Chapter 11: Economic Considerations

Chapter Highlights

- Financial and technical assistance for agroforestry is typically available from at least three major sources: federal, state, and private conservation programs.
- One of the most common mistakes that many land stewards make is failing to account for their own personal time. Remember to count personal time spent as a variable cost.
- Because of the impact of long establishment periods for tree crops to produce marketable crops, it's important for agroforestry producers to think carefully about the time horizon of each enterprise on their land. Creativity in stacking multiple enterprises (e.g. growing annual crops in alleys while trees mature) may be useful, especially in the operation's early years.

Agroforestry Economics Overview

Agroforestry should not be thought of as a set of practices that take land out of production. Instead, agroforestry is a set of practices that responsibly weaves together production and land stewardship. There are many economic benefits to incorporating agroforestry practices into agricultural landscapes. The five practices of agroforestry provide opportunities for generating income from a wide array of alternative products, ranging from edible nut and berry crops to diverse woody floral crops. Additionally, agroforestry practices provide valuable environmental services for producers, such as soil and stream protection, wildlife habitat, and aesthetics at a low cost.

Monitoring the economic costs and benefits from an agroforestry practice is essential for analyzing its economic success or failure. Economic budgeting provides a method for systematically tracking costs and revenues that are incurred on any productive enterprise.

For most agroforestry practices, there are numerous incentive programs available that can help offset establishment costs. Federal income tax laws can also provide incentives in the form of increased deductions from taxable income and lower tax rates on certain types of income. This chapter will briefly discuss agroforestry from an economic perspective.

Budgeting, funding incentives, and tax incentives are three of the most important economic considerations when analyzing an agroforestry practice. Even if the goals of the land steward do not include managing the agroforestry practice for income, the land steward should be aware of ways to minimize the costs associated with establishing and maintaining that practice.

Economic budgeting

Economic budgeting is a decision making tool used to: *report, monitor, analyze, and forecast the financial performance of an economic enterprise.*

Budgets can be highly detailed standardized forms or roughly delineated estimates on the back of an envelope. The quality of the economic analysis and thus the quality of the decisions made based on the analysis depend on the time and effort put into the budget. There are several methods for budgeting, depending on the type of analysis being conducted. For agroforestry economic analysis, two main types of budgets are used: enterprise budgets and cash flow budgets.

Enterprise budget

This is a detailed list of all cost and revenues for a single enterprise, such as corn or livestock, typically for a single planning period.

Cash flow budget

This is a detailed schedule of the amount and timing of costs and revenues. Cash flow budgets can identify possible risks, predict cash needs over a period of time, and provide a basis for comparison with other alternatives. A cash flow budget can combine several enterprise

budgets to identify areas where losses from one enterprise can be offset by revenues from another enterprise.

Costs

Costs can be grouped into two categories: fixed and variable. Within these two categories, costs are separated even further into cash and non-cash costs. Cash costs are those costs that require out-of-pocket cash payments. Non-cash costs are often called economic costs or opportunity costs. Understanding each of these categories of costs will help organize data into economic information.

Fixed costs

Fixed costs are typically those costs that are attributed to resource ownership. In other words, fixed costs occur regardless of any productive activity being attempted. Fixed cash costs are out-of-pocket expenses that are not dependent on production level or commodity. Examples of fixed cash costs include property taxes and insurance. Fixed non-cash costs are accounting costs that do not require a cash outlay. Although these costs are incurred regardless of production, they are influenced by production activities. For example, depreciation is a non-cash fixed cost that accrues regardless of whether the capital is used for production or not. A tractor will depreciate in value even if it is parked in a barn and never used. The amount and type of capital that depreciates will depend on the production activities. A crop enterprise may have depreciation from specialized equipment such as a combine and a planter, but a livestock enterprise will not have this type of depreciation.

Variable costs

Variable costs are those costs attributed to the productive use of resources. Variable cash costs include all input costs, such as seed, chemicals, fuel, hired labor, and maintenance. Variable cash costs for agroforestry practices can be broken down even farther into four main cost areas: establishment, maintenance, harvesting, and marketing. One of the most common mistakes that many land stewards make is failing to account for their own personal time. Although many land stewards enjoy the time they spend working with trees and nature in general, there is still an economic cost to the time that is spent establishing, managing, harvesting, and marketing products from agroforestry practices. Remember to count personal time spent as a variable cost.

Revenues

Typical revenues from conventional forestry can come from things such as nuts, timber, and seedlings. In agriculture, revenues are typically based on monoculture crops or livestock enterprises. However, by combining agriculture and forestry, more income opportunities can be realized from the same natural resource base. Revenues in agroforestry are limited only by the creative resources of the decision maker.

Many agroforestry practices require significant investment during establishment years, followed by a period of several years before the trees start to generate a return on that investment. This may be a strong disincentive to the adoption of these practices, even if long-run estimates indicate that the practice will be more profitable. Because of this characteristic of agroforestry, farmers should be encouraged to seek out additional incentives for agroforestry.

