

Agroforestry

Agroforestry is a type of land management where trees or shrubs are planted around or amid crops or pastureland. This heterogeneity of the agricultural system commences an agroecological succession, similar to that found in natural ecosystems, and so begins a cycle of events that improve the agricultural system's functioning and sustainability. Fruits/nuts, pharmaceuticals, wood products, and other valuable and commercial things are all produced by trees. This deliberate blending of farming and forestry has a number of advantages, including higher yields from staple food crops, improved farmer livelihoods through wealth creation, increased biodiversity, enhanced soil structure and health, limited erosion, and carbon sequestration, to name a few. In the tropical regions, agroforestry activities are quite advantageous. Agroforestry is similar to intercropping in terms of principles, but it may also encompass considerably more complicated multi-strata agroforests with numerous species.

Benefits of Agroforestry

Agroforestry systems have the potential to be more beneficial than traditional agriculture and forest production practices. They may be able to give enhanced productivity, as well as social, economic, and environmental advantages, as well as a broader variety of ecological products and services. It's important to remember that these advantages are contingent on appropriate farm management. This means picking the correct trees and trimming them on a regular basis, among other things.

Biodiversity

Agroforestry systems have more biodiversity over conventional farming systems. In a given region, two or more interdependent plant species provide a more complex environment that may sustain a greater range of animals. Agroforestry is beneficial to biodiversity for a variety of reasons. It offers a more diversified environment than a traditional farming system, because the tree component generates biological niches for a variety of creatures above as well as below land. The life cycles and food chains linked with diversification start an agroecological succession which results in productive agroecosystems with long-term viability. The variety of tropical bats and birds, for example, is equivalent to that of natural forests.

Agroforestry systems do not have the same number of species diversity as in forests and do not have the same canopy elevation, but they do offer food and nesting opportunities. Another benefit to biodiversity is that delicate species' germplasm can be conserved. Ecosystems are more homogeneous in agroforests since there are no natural clear places. Agroforests can also act as a link between different environments. Agroforestry can aid in the conservation of biodiversity while also benefiting other ecological functions.

Soil and Plant Growth

Groundcover vegetation, like naturally occurring grasses in agroforestry systems, can buffer depleted soil from erosion. When compared to short-cycle farming methods, these serve to protect the soil by increasing cover. In order to avoid erosion, soil cover is essential. Agroforestry can also help clean the water by reducing fertiliser and soil surface overflow. Trees can assist minimise water runoff by reducing water flow and evaporation, allowing for more penetration into the soil. Nutrient intake can be greater in row-cropped fields, reducing leaching of nutrients into streams. It also helps with bioremediation, and drought resistance.

Sustainable Agriculture

Agroforestry could provide a variety of ecosystem services that can help to ensure long-term agricultural sustainability in the following manner:

- Income security is improved by diversifying agricultural products like firewood, medicinal herbs, and various crops.
- Food security and nutrition were improved through restoring soil fertility, crop diversification, and food crop resistance to environmental shocks.
- Reduce soil erosion and regulate water accessibility to restore the land.
- Crop cultivation and livestock grazing are two examples of multifunctional site usage.
- By delivering farm-grown firewood, deforestation and strain on woods can be reduced.
- Reduced chemical inputs, for example, owing to better fertiliser usage, enhanced insect resistance, and enhanced ground cover, which decreases weeds.
- Cultivating space for therapeutic plants, for example, in situations when people's access to conventional treatments is limited.

Implementing agroforestry and self sustaining production techniques, restoring the potential of damaged agricultural areas, adopting better diets, and minimising food wastage are all efforts which need to be ramped up as quickly as possible. Firms which have not established zero-deforestation promises must do so. Agribusinesses must satisfy their obligations to deforestation-free commodities chains.

Environment

Agroforestry activities can boost soil and vegetation biomass carbon reserves. Agroforestry systems, such as new forests, can help to recoup plenty of the carbon which has been lost due to forest clearance. They also supply extra food and products. The length of the cycle and the utilisation of the products produced are major determinants of the quantity of carbon stored. By supplying forest resources, agroforests can help to relieve strain on primary forests.

Agroforestry practises can help achieve a variety of environmental objectives, including:

- Lowering odour, dust and noise.
- Visual aesthetics and green space
- Wildlife habitat improvement or preservation

Climate Change

Agroforestry can help mitigate climate change while also providing adaptive advantages. Its wider adoption in many parts of the world by small-scale farmers has made their farming less prone to disadvantages arising due to climate change. Such adoptions has increased the carbon sequestration and is thereby helping curb global warming.

Challenges

Although quite beneficial in theory the adoption of agroforestry could be very challenging due to the following factors:

- Undeveloped market

- Unfamiliarity with technologies
- Less of awareness
- Inter Competition between trees, crops and animals
- Lack of fiscal resources
- Lesser profit potential
- Expense of additional management
- Unavailability of training or expertise
- Lack of marketing knowledge for such products
- Adoption cost
- Apparent inconvenience

National Agroforestry Policy

India's National Agroforestry Policy is a detailed policy framework aimed at improving agricultural livelihoods and minimising climate change by boosting agricultural production. The initiative was announced by the Indian government in February 2014 at the World Congress on Agroforestry in New Delhi. India was the world's first nation to establish an agroforestry policy. By combining trees, crops, and cattle on the same piece of land, the strategy strives to increase production and environmental resilience. It was established to address low agricultural production as a result of farmers' land-holding share declining over time, as a result of fast population increase and farming activity depending on seasonal rainfall.

Objectives

- Creating a national nodal body to bring together various agroforestry projects, programmes, and policies that are distributed throughout the government's several agriculture development domains.
- Boosting small farmer production and utilising agroforestry techniques to improve their economic situation.
- Environmental protection and supplying the growing demand for wood and other agroforestry commodities.
- Expanding the nation's woodland and tree cover.