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# Bamboo in the Rural Life of Hill Tracts of the Western Ghats

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Bamboos are an important component of the forests of the Western Ghats, and must have played a significant role in the life of people since time immemorial. The earliest uses for people in the hunting-gathering stage must have included the construction of hunting implements and shelter, and use of shoots and seeds as food. When agriculture was taken up, bamboo began to play an important role in the construction of various agricultural implements, grain storage bins and the more elaborate houses of the farming communities. The use of bamboo by the farming communities is illustrated by a detailed survey of an Uttara Kannada village. The pastorals depend on bamboo as fodder especially in the summer when the grass dries up. In the simpler tribal and pastoral communities bamboo is worked by all members. However, in the more complex agricultural society some communities devote themselves entirely to bamboo working. In years of seeding, seed collection may provide subsistence to many rural communities. The modern use of bamboo in industry dates from the last half century. Prior to that bamboo was considered a weed by foresters; now that it is a valuable commodity, its availability for the local population has steeply declined due to over exploitation. This poses considerable hardships to the rural population.

**Key Words:** Bamboo, Western Ghats, Basket-weavers, Paper mills

## Introduction

The hill chain of the Western Ghats runs parallel to the West Coast between the latitudes 8°N to 20°N. It experiences rainfall regimes ranging from 7500 mm to as little as 800 mm a year and harbours vegetation ranging in physiognomy from evergreen to dry deciduous forest. Bamboos are an important component of this vegetation, the dominant species being *Bambusa arundinacea* in regions with an annual precipitation of 1000–2500 mm and *Dendrocalamus strictus* in regions with an annual precipitation of 800 to 1500 mm. The bamboos come up well when the canopy of the forest is somewhat opened up; hence they are particularly abundant near human habitations with a moderate degree of human interference (Prasad & Gadgil 1981).

Bamboos are light demanders that reach the forest canopy in a single spurt of growth lasting over a few months of the monsoon. They achieve this feat of coupling high growth

with the height of a tree by producing hollow culms strengthened periodically by horizontal septa at the nodes The culm walls are rich in cellulose and derive their high tensile strength comparable to that of steel from the presence of very long cellulose fibres aligned in a longitudinal fashion (Shekhar & Rawat 1956, Anon 1972). All of this renders bamboos an excellent structural material which can be worked easily even with the most primitive tools. Furthermore, bamboo shoots and seeds are an excellent source of nutrition.

**Early Use**

Bamboo must therefore have played a significant role in human life since the earliest times. The evidence for this is apparently reflected in its present position in the life of tribals of the Western Ghats. A primitive hunting-gathering tribe of the Western Ghats of Goa and Ratnagiri is known as teer-Kamtha vallas, (teer = arrows, Kamtha = bow) and as its name implies, depends on bow and arrow for its subsistence. This bow and arrow is made up of bamboos. The bamboo shoots are an important item in the diet of all Western Ghats tribals, e.g. Kadu Kurubas of Bandipur tiger reserve, as well as many other rural communities. The tribals construct their huts largely out of bamboo with their own efforts.

The pastorals also depend a great deal on bamboos not only for their shelter and other tools, but also as a fodder for their animals. Thus, the buffalo and cattle keeping caste of Gavli Dhangars of Western Ghats of Maharashtra and Karnataka depend largely on bamboos for green fodder for their livestock in the summer months. They lop the bamboo culms to bring down the foliage-bearing culm tips (Gadgil & Malhotra 1982).

The tribal and pastoral societies tend to be self-sufficient and depend very little on other communities for any services. Simple working of bamboo requires little skill and these people construct bamboo huts or weave simple bamboo baskets on their own.

**Farming Communities**

The farming communities of the tract continued extensive uses of bamboo as before, but also added to them in terms of uses for farm implements such as seed drills, irrigation systems and so on. A very interesting application is the irrigation system of the farmers of the hill tracts of Sampaje in the district of Dakshina Kannada of Karnataka. Here the farmers tap perennial streams in the higher reaches of the hills and use them to irrigate their terraced cultivation. Bamboo and arecanut pipes are used to convey water whereever the terrain is uneven. Very elaborate pipes convey water across gullies through arecanut stem pipes supported by bamboo pillars. The bamboo pillars are maintained erect by being thrust in a large bamboo basket full of boulders and large pillars (figure 1).

