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Agroforestry --- What is It?

Q: What do trees, livestock, field corn, and ginseng have in common?

A: All can be elements of agroforestry practices.

Q: What is *agroforestry*?

A: Agroforestry is an intensive land management system that optimizes benefits when trees and/or shrubs are combined deliberately with crops and/or animals. The system is intentional, intensive, interactive, and integrated, which distinguishes agroforestry from other forestry or farming practices.

Agroforestry practices

Among the agroforestry practices applicable to Maryland are alley cropping, silvopasture, riparian buffer strips, and forest farming. **Alley cropping** is the combination of trees, planted in single or grouped rows, with agricultural or horticultural crops which are cultivated in the wide alleys between the tree rows. High-value hardwoods such as oak, walnut, and ash, are typical alley cropping species. Annual or perennial crops are grown between the rows of trees and provide short-term income before the trees bear nuts, close in the overstory, or are harvested for timber. Such crops are field, sweet, or pop corn; small grains or specialty grains; berries; paw paws; pumpkins; sunflowers and other cut flowers; and clover for honey production. Alley cropping also can have wildlife benefits. With proper planning, trees and shrubs can provide food, cover, and access to water for wildlife species. The width of the alleys and tree rows are variables that affect how long the alleys receive sunlight and are suitable for crops.

Silvopasture combines trees with forage and livestock production. The trees are grown for timber and provide shade and shelter for livestock. Silvopasture still is

developing and currently focuses on grazing sheep, cattle, or goats between rows of trees such as black walnut, honey locust, and black locust. The forage crop can be cool- or warm-season grasses. A successful silvopasture requires good grazing management and an understanding of forage growth. Well-managed grazing enhances tree growth by controlling grass competition for moisture, nutrients, and sunlight; provides economical control of weeds and brush without herbicides; maintains fire breaks; reduces habitat for gnawing rodents; prevents browsing of young seedlings; and recycles nutrients to trees and forage through manure. Silvopasture can provide income from livestock production and selective sales of timber and timber products. Silvopasture is different from simply grazing cattle in the forestland because it is developed intentionally and managed intensively.

Riparian buffer strips are trees/shrubs/grass planted between cropland or pastures and water. These strips are managed to intercept sediment, reduce pollution from agriculture activities on adjacent lands, stabilize streambanks, enhance stream and land habitats, improve the landscape appearance, and provide harvestable products such as hybrid poplar and willow. Planting of riparian forest buffers, using native tree species, is a major focus of tree planting programs in the mid-Atlantic area. In the mid-West, hybrid poplar has been used extensively in riparian buffer plantings. Hybrid poplar is a fast-growing tree with many uses and has the ability to uptake large amounts of nutrients that enter riparian buffers from surrounding farmland.

Forest farming consists of enterprise activities that have been around for many years but also are part of agroforestry. Forest farming uses a forested area for producing speciality crops. These crops are sold for medicinal, ornamental, or culinary uses. Shade tolerant crops such as ginseng, goldenseal, decorative ferns, or shiitake mushrooms are cultivated under a forest cover that is modified to provide the correct level of shade. Forest farming is intentional, intensive cultivation and is different from gathering native wild plants for sale, or wildcrafting. Maple syrup production also is considered forest farming.

Issues to Consider

Agroforestry is not a new concept. It has been practiced in the United States since the early 1900's and around the world for centuries. However, agroforestry only recently has received attention and promotion in this country because it can address landowners' needs for improved productivity, potential profitablility, and natural resources protection. Yet much remains to be learned about the profitability and sustainability of integrating agroforestry practices into forestry or agriculture. For any agroforestry system to be considered a viable alternative to forestry, it must provide economic or conservation benefits consistent with the forest landowner's objectives. Any practice is more likely to be adopted if it pays—by increasing yields, reducing costs, or generating new products and income.

Agroforestry practices that work in one part of the country may not be valid for another part. Soils, climate, agriculture practices, markets, and other factors are different. As an example, alley cropping alleys must be matched to available equipment, which is smaller in our area than in the flat topography of the mid-West.

The economic returns of many agroforestry practices, especially alley cropping and silvopasture, should be considered carefully before practices are implemented. The reality is that income from agroforestry likely will be

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supplemental income, rather than primary, for the landowner. Even when agroforestry practices are used to speed up the economic return from timber trees, they are not a "get rich quick" scheme. For example, in forest farming, many cultivated forest products require several years of growth before harvesting.

A limited number of cost sharing programs assist with agroforestry practices, e.g., the establishment of riparian buffers. However, the landowner must understand the requirements of these programs. Some put limitations on forestry activities, such as harvesting, in the buffer strips.

