

Morphological and physical properties of bamboo species in South Gujarat, India**Aakash Patel, Satish Kumar Sinha*, Jayesh Pathak and Jayendra R Chavda***College of Forestry, Navsari Agricultural University, Navsari-396450 India**Email: sksinha@nau.in**Keywords:** Clump, culm, yield, moisture content, basic density**1. Introduction**

Bamboo is a versatile, fast-growing woody perennial grass belonging to the family poaceae and considered as one of the important non-timber forest products (Pathak *et al.* 2017). The morphology and physical characteristics of bamboo vary between species and among the culm which influence the utilization patterns of the bamboo species for various industrial applications. (Amlani *et al.* 2017). Therefore, a study was carried out to understand the morphological and physical properties of various bamboo species in South Gujarat.

2. Material and methods

The present study was carried out on six bamboo species *i.e.*, *Dendrocalamus strictus* (Roxb.) Nees, *Dendrocalamus stocksii* (Munro.), *Dendrocalamus hamiltonii* Gamble, *Bambusa vulgaris* Schrad. ex J. C. Wendl. (Green), *Bambusa balcooa* (Roxb.), and *Bambusa bambos* (L.) planted at bambusetum, College of Forestry, Navsari Agricultural University, Navsari, Gujarat. Total five (4-year-old) culms per clump of each species were randomly selected and harvested for the study. Morphological properties such as clump height and girth, culm length and diameter, internodal length and mid-diameter of entire culm; culm weight, number of culms per clump and total yield were recorded. Cross sectional samples were used for evaluation of physical properties *i.e.*, moisture content, basic density and hollowness proportion.

3. Result and discussion

The highest clump height (11.25 m) and internodal length (27.77 m) were recorded in *B. vulgaris*. The maximum clump girth (7.38 m) was recorded in *B. balcooa*. Culm diameter (3.87 cm) and internodal mid-diameter (4.02 cm) were recorded highest in *B. bambos*. However, the maximum biomass in terms of yield per clump was recorded in *D. strictus* (299.90 kg) followed by *B. bambos* (238.52 kg) and *B. balcooa* (188.99 kg). It was observed that the moisture content in each bamboo species varied inversely with basic density. The highest basic density (0.693 g/cm³) and the lowest moisture content (64.58 %) was recorded in *B. balcooa* followed by *B. vulgaris*, while the lowest basic density (0.505 g/cm³) and high moisture content (121.66 %) was recorded in *B. bambos* followed by *D. hamiltonii*. The minimum (2.35%) and maximum (27.32%) hollowness was recorded in *D. stocksii* and *B. bambos*, respectively. It is concluded that, among six selected bamboo species, *D. strictus* and *B. bambos* performed better for biomass in terms of yield per clump in south Gujarat. Considering the physical properties, *B. vulgaris* and *B. balcooa* showed higher basic density than rest of the bamboo species. Hence, bamboo culms and their clumps could be characterized by individual growth, biomass and physical attributes for further utilization.

References

- Amlani M H, Tandel M B, Prajapati V M, Pathak J G and Behera L K 2017. The Assessment of growth variation among different species of Bamboo. *International journal of chemistry studies* **5**(6): 1436-1439.
- Pathak J G, Tandel M B, Amlani M H, Chavda JR and Prajapati J R 2017. Growth evaluation of long internode bamboo species in South Gujarat. *Journal of Tree Science* **36**(2):40-44.