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DIVERSITY, DISTRIBUTION AND ECONOMIC IMPORTANCE OF *Bambusa polymorpha*

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Forests provide various support materials and natural capital to the farmers of forest dependent communities. Bamboo, a popular group of grass family Poaceae (Gramineae) belonging to sub-family Bambusoideae. It is estimated that over 1200 species of bamboo are known to occur in natural forests, semi-exploited stands, and intensive plantations. Bamboo grows above the sea level in tropics to 4000 meters in temperate regions. For the sustainable production of materials, bamboo becomes important. Wood of bamboo is gaining more popularity in India for various applications, replacing the utilization of conventional timber of high priced tree species.

The industrial development of bamboo in developing countries is providing new opportunities to younger generations to retain and continue its traditional techniques to harvest, process and ultimately use bamboo. Bamboo industries in Asia have a large market and are quickly spreading across the continents to Africa and America (FAO, 2007). India is the seventh largest country in the world having total geographical area of 328.73 Mha, support over 16.7 percent of the world population.

Description and Morphology

Bambusa polymorpha commonly known as *Burmese* bamboo is a caespitose (small dense clump) bamboo and belongs to the family Poaceae. It is a tall, grayish green colored bamboo species, having large numbers of branches and growing in a closed culm. It prefers a mean annual rainfall in the range 1,100 – 2,500 mm to promote maximum growth, but tolerates upto 900 – 4,300mm. The bamboo grows in light shade, tolerating full sun. Its significant growth can be seen in deep, fertile, well-drained, loam soils with pH in the range 5 - 6, tolerating 4.5 – 6.5.

Table 1: Characteristics of *Bambusa polymorpha*

Height	15-25 cm
Diameter	7-15 cm
Growth habit	Dense clumping
Climate	Tropical-Sub tropical
Hardness	0°C
Origin	Southeast Asia

Table 2: Mechanical properties of *Bambusa polymorpha*

Properties	Strength	
	Green conditions	Air dry conditions
Modulus of elasticity	3.2 kN/mm ²	3.9 kN/mm ²
Modulus of rupture	27.3 N/mm ²	35.6 N/mm ²
Fiber stress at elastic limit	13.8 N/mm ²	16.0 N/mm ²

Bamboos are usually monocarpic and living for many years before flowering. Most bamboo species flower infrequently, certainly at an interval of 30– 80 years. The estimated life cycle of *Bambusa polymorpha* is 60 years. Burmese bamboo has gregarious flowering for about 2 - 3 years. After the mass flowering of bamboo of particular species, they die. These flowers are pollinated by wind. The production of 1000 seeds weighs 38 grams. Natural regeneration is done through seed. A bamboo seedling needs more than 10 years to develop into a mature clump. Each culm produces a number of new stems annually and attains their maximum height in their first year of growth. In mature tropical species, the new stem could reach a height of 30 meters, with daily increment of 30cm or more during their peak growth period. This characteristic of *Bambusa polymorpha* makes them one of the fastest-growing species in the world.

Growth originates from a unique rhizome system. Branching occurs from the mid-culm to the top, reaches a height of 15 - 25 m, 7 - 15 cm in diameter, smooth, and covered with white powder. The culms are harvested of culms when the clumps are more than 5 years old. For construction purposes, 2 years culms can be harvested. For the sustainable growth of bamboo, at least 8 - 10 old culms should be left in the clump. The sheaths of growing shoots are golden yellow color, with cup shaped blades. Leaves are used as an excellent cattle fodder.

Distribution

The major bamboo producing countries in Asia are China and India accounting for approximately 70% of bamboo in Asia. *Bambusa polymorpha* is suitable for light (sandy), medium (loamy) and heavy (clay) soils and prefers moist soil. It can be grown in semi-shade (light woodland) or no shade. The culm can tolerate strong winds but not maritime exposure. *Bambusa polymorpha* is a large dense clumping tropical bamboo native to Myanmar, Thailand and widely distributed throughout North-east India, Bhutan and Bangladesh. The areas particularly rich in bamboo are Madhya Pradesh, Northeastern states, Western Ghats and Andaman and Nicobar islands.

Economic Importance

Bamboo is economically important non-timber forest product (NTFP), popularly referred to as “poor man’s timber” and a good substitute for expensive wood from trees. It is considered as one of the largest reserves in Indian sub-continent. India is the seventh largest country in the world having total geographical area of 328.73 Mha, support over 16.7 percent of the world population. Bamboo provides income, food and housing to over 2.2 billion people worldwide. The National Forestry Action Plan projects states that the total annual requirement of timber in 2001 and 2006 was 73 and 81.8 million m³ (GoI, 1999) against the available forest stock of 12 million m³ per annum. Therefore, a huge gap lies between demand and supply. To resolve this, the Government of India started the National Bamboo Mission to promote growth of the bamboo sector, to increase the availability of utility planting material and to strengthen the marketing of bamboo products.

Due to its fast growth, easy propagation, soil binding properties and short rotation, bamboo is considered as an ideal plant for use in afforestation and soil conservation. Long fibre and good working qualities make them suitable for a variety of purposes. Traditionally, entire houses are built using bamboo (without a single iron nail). The tribal communities made large suspension bridges by using cane/bamboos. Bamboos are commonly used as agricultural implements for anchors, boats, bows, chairs, water bottles, ladders, musical instruments, paper, poles, roofing ropes and table mats. In India, *Bambusa polymorpha* is also used for walls, mats, partitions and boards. It is utilized as a raw material for paper pulp. The shoots of bamboo are having low fat and high nutrient content, antioxidants and phytochemical compounds. The market of bamboo is gaining popularity worldwide for its utilization as healthy and nutritious food. The International market for bamboo shoots has

grown upto 150 million per year from China alone. *Bambusa polymorpha* is used for building and structural uses, baskets making and making low quality furniture. In recent years, *Bambusa polymorpha* is gaining importance due to its wide acceptance and structural uses.

Conclusion

Bamboos have always been an integral part of the traditional landuse system and domestic life. They are widely distributed in Madhya Pradesh, Northeastern states, Western Ghats and Andaman and Nicobar islands. It provides craftsmen nourishment, build roofs and walls of their houses and turn them into bottles to drink. It also plays an important role in soil conservation, their rhizomes firmly holding the top layer soil which prevent soil erosion. Over 1,000 million people live in bamboo houses as the key structural and roofing element. It has been assumed that promoting the use of bamboo as a renewable and sustainable substitute of wood from trees in the form of fuelwood, beams, column, furniture etc. may reduce the pressure on tree dominated forests.

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