Incentives for Agroforestry

Agroforestry incentives can come from many different sources. The fact that the practice improves the environmental quality of a farmer's property may be all the incentive needed to convince that farmer to adopt that practice. However, for some producers to adopt agroforestry practices requires a significant financial incentive. Programs designed to minimize or offset the initial establishment cost burden are the most common type of funding incentive available to land stewards interested in agroforestry.

Funding incentives can come from at least three major sources: (1) federal, state, and private conservation programs.

Federal conservation programs are those initiated by major legislation, such as the Farm Bill. Examples of federally funded agroforestry incentives would include programs such as:

- *Conservation Reserve Program (CRP)*
- *Environmental Quality Incentive Program (EQIP)*
- Conservation Stewardship Program (CSP)
- *Sustainable Agriculture Research and Education Program (SARE)*
- *Partners for Fish and Wildlife (PFW)*

These programs offer cost share payments, land

easement payments, and other incentive payments to farmers who adopt environ- mentally responsible land-use practices. One downside to many of these programs is the fact that the producer often foregos design flexibility and alternative product market income for the guaranteed program payments.

State funding programs are very similar to the federal programs. In 1990, the State of Missouri passed an innovative program called the Missouri Agroforestry Program which was part of the Missouri Economic Diversification and Afforestation Act. Although this program has had limited funding, the concept is unique in the fact that it encourages farmers to seek income opportunities from alternative products grown or harvested from land that is managed primarily for conservation benefits. The Missouri Department of Conservation was given the responsibility of overseeing this program along with a cost share program that promotes conservation practices. Other sources of funding in Missouri include the Missouri Department of Agriculture and the Missouri Department of Natural Resources.

Private funding sources with application for agroforestry often center on organizations that promote game animals or forestry. Private sources include groups such as Pheasants Forever, Ducks Unlimited, Quail Unlimited, and the National Wild Turkey Federation. These organizations offer cost-share programs and land easement payments to producers who manage their land in a way that improves the habitat of the game animal they represent.

Tax incentives

Another incentive for agroforestry adoption may be the income tax benefits that a producer could receive.

There are three basic ways to substantially reduce your tax burden: (1) increased deductions, (2) reduced tax rate, and (3) tax credits.

The current Internal Revenue Code (IRC) offers tax benefits for reforestation, conservation, business investment, and capital gains.

Section 194 of the IRC describes the reforestation deduction and amortizable basis deduction. This deduction allows a producer to deduct the first $10,000 of reforestation expenses from taxable income and then amortize and deduct the remaining expense over an 84-month period.

Section 175 describes the conservation deduction that allows a producer to deduct certain conservation expenses up to 25% of the gross income earned from the farming business. These conservation expenses must be incurred in accordance with a plan approved by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), or a similar agency.

Section 126 details how to exclude cost- share payments received from approved federal or state conservation programs from taxable income.

Section 179 allows a producer who is managing the agroforestry practice as an active business to deduct a large amount of expenses incurred for personal property used more than 50% in the business.

Summary

Agroforestry is a set of land-use practices that interlaces production and stewardship. From an economic standpoint, agroforestry can increase production diversity by integrating a wide range of commodity and alternative products. In order to monitor and analyze the economic parameters of an agroforestry practice, land stewards may need to adopt some form of economic budgeting. Because of the impact of long establishment periods and long periods where no economic returns are generated, a combination of enterprise budgeting and cash flow budgeting is recommended in order to fully capture the short- and long-term revenue potentials. Some agroforestry practices may have substantial costs during an establishment period and not generate revenue to offset those costs until several years later. Because of this, farmers may wish to seek funding incentives to help ease the establishment cost burden. Federal, state and private conservation programs offer land easements and cost-share payments for establishing agroforestry practices or related land use practices.



In addition to these programs, the IRC offers some substantial tax benefits for those who invest in reforestation, conservation, or some form of business that relies on the management of the natural resource base.

Additional Resources

Pasture-raised beef calculator. The Pasture Project at the Wallace Center . (n.d.).

Farm Financial Management. National Institute of Food and Agriculture. (n.d.).

University of Missouri . (n.d.). Agricultural Business and Policy Extension. MU Extension.

U.S. Department of Agriculture, Farm Service Agency: Home. U.S. Department of Agriculture, Farm Service Agency. (2025).

Natural Resources Conservation Service. USDA Natural Resources Conservation Service. (2025, January 24).

Sustainable Agriculture Research and Education Program. SARE. (2025, January 22).

Tax Treatment of Timber. National Timber Tax Website - Tax Management for Timberland Owners. (n.d.).

Home: Internal Revenue Service. Internal Revenue Service | An official website of the United States government. (n.d.).

Financial Assistance. Missouri Department of Agriculture . (n.d.).

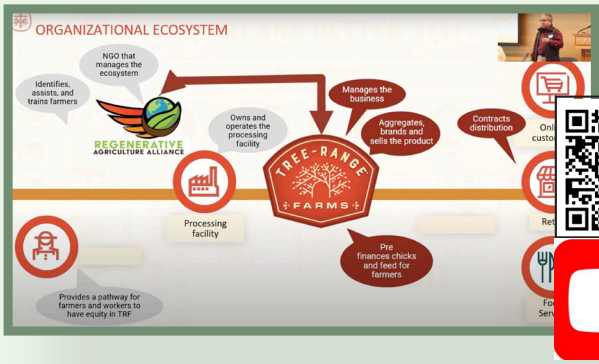
U.S. Department of Agriculture. (n.d.). Building Better Rural Places.

