

Short Communication

Status Of *Diploknema Butyracea* (Roxb.) H.J. Lam In Tawang District Of Arunachal Pradesh

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Abstract: *D. butyracea* (Fam: Sapotaceae) is an economically important tree with many uses of its different parts. In Arunachal Pradesh, *D. butyracea* is mainly found in subtropical regions of Tawang district adjoining to Bhutan. During the last 20 years, majority of the trees were dried up due to overharvesting. The seeds are recalcitrant and lose viability quickly after dispersal. The present study recorded 61 trees of which 50 plants were either dead or lost all branches and only 3 were saplings. The plant is facing great threat of becoming extinction from Tawang region. Proper *in-situ* and *ex-situ* conservation strategies and propagation techniques such as tissue culture are urgently needed.

Key words: *Diploknema butyracea*, Finsheng, Tawang, Conservation

D. butyracea locally known as 'Finsheng' by the Monpas and commonly known as 'Indian butter tree' is a lesser-known, economically important and underutilized tree. It has many local uses as described by various authors. The tree is best known for the yield of edible oil (butter) from kernels which is used in chocolate, soap and candle manufacture, as fertilizer and fish intoxicant (Awasthi and Mitra, 1962; Mitra and Awasthi, 1962; Mukerji, 1953). The butter obtained is also used for cooking, burning in lamps and medicine preparation (Tag and Tsering, 2012). Hence, it is known as Indian butter tree. The fruit pulp is eaten raw by the Monpas of Tawang (Tag and Tsering, 2012). The bark which is rich in tannin is used in dyeing. The leaf is assumed as a good fodder, branches for fuel wood and trunk for timber. The nectar from the flowers is harvested through honeybees or directly to produce a jaggery which is highly prized in Uttarakhand (Bahar, 2011). The medicinal properties of this tree is also well recognized and used for the treatment of rheumatic pain, ulcers, itching, haemorrhage, inflammation of tonsils, leprosy and diabetes (Awasthi and Mitra, 1968; Khetwal and Verma, 1986; Mishra *et al.*, 1991). The oil/fat extracted from kernels is used in

preparation of various Sowe-Rigpa's herbal drug formulation (Tag and Tsering, 2012). The cake obtained after extraction of the fat contains saponins and is toxic (Awasthi and Mitra, 1962; Mitra and Awasthi, 1962; Mukerji, 1953). Many chemical compounds were isolated from seed oil. The major components were Palmitic acid, linoleic acid, oleic acid and steric acid (Devkota *et al.*, 2012).

The plant is distributed throughout the Himalaya, from Garhwal, Kumaon through Nepal in Central Himalaya to Sikkim, Darjeeling, Bhutan and Arunachal Pradesh in the eastern Himalaya. The plant was also reported from Tripura and Andaman & Nicobar Islands (Kureel *et al.*, 2008; Rajkumar and Parthasarathy, 2008). It grows mainly in the sub-Himalayan tracts on steep slopes, ravines and cliffs at an altitude of 300 - 1500 m (Majumdar, 2012). In Arunachal Himalaya the plant was reported from of Lohit, Kameng and Tawang districts, however, their ecological status is unknown (BSI, Shillong). The present work is an attempt to explore current status of *D. butyracea* in Tawang.

Tawang is one of the biodiversity rich area of Arunachal Pradesh. It is located between 27° 28' - 27° 52' N latitudes and between 91° 32' - 92° 23' E longitudes

covering an area of 2,085 sq. km in the eastern Himalaya (Jambey et al., 2012). The district is bounded by Tibet Province in the north, Bhutan in the south and West Kameng district in the East. The district is divided into three sub-divisions viz. Tawang, Lumla and Jang with three blocks and nine circles. The region supports five types of forests: Sub-tropical broad-leaved forest (1000-1800 m), Pine forest (1800-2200 m), Temperate broad-leaved forest (1800-2800 m), Temperate coniferous forest (2800-3500 m) and Alpine (above 3500 m) (Tag and Tsering, 2012).

D. butyracea is a subtropical tree as it was found to be grown between 1400-1800 m asl in Tawang which strictly falls under sub-tropical forest. All the village and forest sites of Tawang falling under sub-tropical regions were visited during the year 2012-2013. Altogether, 102 persons were interviewed. Most of them were farmers and herdsman. Due to the limited number of *D. butyracea* trees in each village sites, the locations were easily identified by the villagers. A total of 11 live and 50 dead or half dead trees were recorded from 18 sites (Figure 1) out of which, only 3 were saplings. Highest number of plant was recorded from Kungba, Sazo and Poito under Lumla block with 7 individuals each including both live and dead trees. This provides a dismal picture and alarming situation in the area. Villagers reported that the declining of *D. butyracea* population was observed since last 25 years.

