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Short communication

Potential for exploitation of *Dendrocalamus stocksii* (Munro.) shoots: New report from Peninsular India

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Dendrocalamus stocksii (Munro.) is an extremely manageable thorn less, mid-sized bamboo species with great economic and socio-cultural importance found naturally distributed in Central Western Ghats from Kasargod (Kerala) to Ratnagiri (Maharashtra) (Fig. 1). This is an extremely manageable species with a great economic and ecological importance (Singhal & Gangopadhyay 1999). Previous studies have indicated that this species has problem in seed setting coupled with sporadic flowering behaviour (Beena 2012). Due to solid nature of culms, it has multifarious uses in agrarian ecosystems along the Central Western Ghats and is maintained in field bunds/farm boundaries and in homesteads (Viswanath *et al*. 2013).

Figure 1. A typical *Dendrocalamus stocksii* clump with loosely spaced culms. (Inset: Emerging shoots)

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It is a component of various agricultural implements, used in farm structures and small construction, live fencing and as navigation tool in country boats etc. In recent times due to the scarcity of cane/rattan this species is increasingly been seen as a substitute in furniture industry due to its typical anatomical characteristics like the presence of non- predominant nodes, solid nature of culms and good culm wall thickness. Owing to its multifarious uses and perceived importance, National Bamboo Mission (NBM) has prioritized this species for large scale cultivation in Peninsular India. Despite its marked presence in the region, there is a lack of awareness on the utilization potential of the species as edible shoots. Though this species is endemic to Central Western Ghats, there are no reports on the edible properties of the shoots. The possibility of exploiting shoots of this species for edible purposes was explored.

Bamboo shoots are used as vegetable in many south Asian nations. Shoots are reported to be high in proteins, fibre, essential amino acids, bioactive compounds and minerals, and low in fat, which makes it an excellent food for direct consumption and in nutraceuticals. The macronutritional composition (ash, protein, carbohydrates, fat, crude fibre) (AOAC 1998, 2005) and total cyanogen content (Bradbury *et al.* 1999) of the species was analyzed in comparison with other commonly consumed species in the region like *Bambusa bambos* and *Dendrocalamus strictus* and the well-known 'sweet bamboo' *Dendrocalamus asper* which is solely cultivated for edible purposes. Study revealed that the macronutritional composition of *D. stocksii* was on par with the other three species and also the cyanogenic glucosides responsible for the pungent taste and bitterness in the shoots are found to be low in *D. stocksii* (Figs. 2 & 3). The percentage of edible portion from *D. stocksii* (35%) was also as good as *Bambusa bambos* (31%), *Dendrocalamus strictus* (52%) and *D. asper* (41%).

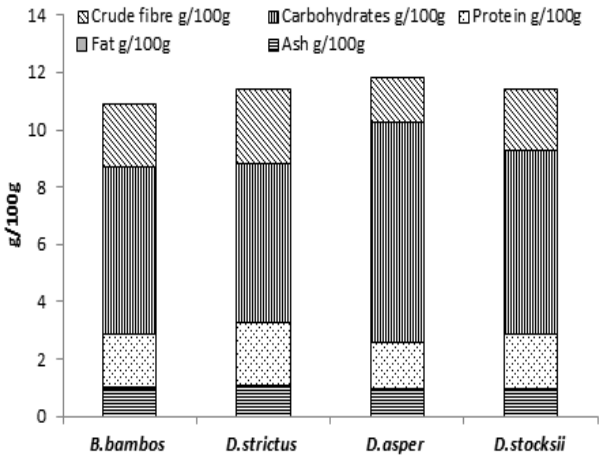

Figure 2. Macronutrient composition in g/100g of fresh bamboo shoots of *Bambusa bambos, Dendrocalamus strictus, D. asper* and *D. stocksii*.

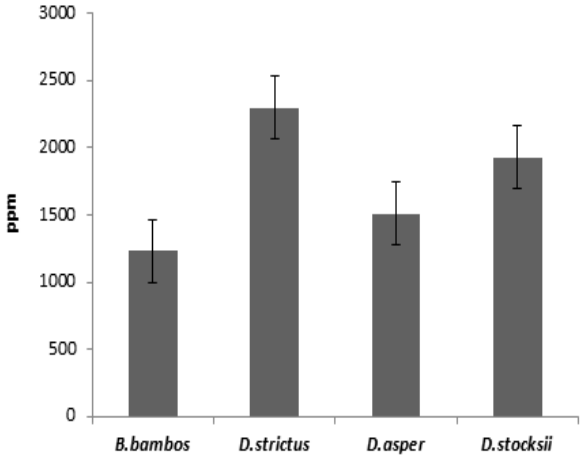

Figure 3. Total cyanogen content in ppm in fresh bamboo shoots of *Bambusa bambos, Dendrocalamus strictus, D. asper* and *D .stocksii*.

India, which is the second largest producer of bamboo shoots after China, the food potential seems grossly underutilized. This may be primarily due to lack of awareness about the edible characteristics of the shoots. Consumption of tender shoots is confined mainly to the Northeastern states and few parts of Southern peninsula like Coorg, South Canara in Karnataka and in Wayanad, Kerala where they are part of the traditional cuisine during monsoon when the shoots emerge. In other parts, especially surrounding forest areas, shoots of species like *Bambusa bambos* and *Dendrocalamus strictus* which generally occur in the wild are consumed. Restrictions imposed by Forest department on the harvest of bamboo from the forests of Western Ghats have hampered the exploitation of bamboo shoots for edible purposes. Although multipurpose species like *D. stocksii*, *B. balcooa*, *D. asper*, *D. brandisii* and *D. hamiltonii* are widely cultivated, its potential as food is poorly recognized and there is a lack of awareness on sustainable management. Observations on the average number of new shoots emerging *D. stocksii* clumps per year at IWST field station indicate that around 18–20 new shoots emerge as compared to 10–15 shoots in *B. bambos* and *D. strictus* and 8–10 shoots in *D. asper* grown under same conditions which indicate that after scientifically harvesting 20–30% of the emerging shoots for edible purposes, the mature culms can still be exploited for other commercial uses. The emerging shoots could serve as additional source of nutrition during monsoon. Since the mature culms also have very high utility value, sustainable harvest of juvenile shoots could serve as an additional source of income for the farmers in Central Western Ghats and the species could truly be recommended as a multi-purpose bamboo species for large scale commercial cultivation.

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