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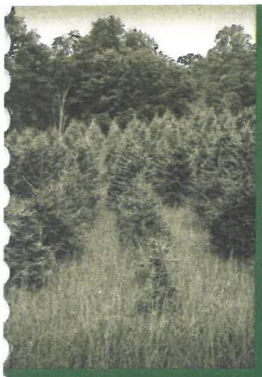
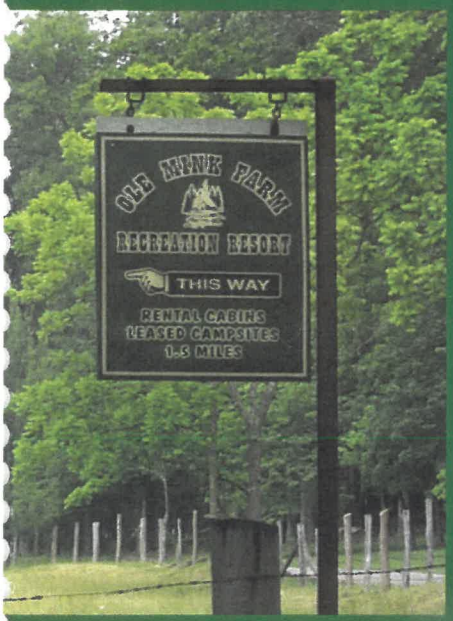


FOREST LANDOWNER'S GUIDE

to Evaluating and Choosing a



NATURAL RESOURCE-BASED ENTERPRISE

Natural Resource, Agriculture, and Engineering Service

Cooperative Extension

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Forest Landowner's Guide to Evaluating and Choosing a Natural Resource–Based Enterprise

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About the Authors

JONATHAN S. KAYS has been a regional extension specialist at the Western Maryland Research and Education Center, just south of Hagerstown, since 1988. He is responsible for developing and implementing natural resource extension programs in Maryland. Toward that endeavor, he works with county extension agents; public agencies; and nonprofit, private forestry, and national organizations to develop programs in forest stewardship, working forest conservation easements, woodland owner volunteer programs, wildlife damage management strategies for deer and voles, alternative income opportunities utilizing natural resources, and methods for using biosolids to grow forest trees on gravel spoils. Kays has authored numerous extension publications on forest and wildlife management and produces a quarterly newsletter, *Branching Out,* for Maryland woodland owners. He developed and maintains the Web site <WWW.NATURALRESOURCES.UMD.EDU>, which provides an overview of program areas and products for forest stewardship managers, natural resource professionals, and others. Kays has also worked with the Virginia Department of Forestry; the Institute of Ecosystem Studies in New York; and the U. S. Forest Service.

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Why Use This Guide?

Each year, farm and forest owners consider starting nontraditional enterprises to take advantage of renewable natural resources, such as forests, wildlife, water, and cropland. (The word *enterprise* is used loosely to refer to anything from a serious business venture or a hobby that may someday develop into a business to the practice of forest stewardship.) Some landowners are traditional farmers who want to diversify their operations. Others are new property owners. Their aim may be to produce a sustainable long-term source of income. Or they may just want to be good stewards of their forests' resources.

However, many endeavors are less than successful —or fail altogether—because the landowner lacked sufficient information necessary to make an informed decision or failed to take a long-term view of the enterprise. Equally important, landowners often also lack necessary technical, business, and marketing skills.

Before you as a forest landowner begin to consider the time, resources, and money necessary to develop a rural enterprise, you need to undertake a relatively simple step: take stock of your current management practices. Make sure you are properly managing your existing forest resources and are currently making wise forest-management decisions.

After your forest resources are in order, you can then consider one or more intensive rural enterprises, which usually fall into one of three categories: (1) forest farming and forest product enterprises; (2) recreational access and ecotourism enterprises; and (3) alternative and traditional agriculture enterprises. To properly evaluate and choose an enterprise, it is essential to consider all of the critical steps in decision making or business planning: assessing your personal and family goals, assessing your lifestyle, and assessing your land.

