

Doubling Farmer's Income through Agroforestry Rotoform

**Sachin Ruprao Dhage¹, Dr. G.D Shirke², Anil Gavli³ and Sunil Subhash⁴
Kinge**

¹M.Sc. Scholar, Department of Post Harvest Management of Medicinal Aromatic
Plantation Spices and Forest Crops

²HOD, Department (MAPSF) Post Graduate Institute of Post Harvest Management, Killa,
Raha, Raigad,

³Assistant Professor, Department of Forest Products Utilization, College of Forestry, Dr.
Balashab Sawant Konkan Krishi Vidyapeeth, dapoli, Maharashtra

⁴PhD Scholar, Department of Agronomy, Dr. Balashab Sawant Konkan Krishi
Vidyapeeth, dapoli, Maharashtra

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Introduction

In order to increase production, profitability, diversity, and the sustainability of ecosystems, agroforestry is a strategy of land use that incorporates trees and shrubs on farmlands and rural landscapes. Through the integration of woody perennials on farms and in the agricultural landscape, it is a dynamic, ecologically based strategy for managing natural resources that sustains output, diversifies it, and creates social institutions. Since the beginning of time, the agroforestry system has been acknowledged as a crucial integrated farming method for meeting domestic needs for food, fodder, fuelwood, fibre, and timber as well as providing social, aesthetic, and environmental benefits. However, woody perennials have gradually declined as a result of increased demand for foodgrains on the planet's finite land resources, particularly in India. The development of the social forestry programme, which included farm forestry, extension forestry, replanting in degraded woods, and recreational forestry, was recommended by the National Commission on Agriculture in 1976. The government backed this cropping method because it uses fewer natural resources than current cropping systems while also improving soil health, nutrient cycling, carbon sequestration, and economic return. A dedicated "National Agroforestry Policy" was approved by the Government of India in 2014, following the approval of several significant policy initiatives, including the "National Agriculture Policy 2000," the "Planning Commission Task Force on Greening India 2001," the "National Bamboo Mission 2002," the



"National Policy for Farmers 2007," the "Green India Mission," and others, all of which served to promote agroforestry.

Component Nature

AF systems can be divided into the following groups based on the characteristics of their components; Agrisilvicultural systems, Silvopastoral systems, Agrosilvopastoral systems and Other systems.

In north India Poplar+ wheat based agrisilviculture system, In central India Acacia nilotica+ Paddy agrisilviculture system, South India Homegarden system, Coconut, Arcanot based agrifamring system, Wood lots like Eucalyptus, Subhabool, Poplar plantation.

Income opportunities – windbreaks

Woodfibre, lumber, speciality forest products, and food Agroforestry are potential sources of income. Use a windbreak. Windbreaks with multiple rows are good locations to grow marketable items including timber, almonds, apples, cherries, and hybrid Poplar blackberries and products made of woody flowers. Evergreen trees can be bought for seasonal flower goods and sold as Christmas trees or as plants for landscape, while enhancing farms and giving birds and other species protection. Wood for electricity, lumber, specialist forest products, and food are potential sources of income.

Forest farming

Forest farming is an agroforestry practice. High quality firewood, timber, and speciality forest products like maple syrup, ginseng, and other medicinal plants that are grown in shade can all be produced by well managed woodlots. Pine straw from longleaf or loblolly pine plantations, where there are markets, may be another way to make money.

Alley cropping

When sold as locally cultivated goods, blueberries, chokecherries, elderberries, chestnuts, hazelnuts, and many more have a lot of promise. Vegetables, horticultural plants, forages, and conventional row crops are examples of potential intercrops. This system will produce high-quality goods while preserving the environment.

Silvopasture

is a type of agroforestry. When the trees or tree products are harvested, tree canopies may generate additional revenue in addition to shading and shielding cattle from the wind. Some trees' branches and leaves can be cut from the trees and given to cattle right away. To



generate money before and while trees are producing and growing, grazing is permitted in pine stands and nut and fruit orchards.

Forest farming or alley cropping

Along with the aforementioned crops, forest farming techniques such as alley cropping can also yield fast-growing trees like hybrid cottonwood and poplar that can be harvested and sold for pulpwood, wood for energy, and other solid wood products. Before the trees are harvested, certain forest product companies may offer advanced purchase or lease arrangements that include yearly payments. Hunting leases could be a source of income because these plantings draw wildlife.

Strategy

By encouraging farmers to grow trees on their farmland alongside crops and/or livestock as a vital part of farming systems, we can increase the coverage under tree plantation in arable land suitable to local agroclimatic and land use conditions and provide livelihood, environmental, and biodiversity protection.