*Bambusa arundinacea* is notable for its monocarpic, gregarious flowering, during which a single clump may produce as much as 50 to 100 kg of seed with a total production of 50–100 quintals per hectare. This bamboo rice is highly palatable and can substitute for ordinary rice in many preparations. Such flowering occurred in Sampaje area of Dakshina Kannada over 1977–81. The local farmers reported that about 20–21 man-days were required to collect two quintals of seeds during the three waves of seed production between December–April (figure 2). The forest department purchases this at the rate of Rs. 150.00 per quintal; or it can substitute for rice available at Rs. 140.00 per quintal. Thus, the collection of bamboo seeds leads to an earning of Rs. 14 00 to Rs. 15 00 per day, compared with earnings of Rs. 6 00 per day as a forest department labourer or Rs. 8.00 per day as an arecanut plantation labourer.

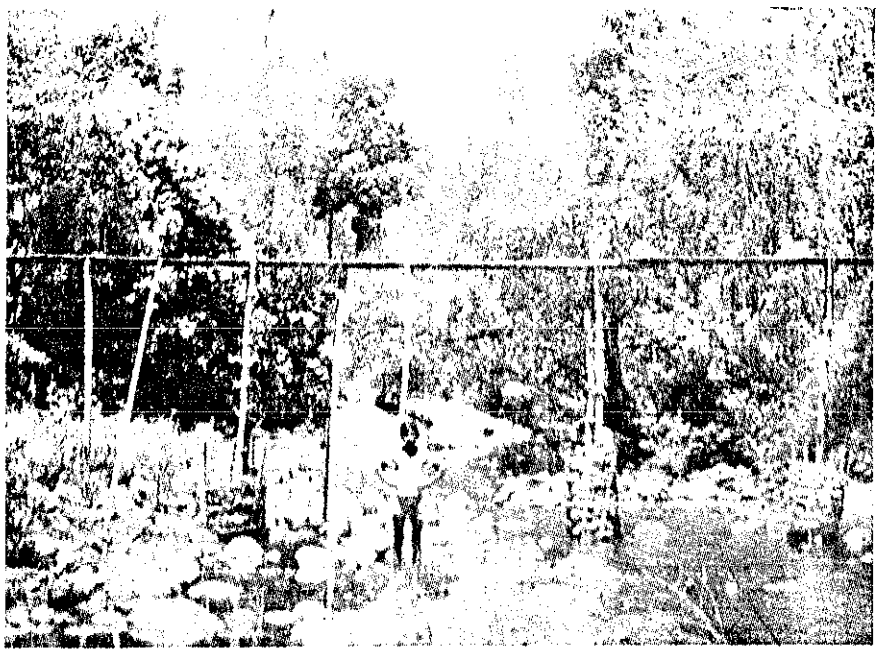

**Figure 1** An irrigation pipe system with bamboo pillars Sampaje Dakshin Kannada

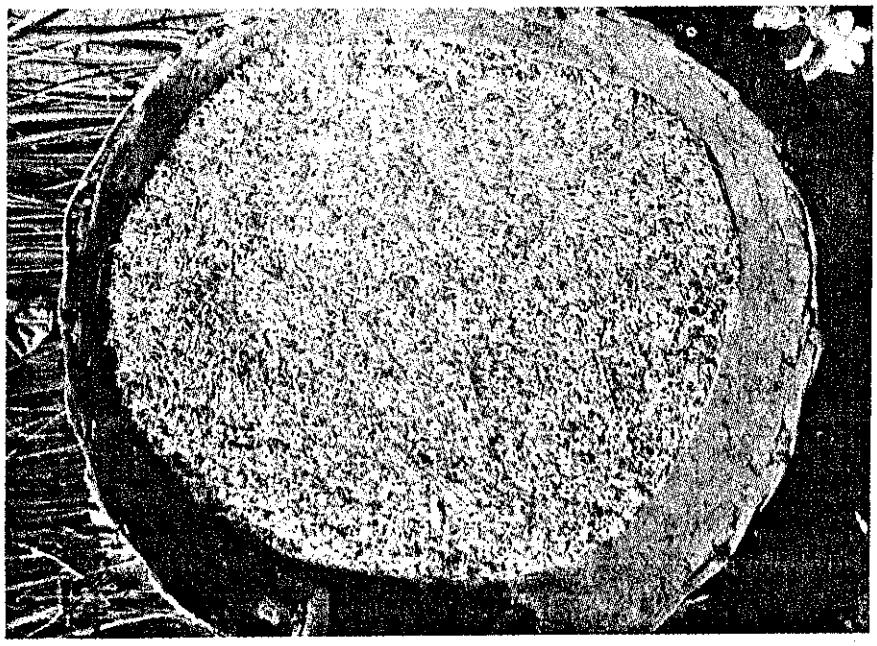

**Figure 2** Bamboo rice: Seeds of *B. arundinacea* Sampaje Dakshin Kannada

There is a prevalent belief, though not supported by our data (Gadgil & Prasad 1984) that bamboo seeding is triggered by years of successive drought and hence coincides with famine conditions. Thus, during the 1865 famine of Dharwar a large number of people migrated to the Uttara Kannada forests in search of *B. arundinacea* seeds (Campbell 1883). Similarly, atleast 35,000 people were supposed to have been saved from starvation deaths by the timely seeding of *Dendrocalamus strictus* in the Chandrapur district of Maharashtra in 1899-1900 (Lowrie 1900).

**Rural Housing**

The most significant use of bamboo in the farming villages is in house construction. We attempted a detailed estimate of this use for the village of Alur in Haliyal taluk of Uttar Kannada district. This village with a population of 300, lies amidst bamboo forest. A total of 46 houses were sampled in April 1979 to determine the use of bamboo for house construction and other uses. The quantities of bamboo used was estimated by actual measurements and through administering a questionnaire to the head of the household. Data were also obtained on the frequency of replacement of bamboo in the construction and the use of bamboo in the