

in general, harboured about 16 times more *Azospirillum* population in the rhizosphere than the hulled ones. A comparison of the quantitative estimation of bacterial numbers between treated and untreated plant rhizosphere revealed the effects of inoculation in increasing the population. It is interesting to note that inoculation brought about 7-11 and 9.5-13 fold increase in bacterial numbers in plant rhizosphere of hul-less and hulled types of barley, respectively. It is evident from the table that the hulled barleys yielded more than that of hul-less types used in the present study. The seed inoculation with *A. brasilense*, in general, increased the grain yield over that of the uninoculated control. The increase in yield due to seed inoculation over the control ranged from 21.7-25.9 and 11.6-26.7% with hul-less and hulled types of barley, respectively. But it is interesting to point out that the grain yield of the inoculated hul-less barleys is almost on par with that of the uninoculated hulled varieties, which may be attributed to the presence of *Azospirillum* in larger numbers in the rhizosphere of hul-less plants. Fixation of higher amounts of nitrogen in hul-less types of barley has been reported recently.¹ The hul-less varieties are reported to possess high protein content, being derived from a complex cross involving Hyproly³, a high protein and high lysine hul-less barley identified from a World Barley Collection in 1970⁶. It is not known whether the increase in bacterial numbers in the plant rhizosphere of inoculated hul-less barley has resulted in increase protein compared to grain yield.

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1. Tilak, K. V. B. R. and Murthy, B. N. *Curr. Sci.*, 1981, 50, 496.
2. Subba Rao, N. S., Tilak, K. V. B. R., Lakshmi-kumari, M. and Singh, C. S. *First Natl. Symp. Barley* (ICAR) held at IARI, Karnal, 1979.
3. Sastry, L. V. S. and Murthy, B. N., *Curr. Sci.*, 1979, 48, 729.
4. Tarrand, J., Krieg, N. R. and Dobereiner, J. *Can. J. Microbiol.*, 1978, 24, 967.
5. Alexander, M. In *Methods of soil analysis.*, II ed. C. A. Black *et al.*, 1965, p. 1467.
6. Munck, L., Karlson, K. E. and Hagberg, G. In *Barley genetics* II ed. R. Nilan, Washington State Univ. Press, Pullman, 1971, p. 544.

