Bamboo research and development in Nepal

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Introduction

Bamboos are important sources of income for rural households in Nepal and elsewhere. This paper highlights bamboo research and development activities that have so far been carried out in Nepal and the prospects for future research and development. Bamboos, the perennial woody grasses, are one of the very important non-timber forest products of Nepal. They are an important component of rural farming system. These play a critical role in rural economy and helps sustain livelihoods of many rural households, in particular social and economically disadvantaged groups. Bamboo culms and its various products are readily sold and bought in the market (Poudyal, 1992; Das, 1999). It is in this context that Bamboo is increasingly identified as potential species for poverty reduction programs in many countries including Nepal. Box 1 indicates the importance of Bamboo for domestic as well as commercial purposes. Despite its importance, management and commercial utilization aspects are not yet fully explored to its potential in Nepal.

Box 1 Importance of Bamboo

- Bamboo has the potential to generate income and can help alleviate poverty through its wise use.
- Reduce the pressure on forests through its increased cultivation on private and communal lands.
- Very few species can match bamboo in terms of uses. It is one the fastest growing plants of the world, and therefore one of the alternatives to timber.
- Bamboo culms have fine physical and mechanical properties. Its tensile, compressive and static strength and modulus of elasticity are far beyond the common coniferous timber as vascular bundles and grains in the bamboo are orderly arranged and have high compressive strength in vertical direction.
- Bamboo has greater impact flexibility than that of timber.
- Bamboo ply and matboards have higher strength than oak wood and is highly resistant against abrasion and scratches.
- Bamboo active carbon can be widely used in absorbing poisonous elements in the air, to purify harmful gases in industry and also for stink remover in the fridge, bathroom and sink. It has been widely used for smoke filtering in Japan, Korea and china.

Source: INBAR nd; Das, 1999

Bamboo research and development activities in Nepal

Resource inventory, socio-economic studies, taxonomic studies. Bamboo propagation, plantation and demonstration. Bamboo management, studies related to women in Bamboo craft making and studies related to Bamboo utilization and marketing are the main areas of Bamboo research in Nepal (see Karki *et al.* 1995; Poudyal 1992; Manandhar and Bhattarai, 1998; Stapleton and Tamrakar, 1983; Thapa *el al.*, 1998; Das, 1992; Das, 1999; Das, 2000; *Karki et al.*, 1998; Metz, 1987; Poudyal, 1992; Carter, 1995; Sherchan *et al.*, 1996; Das, 1999; Das, 1996; Metz, 1987; Das, 1999 for details). Similarly, establishment of Bamboo based industries, involvement of communities in Bamboo conservation and management and increasing support and interest among

INGO on Bamboo are the major areas of development in Nepal. Box below indicates the main facts about Bamboo.

Box 2 Facts about Bamboo

- A single bamboo clump can produce up to 15 kilometres of usable pole (up to 30 cm in diameter) in its lifetime.
- A sixty-feet tree cut for market takes 60 years to replace. A sixty-feet bamboo cut for market takes 59 days to replace.
- Described as the 'wood of the poor' (India), 'friend of the people' (China) and 'brother' (Vietnam).
- Exports of bamboo shoots from Taiwan alone amount to$50 million (US).
- The value of bamboo products has jumped from 412 million Yuan (US $ 50 million) in 1990 to 608 million Yuan (US $ 1.045 billion) in 1997 and the total contribution bamboo makes to the Chinese economy is now estimated to be over US$ 2.1 billion.
- Over one billion people in the world live in bamboo house. Bamboo's role in the construction field is equally substantial.
- In India, modern paper industry has expanded to such an extent that 2.2 million tons of bamboos are used for this purpose.
- Bamboo furniture is expanding business worldwide. In the Philippines, between 1985-1994, exports rose from $625,000 to $1.2 million.
- Bamboo's potential for checking soil erosion and for road embankment stabilization is now becoming well known. It is equally important for road embankment stabilizations now becoming well known. It is equally important for providing fast vegetative cover to deforested areas.
- In Bangladesh, 73% of the population live in bamboo house. It provides pillars, walls, window frames, rafters, room separators, ceilings and roofs.
- Throughout rural Asia it is used for building bridges, from the sophisticated technology of suspension bridges to the simpler pontoon brides. Bamboo scaffoldings are found throughout Asia, and they are employed on the high rise structures of Tokyo and Hong Kong.
- In Java, 20 different musical instruments have been fashioned of bamboo. The flute may have been invented by cave people toying with a hollow bamboo stem.
- Moso (Phyllostachys species) bamboos are sympodial and have been extensively used for production of edible shoot, plywood, flooring board and other manufactured goods in China mainly for export purposes.

Source: INBAR nd.

Prospects of further research and development of bamboo in Nepal

Establishment of germplasm and arboretums. Bamboos propagation in agroforestry, and Bamboo related training and extension and market services are the major areas of further research and development required in Nepal.

Herbaria have not yet been collected for all species available in Nepal. The in-situ and ex-situ conservation of naturally occurring bamboos is necessary. In this context, establishment of bamboo germplasm in different ecological zones of Nepal will help gene conservation and demonstrate species availability in Nepal.

A common complaint against bamboo planting on farmland is that it reduces the productivity of the land, yet no studies have been done to quantify such effect. Potential developments include agro-forestry practices, which allow bamboo to be grown with minimum impact on food production.

Due to poor extension services, research results have not been used. There is also a lack of extension materials and publications on bamboos in Nepali and none at all in local languages. An effective mechanism and institutional arrangements are indispensable to carry out such activities in Nepal.

Bamboo growers, traders, craft makers and entrepreneurs lack necessary information on the technical know-how of bamboo growing and its marketing (Das, 1999). Similarly, Nepalese entrepreneurs lack information on price differences, demand and supply situations in the national and international markets, global marketing trends of bamboo based products, and also need suitable multilateral/overseas partners for investment. Therefore, it is necessary to develop market information system on bamboo so that all concerned stakeholders would benefit. Provision of training to establish bamboo-based micro-enterprise for rural households, who depend upon natural resources for their livelihood, having small landholdings, is highly recommended. Such enterprise will directly help improve incomes and should also include rural women for whom bamboo craft making can be a full/part time employment and a source of income. The publication of extension leaflets; manuals on bamboo craft making; promotional videos; workshops and meetings at regional and national level should be highly prioritized for effective dissemination of research findings.

Conclusions

Bamboo has a great income generation potential and can be one of the means for poverty alleviation in Nepal. Increased production of bamboos, their wise use will provide employment and income, both in the rural and urban areas.

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