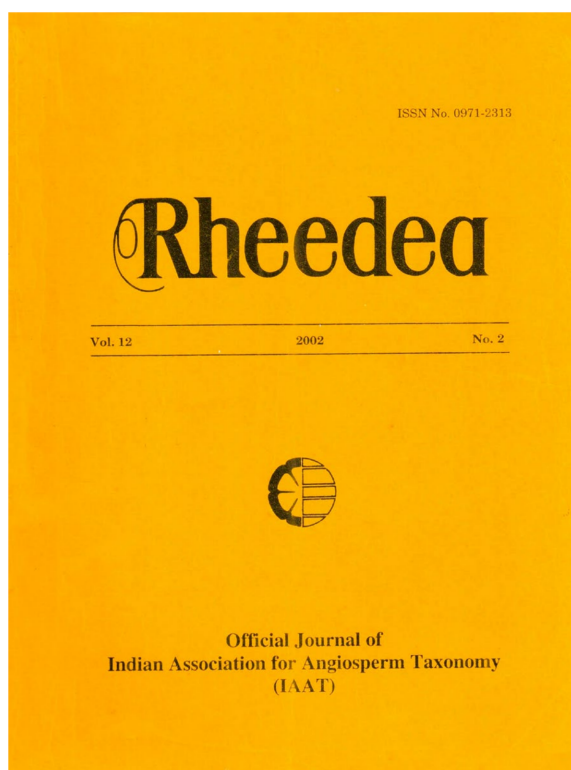




## Two new varieties of *Amorphophallus commutatus* (Schott) Engl. (Araceae) from India

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## Two new varieties of *Amorphophallus commutatus* (Schott) Engl. (Araceae) from India

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### Abstract

Two new varieties of *Amorphophallus commutatus* (Schott ) Engl. (Araceae) - one from Anmod Ghat in Goa and the other from Wayanad Ghat in Kerala state have been discovered. Detailed descriptions, illustrations and relevant notes are provided.

### INTRODUCTION

The genus *Amorphophallus* Bl. ex Decne. is a member of the subfamily Aroideae and has about 170 species distributed in Tropical Africa, Malay Archipelago, Melanesia and Australia (Mayo, Bogner & Boyce, 1997). In India it is represented by 21 species including two incompletely known species (Jaleel, 2002). During the revisionary work on *Amorphophallus* of India, we collected specimens of *A. commutatus* (Schott) Engl. (1879) with much difference in certain characters, and realized that the species forms a complex with closely related, but distinct varieties. The species was originally described by Schott (1859) based on a specimen probably collected by Dalzell from Bombay. It is characterized by a long peduncled inflorescence with usually cream or pale yellowish, or rarely light reddish brown coloured spadix-appendix. The very long peduncled specimens collected from Wayanad Ghats, Kerala and the short peduncled specimens collected from Anmod Ghat, Goa showed much differences from the typical species. Detailed examination revealed that these two represent two distinct taxa and are recognized as new varieties.

1. *Amorphophallus commutatus* (Schott) Engl. var. **anmodensis** Sivad. et Jaleel, var. nov. (Figs. 1 & 2).

*Typus*: India, Goa, Anmod Ghat, 4<sup>th</sup> June 1997, Abdul Jaleel RIA 68 (*Holotypus* – K; *Isotypus*– CAL).

*A. commutatus* var. *wayanadensis* Sivad. et Jaleel in formam generalam spathae et spadicis arte affinis, sed pedunculis curtissimis, 8-10 cm longis; tubo spathae leviter

