Need of Agroforestry

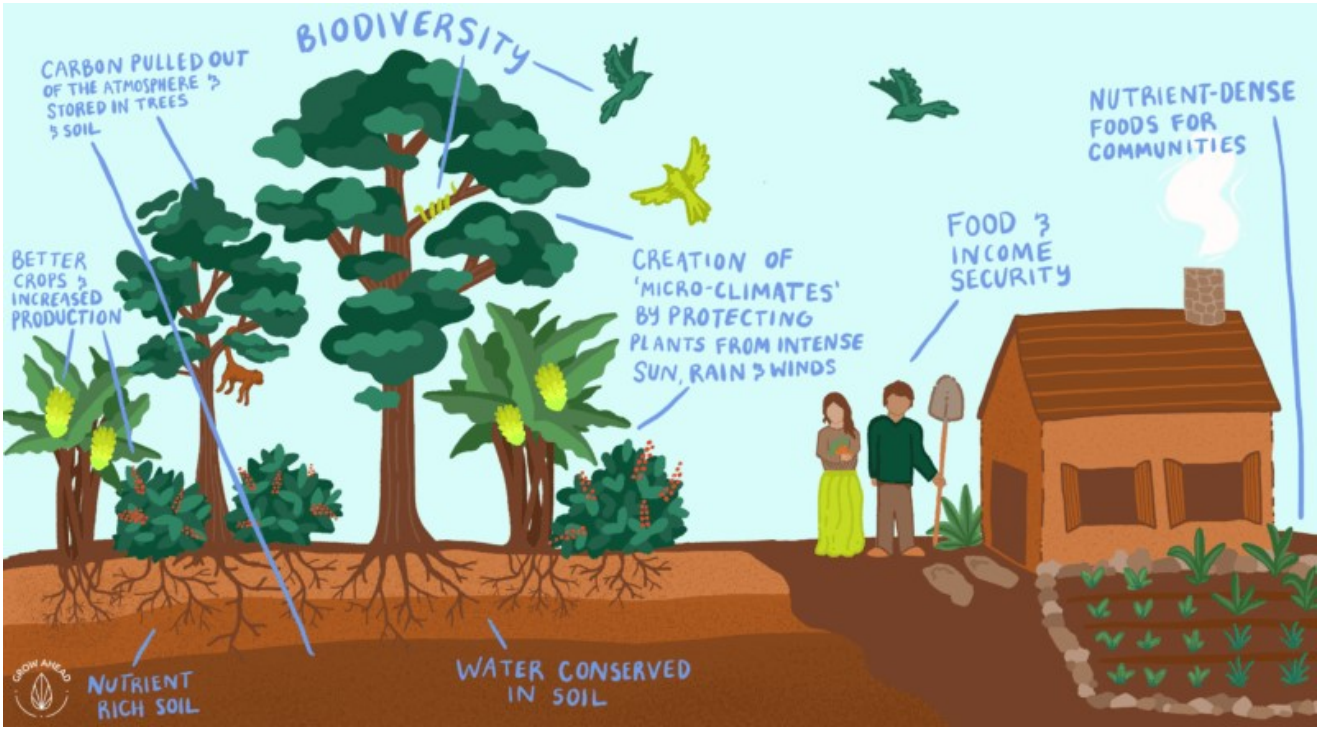
Why in news?

Agroforestry has gained popularity after decades of mono-cropping inspired by Green Revolution as it enhances farmer livelihoods and benefits the environment.

What are the features of agroforestry?

> *Agroforestry is the interaction of agriculture and trees, including the agricultural use of trees.*

- **Integration of trees and shrubs**- It is a comprehensive land use system that goes beyond traditional agriculture by integrating trees and shrubs into farmlands and rural landscapes.
- **Enhanced productivity**- It *diversifies agricultural production* by incorporating trees and shrubs alongside traditional crops and livestock that can lead to increased yields and overall productivity of the land.
- **Improved profitability-** It can provide *additional source of income* for farmers through products such as fruits, nuts, timber, and medicinal plants hence contribute to greater economic stability and resilience for farming communities.



- **Increased diversity**- It can *promote biodiversity* by creating habitats for various plant and animal species that not only supports ecosystem health but also provides

ecological services such as pollination and pest control.