- Agroforestry systems will also be encouraged in conjunction with low density plantation on farmlands, including intermediate/strip plantation and high density block plantation.
- Utilizing ICT, a database was created on the area covered by agroforestry, the condition of soil organic carbon, and other topics.
- Under the programme, endemic and other species—including trees with medicinal value—that are suitable for the agroclimatic conditions will be fostered. Exotic species, species not suited to agro-ecology, and species not included in a scheme for authorised afforestation will not be supported.
- To identify the soil carbon status and facilitate periodic evaluation of soil carbon enhancement, Soil Health Cards will be made a requirement for farmers receiving benefits under the programme.
- Building the skills and knowledge of scientists, farmers, and officials in the field of development as part of national and international exchange programmes; extension activities such as demonstrating appropriate agrisilvicultural, silvipastoral, and agrisilvopastoral systems; seminars, workshops, conferences, fairs and exhibitions; and exposure trips at both the national and international levels.



- promoting diverse agroforestry methods/practices that are suitable for varied agro-ecological areas and types of land use in order to aid in climate change adaptation and mitigation. promoting sustainable agroforestry techniques, such as apiculture with trees and aquaforestry, as well as sylvipastoral and other agroforestry techniques.

Establishing a National Institutional Framework to Promote Agroforestry

It is necessary to establish an institutional vehicle, such as a Mission or Board, to carry out the agroforestry policy. The multi-stakeholders can use it as a platform to collectively plan and identify the strategies for inter-ministerial coordination, programmatic convergence, financial resource mobilisation and leveraging, capacity building facilitation, and technical and managerial assistance.

Agroforestry and its socio economic impact

In India, agroforestry has been practised for centuries. Farmers have planted trees, grass, herbs, and bamboo as fodder to suit their minor timber needs as well as other necessities like fuelwood, seeds, fruits, and medicinal plants for building houses and the like while also earning extra money. Small and marginal farmers (who practise linear or singular agroforestry on their backyards and bunds either as a pure crop or mixed) and large landowners, including absentee landlords, who have large tracts of unproductive and degraded agriculture land that are diverted for tree cultivation because it is significantly more cost-effective than leaving such lands fallow and vulnerable to encroachment. These types of farmers cultivate block commercial tree plantations of fast-growing species and frequently collaborate as raw material suppliers with the aforementioned companies. These plantation growers receive a lot of assistance from end customers, including financial and technical help. Due to the implementation of properly led and well-steered agroforestry policies and practises by the government as well as industries, both kinds of farmers have benefited greatly.

Different types benefits- Environment Benefits:

Planting trees alongside food crops on agricultural farms produces a number of significant environmental advantages, including both broad ecological advantages and localized advantages. The overall environmental advantages include: easing of forest pressure. Enhanced nutrient recycling by the site's deep-rooted plants. improved ecological system protection. lowering of soil erosion, nutrient leaching, and surface run-off due to the



upcoming impact of tree roots and stems on these processes. A combination of mulching and shadowing can improve the microclimate by lowering soil surface temperature and reducing soil moisture evaporation. Increase in soil nutrients brought on by the addition and decay of litter. the continual supply of organic materials from decomposing litter improves soil structure.

Economic benefits

Agroforestry systems on cropland/farmland have major economic advantages for the farmer, the neighbourhood, the state, or the country. Among these advantages are an increase in and maintenance of food, fuelwood, fodder, fertiliser, and timber outputs; a decrease in the occurrence of total crop failure, which is common in single-cropping, or monoculture systems; and an increase in farm income levels as a result of enhanced and sustained productivity.

Social Benefits

In addition to the economic advantages, increased crop and tree product yields and the sustainability of these products also have social advantages. The condition of living in rural areas will improve thanks to stable work and greater wages; the quality and variety of food produced will also improve nutrition and health; and Upland communities will be stabilised and improved by not having to move the locations of farm activities. In addition to the economic advantages, increased crop and tree product yields and the sustainability of these products also have social advantages. The condition of living in rural areas will improve thanks to stable work and greater wages; the quality and variety of food produced will also improve nutrition and health; and Upland communities will be stabilised and improved by not having to move the locations of farm activities.

Summary

The Indian government has already planned to implement a number of steps to boost farm revenue, stabilise production, and ultimately boost productivity in small farms. The integrated farming system approach, which involves the synergistic blending of crops, horticulture, dairy, fisheries, poultry, and other agricultural products, appears to be a viable option to give small-land owners a regular income and on-site employment while reducing cultivation costs through the efficient use of multiple resources and supplying much-needed resilience for the predicted climate change scenario. High-yielding varieties and hybrid seeds



are crucial for a successful crop production and increase the yield by 15 to 20 percent depending on the crop. With effective management of other inputs, the yield can be further increased to 45 percent. Priority should be made to equipping farmers with microirrigation since it can be extremely effective when used in conjunction with the administration of nutrients. Given the growing difficulties faced by farmers as a result of regular weather disturbances, the government is vigorously promoting a new crop insurance (PMFBY).