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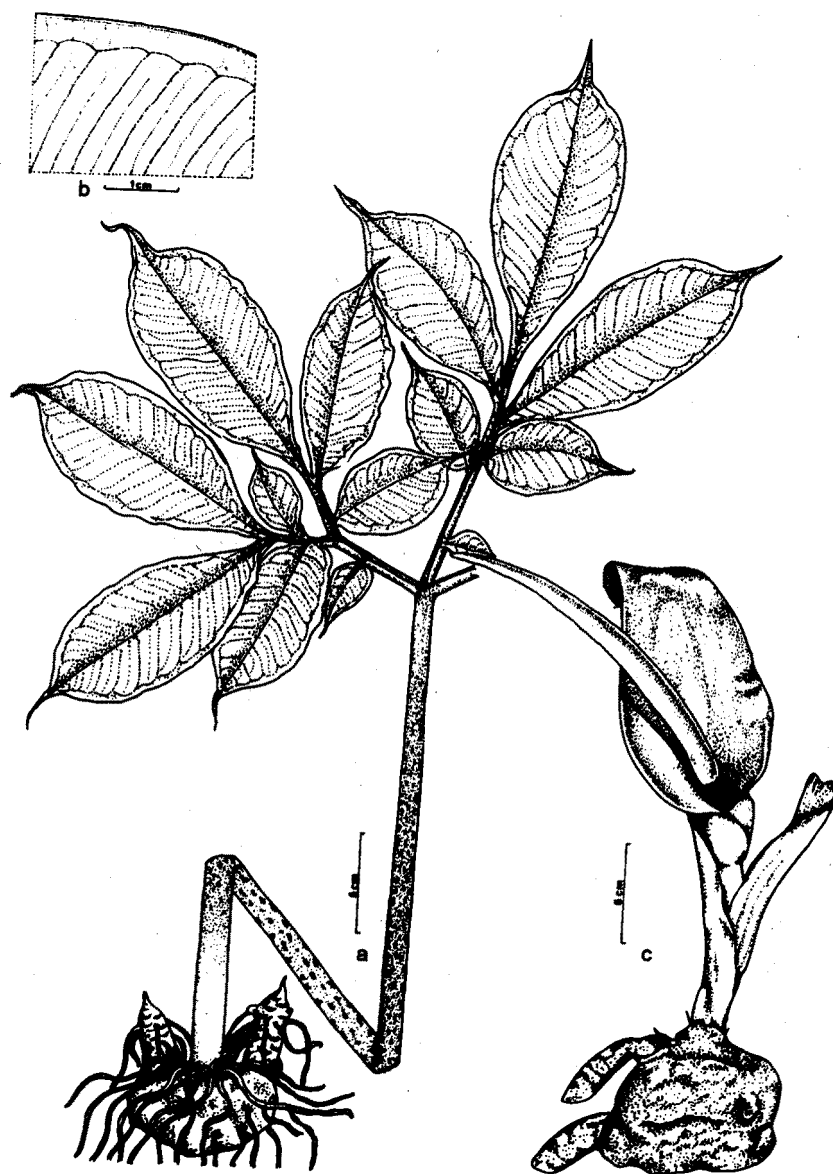


Fig. 1. *Amorphophallus commutatus* (Schott) Engl. var. *anmodensis* Sivad. et Jaleel : a. Tuber with leaf; b. Marginal portion of a leaflet showing venation; c. Tuber with inflorescence.

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purpurascens, verrucosus, interne unicellulario-pilosus et ab var. *commutatus* area intertubum et limbum constricta, et tubo compresso obovato differt.

Tubers sub-globose, 8-10 cm diam. and 5-7 cm thick, produce rhizomatous offsets, 2-3 in number, each ca. 4-5 cm long and 0.8-1.2 cm diam. Petiole 50-52.5 cm long and ca. 1.5 cm diam. at base and tapering towards the tip, smooth, blackish brown with white mottlings, and paler towards the tip. Lamina 50-52 cm. in diam., leaflets ovate acuminate to oblong acuminate, smaller leaflets 5-8 cm long and 3-3.5 cm broad, bigger ones 14.5-16.5 cm long and 6-6.5 cm broad, marginal surface slightly undulate, dark green above and paler below.

