x 1 mm, late obtuse retusa ad apicem et omnino utrinque late sed inaequaliter alata, et gluma superiore brevior debiliter evoluta. Species bene distincta culmis annuis erectis ad decumbentibus usque ad 60 cm longis, racemis binatis usque ad 5 cm longis crustaceis turbinatis, articulis rhachidis nitidis, 3 x 1 mm, dense longiciliatis in angulis exterioribus, spiculis oblongo-ellipticis, c 5 x 2 mm, callo brevi crasso longe ciliato, gluma inferiore crustacea nitida manifeste nodulosa in lateribus in dimidio inferiore et coriaceo-herbacea et late sed inaequaliter alata in unusquisque latere apiceque obtuso-retusa, manifeste anastomosim, venosa in dimidio superiore, aristaque longa usque ad 22.5 mm long cum columna usque ad 7.5 mm longa.

Type : India, Kerala, Kannur Dt. Pappinisseri. Dec. 12, 1996 *Ravi TBG & RI 33707* (Holo - TBGT ; Iso - K, MH, KFRI)

Ischaemum pappinisseriensis, with no closely allied species, is unique in having completely sterile pedicelled spikelets with a well developed pedicel more than 1/3 the length of the sessile spikelet and only two glumes, the lower of which oblong, 2.5-3 x 1 mm, broadly obtuse-retuse at apex and broadly but evenly winged all along on both sides and the upper a poorly developed short one. It is further distinctive in having annual, erect to decumbent and up to 60 cm long culms, binate racemes up to 5 cm long, crustaceous, glossy and turbinate joints of rhachis 3 x 1 mm and densely long-ciliate on outer angle, oblong elliptic c 5 x 2 mm spikelets, short, thick and long-ciliate callus, lower glume crustaceous, glossy and prominently nodulose in the lower half, coriaceous-herbaceous and broadly but unevenly winged on sides, obtuse-retuse at apex and clearly anastomosely veined in the upper half and a long awn up to 22.5 mm long with a column up to 7.5 mm long.

N. Ravi et al.



Fig. 3. *Ischaemum pappinisseriensis* Ravi, Mohanan et Rajesh: A. Habit; B. Rhachis joint; C. Spikelet pair; D-I. Sessile spikelet; D. Lower glume; E. Upper glume; F. Lower lemma; G. Lower palea; H. Upper lemma; I. Upper palea; J-L. Pedicelled spikelet; J. Spikelet; K1. Lower glume - back; K2. Lower glume - front; L. Upper glume; M. Lodicules, Stamens and pistil.

Three new species of *Ischaemum* L. (Poaceae)

