

**AMORPHOPHALLUS BONACCORDENSIS,  
A NEW SPECIES OF ARACEAE FROM INDIA**

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SUMMARY

*Amorphophallus bonaccordensis*, a new species belonging to *Amorphophallus* sect. *Rhaphiophallus* of the family Araceae, is described from India. The section is characterized by the presence of a zone of neuter flowers between the pistillate and staminate zones.

INTRODUCTION

A recent plant collection trip to Agasthyamala Hills on the southern end of Western Ghats in Trivandrum District of Kerala State, India, yielded another new species of *Amorphophallus*, belonging to sect. *Rhaphiophallus* (Schott) Engl., and characterized by the presence of a zone of neuter flowers between pistillate and staminate zones.

DESCRIPTION

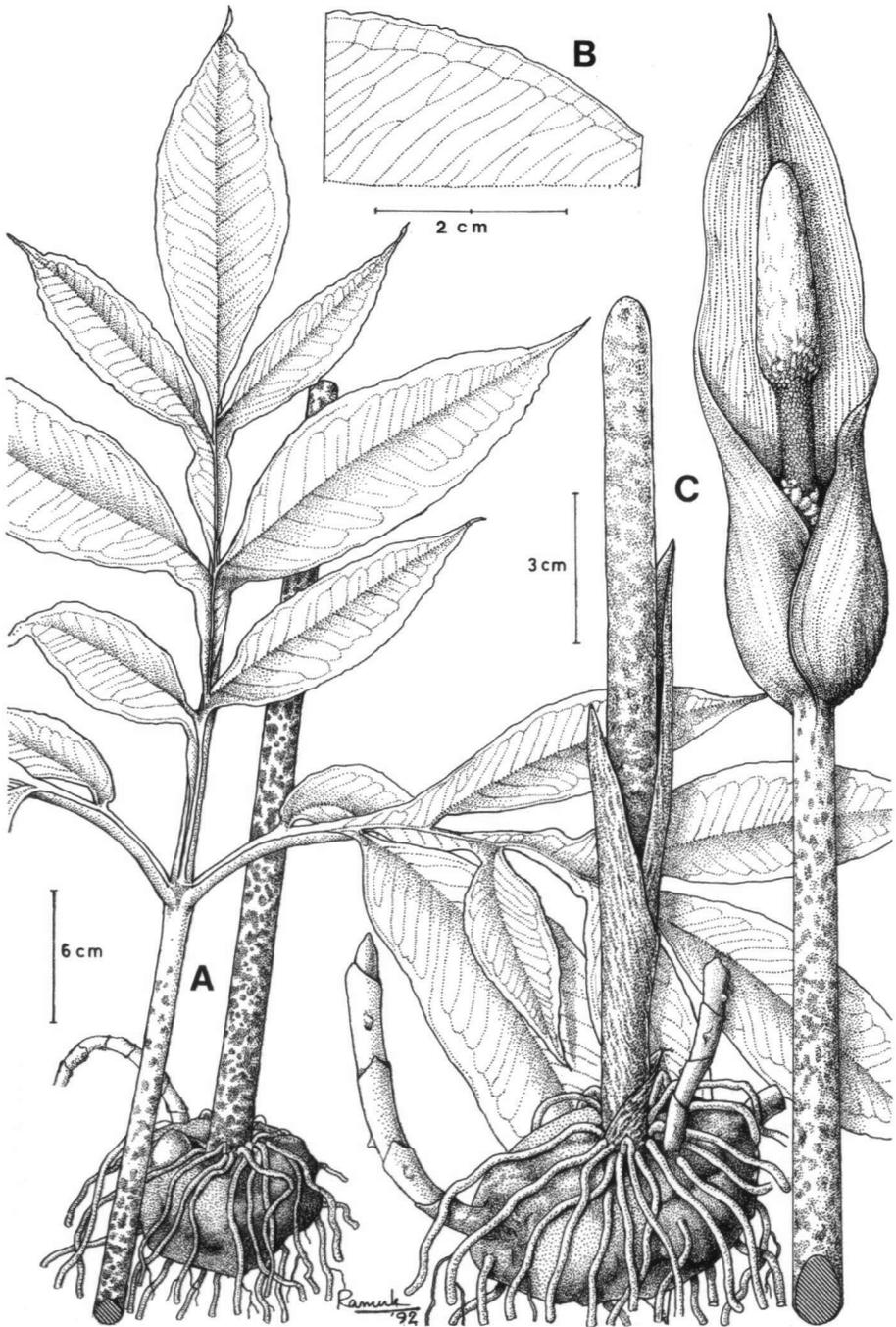
***Amorphophallus bonaccordensis* Sivad. & Mohanan, *spec. nov.* — Figs. 1, 2**

