

What is Agroforestry?

Agroforestry – Quick Reference Notes

1. Definition

Agroforestry = the intentional integration of trees and shrubs into crop and/or livestock production systems.

- **Goal:** Combine the ecological and economic benefits of forestry with agriculture.
 - **Key idea:** Trees are managed as a functional component, not just a background element.
-

2. Core Principles

Principle	What it Means	Practical Implication
Diversity	Multiple species (trees, crops, animals) coexist.	Reduces pest pressure, spreads risk.
Synergy	Positive interactions (e.g., shade, nitrogen fixation).	Improves yields, soil health, microclimate.
Spatial & Temporal Integration	Trees are placed and timed to complement crops/livestock.	Row?planting, alley cropping, windbreaks, silvopasture.
Sustainability	Long?term resource use without degrading the ecosystem.	Soil carbon sequestration, water regulation.
Multifunctionality	One land unit delivers several outputs (food, timber, fuel, services).	Diversified farm income.

3. Common Agroforestry Systems

System	Layout & Main Components	Typical Uses
Alley Cropping	Crops grown in wide alleys between rows of trees/shrubs.	Food crops + timber, fodder, nitrogen?fixing trees.
Silvopasture	Pasture grazed by livestock under a canopy of trees.	Meat/milk + firewood, shade for animals.

What is Agroforestry?

System	Layout & Main Components	Typical Uses
Windbreaks / Shelterbelts	Linear rows of trees bordering fields.	Reduce wind erosion, protect crops, enhance pollination.
Forest Farming (Multi-Strata)	Understory crops (e.g., mushrooms, herbs) cultivated beneath a forest canopy.	High-value specialty products.
Homegardens	Small, diverse plots around dwellings mixing trees, vines, vegetables, herbs.	Household food security, medicinal plants.
Taungya	Short-term crop cultivation in young forest plantations.	Fast-growing timber + annual crops.

4. Ecological Benefits

Benefit	Mechanism
Soil Conservation	Tree roots stabilize soil; leaf litter adds organic matter.
Nutrient Cycling	Leguminous trees fix atmospheric N; deep roots bring nutrients from subsoil.
Water Management	Canopy reduces evaporation; roots improve infiltration and reduce runoff.
Biodiversity	Habitat for pollinators, predators, birds, and beneficial microbes.
Carbon Sequestration	Above-ground biomass + soil organic carbon store CO ₂ .
Microclimate Moderation	Shade lowers temperature extremes; windbreaks reduce wind speed.

5. Economic & Social Advantages

- **Diversified Income:** Timber, fruit, nuts, honey, medicinal products, livestock, and crops can be harvested on the same land.
- **Risk Buffering:** If one product fails (e.g., crop loss due to drought), tree products may still generate revenue.
- **Reduced Input Costs:** Natural nitrogen fixation, pest control, and soil improvement lower fertilizer and pesticide needs.

What is Agroforestry?

- **Labor Distribution:** Tree management is often seasonal, spreading labor demand throughout the year.
 - **Cultural Value:** Many traditional societies rely on agroforestry for food sovereignty and cultural practices.
-

6. Design Considerations

1. Site Assessment

- Climate, soil type