The aim of this guide is to supply the method and the tools that will enable you to use a decision-making process, a process that will help you manage your forest resources and make your enterprise assessment. In many cases, the principal manager is more enthusiastic about the enterprise idea than the rest of the family. This guide will stress that forest resources can be managed largely by the principal manager, with help available in the public and private sectors from forestry professionals. However, success at rural enterprises that go beyond the scope of basic forest stewardship requires that the principal manager and the others involved in the enterprise work as a team, with each person pulling his or her own weight.

Don't be disappointed if after completing the exercises in this guide you decide that starting a forest-based enterprise is not for you. In fact, you should consider yourself lucky, because you'll have saved yourself money and time. You may find that after your information gathering, the enterprise you choose is different from the one you considered initially. If, after completing the exercises, you decide to go forward with your enterprise idea, you'll be better assured of success, knowing that you've thought through many important aspects of the business.

The First Step: Dealing with the Stewardship of Forest Resources

Because patterns in agriculture, forestry, recreation, land ownership, and population have changed over the past few decades, landowners and natural resource management professionals have grown increasingly interested in nontraditional enterprises using natural resources.

These changes are influenced by:

- Landowners who have diverse objectives for owning land but lack an understanding of how to manage forest and farmland resources (These individuals actively seek information from natural resource and agricultural professionals about forest stewardship and nontraditional enterprise opportunities.)
- Increasing numbers of smaller farm and forest parcels, which are better suited for nontraditional than traditional enterprises
- Lower profit margins for traditional farming enterprises, such as growing field crops, dairy farming, and raising livestock
- Large and diverse markets for foods and forest products in easily accessible metropolitan areas (Some examples of markets are specialty craft stores, stores selling specialty wood products, gourmet retailers, and health food stores; in addition, many people want quality recreational and learning experiences.)

The following section presents some key points landowners with forest resources need to consider before they begin to evaluate and choose a natural resource–based enterprise. Information about how to use professional forestry assistance to your advantage is also included.

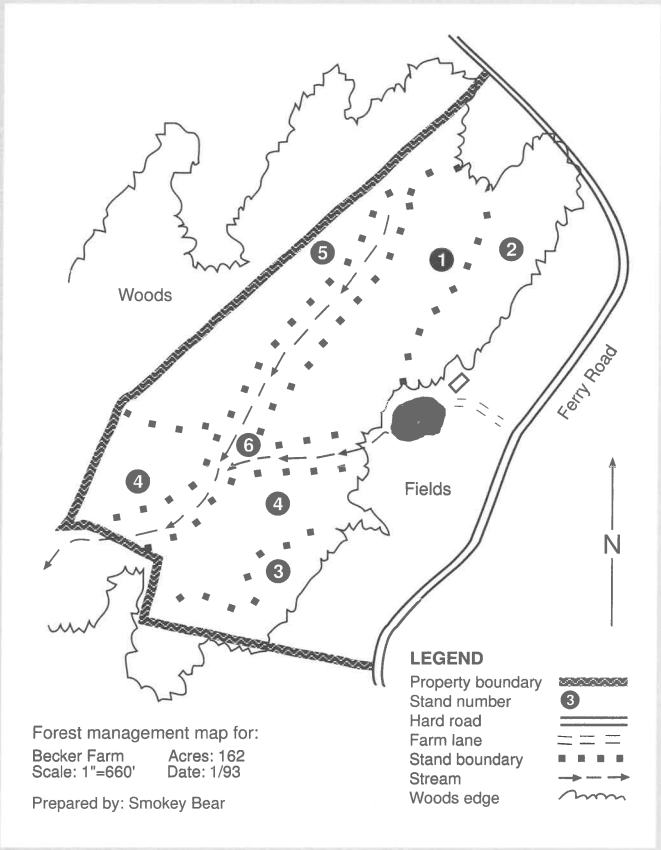
DEVELOPING A FOREST STEWARDSHIP PLAN

Forests provide a range of benefits to landowners, including wildlife habitat, a place to get back to nature, timber or forest products, recreational opportunities, and clean water. Managing your forest today to meet your personal objectives while conserving the integrity of its natural resources for future generations is known as the practice of forest stewardship. Contact a professional forester to develop a forest stewardship plan for your forest resources. Novice and experienced landowners, including many landowners considering a rural enterprise, often overlook this essential step. As a consequence, they make forest-management decisions that result in poor harvesting practices, low economic returns, and serious damage to wildlife and aesthetic and recreational resources. In addition, they fail to benefit from the income and enjoyment the forest can provide.

