

## **PSIDIUM GUINEENSE SWARTZ. (MYRTACEAE)-AN ENDEMIC THREATENED SPECIES OF TRIPURA, INDIA**

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Continued human interference on the natural growth of wild population of *P. guineense* is becoming a great concern to its very existence. The indiscriminate cutting of the plants led to its poor growth and resulted in regeneration of new shoots every year – ‘coppice regeneration’. The need of *ex-situ* conservation of this endemic species in the Botanical garden is seriously realized in the context of plant diversity and fruitful resource utilization.

**Keywords:** Coppice regeneration; Endemic; *Psidium guineense*.

Floristic diversity and endemism are rich in Indian sub-continent and known to constitute one of the mega diversity centres in the world<sup>1</sup>. In the last few decades, there has been an increasing awareness about the threat to biological diversity due to several natural and man-made activities<sup>2</sup>. In recent times certain endemic species are under different degrees of endangerment<sup>3-6</sup> and therefore, the need of appropriate conservation strategy is well understood in the context of plant diversity. The urgent need for conservation and economic evaluation of Indian plant diversity has also been well emphasized and pointed out<sup>7</sup>.

The genus *Psidium* L. of the family Myrtaceae, a tropical American genus of over 100 species is mostly represented by evergreen trees or shrubs with edible berries<sup>8</sup>. In India, the genus is represented by three introduced species of which *P. guineense* Sw. is endemic to Tripura state<sup>9</sup>. Recently the species is also reported from Kerala<sup>10</sup>. Information regarding the diversity, habit and distributional details of *P. guineense* in this hillocks state Tripura are very much lacking in the context of present day human population pressure, indiscriminate cutting forests resources and increased urbanization activities. All these unavoidable consequences have let to us a great concern on the very existence of this wild guava in their natural habitat.

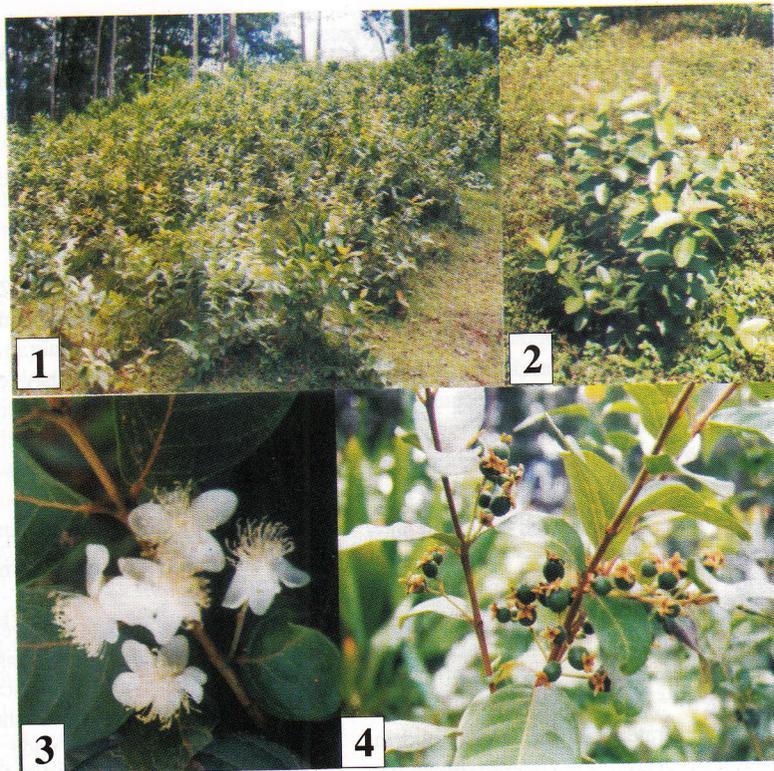
During the ethno-botanical survey in west district of Tripura, we relocated three restricted populations of wild guava (*P. guineense*) growing in an unmanaged natural condition. Populations recorded at Collegetila complex, Arundhutinagar and greater Kunjaban areas are almost similar in identical habitat of red sandy and lateritic soils. The present site of Collegetila complex population was selected for studying the form of growth and vegetation in a year. At least 50 random observations were made for

measurements of shoot growth, number of coppiced shoots, and number of fruit bearing plants with fruits per plant.

