Agroforestry Third stage

Forestry Department

**AGROFORESTRY**

Agroforesty is combination between agricultural and forestry (trees and shrubs) technologies to create more diverse, productive, profitable, healthy and sustainable land-use systems. It is growth of crops and livestock with trees and shrubs on the area of land. (It is an area of land allowed to grow crops, trees and livestock).

**Main feature**

The main feature of agroforesty is the multi-storied production of different species of economic plant with suitable plant geometry. Agroforestry is **6F program** because it provides i.e. **Food** for man, **Feed** for livestock, **Fiber** for clothing, **Fuel** for village and urban homes**, Furniture** for timber and **Funds** for the poor forest villagers and govt. development programs.

**Good stewardship**

1. Improves water quality
2. Improves wildlife habitat
3. Increases recreational and hunting opportunities
4. Reduces noise, dust, & odors
5. More beautiful and pleasant place to work

**Objectives and characteristics of the system**

Agroforestry system aims at optimizing ecological and economical interactions between its different constituents to obtain a higher, more diversified and or more sustainable total production than is possible with any single land use under prevailing technological and socio economic conditions. Such system should have the following characteristics:

1. Agroforestry normally involves two or more species of plants (plants or animals) and at least one of them is a woody perennial
2. It has two or more outputs
3. The cycle of the system is always more than one year
4. Production of basic needs of farmers namely, food, fruit, fodder, fuel etc. from their own piece of land
5. It is more complex system ecologically

**Benefits of Agroforestry**

Agroforestry in reality meets the basic necessities of food and energy, besides supply of fuel, fodder, fruits, fiber, fertilizer, shelter and shade.

1. Increases crop productivity & livestock production
2. Short-time crops provide immediate need of food, fodder, fuel etc. while tree crops give benefit later
3. Protect aquatic habitat
4. Flood protection
5. Act as windbreaks
6. Increase soil organic matter through carbon fixation in photosynthesis and transfer via litter and root decay
7. Legumes included in agroforestry system improve nitrogen availability of soil
8. Prevention of soil erosion with planting deep-rooted tree crops and loss of organic matter and nutrients
9. Reduction of runoff by growing tree crops
10. Modification of soil temperature extremes
11. Reduction of soil acidity through addition of plant litter
12. Reduction of salinity

**Adverse effects of trees on soil**

1. Loss of organic matter and nutrients in tree harvest
2. Nutrient competition between trees and crops
3. Moisture competition between trees and crops
4. Production of substances which inhibit germination or growth (allelochemicals)
5. Acidification of soil by some tree species

**Suitability characteristics of the tree species for agroforestry**

While selecting trees an agroforestry system, the crown architecture, morphology, phenology, root distribution, root spreading and activity of woody perennial must be taken into consideration. Tree species to be grown in conjunction with crops should have

the following characteristics.

1. They should have low crown diameter ratio
2. They should have light branching in habit
3. Tolerance to side shading
4. Litter fall and decomposition rate having positive effect on soil
5. Absence of competition at root zone level
6. Sufficient nutrient pumping
7. Ability to fix atmospheric nitrogen
8. Production of fire wood / timber / green manure / fodder on sustained basis
9. Nutritious and palatable fodder
10. Well-developed rooting system
11. Absence of toxic substances in foliage or root exudates
12. Cognizance must be taken of known responses of the species to various management practices such as pruning, thinning, coppicing etc.