Peduncle 8-10 cm long and 0.7-0.9 cm diam., smooth, pale yellowish in colour, covered by about 4 cataphylls, each cataphyll 2.5-15 cm long and 1.5-5.0 cm broad, tip acute, cream coloured. Spathe ovate-acute, 17-18 cm long and 4-5 cm broad, differentiated into a basal tube and an upper limb separated by a slight constriction between the two; basal tube slightly compressed obovoid, ca. 2.5-3 cm long; limb expanded, erect, pale yellowish outside and pale brownish towards the margin; tube slightly purplish, verrucose, with unicellular hairs within. Spadix 23-25 cm long, sessile or stipitate to ca. 3-5 mm; female zone ca. 1.5 cm long, male zone cylindrical, ca. 3 cm long, appendix elongate, narrowly conical with rounded apex, 18-20 cm long, 1.3-1.5 cm diam. at base and tapering towards the tip, pale-yellowish brown to dark purplish brown in colour. Female flowers ca. 2.5 mm long, ovary sub-globose, ca. 1.5 mm high, 2 mm diam., pale greenish, unilocular with a basal anatropous ovule; style very short; stigma ca. 1.5 mm diam., narrower than the ovary, inconspicuously 3-lobed with a bigger medium lobe, obliquely oriented towards the axis and with a notch at the abaxial side, yellowish orange in colour. Male flowers pale yellowish, densely arranged, sessile; each ca. 1.25 mm high and 1.25 mm broad, inconspicuously 2-lobed; dehiscence by apical slit-like pores. Infructescence not observed.

*Flowering:* June.

*Fruiting:* Fruiting specimens could not be collected.

*Distribution:* A narrow endemic hitherto known only from Anmod Ghat, Goa state.

*Etymology:* The specific epithet is indicative of the name of the type locality – Anmod Ghat in Goa.

*Notes:* *Amorphophallus commutatus* var. *anmodensis* resembles other varieties viz., var. *commutatus* and the following new var. *wayanadensis* in its general appearance of spathe and spadix, but differs from latter two by having a short peduncle of ca. 8-10 cm long, male zone cylindrical and less than twice the length of the female zone, and the spathe-tube slightly purplish and verrucose with unicellular hairs at the base within. The stigma is inconspicuously 3-lobed and is obliquely oriented to the ovary.

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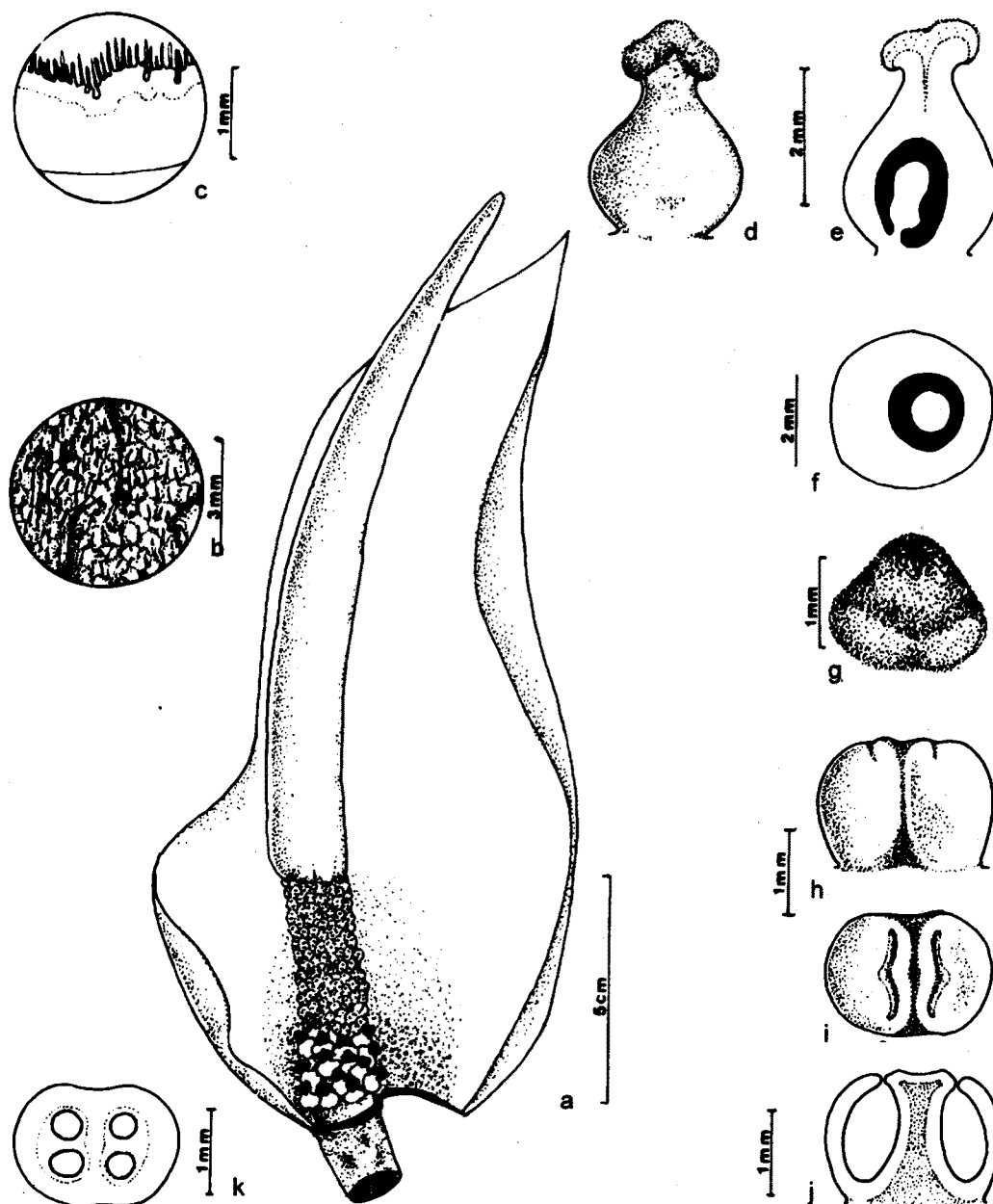