*P. guineense* is a relatively slow growing shrub with grayish bark and hairy young shoots. The branches are slightly flattened and cylindrical. Leaves are petiolate ( $0.9 \pm 0.13$  cm) grayish evergreen and measures  $12.51 \pm 2.23$  cm long and  $6.11 \pm 1.20$  cm wide. Leaves are oblong and elliptic with as many as  $18.40 \pm 2.65$  veins per leaf. It bears hairs scantily on the upper side but coated beneath with pale or rusty hairs. Flowers are found in single or cluster of three in the leaf axils. They are white in colour with as many as 100 – 250 prominent stamens (Fig. 3). The fruit is very small and almost round measuring an average weight of  $5.90 \pm 2.01$  g with a length of  $3.59 \pm 0.37$  cm long and  $6.89 \pm 0.69$  cm circumferences. Young fruits are dark green in colour (Fig. 4) and on maturity turn in to pale yellow. Fruit flash is pale yellowish with central white pulp and contain numerous hard small seeds. The plant raised in the University garden is found to flower and fruit during June to August. In wild population flowering as well as fruiting is recorded in the month July to August. However, the certain population has been found to flower and set fruit till September to October (Fig. 4).

Ethnobotanically, the *P. guineense* is used as non conventional local palatable fruit and very rich in Vitamin C and soluble sugar. It is also used in jelly preparation. The wood bark is rich in tannin. A decoction of the bark and roots is employed to treat urinary diseases, diarrhea and dysentery. Tender leaf decoction is taken to relief colds and bronchitis.

The population of *P. guineense* collected from the present site of investigation shows shrubby habit with branching at the base (Fig. 1). This branching habit has



**Fig. 1.** Vegetation site of *Psidium guineense* at Collegetila complex, Agartala, **2.** Coppicing habit of the species, **3.** Flowering branch of *P. guineense*, **4.** Fruit bearing shoot of the endemic species.

been found to develop only when people indiscriminately cut these plants from the base during its vegetative phase. Instead of immediate collection these cut twigs were kept in the field for a considerable period and were finally utilized as fuel-wood after prolonged sun-drying. Interestingly, this species is found to have 'coppice' response resulting in the regeneration of new shoots every year (Fig. 2). However, in the absence of human interference, the plant grows naturally to a small tree attaining a height of 2-3 meters. The number of coppice shoots per plant was found to vary from 2-7 during one year of growth. Infrequent flowering and poor fruiting was also recorded in the present population (Figs. 3-4). Out of 50 randomly sampled populations 32% plants were found to bear fruits with an average of  $11.94 \pm 3.32$  per plant having a C.V. value of 111.22 indicating inconsistencies and high level of variability in fruit setting. It has also been recorded that the average height of the main shoot is much higher ( $134.38 \pm 6.05$  cm) in plants having fruits with less number of coppiced shoots ( $2.19 \pm 0.88$ ) than that of fruitless plants ( $99.98 \pm 4.34$  cm) with more number of coppice shoots ( $4.12 \pm 1.32$ ). Thus the poor habit of *P. guineense* recorded in the present study suggests the impact of human interference on natural growth of the endemic species. These consequences are becoming a great concern to the very existence and vegetation of wild guava, threatening its

biodiversity and ethno-economical significance of Tripura.

#### Acknowledgement

Authors are grateful to GBPIHED of IERP, Almora for financial support to carry out the present work.

#### References

- Gadgil M 1983, In : *Conservation of plant resources through Biosphere Reserve-Conservation of Tropical plant resources* (eds. Jain, S. K. and Mehra, K. L.) p 66-71.
- Heywood V H 1990, *Bot. Gard. Cons. News* 1 (7) 15-16.
- Jain S K and Sastry A R K 1984, *The Indian Plant Red Data Book-I*, BSI, Howrah, p162.
- Nayer M P and Sastry A R K (eds) 1987, *Red Data Book of Indian Plants*, BSI, Howrah 1 367.
- Nayer M P and Sastry A R K (eds) 1988, *Red Data Book of Indian Plants*, BSI, Howrah 2 268.
- Nayer M P and Sastry A R K (eds) 1990, *Red Data Book of Indian Plants*, BSI, Howrah 3 271.
- Pushpangadan P, Ravi K and Santosh V (eds) 1997, *Conservation and economic evaluation of Biodiversity*, Oxford & IBH Publ., New Delhi, 21-22.
- Mabberley D L 1990, *The Plant Book*, Cambridge Univ. Press, Cambridge, U. K.
- Deb D B 1961, *Bull. Bot. Surv. Ind.* 3 (1) 87-89.
- Nazarudeen A 2001, *Rheedea* 11 (1) 57-59.