Economics of Agroforestry

Three general economic benefits typically are ascribed to agroforestry: (1) spreading of fixed costs associated with forestry and agriculture because of the joint-production relationship; (2) reducing the initial time period required to produce income from land devoted exclusively to tree production; and (3) diversifying income sources and spreading the risk generally associated with a monoculture.

On the other hand, agroforestry systems have been criticized from an economic standpoint because: (1) the initial cost of establishment, in terms of capital and labor, may be prohibitive if no early income is possible; (2) growing more than one crop at a time in the same field can complicate management; and (3) there may be a shortage of knowledgeable contractors or markets for products of agroforestry practices.

Marketing is a major consideration. It does no good to have a valuable product if there is no market for it. Markets should be thoroughly researched and planned before venturing into any agroforestry practice which yields a specialty product. The landowner should start small and expand only if preliminary results are positive.

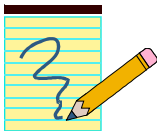
Landowners considering an agroforestry practice first should learn all they can from sources such as those listed below. Develop an enterprise budget and do some test planting before going large scale. An enterprise budget details establishment and overhead costs for the forestry and agriculture components along with the projected revenues. After subtracting costs from the projected profit, one can determine if a profit might be made. Your county Cooperative Extension agent can help with enterprise budgeting.

Agroforestry offers expanded possibilities for forest landowners. It promotes biodiversity and increases production through its concurrent multiple uses of land and is applicable to small as well as large areas. The landowner should consider his or her objectives and resources to determine if agroforestry practices could be implemented. Agroforestry should be tailored to individual situations and then blended and balanced with other production and conservation practices to achieve more sustainable use of the forest or agriculture land. Information to help make decisions on agroforestry is listed below.

Sources of information on agroforestry:
County Cooperative Extension agent, listed under "government" in the telephone book or www.agnr.umd.edu/ces/cooffices.html.
National Agroforestry Center, USDA Forest Service, 402-437-5178, *www.unl.edu/nac;* series of fact sheets.
Sustainable Agriculture Research and Education program, USDA. 202-720-5203, *www.sare.org;* information and grants.
The Status, Opportunities, & Needs for Agroforestry in the United States, A National Report. Association for Temperate Agroforestry, 1997. $6 payable AFTA, c/o Dr. D. B. Hill, Forestry Dept, U of Kentucky, Lexington KY 40546-0073.

Upcoming Stewardship Event

January 22, 2000 - *Trees, Wildlife, and Your Back Yard* - a community wildlife and forestry seminar on creating backyard wildlife habitat, tree care, pruning techniques, insects and diseases, reforestation, the Roadside Tree Law, Greenways, and Maryland's Big Tree program. $5 registration includes lunch. Call 301-473-8417.



Take Note

Woody Plant ID, an interactive identification tutorial CD Rom for more than 125 woody plants found in the eastern United States. Includes terms used in the identification of plants, with twig, leaf, and fruit characteristics; more than 2000 pictures and descriptions of leaves, twigs, fruit, flowers, bark, form, range maps, and interesting tidbits; plus multiple pictures of important distinguishing features, a tutorial, and a quiz section that allows you to evaluate your ability to identify trees and other woody plants. Produced by Virginia Tech in cooperation with Penn State University and the University of Georgia. Order ISBN 0-7872-3803-1 from Kendall/Hunt Publishing Company, 800-228-0810, $50.

Wood Handbook–Wood as an Engineering Material. Characteristics, properties, and guidelines for using wood. 463 pages; $41. Order online from *www.fpl.fs.fed.us* or from the US Government Printing Office, 202-512-1530 or 888-293-6498; *www.access.gpo.gov/su_docs/sale/*.

A ***forest buffer tool kit*** provides step-by-step instructions on planting stream buffers, what to plant, and group projects. Free from Pennsylvania Division of Watershed Support, 717-787-5259.

Become certified as a ***Wildlife Habitat Naturalist*** through a home study course. Produced by Windstar Wildlife Institute, it will be available both on the Internet and to those who don't have Internet access. Beginning in January, the first half of the 14-unit course is devoted to discovery and the second half to projects. Fee $150/$175. Contact Janet Ford, 301-293-3351 or *janet@windstar.org.*

VegSpec is a web-based program to help landowners/managers make sound decisions on what to plant on specific sites, e.g., reforested areas, buffer strips, and wildlife habitats. It also provides native plant alternatives to traditional introduced plant materials. It produces a detailed planting plan and is linked to a plant photo gallery. Developed by the Natural Resources Conservation Service, the U.S. Construction Engineering Research Labs, and the U.S. Geological

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