- **Sustainability-** By mimicking natural ecosystems, agroforestry enhances the sustainability of agricultural practices. Trees help to conserve soil, improve water retention, and *mitigate the impacts of climate change* by sequestering carbon.
- **Resilience**- Agroforestry systems are adaptable and *responsive to ecological conditions*, allowing farmers to adjust their practices based on factors like soil type, climate, and landscape characteristics.
- **Built social institutions**- It encourages *community participation* and cooperation in natural resource management. It can foster social cohesion and empower local communities to collectively manage their landscapes for mutual benefit.

Why there is a need of agroforestry?

- **Weather induced changes-** Challenges like the *Gaja cyclone*-induced damage prompted farmers in Tamil Nadu to transit agroforestry by planting trees like jackfruit and mangoes, leading to increased profits.
- **Diverse agro climatic zones**- Agroforestry provides a *flexible and adaptable approach* that can be tailored to suit the specific needs and conditions of different regions, from the humid tropics to the arid deserts.
- **Climate resilience**- Indian agriculture faces increasing incidences of *extreme weather events* such as droughts, flood and cyclone, agroforestry can built resilience against such shocks by providing buffers and diversifying income sources for farmers.
- **Enhance small landholders**- The majority of farmers in India are small landholders who depend on agriculture for their livelihood, agroforestry offers them opportunities to improve their *income and food security* through diversified production systems that include crops, trees, and livestock.
- **Water management-** Agroforestry-based watershed management can help conserve water, recharge aquifers, and improve *water-use efficiency* in agriculture as erratic rainfall patterns and overexploitation of groundwater resources is a cause of concern for India.
- **Biodiversity conservation**- India is one of the world's biodiversity hotspots, it promotes biodiversity conservation by providing habitats for native species preserving *genetic diversity* and restoring degraded ecosystems.
- **Rural development-** It can contribute to rural development by generating employment opportunities, fostering entrepreneurship, and revitalizing local economies.
- **Food security**- It can integrate food crops with fruit and nut trees can contribute to *diversified diets* and improved nutrition outcomes, thereby enhancing food security at the household and community levels.

Steps taken by India to promote agroforestry

• **Sub-Mission on Agroforestry**- It was launched in 2016-17 to encourage tree plantation on farm land alongside crops/cropping systems under the scheme "Har Medh Par Ped".
• **National Agroforestry Policy**- It was launched in 2014 that aims to support and expand agroforestry practices.
• **Trees Outside of Forests India**- It is a joint initiative by USAID and India's Ministry of Environment to increase tree covers in 7 states (Andhra Pradesh, Assam, Haryana, Odisha, Rajasthan, Tamil Nadu, and Uttar Pradesh) to expanding the area under trees outside forests for the benefit of livelihoods and the ecosystem.
• **AICRP**- All India Coordinated Research Project on Agroforestry (AICRP) was established to conduct systematic research on tree-crop interactions.
• **Greening and Restoration of Wasteland (GROW) with Agroforestry**- It is a *NITI Aayog initiative* that focuses on using agroforestry for greening wastelands and carbon sequestration to combat climate change.
• **Indian Forest and Wood Certification Scheme**- It was launched in 2023 by Ministry of Environment, Forest and Climate Change to promote *sustainable management* of forests and agroforestry.

What lies ahead?

- There is a need of tools like *Jaltol* which is an open source water accounting tool that helps assess water needs for different tree-crop combinations, enabling informed decision making in water stressed region.
- The need of the hour is to choose native species that is crucial for sustainability, tools like *Diversity for Restoration* aid in selecting climate-resilient species.
- Potential incentive mechanisms such as payment of ecosystem services would strengthen the ideology of nature-centred economics.
- There is a need to ensure economic viability through market linkages while meeting the criteria of sustainable agroforestry which is crucial to empower small land holders.
- Agroforestry presents a potential solution to foster healthy ecosystems and resilient livelihoods in India requiring collaboration among conservationists, agro-economists, and policymakers.

References

1. The Hindu- Benefits of agro-forestry
2. Grow Ahead- Agroforestry
3. PIB- Indian Forest and Wood Certification Scheme