

**Mainstreaming the Bamboo Cultivation in J&K**

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Bamboo is an important plant gifted by nature in tropical and subtropical areas of the world. It is also called as wonder plant, green gold, emperor of all grasses, wood of the poor etc. It is used by the people in their every-day utilities. It is closely interwoven with the life of the people in several ways. It can be used as a food, fodder, construction material, paper, mats, musical instruments, paintings etc. In India bamboo is expanding its footprints across the globe. India possesses one of the largest bamboo resources in the world. India has about 130 species covering 9.57 million ha area. It can be grown in between the other trees. In the event of a fire bamboo has the innate ability to regenerate and again grow green shoots next year. Bamboo has multiple economical, ecological and social values. It has the capacity to provide the ecological, economic and livelihood security among the people. It acts as source for the raw material for the industrial and domestic use. Bamboo biodiversity can be observed in different areas of J&K. Bamboo forms the most diverse group of plants in the grass family. It belongs to the sub-family Bambusoideae of the family Poaceae. It is a form of grass but it is strong and elastic. Bamboo is found in all the continents except Europe. It is probably the best natural engineering material on the earth. It mainly grows in the tropics and subtropics. It has versatile, enduring and highly renewable material that people have been utilizing for thousands of years. It can be harvested in 2-3 years. It protects the environment by reducing air and water pollution due to its excellent pollution absorption qualities. It produces more than 35 per cent of oxygen than hardwood trees. It can contribute in the economy and ecology of J&K. It can be used as the building material and also for scaffolding, building of bridges etc. Bamboo maintains its core temperature which helps to grow it in diverse climates. Bamboo occurs in different bioclimatically defined forest types ranging from tropical to subalpine zones. India is the second richest country in bamboo genetic resources after China. These two countries together have more than half the total bamboo resources in the world. About 136 species of bamboos are reported in India. Bamboo is grown on about 9.57 million hectares in India which constitutes about 12.8% of the total area under forests. Out of the 22 genera available in India, 19 are indigenous and three exotic. The annual production of bamboo in India is about 4.6 million tonnes. The annual yield of bamboo per hectare varies between 0.2 and 0.4 tonnes depending upon the intensity of stocking and biotic interferences. The economic impact of the agro forestry-based bamboo system may influence general economic development of the country. It is mostly found in N-E States, Chhattisgarh and Andaman and Nicobar Islands and Jammu and Kashmir. Bamboo is not infested with the insect-pests. After two years of unhindered growth, the bamboo grove can be harvested with the minimum labour. It is a very hardy grass which survived even after the nuclear blast at Hiroshima in Japan in 1945. It is a carbon-friendly grass and it can capture the carbon faster than any tree. Bamboo supports other agro-industries for manufacturing handicrafts items, packaging materials, raw materials for fencing, paper industries etc. across the globe.

Agriculture plays the crucial role in the economy of Union Territory of J&K. The agro-diversity of J&K varies from sub-tropical in Jammu region and temperate in Kashmir region. Agriculture is the dominant occupation in J&K and it provides employment directly or indirectly to about 70 per cent of its population. The average size of land holding of J&K is only 0.67 hectare against 1.33 hectares' land holding size on national basis. About 30 per cent of the area of J&K is under cultivation. The average annual rainfall of these two regions is 1069 mm and 660mm respectively. The average temperatures of these two regions are 24.5 and 13.3 Centigrade respectively. There is need to increase the income and employment in agriculture and allied sectors for the farmers of J&K. This is possible by searching some new avenues in agriculture. Union Territory of J&K lies in the North West of the country. About 19.95% of the total geographical area of this hilly UT is covered under forests. The national level goal in forestry is to cover at least two thirds of the total area in the hilly regions

under forests and trees cover. J&K has adopted the forest policy to maintain the adequate forests in various regions of the UT. There are very good reserves of bamboo in J&K and industries such as Agarbati can be established. Bamboo has steady demand over the years and its market value is not much affected.

There is dire need to mainstream the bamboo cultivation in J&K so that it can help to raise the socio-economic status of the farmers.. There is also need to popularize bamboo cultivation specially in the wastelands as bamboo cultivation has immense potential in J&K. J&K already has some bamboo growing pockets where entrepreneurship can be generated by the value addition in bamboo. J&K has immense scope of agro-ecotourism, handicrafts, agarbati making etc. and bamboo can play an important role in these industries. Bamboo cultivation has number of advantages and its cultivation reduces the soil erosion. Bamboo cultivation can generate extra income and employment for the farmers. Bamboo has manifold uses from cradle to coffin. Bamboo has many uses as a substitute for fast depleting wood and as an alternative to more expensive materials. It can be used in paper industry, to make small footbridges, water pumps, irrigation pipes etc. In rural areas it can be used as fodder, in making brooms, food, buckets etc. Nutrient analysis of edible bamboos indicated that it contains 77% to 84% moisture, 4% to 7% protein, 5% carbohydrates, 12-13 mg/100G vitamin C and Na, K, Ca, Mg and P as minerals. Bamboo has the potential for checking soil erosion, fast vegetative growth cover to deformed areas and road embankment stabilization. Bamboo tensile strength is 28000 per square inch versus 23000 for steel. It can be used for making pillars, roofs, ceiling, walls etc. It has been traditionally used to make medicines to treat asthma, cough and fever etc. It is also used to make certain structures in earthquake prone areas, in music and arts.

Bamboo is one of the fastest growing plants on the earth. Its growth rate ranges between 30cm to 100cm per day. It generates more oxygen than equivalent stand of the trees. It protects against ultra-violet rays and is an atmospheric and soil purifier. A story tells that once a forest officer kept his hat on a fast growing bamboo culm and forgot to take it with himself. The next day, he saw that the hat was beyond his hand's reach in 24 hours. Government is endeavouring for bamboo cultivation. Planning Commission has set up a National Mission on Bamboo Technology and Trade Development. It has been realized that bamboo can help to uplift the socio-economic status of the farmers. The major objective of National Mission on Bamboo is to implement an action plan for keeping bamboo as a key component in the national scene to generate employment, to protect environment degradation and give a boost to bamboo industry. Alcoholic beverages can be made from bamboo leaves, charcoal can be made from bamboo, laminated bamboo mats can be made for disaster prone areas. Thus, bamboo can play a crucial role in strengthening the rural economy of J&K.

There is need to form the bamboo clusters in J&K. Bamboo industries on different products needs to be established in J&K. Capacity building on value addition in bamboo can bring new opportunities of income and employment among the farmers of J&K. Bamboo cultivation in J&K can also be promoted through agro-ecotourism as some areas of J&K are visited by the tourists throughout the year. Bamboo growers need institutional support at regional, national and international levels. During the COVID-19 pandemic the information to the bamboo growers can be disseminated by the effective use of Information and Communication Technologies (ICTs). There is need to preserve the rare and threatened species of bamboo. A linkage needs to be developed between the bamboo growers and scientists. Private parties should also be involved in the bamboo cultivation.

Appropriate species of bamboo are must for its promotion in J&K. More research is needed to specify the species of bamboo in particular belts of J&K and tissue culture labs can also be established. Bamboo technology parks can be set up in J&K. Bamboo model villages needs to be made for promotion of bamboo cultivation in J&K. The cultivation, buying, processing and transporting of bamboo needs to be streamlined in J&K. Proper marketing strategies need to be developed for the sale of bamboo products.

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