Fig. 2. *Amorphophallus commutatus* (Schott) Engl. var. *anmodensis* Sivad. et Jaleel

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2. *Amorphophallus commutatus* (Schott) Engler var. *wayanadensis* Sivad. et Jaleel, var. nov. (Figs. 3 & 4).

*Typus*: India, Kerala, Wayanad Ghat, 29<sup>th</sup> April 1997, Abdul Jaleel RIA 62 (*Holotypus* – K; *Isotypus* – CAL).

*A. commutatus* var. *anmodensis* Sivad. et Jaleel in formam generalam spathae et spadice arte affinis sed pedunculis longioribus, 75-95 cm longis; tubo spathae luteolo, verrucoso, interne rotundato-tumidata et sine pilis unicellularibus differt.

Tubers sub-globose, 10-16 cm diam. and 4.5-6.5 cm thick; skin pale brown in colour; roots numerous. Petiole cylindrical, smooth, light greenish with whitish mottles and dark green dots, extreme base bluish green. Lamina 70-90 cm in diam., leaflets ovate-oblong, acuminate, base cuneate, decurrent on the rachis, smaller leaflets ca. 4.5-8 cm long and 2.2-4.0 cm broad, bigger ones 12-18 cm long and 4.0-5.5 cm broad, upper surface dark green and lower surface light green, margin entire, marginal surface undulate.

Peduncle ca. 75-95 cm long and 1.4-1.8 cm in diam. at base, tapering towards the top, light green with greenish black and purplish green spots, small striations and yellowish green mottles, covered by about four cataphylls; each cataphyll ca. 4.0-35 cm long and 2-4.5 cm broad. Spathe ovate-oblong, as long as the spadix, ca. 26-32 cm long and 9-12 cm broad; basal portion convolute forming a slightly compressed obovoid tube of ca. 5-7 cm long, slightly constricted at the mouth; limb expanded, erect, apex acute, margin incurved, purplish at the top, greenish purplish at the base with white mottles; yellowish with short rounded bumps at base within. Spadix sessile, ca. 27-30 cm long; female zone ca. 2.3-2.5 cm long and 1.3-1.5 cm in diam., male zone ca. 3.7-4.0 cm long and 1.5-1.8 cm diam., terminal spadix-appendix elongate narrowly conoid with a rounded apex, ca. 20.5-23.0 cm long, and 1.4-1.6 cm diam. at base, tapering towards the tip, smooth, reddish brown coloured, base with inconspicuous, irregularly elongate rhomboid projections. Female flowers with ovary sub-globose, 1.5-1.75 mm high and ca. 0.2 mm diam., green in colour, unilocular with a single basal anatropous ovule; style very short or absent, light purplish in colour; stigma discoid with orange in colour. Male flowers sessile, loosely arranged, pale yellowish, connectives purplish, or connective and thecae completely purplish; each flower ca. 2 mm high, 2.25 mm broad, inconspicuously 2-lobed; dehiscence of thecae by an apical slit-like pore, very near to the connective, with the lateral side of the thecae away from the connective and much bulged. Fruits broadly ovate, red-coloured berries, ca. 1.2 cm long and 0.8 cm diam. Seeds ca. 0.8 cm long and 0.5 cm diam.