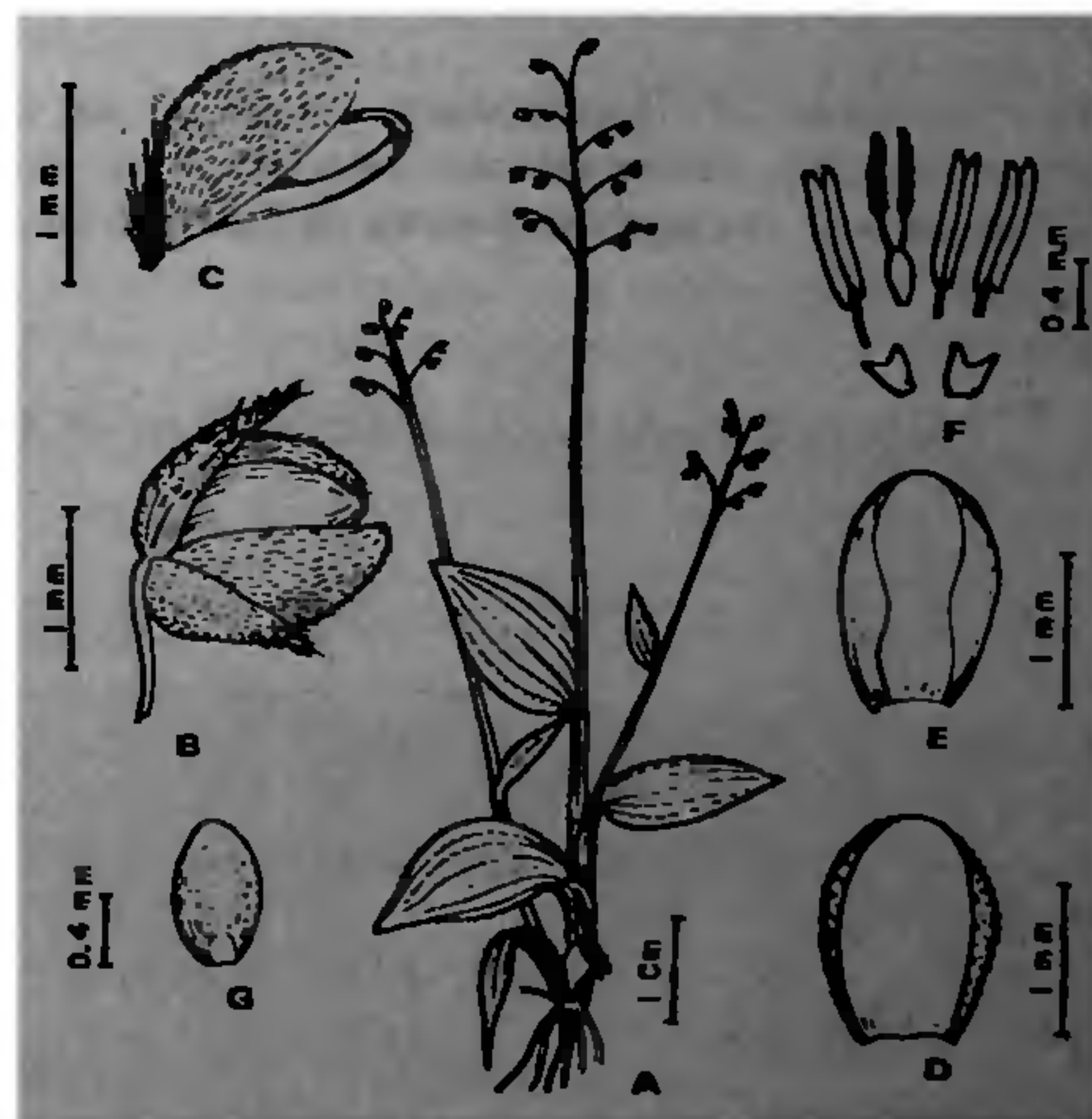
A NEW SPECIES OF ISACHNE (POACEAE) FROM KARNATAKA, INDIA

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ISACHNE veldkampii K. G. Bhat and C. R. Nagendran, *sp. nov.* Affinis *I. myosotis* Nees et *I. mysorensis* Sundara Raghavan sed foliorum vaginis et laminis glabris, annulis glandulosis supra panicularum ramos, pilis lanuginosis ad lemmatum basim et duobus flosculis bisexualibus differt.

Allied to *I. myosotis* Nees and *I. mysorensis* Sundara Raghavan, but it differs in having glabrous leaf sheaths and blades, glandular bands in the branches of the panicle, woolly hairs at the base of the lemmas and two bisexual florets.

A glabrous annual, 3-8.5 cm high. Culms slender; nodes glabrous; internodes covered by sheaths. Leaves upto 15×7 mm, ovate, base decurrent into the sheath, glabrous on both surfaces or scabrous above on nerves, nerves many, midrib obscure, margins serrulate, throat glabrous or with few hairs; ligule obscure; sheaths glabrous. Panicle 7-12 mm long and 6-10 mm wide, open; peduncle exerted from the uppermost sheath, upto 4 cm long; branches short, upto 5 mm long, with 1-3 spikelets, with glandular



Figures A-G. *Isachne veldkampii* K. G. Bhat and C. R. Nagendran *sp. nov.* A. Habit; B. Spikelet; C. Upper lemma and palea (side view); D. Upper lemma; E. Upper palea; F. Flower; G. Grain.

patches. Spikelets ca. 1.5 mm long, with two similar bisexual florets; pedicels short. Glumes 2, ovate, obtuse, shorter than lemmas, minutely hairy with few long hairs at the tip; lower ca. 1.1 mm long, faintly 3-nerved; upper 1.2–1.4 mm long, faintly 5-nerved. Lemmas 2, subequal, coriaceous, elliptic, puberulous, 1.2–1.5 mm long, with woolly hairs at base; paleas elliptic, obtuse, margins incurved. Lodicules 2, minute. Stamens 3; anthers ca. 0.8 mm long. Caryopsis ca. 0.8 mm long, ovoid.

