

A NEW VARIETY OF *MUSA BALBISIANA* COLLA FROM ASSAM, INDIA

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Musa balbisiana was first described as a species by an Italian botanist Luigi Aloysius Colla in 1820 based on the type collected from Southeast Asia (India Orientali). Later on brief descriptions were provided by Cheesman (1948) and Moore (1957). This species is very much important from the evolutionary viewpoint as it is one of the two parent plants together with *M. acuminata* Colla for most of the cultivated bananas of present day. Southeast Asia is regarded as centre of origin of *M. balbisiana* (Hore *et al.*, 1992) and was also reported from Srilanka, India, Thailand, Malaya, Indonesia, Philippines and New Guinea (Cheesman, 1948; Sulistyaningsih *et al.*, 2014). There is very little variation in this species in the interspecific level and no subspecies has been described so far under it (Subbaraya, 2006). However, subsequent workers described five varieties on the basis of intraspecific variations of the species *viz.*, *M. balbisiana* var. *balbisiana* Colla, *M. balbisiana* var. *andamanica* D.B. Singh *et al.*, *M. balbisiana* var. *brachycarpa* (Backer) Hakkinen, *M. balbisiana* var. *liukiuensis* (Matsum.) Hakkinen and *M. balbisiana* var. *elavazhai* A. Joe *et al.* In India the species is widely occurring with intraspecific variations in northeastern states, Andaman and Nicobar islands and in some parts of south India. Wild or feral forms of *M. balbisiana* are considered to possess fertile seeds. But cultivated clones occurring without fertile seeds like “*Bhimkol*” or “*Athiya-kol*” in Assam and “*Elavazhai*” in south India have been proved as distinct commercial varieties in these regions. These two clones cannot be considered as truly wild species due to long time cultivation by the local habitats mainly through suckers and the existence of the species either in wild or feral state is yet to be established (Subbaraya, 2006; Joe *et al.*, 2014). However, the present investigators recorded wild populations of *M. balbisiana* Colla from Dima Hasao district of Assam.

During the field work conducted between the years 2012-14 for taxonomic study on the genus *Musa* L., the authors collected certain specimens of seed propagated plants occurring wild and in semi-domesticated state in Assam which are known as “*Sepa-athiya*”. It differs from *M. balbisiana* in a number of attributes. The plants are propagated both through seeds and by suckers. Further, unlike the cultivated clones of *M. balbisiana*, the fruits of the collected plants are not edible because of the presence of numerous compactly arranged seeds with scanty flesh. However, the other parts like pseudostem, leaves and inflorescence are used as that of *M. balbisiana*. Considering the above differences of the collected specimens with that of *M. balbisiana*, a new variety *viz.*, *Musa balbisiana* var. *sepa-athiya* is proposed and described.

***Musa balbisiana* var. *sepa-athiya* Borborah, Borthakur & Tanti, var. nov. (Fig. 1).**

Diagnosis: *Musa balbisiana* var. *sepa-athiya* is very much similar to *M. balbisiana* var. *balbisiana* but differs in the short peduncle (25-27 cm in *M. balbisiana* var. *sepa-athiya* vs. 30-35 cm in *M. balbisiana*), compact fruit bunch and large number of seeds (240-250 in *M. balbisiana* var. *sepa-athiya* vs. 50-65 in *M. balbisiana*).

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Fig. 1. *Musa balbisiana* var. **sepa-athiya**, var. nov. A. Habitat; B. Upper surface of pseudostem; C. Inner pseudostem; D. Pseudostem with young sucker; E. Petiole canal; F. A mature fruit bunch; G. A mature female bud; H. Fruit bunch with a male bud; I. Female bract containing female flowers; J. A complete female flower; K. Lower surface of a male bract; L. Upper surface of a male bract; M. A complete male flower; N. Mature fruit; O. T.S. of mature fruit; P. Seeds.

Type: India, Assam, Dibrugarh District, Gorokhia Chapori, alongside river Brahmaputra, 27°48.41" N, 94°89.94" E, 96 m 20 October 2013, *Borborah 004* (*Holotype:* GUBH!, *Isotype:* ASSAM!).

