



## The Inherent Benefits of Agroforestry

*This editorial is based on [“For Carbon-Neutral Growth, India must Focus on Agroforestry”](#) which was published in Hindustan Times on 20/04/2022. It talks about the benefits of agroforestry and the challenges to its success in India.*

**For Prelims:** Agroforestry, Climate Change, Carbon Sequestration, Carbon Trading, Land Degradation Neutrality by 2030, Sustainable Farming, Sub-Mission On Agroforestry (SMAF), National Agroforestry Policy (NAP), Corporate Social Responsibility

**For Mains:** Agroforestry - Significance and Challenges

**Climate change** is highly likely to have negative consequences for agriculture all over the world. [Extreme weather events](#) which are consequences of climate change are likely to reduce overall productivity of agriculture. [Flash floods](#), [droughts](#), untimely rains, hailstorms, [heat waves](#) and [cold waves](#) bringing temperature unsuitable for crops will demand adaptation of agriculture practices to new climatic conditions. In this context **Agro-forestry is important for India as well as other developing countries.**

### What is Agroforestry?

- Agro forestry is a **land use system that integrates trees, crops and animals** in a way that is scientifically sound.
  - It integrates trees and shrubs on farmlands and rural landscapes to **enhance productivity, profitability, diversity and ecosystem sustainability.**
- It is a dynamic, ecologically based, natural resource management system that, through integration of woody perennials on farms and in the agricultural landscape, diversifies and sustains production and builds social institutions.

### How is Agroforestry Significant?

- **Economic Value:** It meets **almost half of the country’s fuelwood needs**, about two-thirds of the **small timber demand**, 70-80% of the **plywood requirement**, 60% of the **raw material for the paper pulp industry**, and 9-11% of the **green fodder needs.**
  - Tree products and tree services also **contribute robustly to rural livelihoods.**
  - Fruit, fodder, fuel, fibre, fertiliser, and timber add to **food and nutritional security**, income generation, and work as **insurance against crop failure.**
- **Carbon Sequestration:** Agroforestry or tree-based farming is an established nature-based activity that can **aid carbon-neutral growth.**
  - It enhances tree **cover** outside forests, works as a **surrogate for natural forests** [sequestering carbon](#), keeps the pressure off natural forests, and helps increase farmers’

income.

- **Lower Consumption of Fertilisers:** Nitrogen fixing trees grown in the agroforestry systems are **capable of fixing about 50 -100 Kg Nitrogen/ha per year** - one of the most promising components of the agroforestry system.
  - The leaf litter after decomposition forms humus, releases nutrients and improves various soil properties, it also **reduces the fertiliser needs**.
  - Due to lower requirement of chemical fertilisers agroforestry can supplement **organic farming**.
- **Ecology Friendly:** Use of lesser chemicals will also help in **mitigating anthropogenic effects on climate**.
  - Agroforestry helps in **erosion control and water retention, nutrient recycling**, carbon storage, biodiversity preservation, and cleaner air and helps communities withstand extreme weather events.
- **Global Climate Goals:** Agroforestry can also help India meet its international obligations on -
  - **Climate** - creating an **additional carbon sink of 2.5 to 3 billion tonnes** of carbon dioxide equivalent through additional forest and tree cover by 2030 and **net-zero by 2070**.
  - **Desertification** - achieving 26 million hectares of **Land Degradation Neutrality by 2030**, thus, meeting 9 of the **17 Sustainable Development Goals**.
- **Better Agriculture Yields:** Higher yields of crops have been observed in forest-influenced soils than in ordinary soils.
  - Appropriate agroforestry systems **improve soil physical properties**, maintain soil organic matter and **promote nutrient cycling**.
  - Agroforestry will also help in generation and promotion of sustainable renewable **biomass based energy**.

