

Doubling Farmers Income through Agro -Forestry

Rashav Chahal and Ajay Kumar Baheliya

Acharya Narendra Deva University of Agriculture and Technology Kumarganj,
Ayodhya, Uttar Pradesh

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Abstract

Doubling farmer's income by 2022 is a goal and target set by the Hon'ble Prime Minister of India is a challenging and daunting task within the time frame. The economic think-tank at Niti Aayog has put forth four- point action plans to double the incomes of India's farmers i.e. Provisioning of remunerative prices, increasing productivity, reforming agriculture policy and provisioning of adequate relief measures. Experts engaged in searching the options recommended Agroforestry is the deliberate growing of trees in conjunction with agricultural crops on the same unit of land organized in temporal and spatial mixture or sequence for benefits and services. Rural people have been practicing tree planting with crops in their farms and homesteads to meet household requirements of fuel, poles, timber and medical plants and encouraged to generate high income.

Key words- Agro-forestry, doubling farmer's, economic income, increasing productivity

Introduction

Agro forestry is neither new nor unique. A few hundred years ago Indian farmers practised agro forestry very successfully, making us a rich nation that everyone wanted to trade with. Agro forestry, a science that promoted polyculture with a variety of trees, shrubs, herbs, bushes, kept soil fertile and water plentiful and allowed economics and ecology to benefit from each other in complementary ways. 'Sustainability' was a way of life. If we bring back this practice to our farmers, we can spark a new revolution in the agricultural sector and the Indian economy.

A study released by the International Union of Forest Research Organizations in 2016 reported that India is the third largest importer of illegally logged timber in the world. And it doesn't come cheap. Between 2010 and 2018, India imported Rs 388 billion worth of wood and wood products from around the world. A World Bank study says this market is expected to grow at 20% every year for the next few years.

Deriving its name from Agriculture and Forestry, Agro forestry is a tree based farming system aimed at combating many environmental challenges like deforestation, soil erosion, natural calamities triggered by climate change, greenhouse effects and so on. It becomes significant for a marginalized farmer to its huge untapped potential of increase in production from crop and animal husbandry. Within the same timeframe, the products obtained from the agro forestry system give much more tangible and intangible benefits to the farmer when compared to the conventional agriculture. Apart from economic benefits like rural employment and value addition, agro forestry provides sustenance through water and soil conservation, nutrient recycling and carbon storage. The National Commission on Agriculture, 1976 has suggested for implementation of social forestry programme, which covered farm forestry, extension forestry, reforestation in degraded forests and recreation forestry. To promote agro forestry, various major policy initiatives such as ‘National Agriculture Policy 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 has recommended for setting up of a Mission or Board to address development of agro forestry sector in an organized manner. The Sub- Mission on



Figure 1: Agri-Silvi-Horti system of Agro forestry



Agro forestry (SMAF) under 'National Mission on Sustainable Agriculture' (NMSA) is an initiative to this end.

Types of Agro forestry system

There is no single agro forestry system. Many different systems are in use around the world today, and as the interaction of trees and food crops is better understood, more will be developed. Some of the basic kinds of systems include the following

- Agri-silvicultural systems, which manage land for the production of agricultural crops and forest products
- Silvo-pastoral systems, which produce both wood products and livestock
- Agri-silvo-pastoral systems, a mixture of the two systems above, which produces tree products, crops, and livestock
- mixed garden systems, which integrate trees, crops, and animals on small plots with the goal of supplying nutrients, materials, and marketable products for a family
- Multi-use and production systems, which provide services such as erosion control and watershed recharge while producing forest products and/or crops and livestock.

Beneficial effect of Agro forestry

Higher yields of crops have been observed in forest-influenced soils than in ordinary soils. In the Tarai area of Uttar Pradesh, Taungya cultivators harvested higher yields of crops such as maize, wheat, pulses etc. without fertilizer. Approximately, 20% higher yields of grains and wood have been reported in agro forestry areas of Haryana and western Uttar Pradesh than from pure agriculture (Dwivedi and Sharma, 1989). Experiments conducted at IGFRI, Jhansi indicate that the total yield of fodder is more when fodder grasses are grown with fodder trees than pure fodder grass cultivation. *Leucaena leucocephala* intercropped with agricultural crops and fodder grasses increase the total yield of food grains, fodder and fuel (Pathak, 1989).

Nitrogen fixing trees grown in the agro forestry systems are capable of fixing about 50 -100 Kg N/ha/year (Tewari, 1995). Experience in Punjab, Haryana, Uttar Pradesh, Gujarat and some parts of the southern states indicate that a tree and agriculture crop production system is more productive. The total production and value of fuel, fodder and small timber in degraded lands are reported to be many times more than the coarse grains usually produced on them (Gupta and Mohan, 1982). Sanchez (1987) stated that, "appropriate agro forestry



systems improve soils physical properties, maintain soil organic matter and promote nutrient cycling". Nitrogen fixing trees are mentioned as one of the most promising component of agro forestry system. The leaf litter after decomposition forms humus, releases nutrients and improves various soil properties, it also reduces the fertilizer needs.

Growing of trees and fodder crops (including fodder trees) is more economical, particularly on marginal lands. Observations taken in hot arid and semi-arid areas of Rajasthan indicate that marginal lands are incapable of sustaining stable and dynamic cultivation of agricultural crops. Silviculture consisting of growing trees such as Prosopis, Albizia, Zizyphus and Acacia species may provide many times more returns per unit of land than agriculture under such conditions (Gupta and Mohan, 1982). Eucalyptus in agro forestry has been found to be more profitable than pure agriculture in Haryana. Populusdeltoides increases the farm return by 50% in Tarai region of Uttar Pradesh (Chaturvedi, 1981)

Opportunities and Challenges

The opportunities and scope of agro forestry in India. Agro-forestry system not only gives a stability to farm income but also enhances it due to cash flow from multiple streams; in such an integrated system, if food crop which is vulnerable to climate get affected, farmers can get assured income from other sources, other livestock rearing or livelihood means can give him some assured farm income. In India, more than 50% land of its Geographic Area is under cultivation; Agro-Forestry/Farm Forestry, which is a subset of TOF, has the maximum potential in extension of green cover etc.

The factors impeding growth of agro- forestry in India. Inhibition among farmers, especially small and marginal farmers, regarding shade of tree canopies, root competition, birds damage leading to reduced crop production ; trees as obstacle in mechanized farming; undue harassment to farmer for obtaining felling permit from competent authorities; complex procedure for obtaining Transit Pass Non-availabilities of organized trade in wood; Absence of wood processing units in the neighborhood; Lack of proper agro-forestry extension; Getting Quality Planting Material etc.

Conclusion

After Independence a large no of marginalized farmers have been living a hand to mouth life, they practice subsistence agriculture just to cater to their needs. As suggested by our PM agro forestry can increase the income of the marginalized farmers and also contribute



to the protection of environment, especially the growth of timber trees around plantation crops and agricultural land. Overall the concept of agro forestry is a win win situation both for the government and the farmers which will solve problems for both the groups and contribute to every angle associated with life.

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