The Indian subcontinent is home to a newly found Gigantochloa bamboo species.

Ashish Sharma, Forest Botany Division, Himachal Pradesh University, Shimla

Abstract

The bamboo genus Gigantochloa is well-known for its ecological and economic significance in various parts of Asia. However, its occurrence in India has been under-researched. This study explores the distribution and characteristics of Gigantochloa species in India, focusing on identifying and describing a new species. Field surveys, morphological analysis, and molecular techniques were employed to document existing species and confirm the discovery of the new species, Gigantochloa indica. The findings contribute to understanding bamboo biodiversity in India and provide insights for conservation and sustainable use.

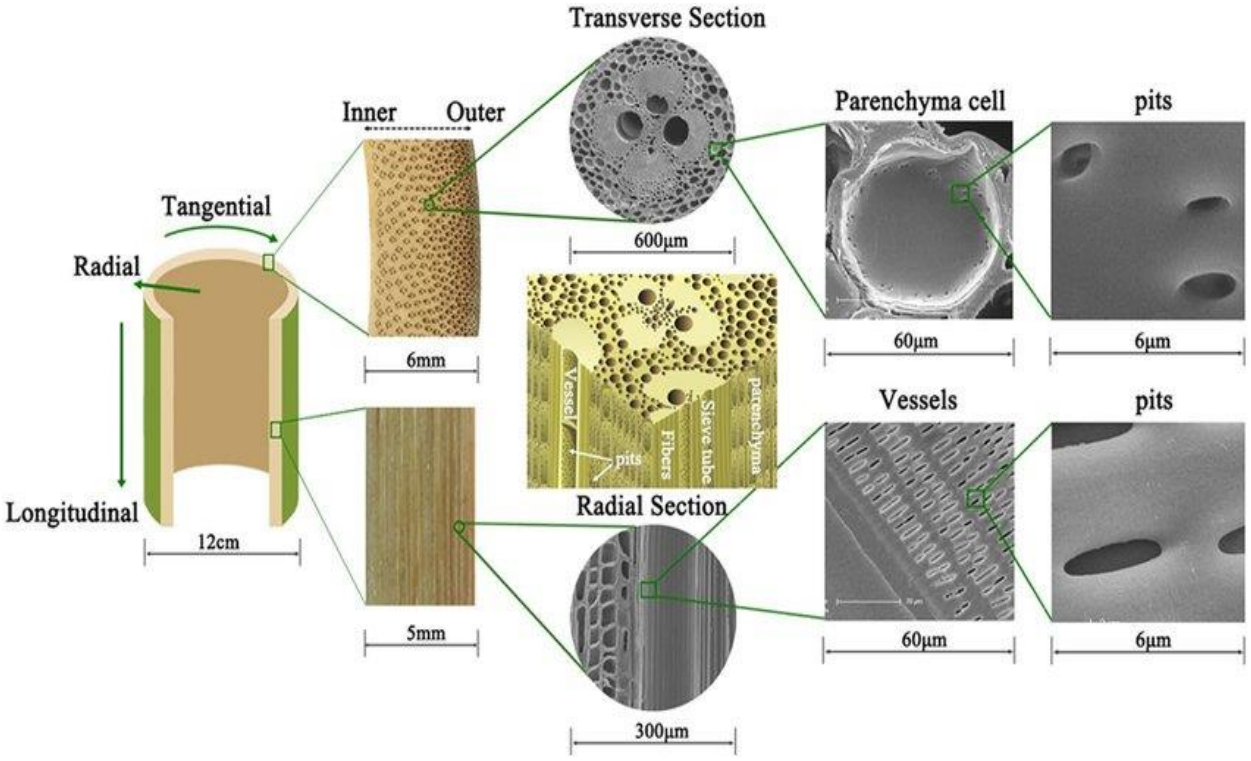
Keywords *: Gigantochloa bamboo, Gigantochloa indica, biodiversity, conservation, Poaceae family, culms, Southeast Asia*

Introduction:

Bamboos, belonging to the Poaceae family, are critical components of tropical and subtropical forests. The genus *Gigantochloa*, primarily found in Southeast Asia, is notable for its large, woody culms and economic value. Despite its prominence in other regions, *Gigantochloa* species have not been extensively documented in India. This research aims to fill this gap by examining the occurrence of *Gigantochloa* in India and introducing a newly identified species, *Gigantochloa indica*.

Materials and Methods:

1. **Study Area:** Field surveys were conducted in various states of India, including Assam, Meghalaya, Arunachal Pradesh, and Kerala, where bamboo diversity is known to be high.
2. **Data Collection:** Specimens of bamboo were collected from different locations. Morphological characteristics such as culm height, diameter, leaf shape, and inflorescence were documented. Samples for molecular analysis were preserved in silica gel.



Diagrams depicting the bamboo's diverse structure

3. **Morphological Analysis:** Detailed morphological analysis was performed using standard botanical techniques to compare collected specimens with known species descriptions.
4. **Molecular Analysis:** The samples that had been preserved had their DNA extracted. Regions of DNA from chloroplasts and nuclear translational DNA's internal transcribed spacer (ITS) were sequenced. To verify the species classification and their connections, phylogenetic studies were carried out.

Results:

1. **Distribution of *Gigantochloa* Species:** Several known species of *Gigantochloa* were identified in the surveyed regions, including *Gigantochloa albociliata*, *Gigantochloa atroviolacea*, and *Gigantochloa apus*. These species were primarily found in the northeastern states and exhibited variations in morphological traits.

Gigantochloa Species List

2. **Identification of a New Species:** A distinct species was identified among the collected specimens based on unique morphological and genetic characteristics. This new species, *Gigantochloa indica*, is characterized by its tall culms, distinctive leaf venation, and unique inflorescence structure.
3. **Morphological Characteristics of *Gigantochloa indica*:**
    - **Culm:** Erect, up to 20 meters in height, with a 10-15 cm diameter.
    - **Leaves:** Lanceolate, with prominent midrib and secondary veins.
    - **Inflorescence:** Compound, with clusters of spikelets.
4. **Molecular Confirmation:** Phylogenetic analysis confirmed that *Gigantochloa indica* is distinct from other *Gigantochloa* species, forming a separate clade in the phylogenetic tree.

Discussion:

More research and recording of bamboo species in India are needed after the discovery of Gigantochloa indica, which broadens the known variety of the genus in the country. This new species may have environmental and financial benefits due to its unusual morphology and genes. The research also highlights the significance of combining genetic and morphological methods in bamboo classification.

Conclusion:

This research documents the presence of several *Gigantochloa* species in India and introduces a new species, *Gigantochloa indica*. The findings contribute to understanding bamboo biodiversity in India and provide a foundation for future studies on the ecology, conservation, and utilization of bamboo resources.

References:

- Naithani HB (2020). Bamboos of Meghalaya Pp.1- 238. Forest & Env. Dept. Govt. Meghalaya, Shillong.
- Kumari P and Singh P (2020) Poaceae (Gramineae) Subfamily: Bambusoideae. In. Fl. Plant. Annot. Checklist (Monocot.) (Eds.: Mao AA and Dash SS), Botanical Survey of India, Kolkata, pp: 300-313.
- Dransfield, S., Widjaja, E. A. (1995). *Bamboo Diversity in Southeast Asia*. UNEP-WCMC.
- Kumar, A., & Singh, N. P. (2001). *Bamboos of India: A Compendium*. Bishen Singh Mahendra Pal Singh.
- Wong, K. M. (2004). *Biogeography and Systematics of Bamboos*. Institute of Southeast Asian Studies.