A professional forester will look at your forest resources, divide the forest into different areas or stands that are similar enough to be managed as separate units, and then provide inventory data and descriptions of each of the stands. For each identified stand, the forester will recommend specific forest stewardship practices. The intensity of the recommended practices will depend on your objectives. The recommended practices will be part of a chronology of activities that will take place throughout a period of ten years or so. Your forest stewardship plan will become your roadmap to forest activities throughout the next decade. The forester can tell you about assistance programs that are available to help you carry out the recommended practices and, if necessary, assist you with the timber sale process.

Components of the Forest Stewardship Plan

- *Objectives*
- *Maps*
- *Inventory data*
  - *Wildlife, endangered species, timber, etc.*
- *Stand descriptions and recommendations*
- *Timetable for action*



The best place to start is to contact your state forester for information on the forest stewardship program in your state <WWW.STATEFORESTERS.ORG/SFLIST.HTML>. Educational assistance is available from your state extension forester at your university cooperative extension office <WWW.CSREES.USDA.GOV/QLINKS/PARTNERS/STATE_PARTNERS.HTML>.

HARVESTING FOREST PRODUCTS TO ENHANCE WILDLIFE HABITAT AND ALLOW OTHER FOREST BENEFITS

Part of your stewardship plan may involve selling timber products. A sale of timber products, although infrequent, can offer a substantial and sustainable form of income, if handled properly. Income from a well-managed timber sale can provide seed money for some of the more intensive rural enterprises discussed later in this guide or needed capital for making improvements to wildlife habitat, road access, and structures.

Most landowners do not own forestland primarily to maximize timber income. However, most are not opposed to the harvest of forest products if their other objectives for wildlife, recreation, and watershed protection continue to be enhanced and protected. Many forests are now mature and lack the habitat diversity that supports certain species of wildlife, such as ruffed grouse and woodcock. Carefully planned timber harvests can create habitat for wildlife that was not previously

present. Well-planned roads also allow for improved recreational access by landowners.

USING A CONSULTING FORESTER WHEN SELLING TIMBER

Most landowners lack the knowledge to successfully carry out a timber harvest. Although state foresters can assist with developing forest stewardship plans, landowners typically use private consulting foresters to act as their agents in timber sales and protect their interests.

Because of the strong demand for forest products, many timber buyers contact landowners directly through the mail or at their homes. Landowners are often tempted to accept what appears to be an attractive price right away for their best trees without considering the impact a harvest will have on the future value of the remaining trees, which is similar to a livestock farmer selling his blue-ribbon breeding stock and keeping the runts, hoping they will flourish.

When landowners sell timber, a wise long-term strategy is to remove smaller trees and leave the bigger, better ones for the future. A timber harvest that removes trees above a certain diameter and leaves the smaller ones to grow—commonly known as cutting to a minimum diameter, diameter-limit cutting, or high-grading—typically reduces future economic value and wildlife and other nontimber benefits important to many landowners.

Many benefits can be attained from hiring a consulting forester to assist with a timber sale. The forester accepts responsibility for the sale's meeting certain standards. These responsibilities are detailed in a contract the landowner first makes with the consultant. Typically, the consultant will mark the trees to be harvested, solicit competitive bids from prospective buyers, help the landowner select an acceptable logger, and develop the contract with the logger. Usually the landowner gets all money before any timber is cut. The consultant should be onsite as the harvest proceeds and should make sure the contract provisions are followed. Increased revenues from the competitive bidding of the timber and the peace of mind resulting from having a knowledgeable forester looking out for your interests more than recoup the 10–15% commission most consultants charge.

Some forest-product companies have landowner assistance programs that help landowners manage and market forest products. In some cases, these programs may be worth considering.