Explanation to Fig. 2. *Amorphophallus commutatus* (Schott) Engl. var. *anmodensis* Sivad. et Jaleel : a. Inflorescence – spathe cut open showing spadix; b. A small basal inside portion of the spathe – magnified; c. A small basal portion of the spathe – C.S. showing unicellular hairs; d. Female flower; e. Female flower – L.S.; f. Ovary – C.S.; g. Stigma – view from top; h. Male flower – view from broad side; i. Male flower – view from top showing openings of the thecae; j. Male flower – I.S.; k. Male flower – C.S.

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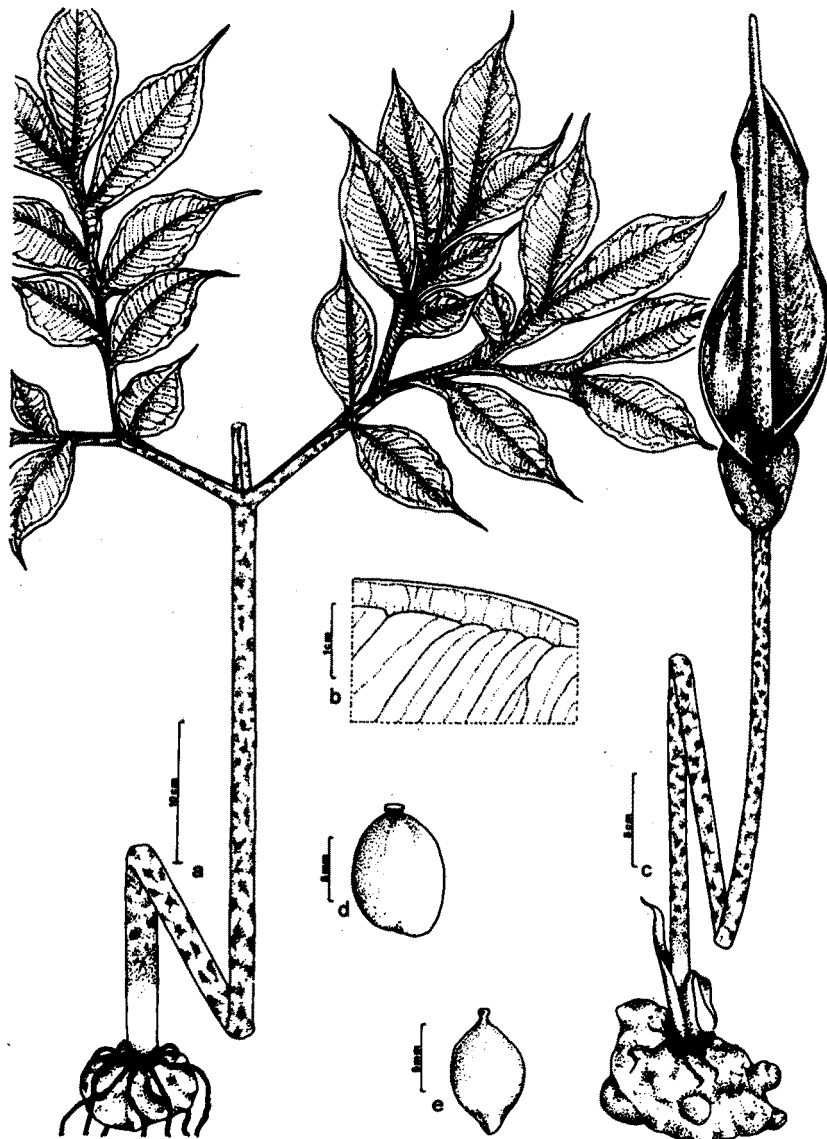


Fig. 3. *Amorphophallus commutatus* (Schott) Engl. var. *wayanadensis* Sivad. et Jaleel: a. Tuber with leaf; b. Marginal portion of a leaflet showing venation; c. Tuber with inflorescence; d. Single fruit; e. Single seed.

