

	<b>Sustainable Agriculture</b>		<b>Unit F</b>	<b>Agroforestry</b>
<b>ESSENTIAL STANDARD:</b>				
	<b>6.00</b>	<b>10%</b>		<b>Introduction to Agroforestry.</b>
<i>Objective:</i>	<i>6.01</i>	<i>3%</i>	<i>C1</i>	Define the fundamental concepts of agroforestry.

6.01 Define the fundamental concepts of agroforestry.

- A. Agroforestry is the intentional integration of trees and shrubs into crop and animal farming systems to create environmental, economic, and social benefits. It has been practiced in the United States and around the world for centuries. To be considered agroforestry it must satisfy the four “I’s”:
  - a. Intentional
  - b. Intensive
  - c. Integrated
  - d. Interactive
- B. Agroforestry creates:
  - a. sustainable farms, ranches, and woodlands
  - b. diversified income on farms and ranches
  - c. clean air and water
  - d. habitat for wildlife
  - e. improved soil health
  - f. safe and healthy food
  - g. energy conservation
  - h. bioenergy production
  - i. increased wealth in rural communities
- C. Agroforestry combines trees and agriculture to enhance long-term production of food and other useful products while protecting the soil and water, diversifying and expanding local economies, providing wildlife habitat, and ensuring a more pleasing and healthy place to work and live. It fosters:
  - a. Productivity
  - b. Profitability
  - c. Environmental Stewardship
- D. Agroforestry Farming Systems
  - a. Silvopasture- Combines trees with livestock and their forages on one piece of land.
    - i. Trees provide timber, fruit, or nuts as well as shade
    - ii. Trees can be harvested for sawtimber
    - iii. Shelters livestock and their forages
    - iv. Reduces stress on the animals from the hot summer sun, cold winter winds, or a downpour
  - b. Alley cropping- Planting crops between rows of trees to provide income while the trees mature.
    - i. System can yield fruits, vegetables, grains, flowers, herbs, bioenergy feedstocks, and more.
    - ii. High dollar trees like pecan, ash, oak, and walnut are preferred for this method.
  - c. Forest farming- Grows food, herbal, botanical, or decorative crops under a forest canopy that is managed to provide ideal shade levels as well as other products, also called multi-story cropping.
    - i. Crops grown include: ginseng, mushrooms, and ferns
    - ii. Provides income while high quality and profitable trees are cultured into maturity.
  - d. Windbreaks- Shelter crops, animals, buildings, and soil from wind, snow, dust, and odors.
    - i. Support wildlife and provide another source of income
    - ii. Also called shelterbelts, hedgerows, or living snow fences

- iii. Increases bee pollination
- iv. Increases pesticide effectiveness
- e. Riparian Forest Buffers- Natural or re-established areas along rivers and streams made up of trees, shrubs, and grasses.
  - i. Reduces non-point source water pollution
  - ii. Increased biodiversity and protects aquatics
  - iii. Filter farm runoff while the roots stabilize the banks of streams, rivers, lakes and ponds to prevent erosion
  - iv. Support wildlife and provide another source of income

#### E. Future of Agroforestry

- a. USDA Agroforestry Strategic Framework
  - i. Provides direction on how U.S. Department of Agriculture (USDA) agencies, partners, and landowners together can significantly expand agroforestry to balance agricultural production with natural resource conservation.
  - ii. The agroforestry community is provided an opportunity to positively influence the long-term health and sustainability of all lands for future generations.
  - iii. The key concept in agroforestry is working trees – putting the right tree, in the right place, for the right purpose.
  - iv. Goals and objectives
    - 1. Adoption- encouraging people to employ agroforestry techniques.
      - a. Develop partnership
      - b. Educate professionals
      - c. Engage globally
    - 2. Science- USDA will create and design more science-based agroforestry tools to address complex environmental, economic, and social conditions and customize those tools for targeted audiences and locations.
      - a. Plan
      - b. Discover
      - c. Translate
    - 3. Integration- USDA will integrate agroforestry into agency programs and policies to maximize and highlight economic, social, and conservation benefits.
      - a. Institutionalize
      - b. Assess performance
      - c. Communicate results

	<b>Sustainable Agriculture</b>		<b>Unit D</b>	<b>Agroforestry</b>
<b>ESSENTIAL STANDARD:</b>	<b>6.00</b>	<b>10%</b>		<b>Introduction to Agroforestry.</b>
<i>Objective:</i>	<i>6.02</i>	<i>7%</i>	<i>C3</i>	Apply agroforest management plans.

A. Agroforestry plans:

- a. Model the effects of a sustained tree planting and felling scheme on a property, while working within the farm's physical and financial constraints.
- b. Land management issues that are tackled in an agroforestry plan include:
  - i. Farm woodlots
  - ii. Farm shelter
  - iii. Scrub or bush retirement
  - iv. Fencing subdivision
  - v. Track layout
  - vi. Impact on farm income

B. Contents of an agroforestry plan include:

- a. Objectives states the owner's wishes; usually to establish woodlots for supplementary income, while retaining sufficient land in pasture to maintain base income from grazing.
- b. Description of property is a summary of size and location, description of landforms, soils and vegetation.
- c. Land use capability arranges different kinds of land on the farm, according to those properties that determine its capacity for permanent sustained production.
  - i. They are categorized as 'Land Use Capability Units' (LUC).
  - ii. An attached map shows where they lie, with respect to paddock fences, access tracks, and water supply.
  - iii. Carrying capacities and tree growth indices are given for each LUC unit.
  - iv. A general indication of the soil conservation measures that are needed are included.
- d. Forestry proposal is a schedule for establishing woodlots, and undertaking silviculture if desired. Pine woodlots are usually proposed, with alternative species like oaks, beech, pecan, cherry or hemlock on request. An attached map shows location and size of woodlots, relative to land remaining in pasture.
- e. Estimate of costs provides cost for each element – land clearance if required, fencing if needed, planting, pruning, thinning, weed and pest control.
- f. Implementation – seek technical advice. For example, Loblolly Pines compared to alternative species, stand density, planting technique, pruning and thinning regimes to optimize timber yield.
- g. Recording progress is a form for keeping track of woodlot establishment, silviculture, weed and pest control, and any problems that need fixing.

C. Assess forest management plans.

- a. What is the objective of this site?
- b. Does this site satisfy the four "I's" of agroforestry?
- c. What agroforestry farming systems are included at this site?
- d. What benefits does this plan have for the environment, wildlife, and people?
- e. Is this plan productive, profitable and does it foster environmental stewardship?