*A hohenackeri* affinis, a qua imprimis differt marginibus basi spathae convolutis, limbo spathae expanso, spathae inter limbum et tubum leviter constricta, appendice spadicis cylindrica, floribus masculinis 2–5-andri insidentibus contextui albo pulvinato. — Typus: *Mohanani TBG & RI 8219* (K holo; CAL, M, TBGT, US iso), India, Kerala State, Trivandrum Dist., Bonaccord on Agasthyamala Hill ranges, 700 m, 20-iv-1990.

*Corms* subglobose, 4–8 cm diam., 2.5 cm thick. *Leaf* trichotomously decompose with petiole cylindrical, 30–75 cm long, 0.8–1.6 cm diam. at base, slightly tapering to the tip, smooth, green with dark greenish brown mottles, the latter fewer towards the top portion; rachis of the segments 15–20 cm long, 0.6–0.8 cm thick at base, 0.3–0.5 cm thick at tip, shallowly channeled above and with decurrent leaf bases; *leaflets* sessile, ovate to oblong, acuminate at apex, acute at base, base unequal and decurrent on rachis, greenish above, paler below, margin wavy, varying in size from 6–13 cm in length and 3–6.5 cm in width; primary veins 15–20 pairs, closely parallel, united below the margin forming a submarginal collective vein. *Stolons* are produced from the corms of the fertile individuals; stolons cylindrical, 4–5 cm long, 0.4–

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**Fig. 1.** *Amorphophallus bonaccordensis* Sivad. & Mohanan. A: Habit, vegetative state; B: a portion of leaflet-margin; C: habit, reproductive state.