INDIA—Karnataka State, South Kanara District: Manipal, 150 m, growing in marshy soils, 29 October 1977, K. G. Bhat 468 A (holotype in CAL, isotypes in L, MH, BSI and Mysore University Herbarium).

The specific epithet is in honour of Dr. J. F. Veldkamp, Rijksherbarium, Leiden.

Thanks are due to Dr. J. F. Veldkamp and Dr. S. Karthikeyan for their comments on the identity of this grass; to Fr. C. J. Saldanha for latin diagnosis; to the Head of the Department of Botany, Mysore University for facilities; to Dr. M. A. Rau for going through the manuscript and the UGC, New Delhi for financial assistance.

8 November 1982

DIMERIA JAINII (POACEAE)— A NOVELTY FROM KERALA, INDIA

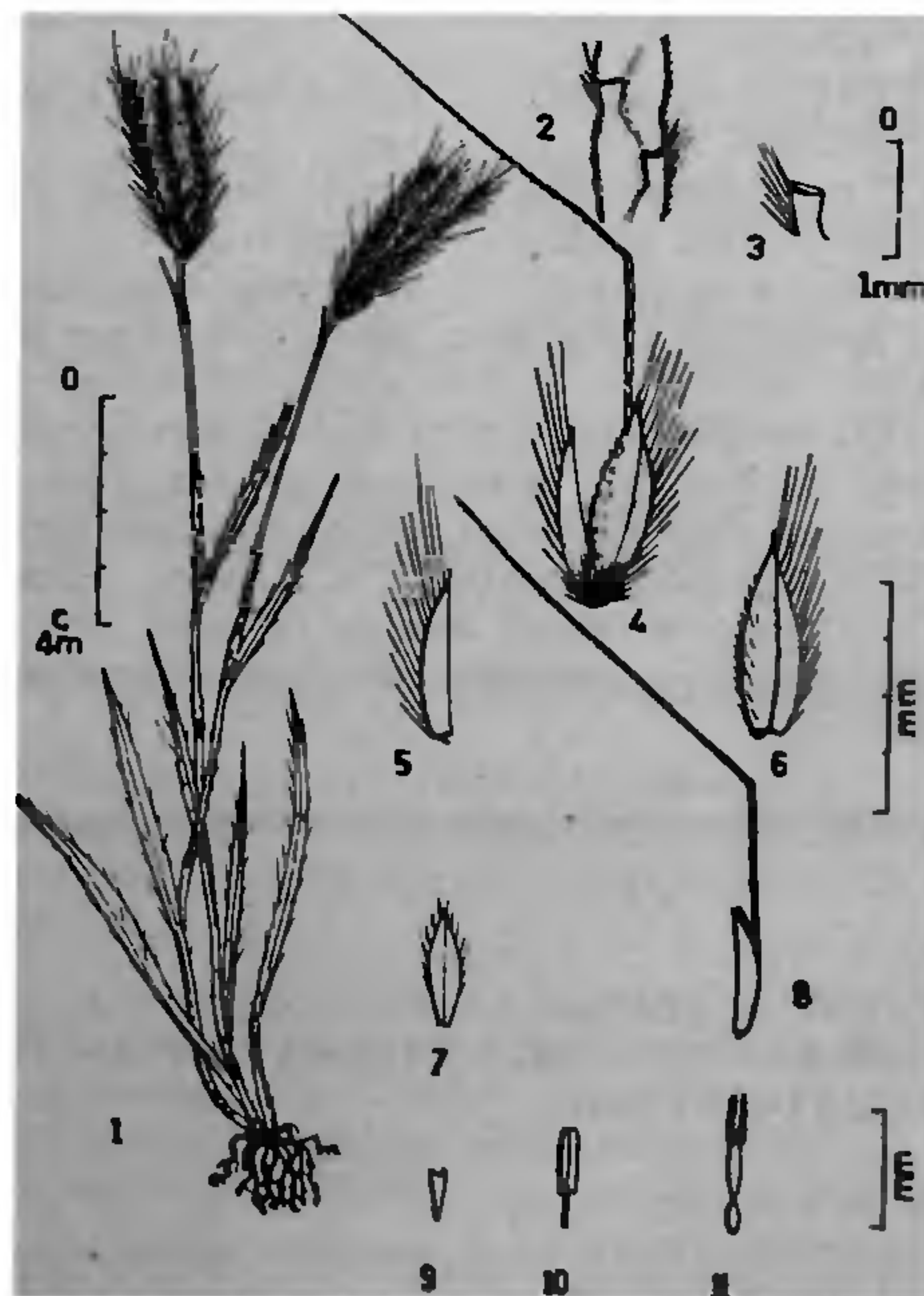
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Dimeria jainii P. V. Sreekumar, V. J. Nair et N. C. Nair, sp. nov.

