



## Agroforestry Facts Bambusa Bamboo



<b>Botanical Name</b>	<b><i>Bambusa</i> spp.</b>
Name in English	Bamboo
Name in Kannada	Bidiru
Family	Poaceae
Seeds Collection	Bamboo seeds need to be collected immediately before rains set in as seeds lose viability rapidly on exposure to excess moisture.
Seeds Processing & Treatment	Seed longevity in bamboos varies with species from one to eight months. Caryopsis and glans type seeds can be stored by controlling moisture content and temperature, for about four to five year using scientific methods of seed storage. No pre-treatment for germination.
Nursery	Generally, Bamboos are propagated through culms cuttings or rhizomes. They can also be propagated through seeds. However, bamboo seeds are very rarely available. Bamboo seedlings are raised on nursery beds and they are allowed to grow in poly pots for a year. Then this seedling will be transplanted into the main field. In rhizome planting method, 1 year age culms with roots should be dug and cut to 1 meter height. These culms should be planted in monsoon (rainy season). If bamboos are propagated through rhizomes, extra care should be taken while planting the rhizomes.



	<p>In most places, vegetative propagation method is practiced. Tissue culture is another means of producing quality bamboo seedlings. KFD is raising tissue culture seedlings of <i>Bambusa tulda</i>. Tissue culture seedlings of <i>Bambusa balcoova</i> are also available in the market.</p>
Plantation Management	<p>The land should be ploughed as thoroughly and deeply as possible. Clearing 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. Provide better drainage system. Bamboo likes water and requires lots of water to do its best, but it does not like to be submerged in water or “wet feet” condition.</p> <p>Pit sites should be identified before digging the pits, to ensure the desired spacing. Dug the pit (3 x 3 x 2 feet size). Pits should be dug much before the rainy season and the dugout soil exposed to weathering. A few days before planting thoroughly turn the soil in the pit.</p> <p>In the pit mix the soil with 10 kg of FYM or vermicompost, 200g neem cake 50g Urea, 50g Super Phosphate and 50g Murite of potash. Carefully remove the Polybag using blade, to ensure the root ball not disturbed. Place the plant vertically in the pit, ensuring that the roots do not curl. 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</p> <p>Drip irrigation is one of the good irrigation systems to get maximum yield. After planting, irrigate with 12-20litres of water, depending on the prevailing climatic conditions and compact the loose soil around the plant. Repeat the watering the next day. For the next 10 weeks (at daily intervals initially, extending later to once in three days).</p> <p>Bamboo plants are heavy feeders and respond well to fertilizers, growing more vigorously with fertilizer application than without. Fertilizers are important to ensure high yield and overall profitability of plantations. Bamboo needs complete range of fertilization, including nitrogen, phosphorous and potassium, and often a higher amount of nitrogen. It is better to carry out soil analysis to fix and confirm the dosages. A general dosage norm that may be followed is 15.5kgs of Urea, 5.5kgs of SSP and 13.45kgs of MOP per plant per year. For first year 50%, second year 75% and third year onwards-full dose should be given in 10</p>



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 month of planting. Care should be taken to see that chemical fertilizers are not applied directly.

**Clump Management:** Soil Loosening: Soil should be loosened to a depth of 10 – 15 cm, and 30 –45 cm away from the bamboo clump at least twice a year is improving the growth of shoots and the root system.

**Weeding:** Regular weeding is necessary to prevent weeds and other vegetation from competing with the young bamboo for sustenance. Weeding should be done at least for the first two years after the rains and end of the wet season. Once the clump gets established there is considerable leaf shedding and this acts as a barrier to the emergence of weeds.

**Mulching:** Mulching reduces loss of moisture due to evaporation from the planting pits and checks weed growth. In grownup bamboo field, fallen bamboo leaves serve as good on-site mulching material. Bamboos have a requirement of silica for growth that can also be contributed by bamboo leaf mulch.

**Mounding:** Rhizomes grow laterally under the soil surface and when ready to throw up shoots, begin to grow upwardly inclined angle as well. In this period of growth, exposure to sunlight retards and may even stop the growth of rhizomes. Mounding or heaping fresh, loose soil around and over the base of the plant is recommended.

**Pruning:** In some species there is heavy branching at the lower nodes of the plant. For example *Dendrocalamus hamiltonii* and *Bambusa balcooa*. Pruning of these branches reduces clump congestion and helps provide a healthy, airy environment within the clump. Mild pruning should be done in the second and third years of growth, and intensive pruning from the fourth year onwards. It should be completed before the end of the dormancy period, well before shoots emerge. Pruning should be carried out in the month of December and January.

**Thinning:** Thinning the clump is essential from third year onwards to avoid congestion and to ensure proper growth and easy extraction of culms. Weak and deformed culms should not be retained in the culm. An appropriate clump structure should be maintained



	<p>through thinning as well as through extraction or retention of shoots.</p> <p>Usually, bamboo planting is preferred in rainy season. The pits size of 60 X 60 cm should be dug and nursery raised seedlings</p>
Model/Spacing	Ideal spacing 5 x 4 m with 200 plants per acre
Pests, diseases and Management	<p>Leaf biting &amp; sucking insects are common pests in young bamboo plantation. Appropriate pesticides should be applied to control these pests. Main diseases found in bamboo plantation are Fusarium moniliforme, var. intermedium, F. equiseti and culms blight. F. moniliforme is the most widespread disease which affects about 24 species of bamboos in Kerala State. Appropriate chemical control measures should be taken care to control these diseases.</p>
Plant Rotation	10 – 25 years
Yield	1 acre of land produces 900 culms (13.5 tonnes per acre)
Uses	Mainly in construction (flooring, roofing designing, and scaffolding), furniture, food, biofuel, fabrics, cloth, paper, pulp, charcoal, ornamental garden planting, and environmental characteristics, such as a large carbon sink and good phytoremediation option, improving soil structure and soil.
Buyers /Industries	Paper industry, Agarabathi industry and local market
Harvesting	<p>Harvesting of bamboo culms every year will induces the emergence of new shoots and ensures regular and healthy culm production. Harvesting of bamboo for commercial purpose can begin from the third year of establishing a plantation. However the clump will mature and yield culms of full physical dimensions only after the fourth year.</p> <p>The age of the culm is an important factor in the uses to which it is put. For non-structural applications and those that do not require their peak physical and mechanical properties, 2-3 year old culms from a mature clump may be harvested.</p> <p>For most purposes however culms should be harvested when they are 4 years old.</p> <p>Culms that are more than 5 years old begin to turn brittle and weak and then die. As a norm culms over 5 years should not be retained in a commercial plantation.</p> <p>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</p>



	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.
Economic Returns	Net profit Rs. 30,720 per acre annually (5 <sup>th</sup> year onwards), 6 <sup>th</sup> year onwards net profit Rs. 63,000 per acre annually.
Current Market Rate	Rs/ 100 per culms