preparation of agricultural implements. Out of these 46 huts sampled, five used no bamboo at all. These houses belonged to the richer farmers who used timber. Of the remaining 41, 21 households used bamboo very extensively. The other 20, which did not use bamboo so extensively, were smaller and apparently temporary dwellings, using small twigs as the basic raw material for construction. Hence, the vast majority of the permanent houses of the farmers were constructed largely out of bamboos. These bamboo houses have a plinth area of around $10M^2$. Out of the 21 bamboo huts, three were used for housing livestock. Our data presented in table 1 furnishes the details of thes use of the bamboo. 53% of the bamboo used goes into scaffolding, 31% in wall construction, and 16% in fencing. The total consumption over 25 years has been of the order of 17 tons. Since the huts appear to need little repair, this implies of the use of around 0.68 tons of bamboo per year. The older houses largely use the bigger *B. arundinacea*, the houses constructed after its gregarious flowering around 1960, use *D. strictus*.

**Basket Weavers**

The settled agricultural communities of India are a loose conglomeration of endogamous castes, each with its own specialized hereditary occupations linked together in a network of exchange. Thus, while the tribals and pastorals may work the bamboo themselves, the settled communities depend on specialized communities of basket-weavers for their requirements of bamboo articles. Such basket weavers are often nomadic castes moving from village to village, camping on the outskirts and exchanging bamboo articles for grain from the villagers. There are apparently several such communities on the Western Ghats. Some excellent material has recently become available about one such—Kaikadis—of Maharashtra—through an autobiography of an educated member of this community (Mane 1981). The Kaikadis weave bamboo articles primarily baskets, grain storage bins and mats for house-walls. They also work as musicians in wedding processions. They have a rather low status amongst the touchable castes and have considerble social intercourse with the other nomadic castes. Traditionally the basket weavers had free access to bamboo in forest areas; they have however, been considerably impoverished in recent years through the decimation of bamboo stocks.