## How has India Responded to Agroforestry?

- In 2014, **India became the first country** to adopt an agroforestry policy - **National Agroforestry Policy (NAP)** - to promote employment, productivity, and environmental conservation.
- In 2016, a **plan** under the NAP was launched, with nearly **₹1,000 crore to transform agroforestry** into a national effort with the tagline: **"Har medh par ped"** (trees on every field boundary).
- In the **2022-23 Union Budget**, the Finance Minister of India announced that the Government of India would **promote agroforestry**.
  - However, the Ministry of Agriculture and Farmers' Welfare **merged the SMAF with the Rashtriya Krishi Vikas Yojana** which deprived the agroforestry sector of its flagship implementation arm.

## What are the Issues in Adopting Agroforestry?

- **Lack of Information among Farmers:** Although agroforestry is not unknown in India, many farmers are not keen to take it up because of a **lack of information on tree rotation** and also the **legal aspects involved in the trade of matured trees**.
- **Ambiguous Categorisation of Agroforestry:** Agroforestry has not become the movement it should have. For a long time the subject **fell between the cracks of "agriculture" and "forestry"** with **no ownership by either sector**.
  - The value and position of agroforestry in the national system remains **ambiguous and undervalued**.
  - It has been disadvantaged by adverse policies and legal bottlenecks and its adoption by tenant-farmers is constrained due to insecurity of tenure.
- **Financial Constraints: Inadequate investment** in the sector is also a cause for neglect. Unlike the credit and insurance products available for the crop sector, the **provisions for growing trees-on-farms are minimal**.
  - Weak marketing infrastructure, **absence of price discovery mechanisms** and lack of post-harvest processing technologies further compound the situation.
- **Small and Marginal Fields:** Most of the farmers are small and marginal having **small fields (less than 2Ha)**. In this area it is **economically and spatially agroforestry is unviable**.

## What can be Done to Promote Agroforestry?

- The sector needs to be **institutionally bolstered and profiled from the perspective of its utility spectrum** that knits farm-forestry, environmental protection, and sustainable development.
- **Financial support should be provided to all small landholders**, rather than only Scheduled Caste and Scheduled Tribe farmers.
  - Protocols need to be developed where **smallholders can earn income through [carbon trading](#)**.
  - **Institutional credit with longer funding cycles**, a moratorium on interests, and insurance products suitable for agroforestry must also be designed.
  - The **private sector** too should **invest in agroforestry** both as a commercial enterprise as well as through the route of **[Corporate Social Responsibility](#)**.
- Farmer collectives — **[cooperatives](#), [self-help groups](#), [Farmer -Producer Organisations \(FPOs\)](#)** — must be promoted for building capacities to foster the expansion of tree-based farming and value chain development.
  - It is possible to **target at least 10% of farmland** to be covered by trees.
- The current situation of agroforestry calls for **amending unfavourable legislation** and simplifying regulations related to forestry and agriculture.
  - Policymakers should **incorporate agroforestry in all policies relating to land use and natural resource management**, and encourage government investments in **agroforestry-related infrastructure** and in the establishment of sustainable enterprises.
- Scientists and researchers can develop **location-specific tree-based technologies that complement the crop and livestock systems** for sustainable livelihoods, factor in gender concerns, and incorporate the feedback from local communities.

### ***Drishti Mains Question***

“Due to the climate crisis, the poor and vulnerable communities, dependent directly on land, water, and forests will face irreversible changes to lives and livelihoods. Agroforestry can help them tackle this challenge”. Discuss.

## **UPSC Civil Services Examination, Previous Year Questions (PYQs)**

### **Q. How is permaculture farming different from conventional chemical farming?**

(1) Permaculture farming discourages monocultural practices but in conventional chemical farming, monoculture practices are predominant.

(2) Conventional chemical farming can cause an increase in soil salinity but the occurrence of such phenomenon is not observed in permaculture farming.

(3) Conventional chemical farming is easily possible in semi-arid regions but permaculture farming is not so easily possible in such regions.

(4) Practice of mulching is very important in permaculture farming but not necessarily so in conventional chemical farming.

Select the correct answer using the code given below:

(a) 1 and 3

(b) 1, 2 and 4

(c) 4 only

(d) 2 and 3

Ans: (b)

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