Plant tall, suckering very close to parent plant, 5-10 cm away, vertically arranged, 7-12 suckers in a clump. Mature pseudostem 3.7-4.0 m high, 25 cm in diameter at base, light green with black colouration when mature, covered with dry outer sheaths, not waxy, underlying colour of pseudostem cream with pink-purple pigmentation, sap watery. Leaves erect, older leaves intermediate occasionally, lamina 270-300 × 70-72 cm, elliptic-oblong, truncate at apex, dorsiventrally green, ventral surface waxy, leaf bases asymmetric, both side rounded, midrib dorsally green, light green ventrally, petiole up to 1.0 m long, yellow green, not waxy, canal margins curved inward, bases not winged and clasping the pseudostem, small blotches present at the petiole base, blotches dark brown. Inflorescence pendulous, peduncle glabrous, up to c. 27 cm long and diameter c. 7.5 cm, dark green, 2 sterile bracts present, persistent. Female bud ovoid, female bracts ovoid, 25-27 × 10-12 cm, dull pink-purple outside, very waxy, bright red-purple inside, shiny, apex obtuse, lifting 1-2 bracts at a time. Female flower on average 15-17 per bract in two rows, c. 7.3 cm long; compound tepal c. 4 cm long, light yellow with a pink touch, lobe colour yellow; free tepal c. 2.1 cm long, oval shaped, translucent white and tinted with pink, simple folding under apex; staminode 5, c. 2.0 cm long, style c. 3.2 cm, cream, stigma large capitate, yellow; ovary yellowish green, c. 4.2 × 3.2 cm, smooth, four rows of ovules per locule. Male bud ovoid; male bract ovate, c. 21 × 9.2 cm, pink-purple adaxially, waxy, bright pink-purple abaxially, shiny, colour homogenous until apex, bract base with large shoulder, apex obtuse, imbricate, lifting two bracts at a time, not revolute before falling, bract scars prominent, bracts persistent for 2-3 days giving the appearance of bracts lifting 4-5 at a time. Male flower on average 13-15 per bract in two rows, 5.8-6.0 cm long, falling before the bracts; compound tepal c. 4.1 cm long, light yellow with thickened keel, lobes 5, bright yellow; free tepal c. 2.4 cm long, translucent white, ovoid or boat shaped, apex poorly developed, obtuse; stamens 5, exerted, filament c. 2.1 cm, cream, anther lobes. 2 cm, cream. Fruit bunch cylindrical, very compact with 7-8 hands and 16-18 fruits per hand in two rows, rachis short, hanging vertically at an angle, fruits perpendicular to the stalk; fruit straight, 9.0-9.5 cm long, 1.6-1.0 cm in circumference, pedicel c. 1 cm, glabrous, apex rounded without any floral relicts, immature fruit peel green, mature fruit peel light yellow with brown spots, fruit peel thickness 3 mm, peels easily when ripe, fruit pulp colour ivory at ripened stage; seeds numerous, 240-250 seeds per fruit, c. 4 × 3 mm, black, rounded and warty.

Flowering and fruiting: Throughout the year.

Distribution: Occurring sporadically in Upper Assam districts of Dibrugarh, Tinsukia, Sibsagar and Golaghat in wild and semi-domesticated habitats near human habitations and along riverside.

Etymology: The varietal epithet "*sepa-athiya*" derives from its common name in Assamese (*sepa* = compressed, *athi* = compact bunch).

Ethnobotanical use: Entire plant is used by the local communities as a decorative stand for lighting lamps in the festival of light. Inflorescence is used as vegetable. Ripe fruits are made into paste and soaked overnight in water and the filtrate is used as a refreshing cooling drink.

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References

- Cheesman, E.E.1948. Classification of the bananas. III. Critical notes on species. *Musa balbisiana* Colla. Kew Bull. **3**: 11–17.
- Colla, L. 1820. *Memorie della Reale Accademia delle Scienze di Torino* **25**: 384–385.
- Hore, D.K., Sharma, B.D. and Pandey, G. 1992. Status of banana in North-East India. J. Econ. Taxon. Bot. **16**: 447–455.
- Joe, A. Sreejith, P.E. and Sabu, M. 2014. A new variety of *Musa balbisiana* Colla (Musaceae) from South India. Phytotaxa, **175**: 113–116.
- Moore, H.E. 1957. *Musa* and *Ensete* the cultivated bananas. Baileya **5**: 177.
- Subbaraya, U. 2006. Farmer's knowledge of wild *Musa* in India. Plant Production and Protection Division, FAO, Rome, pp. 1–46.
- Sulistyaningsih, L.D., Megia, R. and Widjaja, E.A. 2014. Two new records of wild bananas (*Musa balbisiana* and *Musa itinerans*) from Sulawesi. Makara J. Sci. **18**: 1–6.

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