

## *Enset glaucum* (Roxb.) – a wild progenitor species of banana and its little known presence in North East India

Musaceae is an ancient family under the order Zingiberales and it consists of three genera, i.e. *Musa* L., *Ensete* Horan. and *Musella* (Franch) H. W. Li<sup>1,2</sup>. Initially in India only *Enset superbum* (Roxb.) Cheesman was reported from Western Peninsular region in the early 1960s<sup>3,4</sup>. However, Joe<sup>5</sup> revised the Indian Musaceae by reporting 41 wild taxa (39 of which are of *Musa* and 2 are *Ensete*). *Enset glaucum* has a conical stem and green persistent bracts. Hence it is a plant with great ornamental potential<sup>6</sup>, and is grown as an ornamental or decorative plant in most states of North East India. *E. glaucum* (Roxb.) Cheesman is naturally distributed in the Southeast Asian countries like Burma, Thailand, China, Vietnam, Cambodia, Laos and in island nations like the Philippines, Papua New Guinea, Solomon Islands up to Java<sup>7</sup>. Simonds<sup>4</sup> has argued that the origin of *E. glaucum* was actually Burma rather than India. Natural occurrence of *E. glaucum* in India was reported from Khasi Hills Region, Meghalaya in the Eastern Himalayan Region<sup>8</sup> and Vishakhapatnam and Errakonda areas of Andhra Pradesh in Eastern Ghats<sup>9</sup>, however specimens from Andhra Pradesh were later confirmed as *E. superbum*<sup>6</sup>. *E. glaucum* is well distributed on the Mizo hills of Mizoram and sparsely in Diphu hills of Assam. Hore *et al.*<sup>10</sup> reported that the plant spread from Chittagong Hill Tracts of Bangladesh to Meghalaya and into Mizoram from Burma, or may have been cultivated in NE India<sup>11</sup>. *E. glaucum* is a rare, relict and novel species and since its natural distribution in NE India is not well known it deserves further studies and exploration<sup>7</sup>.

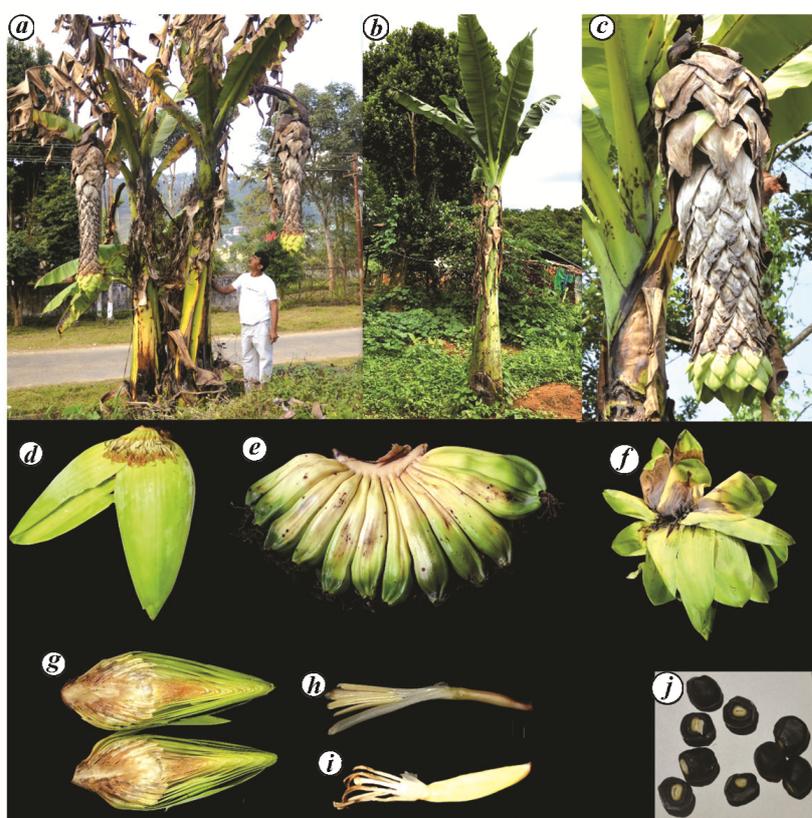
This correspondence reports the presence of *E. glaucum* in Ri-Bhoi district of Meghalaya, where it is known by the local name ‘Kait Marwei’ (Marwei meaning alone in Khasi language). Field observations were recorded from ICAR Quarter Complex, Umiam, Kyrdem and Umraling Village under Umsning Block in Ri-Bhoi District. The similar specimen was also observed in localities near new Boro Haflong and NH36 Lumding-Silchar Road in Diphu district of Assam.

Plant robust, mature pseudostems 2.4–4 m tall, 93–120 cm circumference at the base, light green colour, sap reddish.

