

BAMBOO CULTIVATION TECHNOLOGY

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ARTICLE ID: 054

Introduction:

Bamboo is one of the commercially cultivated crops in India and it is also considered as 'a poor man's timber'. India is the second largest producer of Bamboo in the world after China. Bamboo is a fast-growing woody plant which is a renewable source of fuel which has a heating value comparable to that of timber from trees. Bamboo is a flowering, permanent and evergreen plant, which belongs to the grass family of Poaceae. It is a versatile, strong, renewable as well as environment-friendly material that can be easily grown for various purposes. Bamboo is also considered the fastest growing woody plant on earth. In India, bamboo is the most integrated part of the culture and is used as a substitute to woods. It is mainly used as construction material, furniture, pulp and plywood. India is very fortunate to be blessed with good bamboo resources. Moreover, the bamboo shoots are consumed as food and are considered good source of nutrition. The north eastern states are the major bamboo producing states in the country. Although there are around 136 species of bamboo that exist in the country, still only some of them are commercially feasible. Bamboo is a versatile, strong, renewable and environment friendly material. Bamboo described as the "wood of the poor" in India. In India various species of Bamboo are cultivated which varies according to region, soil type and climatic conditions. Cultivation practices of bamboo also varies from region to region. Here are some general practices for cultivation of bamboo.

Soil and Climate: Bamboos can be grown and cultivated on a wide variety of soils except in rocky soils. Bamboo plantation also requires well drained sandy soil to clay soil that should have a PH range of 4.5 to 6.0. The bamboo plantation grows well in hot to warm temperate climatic conditions. Since the bamboo has thin roots as well as ample growth, provisions should be made to protect it from strong winds.



Propagation: Normally, the bamboos are propagated through the culms, cuttings or rhizomes. But the efficiency of these propagation methods varies greatly. Also they can be propagated through the seeds, which are very rarely available. Bamboo seedlings are basically raised on nursery beds and for a year and later the seedling is transferred into the main field. In the rhizome planting method, a little care is needed. Here, culms of one year along with roots should be dug and cut into one meter size and be planted in the rainy season. Bamboo propagation techniques are insufficient, in view of the need for quality planting material at very large scale. Bamboo can be also propagated through micropropagation. In micropropagation, mass scale production of high-quality plants, which are easy to transport and deliver on site, disease free and vigorous growers. Moreover, micropropagation is very flexible and rapid upscaling is possible.

Land Preparation: The land should be ploughed thoroughly and deeply as possible. Cleaning and ploughing should be done at least three weeks ahead of the planting. Addition of organic materials such as compost, green manures and neutralized saw dust help to retain moisture and also provide nutrition to the plants. Land should be well drained. Bamboo likes water and requires lots of water to do its best, but it does not like to be submerged in water or low land condition.

Planting: Pit sites should be identified before digging the pits, to ensure the desired spacing. Dug the pit of 3 x 3 x 2 feet size at the spacing of 5 x 4 meter. Digging of pits should be done before the rainy season and the dugout soil exposed to weathering. A few days before planting thoroughly turn the soil in the pit. In the pit soil should be added and mixed with 10 kgs of FYM or vermicompost, 200gms neem cake, 50 gm Urea, 50 gm Single Super Phosphate and 50 gm Muriate of potash. While planting remove the polybag using blade, to ensure that root ball should not disturbed. Place the plant vertically in the pit without bending roots. Level the pit with the mixed and enriched soil, being sure to eliminate all air pockets. Mulch the soil around the plants will help control weeds and keep the soil moist. The gestation period in bamboo planting is 5 years. Hence the inter space can be used during first 3 years for earning some extra income by growing inter crops such as ginger, chillies or turmeric.

Manures and Fertilizer: For high quality and optimum yield fertilization is most important. Manure and fertilization are important when the seedling is transplanted in the main field. As



the bamboo plants are heavy feeders, even the richest soil will get washed-out after few years if fertilizers are not applied timely. Bamboo needs complete range of fertilization, including nitrogen, phosphorous and potassium, and often a higher amount of nitrogen. Fertilization should be done after harvesting and before irrigating the plants. A general dosage norm that may be followed is 15.5 kg of Urea, 5.5 kg of SSP and 13.45 kg of MOP per plant per year. For first year 50%, second year 75% and third year onwards-full dose should be given in 10 split doses. Fertilizer application is required to be done first during planting; the fertilizer should be mixed in the pits. Subsequently, fertilizer should be applied every months of planting. Also, there should be application of green manures, organic compost, wood ash and chemical fertigation. Leaf biting and sucking insects are common in young bamboo plants. Hence appropriate pesticides should be applied to control these pests.

