



Poor Man's Timber: Play an Important Role for Livelihood

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Bamboo is a member of the Poaceae family. Bamboo is a significant Non-Timber Forest Produce (NTFP) that grows throughout the country. Bamboos are mostly found in mixed deciduous and tropical evergreen forests, but they are also found in dry dipterocarp forests. More than 1,250 bamboo species belong to 75 genera and are scattered worldwide, with 125 species spread across 9.57 million hectares in India. India is second after China in bio-resource bamboo. Bamboo is known as 'poor man's timber', 'the cradle to coffin plant' and 'green gold'. More recently, bamboo has been called the "wonder plant" (INBAR, 2004), the "miracle grass" (ETI PROSEA, 2001) and the "raw materials of the 21st century."

Habitat

Bamboos grow well in high rainfall areas having mean annual rainfall ranging from 1,250 to more than 5,000 mm. However, it also occurs in Dry Deciduous Forests of low rainfall areas (750 to 1,000 mm). It withstands varying temperatures starting from -5°C to 46°C . Snow has practically no influence on its growth. Humidity, soil texture and structure, drainage pattern, soil moisture, altitude, and physiographic location are also important for bamboo performance. Each species has a distinct habitat that is determined by edaphic and climatic circumstances. Although bamboo species can grow in slopy hilly locations with very thin soil layers, they favour deep loamy soils, sandy loam, and fertile clay loams. They can also grow on degraded, low-fertility soils. Although certain species thrive along river banks, stream beds, and other damp areas, it favour well-drained soils. The climatic and edaphic conditions suitable for the growth of some of the important bamboo species are given in Table 1.

Table 1: Climatic and edaphic conditions suitable for growth of some important bamboo species in India

S. No.	Species	Soil	Topography	Climatic conditions & Occurrence
1	<i>Arundinacea racemosa</i>	Gravelly loam & clay loam	Slopy upland & high relief	Moist, Eastern Himalayas 2200-3050 m alt.
2	<i>Bambusa bambos</i>	Plain catchment, river sand, fertile soil	River bank, hilly moist area	Moist, except dry land and arid regions of India
3	<i>Bambusa tulda</i>	Catchment, Sandy fertile soil	Plain land near water source	Moist, Assam, W.Bengal, Central India, Moist Deccan pleateu, Deciduous forest areas
4	<i>Bambusa nutans</i>	Gravelly	Valleys &	Semi-dry Yamuna eastwards to

		loam, sandy fertile	Sub-Himalayan tract	Arunachal Pradesh, Orissa W. Bengal
5	<i>Bambusa vulgaris</i>	Sandy fertile	Coastal region, Plains	Moist, North-East M.P. and other moist area.
6	<i>Dendrocalamus brandisii</i>	Fertile loamy soil or sandy loam.	River bank, nallahs	Moist, Kerala, Karnataka, Tamil Nadu
7	<i>D. strictus</i>	Gravelly degraded land, shallow soil.	Slopy hills & dry degraded plain land	Dry, all over India upto 1000 m alt.
8	<i>Melcanna baccifera</i>	Fertile, loam	Slopy hills, bunds of cultivated lands	Moist, entire North-East, W. Bengal and hilly areas.
9	<i>Dendrocalamus giganteous</i>	Fertile sandy loam, soil	Plain land and also hilly areas	Moist, Arunachal Pradesh, Assam, Manipur, Nagaland and W. Bengal.
10	<i>D. balcooa</i>	Fertile, loamy, sandy loam.	Foothills and plain lands	Moist, entire North-East, W. Bengal, Bihar, Eastern U.P. upto 600m altitude.

Source: Nagariya and Puri (1997)

Importance of Bamboo

Bamboo Shoot Powder and its Nutritional Value

- Fresh bamboo shoots have high protein content (amino acids), carbohydrates, minerals, and several vitamins.
- Bamboo shoots contain phytosterols and a high amount of fibre that can qualify as “nutraceuticals” or “natural medicines.”
- Phytosterols have cholesterol-lowering activity.
- Bamboo shoots are an excellent source of edible fibre (6 to 8 g/100 g fresh weight), which helps in lowering blood cholesterol.
- Bamboo fibre is available as a powder with at least 95% fibre.
- Bamboo shoots have high cellulosic content that stimulates appetite.

Agroforestry potential

Some of the agroforestry system being adopted in the country are:

- Soybean with *D. strictus*.
- Pigeon pea with *Bambusa bambos*.
- Soybean with *Bambusa bambos*.
- Ginger with *Bambusa bambos*.
- Turmeric with *Bambusa bambos*.
- Soybean with *Melocanna baccifera*.
- Soybean with *D. longispathus*.

Medicinal Potential

- Pharmacological analysis of methanol *B. balcooa* leaves extract revealed anti-ulcer activity of (14.66% protective ratio).

- Shoots of *Phyllostachys nigra* had a significant decrease in serum total cholesterol.
- Leaf extract from *Phyllostachys nigra* is a potent inhibitor of NF-kB- induced gene expression.
- *Phyllostachys edulis* bamboo species is used to prepare the additive known as AOB (antioxidant bamboo)
- *Bambusa arundinacea* has a great significant ayurvedic role as a medicinal plant.
- Bamboo bark has similar effect and is used to treat skin obstruction and eruptions.
- Bamboo shoots are reported to intensify one's craving, also help in digestion and metabolism.

Value added products from bamboo

- Wood substitutes and composites including different types of bamboo boards like flatten, veneer, jute composite, corrugated sheets.
- Food and Agro-processing-Bamboo shoots carry the potential of value-added economic activity through community entrepreneurial initiatives in cultivation, processing, and packaging.
- The gasification of bamboo can produce clean and renewable electricity and a range of valuable by product like high-grade charcoal.
- Bamboo processing 'waste' is an excellent source material for high-grade charcoal and activated carbon which can serve as a fuel, absorbent, and conductor.

Opportunities

- Bamboo plant usually uses for making houses in sub-urban and rural areas.
- It is also, used as raw materials of different house hold products, production of paper and useful handicrafts.
- Bamboo shoot has been using one of the delicious vegetables in different countries. Research has revealed that bamboo shoots have a number of health benefits. So, it is necessary to promote bamboo cultivation through appropriate methods.
- As well as verify the impacts of the plants extract in human body as traditional medicine by using modern technology for further recommendation.
- Bamboo pellets can be used as a source of a renewable energy source.

Conclusion

Plantation of bamboo should be encouraged and promoted due to their high value, productivity, uniformity of crop, choice of species linked to peoples' and industrial need. Bamboo industry that will definitely grow with time and the opportunities are limitless. This amazing plant has unique rapid growth and can play an important role in protecting our planet from pollution and improving the soil. Bamboo can be used as a food, and architecture and construction applications and play a large role in the local economy by creating job opportunities.