Petiole short 27 × 17 cm, not winged and clasping the pseudostem. Leaf habit intermediate, leaf lamina oblong 120 × 55 cm in dimension, leaf base symmetric, both sides pointed; Inflorescence pendulous, peduncle, short, 27–31 cm. Bud cylindrical, highly imbricated, 35–50 cm long when young, green, which grows longer on maturity, the green bracts dry up and turn brown as the fruits are formed one by one, by maturity the fruits are well developed with only the male bracts remaining as green coloured, some grow as much as 130 cm long. Male bud ovoid, 25 × 22 cm, green, glaucous from outside. Bract ovoid with a pointed base, 23 × 11 cm, internal face and external face coloured green, which gets lighter towards the base. Flowers 20–22 numbers arranged in two rows; 5–5.5 cm length of individual flower; compound tapel 3 cm, creamy white, free tapel, 0.9–1.1 cm long, with a prominent

pointed auricle, filament 1.4 cm white, anther 1.7 cm cream, ovary 1.7 cm, yellowish. Fruit 20–24 per hand, arranged in two rows, compact and closely packed, floral relicts present, fruits green/white in colour, flesh white with a large number of seeds. Seeds are large and smooth, 1.5–1.8 cm in diameter. Flowering and fruiting occur throughout the year. Pollination modes are entomophilous, ornithophilous and cheiropterophilous in *E. glaucum*. Inside the bracts, populations of earwig (order: Dermaptera) can be observed for feeding and breeding<sup>7</sup> (Figure 1).

Since *E. glaucum* is well distributed in many tribal areas, it has found multiple uses among the people, whether as a source of food or for medicinal purposes. Most households in Mizoram and Diphu Hills of Assam have this plant in their kitchen gardens. The sheaths are ripped-off and used as a vegetable or salad; the Mizo tribes also hand extract the mature



**Figure 1.** *Ensete glaucum*. *a, b*, Flowering plant; *c*, Mature inflorescence; *d*, Mature bud; *e*, Fruit; *f*, Immature inflorescence; *g*, Cross section of bud; *h*, Male flower; *i*, Female flower; *j*, Mature seeds.

## CORRESPONDENCE

pseudostem fibre for the purpose of handicraft<sup>12</sup>. The use of pseudostem as a vegetable was also reported from Meghalaya<sup>9</sup>. Medicinal uses of the plant were reported among the tribes of Paderu division of Visakhapatnam; the flower juice was used in dysentery and excessive bleeding during menstruation in young girls<sup>13</sup>. Tangjitman *et al.*<sup>14</sup> also reported the uses of *E. glaucum* as a medicine for diarrhoea and food poisoning among the Karen people of northern Thailand. The Irulas tribe of Kerala burns the leaves of *E. glaucum*, and the ash obtained is inhaled for treatment of asthma and to get relief from wheezing and chest congestion<sup>12</sup>. Several studies reveal the presence of tannins and other polyphenolic compounds such as saponins, triterpenoids, coumarins, flavonoids and a host of other secondary metabolites which contribute to its anti-diarrhoeal properties<sup>15-17</sup>.

*E. glaucum* is under threat largely from habitat destruction and deforestation. The wide-scale practice of jhum cultivation, plantations of crops like rubber, orange and pineapple have caused habitat loss where wild *Ensete* was found. Conservation measures have

largely been minimal; the need of the hour is to survey wild populations and identification of suitable habitats for potential future re-establishments. Research on more methods and storage of seeds for future use is also needed.

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## Genetically modified organisms

I find myself in rare agreement with Padmanaban. Indeed there is nothing ‘new in Kesavan’s arguments’. How can there be?

We have the same tired non-regulation of GMOs in India that is replete with the most serious conflicts of interest that make their regulation impossible; a 3-in-1 embodiment of promoter, funder and regulator. And to provide the required support structure to this corrupted process, our agri-institutions with a group of public-sector scientists (retired and current), together, a powerful lobby-

ing force, underpin the push for the wholesale introduction of GMOs and their emerging ‘Avatars’ into Indian agriculture. It is a measure of their mindset that *Bt* cotton is promoted as an ‘outstanding success’ in order to justify other *Bt* crops. That ‘outstanding’ success is based on a deliberately flawed analysis of total production data instead of the proper statistic of ‘yield’ expressed in kg/ha. The fact is a tenth grader would not make this mistake. Two PSC (Parliamentary Standing Committees) have recognized the grave regulatory insuffi-

ciency and deficiency governing GMOs. Will things change? If not, we will be subjected to the same story of historical repetition, because there is ‘none so deaf as those who will not hear’, even PSCs in a parliamentary process. In this ‘polarized’ situation, Kesavan and others may be moved to speak again.

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