



Bamboo based Agro Forestry System for Doubling Farmers' Income

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Bamboo based agro forestry systems of India are one of the important component to improve socio-economic status, annual income of stakeholders as well as environment friendly. The agro forestry system is recognized as an important integrated farming practice since time immemorial, to fulfill the domestic need of food, fodder, fuel wood, fiber and timber along with aesthetic and environmental services to the society. However, woody perennials have been reduced gradually due to more demand of food grains on limited land resources in entire world in general and India in particular.

National Commission on Agriculture (NCA) 1976 suggested for implementation of social forestry programme which covered farm forestry, extension forestry, reforestation in degraded forests and recreation forestry. This system was supported by government because of its role in improvement in soil health, nutrient cycling, carbon sequestration and better economic return in comparison to existing cropping systems with less use of natural resources. To promote agro forestry, various specific initiatives such as National Agriculture Policy (NAP) 2000, Planning Commission Task Force on Greening India 2001, National Bamboo Mission 2002, National Policy for Farmers 2007, Green India Mission 2010 and finally a dedicated National Agro forestry Policy was approved by Government of India in 2014. This policy was recommended for setting up of a Mission or Board to address development of agro forestry sector in an organized manner.

To implement the suggestion, a sub-mission on agro forestry has been initiated under the sustainable agriculture in 2016 by Ministry of Agriculture and Farmers Welfare, Government of India. In common parlance, two factors determine the adoption of agro forestry in any specific region: one is relative profitability with other existing crops and second is the price volatility of wood. Farmers allocate their resources in production of various commodities on the basis of signals they receive from markets.

The growing of tree on farms for market seemed to farmers in many regions of India a more profitable option than field crops. However, in spite of relative higher profitability to farmers and several concerted efforts made by government, the adoption of agro forestry has not reached at expected level. Our Prime Minister has set the target of doubling farmers' income by 2022-23 over that in 2015-16. To achieve this goal, it would require significantly faster growth and synergetic interaction among all variables those affect farmers' income. Agro forestry is one of the land uses to fulfill the commitment for Nationally Determined Contributions (NDCs) of our country and reduce emission of Greenhouse Gases (GHGs) by application of carbon, water and land footprints.

Restructured National Bamboo Mission

Recently, Union Minister for Agriculture and farmer's welfare launched logo for National Bamboo Mission on 8th September, 2020 indicating "Green Gold Aka Bamboo symbolise by Green and Yellow colour where figure shows bamboo culm in Centre of a circle composed of half farmers and an industrial wheel, stating the objectives of NBM. Minister, also launched the 22 clusters in 8 states to increase the export of Bamboo Products and to protect the local artisans for sustainable source of Income. Goal of doubling farmer's income is being achieved with the concerted efforts of all stakeholders in bamboo sector due to importance of bamboo. Where in 2017 amendment of Indian Forest Act 1927 done, to remove bamboo from the category of trees which can help everyone to undertake cultivation and business in bamboo and its products.



Fig-1: Zinger intercropped with *Bamboosa bamboo*

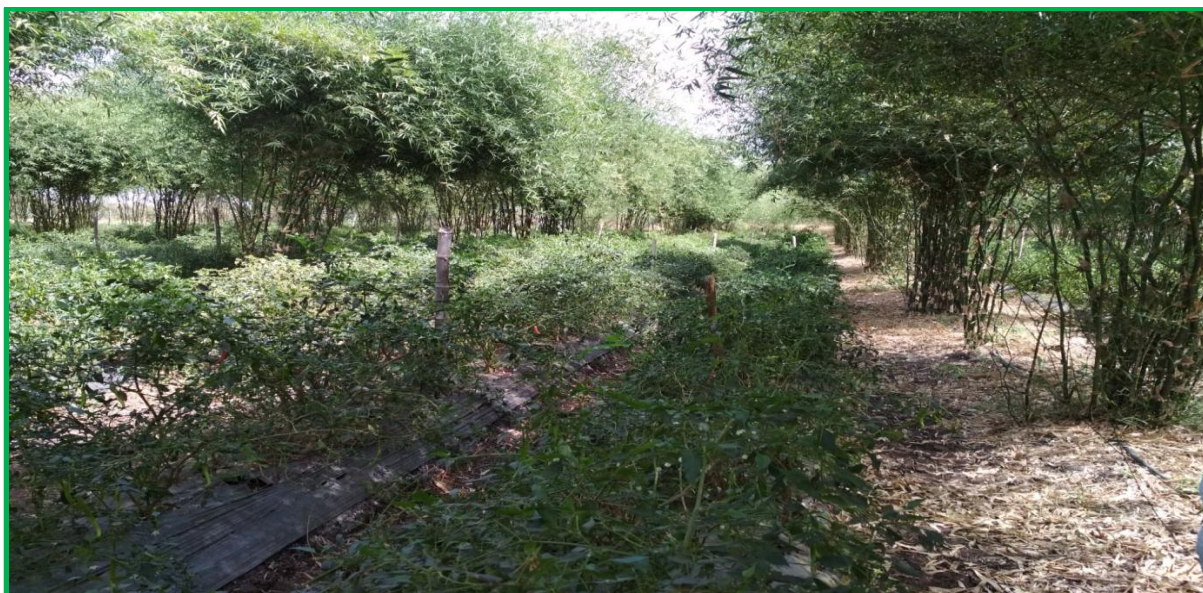


Fig-2: Chilli crop under *Bamboosa bambo*

Relative profitability of Bamboo based agroforestry system. The comparative economic viability of Bamboo based agroforestry system with Zinger-Haldi- Chilli system, prevalent in study area is presented in fig. 1& 2. It showed that agroforestry system is able to enhance farmer's income about double in five years and triple, if farmers get incentive of their carbon sequestered by agroforestry system in comparison to existing Zinger-Haldi cropping system. It is verified that if a farmer growing Zinger-Chilli – Haldi continuously at his farm for five years, he could receive net

Conclusion

Poor man's timber another name of Bamboo which is a versatile and durable resource used as unique alternatives of timbers in the rural culture for creativity and recreation purpose creates demand of bamboo raw material for rural artisans in rural industry. To achieve the objective of doubling farmers income based on utilization of indigenous knowledge and skills for selecting the suitable location specific bamboo-based agroforestry system or technology, its adoption, implementation and management will be beneficial. The comparative economic viability of Bambo based agroforestry system with continuous zinger-chilli crop rotation showed that agroforestry system is able to enhance farmers' income more than double in 5 years and triple if farmers get value of their carbon sequestered by agroforestry.