Irrigation: Irrigation must be done regularly while the bamboos are grown on nursery beds. Immediate water should be provided at the time of transplanting seedlings from nursery to main field. It must be noted that bamboo trees are sensitive to water logging hence you must drain out the soil especially during heavy rainfall or flooding. You can also adopt drip irrigation system for better utilization of water.

Harvesting: The task of harvesting bamboo is very labour-intensive. Bamboo harvesting can be started from the fifth year onwards. On the other hand, in case of commercial farming, harvesting must be done from the sixth year. In the first harvest after sixth year, 6 culms can be harvested followed by 7 culms in the seventh year and so on. Harvesting time varies region to region as per climatic condition and growth of cane. The yield and income from bamboo plantation, increases each year starting from the fifth or sixth year. The best time of the year to harvest culm is in the post monsoon season extending through the winter. This is the period of dormancy during which culms tend to have lower starch content. They are therefore less susceptible to borers, termites and other pests. Culms should not be harvested in the growing season, which is normally during the monsoon months. Harvesting in this period can damage young and emerging shoots and retard the future growth of the clump. Bamboo is a cash crop having low gestation period, faster growth and gives economic recurring returns, generation after generation. Bamboo stands are often found on very steep slopes which are difficult to reach. Bamboo culms are felled with machetes and manually



hauled out of the forests and transported to villages on carts. Most areas do not have road access and modern transport is not available.

General Remarks

Bamboo is a flowering, permanent and evergreen plant, which belongs to the grass family of Poaceae. and subfamily Bambusoideae. Average heights of various species varies from 30 m and more. Cultivation practices of bamboo varies according to different species as well as region of cultivation. Unlike most timber, bamboo is a self-regenerating natural resource; new shoots that appear annually ensure future raw material after mature culms are harvested. Bamboo provides considerable environmental benefits. Bamboo is also used for ecological purposes such as soil stabilization and erosion prevention on hill slopes and verges. It is a very important forestry plant which is harvested from existing natural forests, plantations, and mixed agroforestry systems. Bamboo silviculture is an option for conserving and protecting tropical forests while creating enduring supplies for the wood and cellulose industries. Bamboo is a multipurpose plant with a myriad of applications ranging from construction materials, furniture, fences, handicrafts, pulp and paper, edible shoots, and animal fodder. In developing countries, it is a basic raw material with numerous traditional uses. It is highly suitable for handicrafts; it can be woven into numerous products including mats, baskets, trays, hats, lampshades, caps, lanterns, etc. Bamboo products are serve decorative purposes, in cottage industries, wood and paper industries. Bamboo is also a source of food. Bamboo shoots generally appear during the spring or early rainy season. When harvested young, they are a crunchy and nutritious vegetable. Young shoots contain up to 90% water, and are rich in vitamins, cellulose, and amino acids. They have a high nutritional value, are low in fat and high in fiber content. Young shoots vary in size and weight according to species; the edible content of a newly harvested shoot is usually 30% of its weight. Bamboo shoots are sold fresh but are also canned in brine. They are exported worldwide and constitute a multi-million-dollar trade commodity. Women and children, many of whom live below subsistence levels in developing countries, harvest a great part of the bamboo that is used. The rural tribals are dependent on bamboo for their shelter and daily domestic uses.

Maharashtra is Gold mine of teak wood, tendu leaves and bamboo varieties. Govt. has been managing Teak & Tendu crop by adopting silvicultural practices over long period; however, Bamboo crop could not attract desired attention from foresters due to many



attributes. Now, Bamboo has drawn attention of many because of its remarkable properties, variety of uses, its fast growth, livelihood of forest dwellers in rural areas of the State. Bamboo sector promotes Economic Development, Environmental Sustainability, Equity of developing weaker communities in the backward areas and Employment Generation.