**Industrial Uses**

The long cellulose fibres of bamboo renders

**Table 1** *The utilization of bamboo* D. strictus *in housing by villagers of Alur, Uttara Kannada. The longetivity of these houses is between 25–40 years and they need very little repair*

| Area of the structure (sq m) | Scaffolding | Walls | Fencing | Category of the structure | Species of bamboo | Age of the structure (in yrs) | Time elapsed since last repair (in yrs) | Number of bamboos used in the repair | Type of roofing of the structure |
|---|---|---|---|---|---|---|---|---|---|
| 13 5 | 30–40 | — | — | Dwelling | *B. arundinacea* | 20 | 20 | — | Thatch |
| — | 150 | — | — | —do— | *D. strictus* | 25 | 1 | 25 | Tiles |
| 21 6 | 40 | — | — | —do— | —do— | 1 | 1 | — | Thatch |
| — | 25 | — | — | —do— | —do— | 5 | 5 | — | —do— |
| — | 100 | — | — | —do— | —do— | 45 | 45 | — | Tiles |
| — | 44 | — | 20 | —do— | *B. arundinacea* | 5 | 5 | — | Thatch |
| 72 0 | 48 | — | — | Cattle shed | —do— | 30 | 30 | — | Tiles |
| 43 2 | 60 | 60 | — | Dwelling | —do— | 3 | 3 | — | Thatch |
| — | 65 | 35 | — | —do— | *D. xstrictus* | 3 | 3 | — | —do— |
| 36–01 | 152 | — | — | —do— | —do— | 6 | 6 | — | —do— |
| 43 2 | 90 | 40 | 70 | Cattle shed | *D. strictus* | 4 | 4 | — | Thacth |
| 45 01 | 170 | 60 | — | Dwelling | —do— | 9 | 9 | — | —do— |
| 56 2 | 300 | 300 | — | —do— | —do— | 7 | 7 | — | —do— |
| 21 6 | 40 | 30 | — | —do— | *B. arundinacea* | 16 | 16 | — | —do— |
| — | 102 | 200 | 600 | —do— | *D. strictus* | — | 13 | — | —do— |
| — | 42 | 30 | — | —do— | *B. arundinacea* | 12 | — | — | —do— |
| — | 290 | 90 | — | *Cattle shed* | *D. strictus* | 8 | 8 | — | —do— |
| | 50 | 40 | — | *Dwelling* | *B. arundinacea* | 8 | 8 | — | —do— |
| — | 100 | 150 | — | —do— | *D. strictus* | 30 | 30 | — | —do— |
| — | 200 | 190 | — | —do— | —do— | 8 | 8 | — | —do— |
| — | 45 | 35 | — | —do— | —do— | 8 | 8 | — | —do— |

it an ideal raw material for production of paper. This was realized as early as 1910 (Pearson 1912), and the first paper mill in India based on bamboo was established at Naihati in West Bengal in 1919. The first paper mill based on bamboo of the Western Ghats tracts was established at Bhadravathi in Karnataka in 1937; and others have followed.

Our forest policy is geared to serving the high quality timber and industrial users. Hence, before the establishment of bamboo-based industry, bamboo was considered a weed by the foresters despite its tremendous utility to the rural population. When it became an industrial raw-material it was given away to the industry at throw-away prices such as Re. 1.00 per tonne. While it was supposedly managed for supply to the industry on a sustained yield basis, this has infact not been achieved, and bamboo stocks of the Western Ghats have been rapidly decimated

over the last few decades (Gadgil & Prasad 1978).

The entry of the paper and other industries as users of bamboo has created marginal employment opportunities for harvesting bamboo for the mills. However, the bamboo harvest labourers receive none of the benefits of the industrial labourers in the paper mills. They are always lowly paid temporary employees of agencies specially created as devices to avoid paying them at par with mill labourer. Hence, such jobs are generally not accepted by the local people of the Western Ghats tracts, but by immigrants from drought areas such as Gulbarga.

With the coming of the industrial demand the local population is now denied access to their traditional bamboo sources. Instead they are supplied bamboos from depots or have to buy them on the open market. The bamboos supplied from the depot, as reported to us by basket-weavers of Sambrani in Haliyal taluk of Uttara Kannada district, tend to be dried and useless for basket-weaving. The price of bamboos on the market now is between Rs 1000.00 and 4000.00 per tonne to be contrasted with the price to industry which nowhere exceeds Rs 630.00 per tonne. Thus the industry, the bulk consumers of bamboo stocks, and a major cause for the decimation of these stocks is given bamboo at an incredibly low price while the rural population which has traditionally depended on bamboos for manifold uses suffers serious hardships.

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