Types of Foresters

- *State foresters: develop forest stewardship plans; provide objective information on available programs*
- *Consultant foresters: develop forest stewardship plans; act as agent for landowner in timber sales, paid by commission; perform other forestry services*
- *Industrial foresters: work for specific mill and may provide management services; forester–landowner relationship will vary*
- *Extension foresters: work for university; provide educational assistance*

Choosing Your Consulting Forester Wisely

Some forest-resource professionals are paid by your tax dollars: state foresters, for instance. Others, such as private consulting foresters, provide planning and marketing services for a reasonable cost. Industrial foresters work for a specific company and represent the interests of that company.

When selecting a consultant forester, get a recommendation from another landowner, if possible. Contact your state forester or local cooperative extension agent for a list of consultant foresters and for tips on selecting a forester. Spend some time interviewing a few potential consultants on the phone to make sure you feel comfortable having them represent your interests. Ask them if they are a member of a professional association, such as the Society of American Foresters or Association of Consulting Foresters. If your state registers or certifies professional foresters, are they in good standing? Arrange an onsite visit with a few of the best prospects—usually there is no charge for an initial visit.

The following University of Maryland Web site contains extension bulletin EB367, Marketing Forest Products, *which includes information on contracts and other issues:*
<WWW.NATURALRESOURCES.UMD.EDU/PUBLICATIONS.CFM>

DERIVING TAX ADVANTAGES FROM PRACTICING FOREST STEWARDSHIP

In many states, landowners who develop and implement a forest stewardship plan may receive a lowered property tax assessment in return. Your state forester can provide information about your state's laws.

Also remember that revenues from timber sales can be subject to special rules. Many landowners lose much of their timber revenue because they fail to take advantage of applicable federal and state tax laws. Some of the basic tax strategies that can enable you to defer taxes are (1) calculating the basis of your timber resource when you purchase or inherit property; (2) claiming timber-sale revenue as a capital gain rather than as ordinary income; and (3) subtracting timber-sale expenses for forest consultants. A well-written stewardship plan will provide you with the information needed to calculate your basis and will identify you as someone actively involved in the management of land, an important consideration in federal income tax assessments.

Unfortunately, many accountants are not knowledgeable about current timber tax laws and regulations. Either find one who is or encourage your present accountant to "get up to speed." The most up-to-date information on timber taxes, publications, and other resources is available at the Web site <WWW.TIMBERTAX.ORG>. The best-written resource is the United States Department of Agriculture (USDA) handbook 718, the new *Forest Landowners' Guide to the Federal Income Tax,* which can be found along with other publications at the Web site mentioned above.

GROWING TREES IN YOUR FOREST TO GROW COMPOUND INTEREST

Most trees need to be at least 18 inches in diameter to have significant worth for high-value forest products. A healthy tree 16 inches in diameter is just approaching market size for high-value forest products, such as sawtimber, and increases significantly in value each year. Its continued growth throughout several years adds more volume, and thus more value, than does the growth of a smaller tree during the same years.

Thinning your forest can open the forest canopy, let in sunlight, and increase the growth rate of the remaining trees. A 16-inch-diameter tree growing in a crowded forest may take six years to grow 1 inch in diameter, an annual interest rate of 2.1%. In a thinned forest, the same tree could take only three years to grow 1 inch in diameter, a rate of 4.3% (see table below). Therefore, the faster-growing tree will take only six years to add 2 inches in diameter and reach a diameter of 18 inches compared with 12 years for the slower-growing trees.

Forest thinning can also improve wildlife habitat and trail access, among other things. A real benefit of thinning a forest periodically is not only the money received from the harvest but also the increased rate of growth of the trees that remain, which will shorten the time until the next harvest. A professional forester can help you with this analysis on your land.

Contact your state forestry agency <WWW.STATEFORESTERS.ORG/SFLIST.HTML> or state extension forester <WWW.CSREES.USDA.GOV/QLINKS/PARTNERS/STATE_PARTNERS.HTML> for more information about developing a forest stewardship plan, marketing forest products, improving timber stands, and educational programs.