A Forest Landowner's Guide to Internet Resources: States of the Northeast. National Forest Service Library . (n.d.).

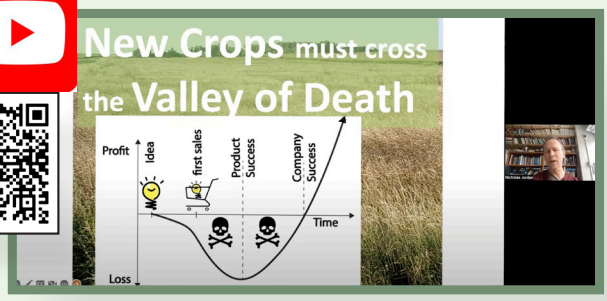
Explore more agroforestry marketing lectures and how-to videos on our Mizzou Agroforestry YouTube Channel!



Growing and Marketing Pawpaw in Missouri with Patrick Byers, horticulture field specialist with MU Extension.



Expert Panel: The Real Impacts of Silvopasture, featuring insights on marketing regenerative poultry products from Reginaldo Haslett-Marroquin of Tree Range® Farms.



One Theory of Scaling for Perennial Crops with Dr. Nick Jordan, co-director of the UMN Forever Green Initiative.

Scaling pecan production at Shepherd Farms in Clifton Hill, Missouri



At a glance: Dan Shepherd's family has been growing pecans in Missouri since 1971. Today, Dan farms around 300 acres of pecans, which were established 20 acres at a time over the years. Pecan trees need nearly a decade of growth before providing steady income to a farmer, and Dan embarked on a variety of successful agriculture endeavors while his trees matured. His family raised buffaloes for 42 years and spent 30 years in the eastern gamma grass seed business. They also sold direct to consumers at their farm store from 1990 to 2023.

Design and management: Dan's pecans are grafted with eight varieties. He grows bluegrass in between tree rows. This shallow rooted grass was selected because it doesn't take much water away from the pecan trees and creates a good mat to pick up pecans. He opted to forgo drip irrigation, relying on rainfall for moisture, and due to the large scale of his operation, he has chosen not to install fencing or other wildlife protection. Dan also raises cattle, but has decided to keep them in a separate portion of his farm to avoid food safety issues and potential harvest complications, as well as to prevent livestock from damaging trees. As for pecan processing, all cracking, air separating, and bagging of the nuts happens on the farm with the help of two employees.



Operational scale: Dan has invested in all the necessary specialized equipment to process and sell pecans. A challenge Dan notes from the early years is the problem of scaling the orchard. Small-scale growers often cannot justify investing in harvesting and processing equipment, but may eventually have too much orchard ground to cover to continue harvesting by hand. To mitigate this issue, collective equipment sharing among neighbors or formalized cooperative agreements can be useful. Nearby pecan farmers pay Dan by the pound to shell their pecans at his facility, with a 3,000-pound minimum required. These farmers sell their pecans to local farmers markets and bakeries in the area. Dan focuses more on wholesale markets spanning the Midwest and Southern U.S. for his pecans. These buyers receive shipments of 45,000 pounds per truck load.



Dan's advice to other agroforestry farmers is to stick with it. For pecans, it takes about 8-10 years to see a profit get turned. He says it takes stamina and strong will to say in it when the times are bad, but developing a solid marketing plan from establishment onward will help agroforestry farmers to one day enjoy the fruits of their labor.

(Top) Collecting scionwood for pecan grafts. (Middle) Pecan processing equipment at Shepherd Farm. (Bottom) An aerial shot of the Shepherd's orchards.

"My dad always had a saying; you stand to make a little money doing what everyone else does but you stand to make a lot of money doing what no one else does."

ECONOMIC CONSIDERATIONS REVIEW

1. **Variable cash costs can be grouped into four categories. What are they?**

2. **Two types of budgets are recommended for the economic analysis of agroforestry practices. What are they?**

3. **What are the four sections of the Internal Revenue Code (IRC) that can affect agroforestry adopters?**

4. **What is the difference between a variable cost and a fixed cost?**

ANSWER KEY

1. Variable cash costs are grouped into the following four categories: establishment, maintenance, harvesting, and marketing
2. The two types of budgets recommended for the economic analysis of agroforestry practices include: enterprise budgets and cash flow budgets.
3. The four sections of the Internal Revenue Code (IRC) that can affect agroforestry adopters include:
    - Section 194: Reforestation deduction and amortizable basis deduction
    - Section 175: Conservation deduction
    - Section 126: Cost-share exclusion
    - Section 179: Business investment deduction
4. A fixed cost is a cost that is associated with the ownership of resources. Fixed costs must be paid regardless of what activity is conducted on the property. Variable costs are costs associated with the productive use of resources. Variable costs are the costs that are used when comparing the economics of competing resource-use options.