DIMERIA bialata C. E. C. Fischer affinis, sed rhachidi angustiore (ca. 0.5 mm); margine rhachidis dense ciliato; pilis calli longioribus (usque ad 1 mm); gluma supera acuminata; carina glumae superae apice non alato, alibi alata; ala papyracea; pilis glumae superae longioribus (1–2 mm); antheris parvioribus (ca. 0.5 mm), differt.

Annuals. Culms 10–20 cm tall, erect; nodes glabrous. Leaves 2–8 × 0.2–0.3 cm, linear-lanceolate, acuminate, rounded at base, covered with long or short tubercle-based hairs, midrib prominent. Sheaths 1–5 cm, shorter than the internodes, slightly keeled, villous with tubercle-based hairs. Ligule a short fimbriate membrane. Racemes usually 3, rarely

2, each 2–4 cm long. Rhachis ca. 0.5 mm wide, flattened, margins densely ciliate. Spikelets 3–3.5 mm long, ovate, acuminate, densely ciliate. Pedicels ca. 0.5 mm, joints concave. Callus hairs 0.5–1 mm long. Lower glumes 2.25–2.5 × 0.5–0.75 mm, linear-lanceolate, densely ciliate along the dorsal margins, cilia 0.5–2 mm long. Upper glumes 3–3.5 × 1.5–2 mm, ovate, acuminate, broadly winged except at tip, wing papery, long ciliate along keel, cilia 1–2 mm long, margins shortly ciliate and hyaline. Lower floret empty; lemma 1.5–2 × 0.3–0.5 mm, elliptic, acute, delicate, hyaline, faintly 1-nerved, margins ciliate in the upper half. Upper floret bisexual; lemma 1.75–2 × 0.6–0.75 mm, delicate, notched at apex, awned, awns 10–12 mm long, geniculate, column ca. 3 mm long, twisted, brownish, bristle pale, scabrid; lodicules 2, each ca. 0.4 × 0.1 mm, oblanceolate, 2-lobed at apex, stamens 2, anthers ca. 0.5 mm long, filaments short; ovary ca. 0.25 mm long, elliptic, styles ca. 0.5 mm long, slender, stigmas ca. 0.35 mm long, feathery.



Figures 1–11: *Dimeria jainii* sp. nov. 1. Plant; 2. A portion of rhachis showing pedicels; 3. Pedicel; 4. Spikelet; 5. Lower glume (lateral view); 6. Upper glume (lateral view); 7. Lower lemma (dorsal view); 8. Upper lemma (lateral view); 9. Lodicule; 10. Stamen; 11. Pistil.