### Two new varieties of *Amorphophallus commutatus*

*Flowering:* May-June.

*Fruiting:* July-August.

*Distribution:* Kerala.

*Etymology:* The specific epithet is indicative of the name of the type locality – Wayanad district – where the species is fairly common in certain areas.

*Notes:* *Amorphophallus commutatus* var. *wayanadensis* resembles the other two varieties viz., var. *anmodensis* and var. *commutatus* in its general appearance of the spathe and spadix, but its resemblance is more with the var. *anmodensis* in the slightly compressed ovoid nature of the basal tube of the spathe with a slight constriction between the tube and limb. It is distinct in having a long peduncle of about 75-95 cm, male zone fusiform, the male flowers with the apical connective region depressed, and dehiscence of the thecae very near to the connective. The tube of the spathe is yellowish verrucose with round bumps within.

*Specimens examined:* INDIA, **Kerala**, Kollam Dist.: Thenmala, behind the Forest Range Office, 3<sup>rd</sup> May 1979; Sivadasan CU 21447 (US); Kozhikode Dist.: Vaithiri Ghats, after 1<sup>st</sup> hair-pin curve, 16<sup>th</sup> Jun. 1976, Sivadasan CU 19009 (L); Palakkad Dist.: Mukkali, 29<sup>th</sup> May 1966, Vajravelu 27711 (infl.) (MH); Manthampotti, 16<sup>th</sup> May 1977, Sivadasan CU 19174 (leaf) (CALI); *Ibid.*, 25<sup>th</sup> May 1978, Sivadasan CU 21464 (K); *Ibid.*, 11<sup>th</sup> May 1984, Sabu CU 36542 (leaf) (CALI); *Ibid.*, 11<sup>th</sup> May 1984, Sivadasan CU 36544 (infl.) (CALI); Dhoni Hills, 26<sup>th</sup> Jan. 1978, Sivadasan CU 21434 (infl.) (CALI); *Ibid.*, 25<sup>th</sup> May 1978, Sivadasan CU 21426 (infl.) (CALI, US); Dhoni Hills, 24<sup>th</sup> June 1978, Sivadasan CU 21434 B (leaf) (CALI); Wayanad Dist.: Vaithiri, 13<sup>th</sup> Sept. 1975, Sivadasan CU 7815 (infl.) (CALI); Wayanad Ghat, 29<sup>th</sup> April 1997, Abdul Jaleel & Bobby Thomas RIA 61 (leaf) (CALI); *Ibid.*, 29<sup>th</sup> April 1997, Abdul Jaleel & Bobby Thomas RIA 62 (infl.) (CALI).

#### Key to the varieties

1. Peduncle short, 8-10 cm long; tubular portion of the spathe slightly compressed obovoid; male zone cylindrical ..... var. *anmodensis*
1. Peduncle long, 20-95 cm long; tubular portion of the spathe slightly obovoid or cylindric; male zone fusiform or obconic.
  2. Spathe tube cylindric, purplish brown, verrucose with silvery hairs within ..... var. *commutatus*
  2. Spathe tube slightly compressed obovoid, slightly yellowish verrucose with rounded bumps within ..... var. *wayanadensis*