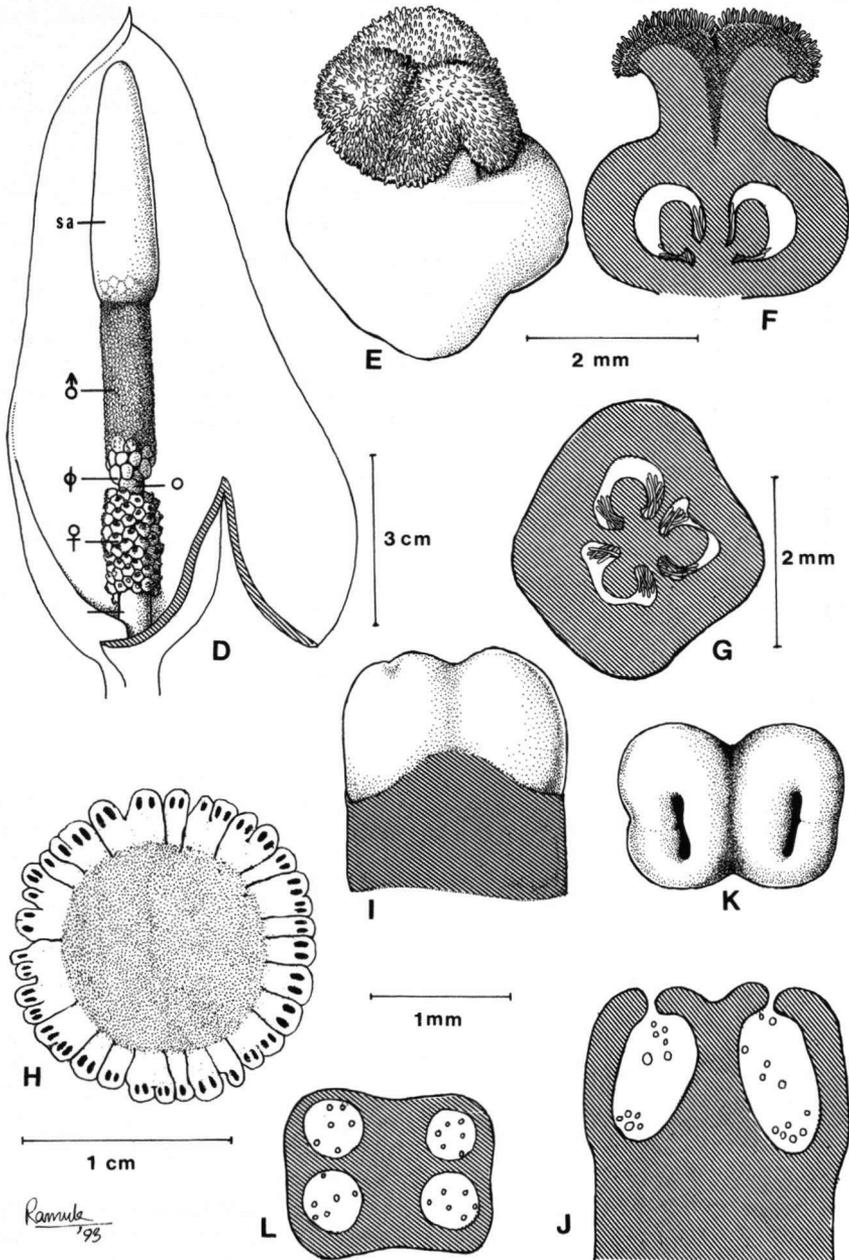


Fig. 2. *Amorphophallus bonaccordensis* Sivad. & Mohanan. D: Inflorescence; E: pistillate flower; F: pistillate flower, vertical section; G: pistillate flower, cross section; H: staminate portion of spadix, cross section; I: single stamen, view from broad side; J: stamen, vertical section; K: stamen, view from top; L: stamen, cross section. — sa = spadix-appendix; ♀ = pistillate zone; ♂ = staminate zone; o = barren spadix axis; φ = zone with neuter flowers.

0.7 cm diam., nodes with thin scale leaves and few root primordia. *Inflorescence* with peduncle cylindrical, smooth, 30–75 cm high, 1–1.6 cm diam. at base, gradually narrowed to the tip; identical with petiole in colour and pattern of mottles; spathe ovate-oblong, 12–22 cm long, differentiated into a basal convolute tube and an upper expanded limb with a shallow constriction in between, tip shortly acuminate, 2.5–3.5 cm diam. at convolute base, 2–3 cm diam. at the constriction, and 3–3.5 cm diam. just above the constriction. *Spadix* stipitate, 9–18 cm long; *stipe* to 0.5–1 cm long, 0.5–0.6 cm diam., light greenish; basal portion of 2–3.5 cm of the spadix occupied with pistillate flowers, middle 1–1.5 cm with neuter flowers, upper 3–3.5 cm with staminate flowers, and terminal 4.5–10 cm produced into a sterile cylindrical barren appendix; a barren naked zone of 0.2–0.3 cm present between the zones with pistillate and with neuter flowers, respectively. *Pistillate flowers* subspirally arranged; ovary sessile, subglobose, 0.18–0.2 cm high, 0.2–0.3 cm diam., greenish, 2- or 3-loculed, each locule with one subbasal ovule; unicellular trichomes present on funicle and on placenta around the area of funicular attachment; style very short, cylindrical, 0.5–0.8 mm long, 0.8–1 mm diam.; stigma 2- or 3-lobed, covered with short unicellular papillae, cream-coloured, brownish on ageing; neuter flowers in 1–3 rows, creamy white in colour, obovoid, 0.2–0.3 cm diam., few appear to be transitional to the staminate flowers. *Staminate flowers* closely arranged, each composed of 2–5 stamens borne on a white cushion-like tissue of 0.8–1 mm thickness; each stamen 0.1–0.13 cm high, inconspicuously 2-lobed; thecae dehisce by narrow apical horizontal slits; spadix-appendix cylindrical, 4.5–10 cm long, 0.8–1 cm diam., rounded at apex, cream in colour, smooth except rarely at the base where it may bear some very shallow rhomboidally oriented projections; becomes warty on ageing; infructescence not observed.