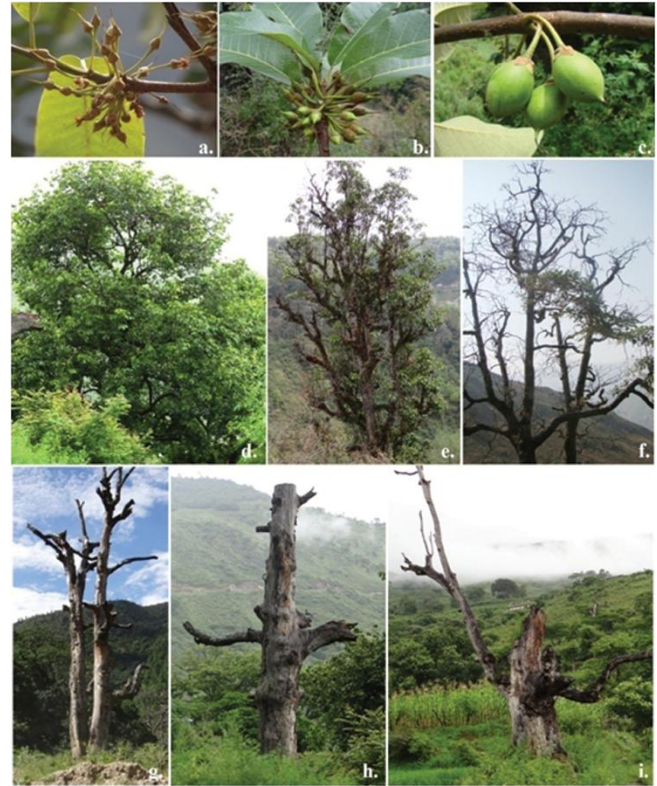


Fig. 2. *Diploknema butyracea*: (a. flowering bud; b. fruits- 2 months; c. mature fruits- 6 months; d. a young tree; e.&f. harvested trees; g.-i. dead trees)

Felling of branches and poor regeneration were the two main factors leading to fast depletion of the tree. Due to large size of *D. butyracea* and fragile branches, fruits are collected by cutting whole branches. The steep landscape which doesn't permit for ground collection of fruits also adds up to the cutting of branches. Regular felling of branches every year has led to drying of tree's trunk (Figure 2). In addition, seed propagation in wild has not been observed since last few decades. Many local people have unsuccessfully tried propagation through 'seed' and 'stem cutting' in their gardens. The seeds are recalcitrant and lose viability quickly after dispersal (Sundriyal and Sundriyal, 2003). Viability of seed and regeneration of *D. butyracea* were almost lost, and there is a great threat of becoming extinction of the plant from Tawang region.

These species need to be immediately conserved both *in-situ* and *ex-situ*. Plant dwellers and fruit collectors need to

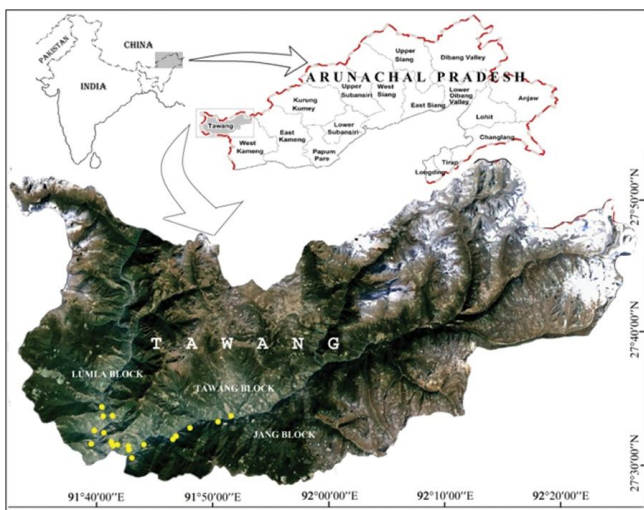


Fig. 1. Tawang district (dots indicates location of *Diploknema butyracea*)

be educated about forest associations and adverse impact of felling of branches for fruit collection. Tissue culture techniques are needed to be developed for regeneration and to save from imminent threat of extinction of the plant from the area.

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