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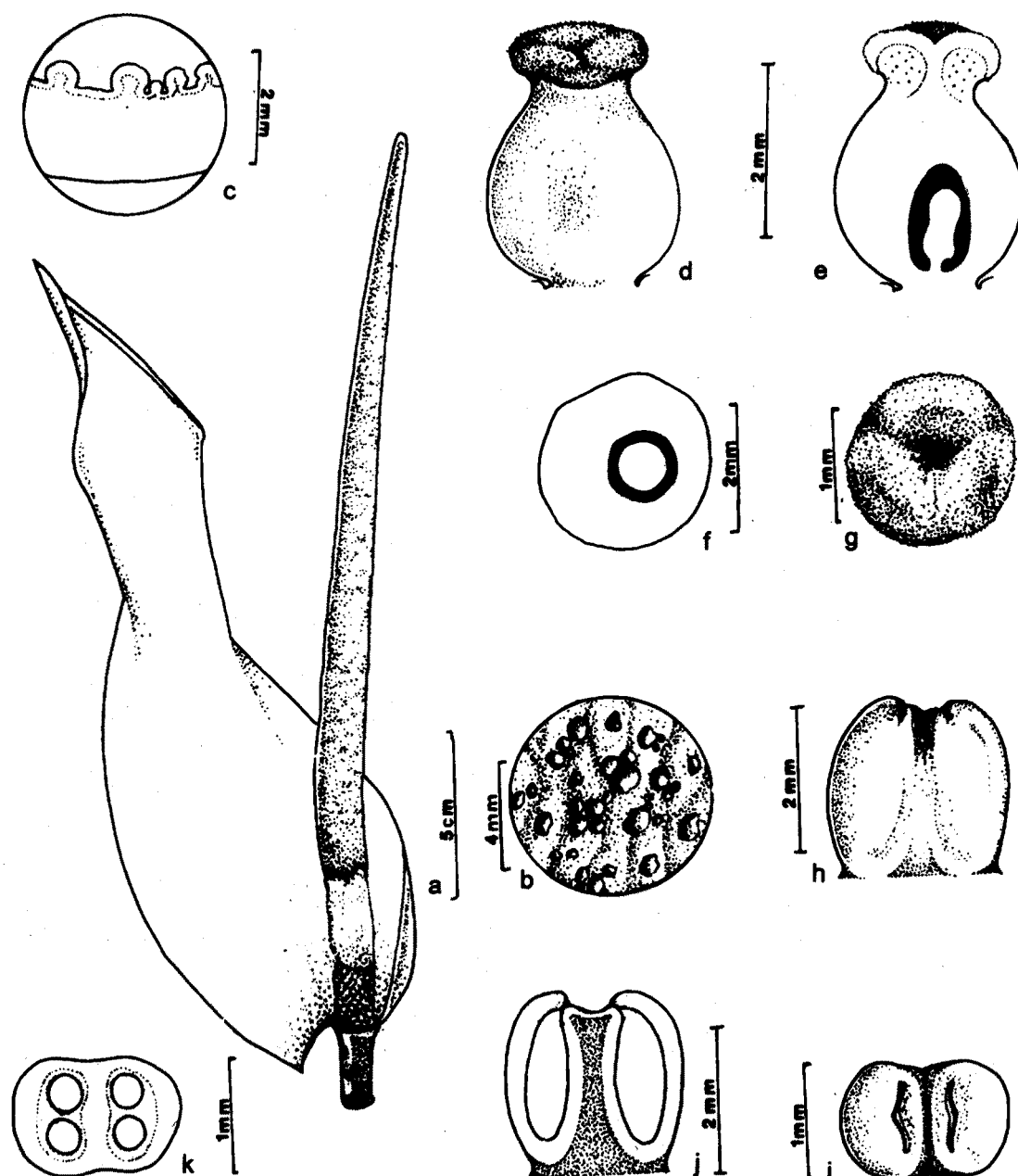


Fig. 4. *Amorphophallus commutatus* (Schott) Engl. var. *wayanadensis* Sivad. et Jaleel

**Two new varieties of *Amorphophallus commutatus*****Acknowledgements**

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Explanation to Fig. 4. *Amorphophallus commutatus* (Schott) Engl. var. *wayanadensis* Sivad. et Jaleel: a. Inflorescence – spathe cut open showing spadix; b. A small basal inside portion of the spathe – magnified; c. A small basal portion of the spathe – C.S.; d. Female flower; e. Female flower – L.S.; f. Ovary – C.S.; g. Stigma – view from top; h. Male flower – view from broad side; i. Male flower – view from top showing openings of thecae; j. Male flower – L.S.; k. Male flower – C.S.