*Etymology* – The specific epithet is indicative of the name of the type locality.

*Distribution* – The species is hitherto known only from the type locality.

#### INTERRELATIONSHIPS

Other Indian species hitherto known as belonging to *Amorphophallus* sect. *Rhaphiophallus* are *A. hohenackeri* (Schott) Engl. & Gehrm., *A. margaritifera* (Roxb.) Kunth, *A. mysorensis* Barnes & Fischer (1939), *A. sylvaticus* (Roxb.) Kunth, *A. smithsonianus* Sivad. (Sivadasan, 1989), and *A. konkanensis* Hett., Yadav & Patil (Hetterscheid et al., 1994).

Engler (1911), in his revision of the genus, had treated *A. hohenackeri* and *A. sylvaticus* under two separate sections, viz. sect. *Rhaphiophallus* and sect. *Synantherias*, respectively. *Amorphophallus margaritifera* was treated under the genus *Plesmonium* Schott. *Amorphophallus bonaccordensis* closely resembles *A. hohenackeri* in its general morphological features, but in the latter species the mature spathe is completely open throughout its length without a basal convolute tubular portion; the limb of the spathe is ovate-lanceolate with subacuminate tip; the spadix-appendix tapers to the tip and reaches almost to the top of the spathe. In *A. bonaccordensis* the spathe is ovate-oblong, with a prominent basal convolute tubular portion separated from the oblong limb by a slight constriction. The spadix-appendix is cylindrical with round tip and is

much shorter than the spathe, and never reaches the tip of the spathe. Another most significant character noted is the nature of the stamens which are found in groups of 2–5, borne on a white cushion-like tissue.

The presence of a barren axis between the pistillate and neuter zones is of much significance in the presumed evolution of *Amorphophallus* sect. *Rhaphiophallus*. In *A. longiconnectivus* Bogner & Mayo, a new species from Central India to be published shortly (Mayo, pers. comm.) there is a zone of barren axis of the spadix between the pistillate and staminate zones without any neuter flowers. This condition is presumed to have evolved by the complete reduction or elimination of neuter flowers as evidenced by intermediate members as *A. bonaccordensis*, where both a short barren axis and few neuter flowers are present.

#### ACKNOWLEDGEMENTS

We thank Dr. P. Pushpangadan, Director Tropical Botanic Garden and Research Institute, Trivandrum for encouragement. We express our sincere gratitude towards Dr. Dan H. Nicolson, Department of Botany, Smithsonian Institution, Washington, D.C., USA for correction of the Latin diagnosis and critical comments on the manuscript, and Mr. K.P. Pradeep Kumar for the excellent illustrations.

#### REFERENCES

- Barnes, E., & C.E.C. Fischer. 1939. *Amorphophallus mysorensis*. In: LXVIII. New or little-known plants from Southern India: XI. Kew Bull. Misc. Inform. 10: 661.
- Engler, A. 1911. Araceae–Lasioideae. In: A. Engler (ed.), Das Pflanzenreich IV.23C, Heft 48. Leipzig.
- Hettterscheid, W.L.A., S.R. Yadav & K.S. Patil. 1994. Notes on the genus *Amorphophallus* (Araceae) 5. *Amorphophallus konkanensis*, a new species from India, and taxonomic reflections on *Amorphophallus* section *Rhaphiophallus*. *Blumea* 39: 289–294 (this issue).
- Sivadasan, M. 1989. *Amorphophallus smithsonianus* (Araceae), a new species from India and a note on *A.* sect. *Synantherias*. *Willdenowia* 18: 435–440.