Compound Rate of Interest for Trees of Different Diameters and Growth Rates

	NUMBER OF YEARS TO GROW 1 INCH IN DIAMETER Rapid Growth <----------> Slow Growth			
	2	3	4	6
Diameter of tree (inches)	Compound Rate of Interest (%)			
6	18.1	12.1	9.1	6.0
12	8.7	5.8	4.4	2.9
14	7.4	4.9	3.7	2.5
16	6.4	4.3	3.2	2.1
18	5.7	3.8	2.9	1.9

Possible Natural Resource Income Opportunities

Let's assume that you have a forest stewardship plan and are following it. Now is the time to follow a process for evaluating and choosing other rural enterprise opportunities.

Avoid focusing only on cropland when gathering information about suitable enterprises. Don't forget to consider the potential value of products and services that can be developed from natural resources, such as forests, wildlife, water, and natural beauty.

This guide provides a process for evaluating three types of enterprise groups to meet a landowner's objectives. Most of the emphasis and examples will concentrate on two types: forestry and natural resource enterprises and recreational access and ecotourism.

FORESTRY AND NATURAL RESOURCE ENTERPRISES

These enterprises include a number that are known by different names, such as tree farming, forest farming, agroforestry, and special forest products (see sidebar).

- Intensive management of a sustainable stream of a forest product or products (firewood, high-quality sawtimber, or veneer) every few years by using traditional forest stewardship and tree-farming programs
- Roadside marketing of high-quality forest products
- Implementing agroforestry practices that combine agriculture and forest products
- Producing and marketing special forest products, including shiitake and oyster mushrooms, maple syrup, pine straw, and medicinals such as ginseng and goldenseal

What about Special Forest Products?

A special forest product (SFP) is a product or craft that is based on raw materials from woodlands. Also known as nontimber forest products (NTFPs), SFPs include mushrooms, medicinal plants, crafts, and wreaths.

SFPs tend to have niche markets that require the producer to spend more time marketing the products than is required for traditional agricultural crops. Most producers of SFPs work on a small scale, so the market may consist of many small producers instead of a few large-scale producers, as is common in many industries today. Government financial support programs for SFPs are limited.

Producers who command the highest prices in the marketplace tend to be those who contract with buyers before the products are ready. That way, they can make sure that the product meets a buyer's criteria. Successful producers monitor the latest trends in their field by continually doing research and comparison shopping with producers of competing products.

A good source of information on SFPs can be found at <WWW.SFP.FORPROD.VT.EDU>.

- Collecting native plants, mushrooms, and craft materials
- Producing wood and native crafts
- Growing Christmas trees and producing holiday greenery such as wreaths and roping
- Providing custom sawmilling and kiln-drying services

RECREATIONAL ACCESS AND ECOTOURISM

These enterprises include those that provide a service or experience to the customer. Many also provide the opportunity to sell products made by the landowner.

- Fee hunting or fishing, hunting preserves, sporting clays
- Guide services, wildlife viewing
- Campgrounds
- Outdoor sports; high-risk recreation such as rock climbing, canoeing, and rafting
- Bed and breakfasts, vacation cabins
- Petting zoo with animals
- Mazes made of hay bales or corn rows
- Immersion experiences that teach skills and crafts such as basket weaving, herb preparation, or horseback riding

ALTERNATIVE AND TRADITIONAL AGRICULTURE

These enterprises include those that are more agricultural in nature and may have little to do with the direct management of forest resources. However, they should be considered along with the full range of enterprise options.

- Aquaculture
- Growing nuts, herbs, small fruits
- Producing native plants such as tree seedlings and shrubs in a nursery
- Horse boarding
- Breeding specialty livestock
- Operating greenhouses and other enterprises that use cropland and nonforest resources
- Pursuing more traditional agricultural enterprises, such as row crops, livestock, and dairy

MARKETING IS KEY!

Many of the enterprises mentioned above have multiple markets in the retail, wholesale, and niche arenas. In retail markets, you sell directly to the consumer (also known as direct marketing), while in wholesale markets you sell to someone who then retails the product to the consumer. Niche markets are usually small specialty areas.

People never make money producing products and services; they make money selling them. So a crucial step in the development of any enterprise is thinking about where your markets will be.