Annual. Culms tufted, erect to decumbent, up to 60 cm long, rooting at lower nodes, terete and smooth; nodes sparsely bearded. Leaves all along the culm; sheath up to 7 cm long, keeled on back, striate and glabrous; blade linear, oblong-lanceolate, up to 8 x 0.6 cm, lower ones cuneate to cuneately rounded and non-petiolate at base, upper ones cuneate rounded at base with a short-ciliate petiole and acute to acuminate at apex, scaberulous on margins towards apex and glabrous otherwise; ligule subcoriaceous, up to 5 mm long, oblong to oblong-ovate, 2-keeled on back, subacute to truncate or shortly notched at apex. Inflorescence terminal; racemes 2, up to 5 cm long; joints of rhachis 3 x 1 mm, triquetrous, turbinate, densely long-ciliate on the outer angle and glabrous and glossy otherwise. *Sessile spikelet* oblong-elliptic, c 5 x 2 mm; callus short and thick, 0.5-0.75 mm long, densely long-ciliate with the hairs up to 1.5 mm long. Lower glume oblong-elliptic, 4-5 x 1.8-2 mm, crustaceous below and coriaceous-herbaceous above with a retuse apex, laterally keeled with incurved margins and the keel sharply angled and unevenly and somewhat broadly winged in the upper half and the wings scabrid on margins, prominently and deeply 3-5-nodulose on sides in the lower half and glossy, 13-15-nerved with the nerves anastomosing towards apex. Upper glume coriaceous, boat-shaped, 5 x 1.25 mm (when folded), faintly 5-nerved, keeled on back and the keel sharply angled, shortly incurved on margins and acute at apex, scaberulous without and sparsely short-ciliate on the incurved margins. Lower lemma subcoriaceous, elliptic-lanceolate, 4-4.5 mm long, 3-nerved, acute at apex, incurved on sides, thinly and narrowly hyaline and sparsely short-ciliate on margins towards apex and paleate and male. Lower palea hyaline, elliptic-lanceolate, 3.5-4 x 1 mm, subacute at apex, 2-nerved, incurved along the nerves and thinly and narrowly hyaline and sparsely short-ciliate on margins towards apex. Upper lemma hyaline, oblong lanceolate, 3-4 x 0.75 mm (when folded), deeply cleft with acute lobes, awned from the sinus, 3-nerved and minutely and sparsely scaberulous without above the middle; awn up to 22.5 mm long with a column up to 7.5 mm long. Upper palea hyaline, lanceolate, 2.5-3 x 0.5 mm, faintly 2-nerved, incurved on sides and obtuse at apex. Lodicules 2, c 0.5 mm long, truncate at apex and cuneate at base. Stamens 3; anthers 1-2 mm long. Ovary c 0.5 mm long; styles, 1-1.5 mm long; stigmas 2.5-3 mm long. Grains oblong-ellipsoid, c 2 x 1 mm and brown. *Pedicelled spikelet* reduced and empty; pedicel linear-oblongate, c 3 mm long, triquetrous, densely long-ciliate on outer angle and glabrous and glossy otherwise. Lower glume subcoriaceous, oblong, 2.5-3 x 1 mm, broadly obtuse-retuse at apex, 9-11-nerved, flattened and keeled with the keels broadly and more or less uniformly winged all along on both sides and the wings scabrid on margins. Upper glume highly reduced, hyaline, elliptic-lanceolate, c 1.25 mm long, acute at apex, 2-nerved and incurved along the nerves and ciliate on margins towards apex. All other parts completely suppressed.

The specific epithet is derived from the type locality, Pappinisseri.

Collected from a lowland lake-side. This annual species grows among other species of *Ischaemum* like *I. indicum*, sedges and other weeds. Common in the locality.

Fl. & Fr. : October to March.

N. Ravi et al.

Acknowledgements

The authors are grateful to Dr. Thomas A. Cope of Royal Botanic Gardens, Kew for his help in the identification of the taxa. The authors also wish to express their thanks to Dr. P. Pushpangadan, Director, Tropical Botanic Garden and Research Institute (TBGRI), Palode, Kerala for his encouragement, Dr. N.C. Majumdar, formerly of Botanical Survey of India, Calcutta for the Latin diagnosis of the taxa and to Shri. K.P. Pradeep Kumar, Artist of TBGRI for India ink drawings.

Literature cited

- Bor, N.L. 1960. *Ischaemum*. In: *The grasses of Burma, Ceylon, India & Pakistan*. Pergamon Press, Oxford. pp. 171-186.
- Fischer, C.E.C. 1934. *Ischaemum*. In: J.S. Gamble, *Flora of the Presidency of Madras*. Adlard & Son, Ltd., London. pp. 1717-1723.
- Hooker, J.D. 1896. *Ischaemum*. In: *Flora of British India*. L. Reeve & Co. Ltd., London. Vol. 7 : 126-140.
- Sreekumar, P.V. & V.J. Nair. 1991. *Ischaemum*. In: *Flora of Kerala - Grasses*. BSI, Calcutta. pp. 116-171.
- Sur, P.R. 1987. Studies in the genus *Ischaemum* Linn. in India - Endemism. *J. Econ. Tax. Bot.* 9 (2): 311-315.