The importance of marketing cannot be overstated. The tables on pages 9–11 provide examples of retail, wholesale, and niche markets for a select group of enterprises in each enterprise category: forestry and natural resources, recreational access and ecotourism, and alternative and traditional agriculture.

Marketing Examples for Forestry, Agroforestry, and Natural Resource Enterprises

Enterprise	Retail or Direct Market	Wholesale Market	Niche Market
FIREWOOD	Delivery to homeowner; roadside piles for campers	Broker, garden center, landscape contractors	Convenience store bundles; custom cut/split; select species
BLACK LOCUST OR CEDAR FENCE POSTS and/or RAILS	Homeowners	Landscape contractors, garden stores	Nature stores
WOOD CHIPS for COOKING and SMOKING (hickory, apple, maple)	Homeowners and businesses	Convenience stores	Fairs and festivals
HIGH-VALUE SAWTIMBER and VENEER	–	Sawmills through traditional sale process	Sell harvested logs directly from log deck to buyers; sell to the export market
CUSTOM SAWMILLING	Craft artisans, hobbyists	Other sawmills	Cut lumber at landowner's property
DRYING LUMBER	Craft artisans, hobbyists, cabinetmakers	Local lumber store, chain stores, planing mill	Unique species or products such as crotch wood, matching panels
VALUE-ADDED WOOD PRODUCTS (hardwood and grapevine baskets, bowls, kitchen utensils, and other value-added products)	Craft fair, tourist sites, Internet and catalog sales	Broker	Custom-shaped and custom-sized baskets; gift baskets
CHRISTMAS TREES	Choose-and-cut or parking lot sales	Garden stores; nonprofit organizations that sell trees for fundraising	Super large trees, tabletop trees, and select species; combine with sleigh ride and other activities or onsite sales
HOLIDAY GREENERY (wreaths and roping from pine trees and grapevines)	Choose-and-cut parking lot sales	Broker; nonprofit organizations that sell greenery for fundraising	Decorated greenery at holiday crafts fair
NATIVE VEGETATION COLLECTION for floral and food markets on a sustainable basis (moss, ferns, colored twigs, mushrooms, ramps, etc.)	Florist shops, craft artisans, fairs	Brokers for floral markets and edibles, stores, restaurants	–
SHIITAKE, OYSTER, and OTHER MUSHROOMS	Farmers market	Broker, specialty stores, restaurants	Dried mushrooms and other unique products
GINSENG/GOLDENSEAL	–	Broker	Ginseng jams or other products at specialty stores
WALNUT, PECAN, HAZELNUT, or OTHER NUT PRODUCTION	Farmers market, Internet or catalog sales	Broker	Specialty stores
AQUACULTURE in CAGES, PONDS, and CLOSED SYSTEMS	Farmers market	Broker, restaurants	Dried smoked fish at specialty stores
BAIT for FISHING	Fishermen, roadside sales	Bait stores, tourism locations, marinas	Select baitfish for specific types of fishing or contest; compatible with fee fishing, campground, boat rental, etc.
RECREATIONAL NATURAL RESOURCE EVENTS (forestry, logging, heritage, wildlife, maple syrup festivals or field days; forestry skill competitions)	Individuals, organizations, and groups	–	Combine with value-added forestry products and many other unique offerings

Marketing Examples for Recreational Access and Ecotourism Enterprises

Enterprise	Retail or Direct Market	Wholesale Market	Niche Market
HUNTING LEASE	Hunting clubs and groups	Forester or other outlets to act as your broker	Combining hunting lease with cabin rentals
SPORTING CLAY or RIFLE RANGE	Individuals and groups	Broker	Special events and competitions
FEE FISHING	Individuals, youth organizations, group rentals	–	Contests to attract special audiences (youth, senior citizens, etc.); combine with cabin or campground rental
CAMPGROUND	Individuals, youth organizations, group rentals	–	Contests to attract special audiences (youth, senior citizens, etc.); combine with fee fishing or other recreational enterprises
VACATION CABIN	Individuals, families, hunt clubs	Broker	Combine with fee hunting, campground, or other recreational access enterprises
RECREATIONAL TRAILS (bird watching, hiking, cross-country skiing, horseback riding)	Individuals, nature and conservation groups, church and school groups	Broker	Special arrangements
HAYRIDE/SLEIGH RIDE/BONFIRE COMBINATIONS	Individuals, nature and conservation groups, church and school groups	Broker	Special holiday programs and promotions (e.g., Halloween, Thanksgiving, Christmas)
NATURE-BASED BED and BREAKFAST	Individuals, couples, small groups	Broker	Special program offerings
ALL-TERRAIN-VEHICLE (ATV) and MOUNTAIN-BIKING ACCESS	Individuals, groups	Broker	Special races, events, and promotions
BOATING, CANOES, PADDLEBOATS, RAFTS, and TUBES	Individuals and groups	Broker	Special events or promotions

Marketing Examples for Alternative and Traditional Agriculture Enterprises

Enterprise	Retail or Direct Market	Wholesale Market	Niche Market
HAY	Farmers, small-farm owners, horse owners	Auction	Special hay mixes for specific livestock
VEGETABLES	Farmers markets, roadside stands, pick-your-own, CSAs*	Broker, auction, cooperative, restaurants	Ethnic markets, organic
FIELD CROPS (corn, soybeans, small grains, etc.)	Livestock farmers	Elevator, cooperative	Popcorn, edible soybeans, fuel for heating stove, organic
WINE and TABLE GRAPES	Farmers markets, CSAs*	Stores, wineries, restaurants	Organic, special and heirloom varieties for wineries
BRAMBLE FRUIT CROPS (raspberries, blackberries, currants, gooseberries)	Farmers markets, roadside stands, pick-your-own, CSAs*	Stores	Organic, heirloom varieties
FRUIT TREES (apples, pears, peaches, etc.)	Farmers markets, roadside stands, pick-your-own, CSAs*	Broker, stores, restaurants	Unique and heirloom varieties and species, special sizes and quality
HONEY	Individuals, roadside stands, farmers markets	Stores, restaurants, cooperative	Organic, honeycomb
SHEEP and GOATS (milk, meat, and fiber)	Farmers, 4-H groups, and other individuals or groups	Auction	Ethnic meat markets, organic markets
EXOTIC LIVESTOCK (emu, fallow deer, ostrich, etc.)	Farmers, 4-H groups, and other individuals and groups	Auction	Ethnic meat markets, restaurants
HORSE BOARDING	Horse owners in urban and rural areas	–	Lessons, training, trail riding, events; combine with other recreational enterprises
VALUE-ADDED FOOD PROCESSING (slaughterhouse, bakery, canning, microdairy processing)	Farmers markets, roadside stands, fairs and festivals	Specialty stores, restaurants, broker	Organic, specialty products
HERBS (Echinacea, basil, etc.)	Farmers markets, roadside stands	Broker, stores, restaurants	Organic, medicinal, special product combinations, heirloom varieties
NATIVE PLANT NURSERY	Homeowners, local businesses	Landscape contractors doing residential and restoration work, garden centers	Specific in-demand species that are difficult to grow
GREENHOUSE	Homeowners, local businesses	Garden centers, brokers	Specialty plants for a specific market
RECREATIONAL AGRICULTURE (harvest festivals, corn mazes, petting zoos)	Individuals, organizations, and groups	–	Combine with value-added, roadside stand, and many other unique offerings

**CSA indicates community-supported agriculture.*

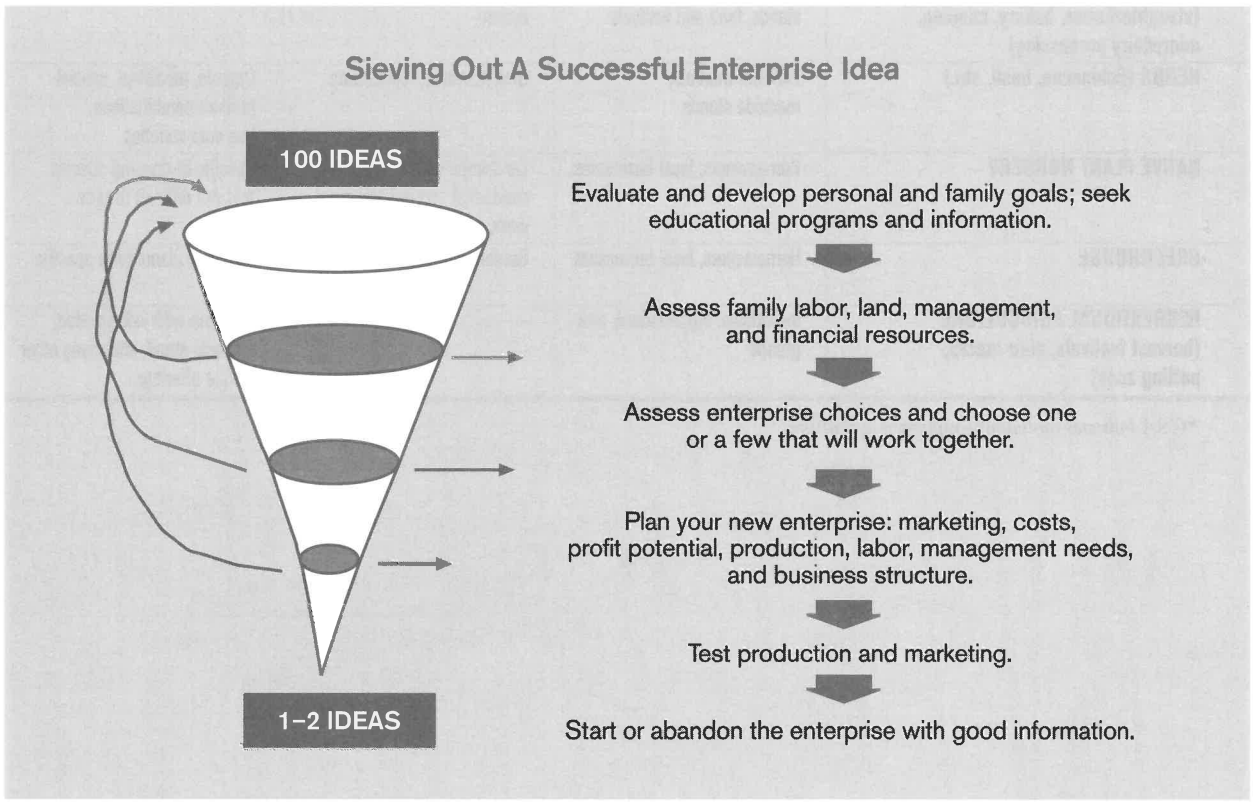
Sieving Out a Successful Enterprise Idea

Landowners who think of themselves as entrepreneurs often fail to realize their goals. In fact, many never even set goals. Although motivation, self-reliance, and interest are essential, such personal qualities by themselves are not enough.

You will have the greatest chance of success in your enterprise if you realistically assess your goals and resources and your marketing, production, and financial capabilities. Then you will be able to base your decision to start or abandon an enterprise on the best available information.

The process of evaluating and choosing an enterprise can be likened to a sieve filtering sand (see figure below). The sand poured into the sieve corresponds to the ideas you generate before you do much serious thinking or research about possible enterprises. The filtering process involves gathering information about your ideas and evaluating your personal and family goals. You will abandon some ideas as you go through the investigation process, while you will rethink others and reenter them in the sieve process. A few of the "refined" ideas will emerge as possibilities worth pursuing, which will lead to the decision-making stage from which you will be able to develop the components of a business plan.

In selecting one or several ideas over others, balance your objectives against the available resources and markets. Practicing diversification—having several enterprises that are compatible with one another—will give you more flexibility and opportunity than concentrating on just one. However, start small and then expand. Once you select one or more enterprises, develop a rough business plan for each, including basic business and marketing concerns outlined in this guide. In following this process, you move farther down the sieve, eliminating ideas that do not suit you best.



The key component of this assessment is the development of an enterprise budget and cash flow statement, which requires that you estimate your costs and revenues for one year, one season of operation, or whatever length of time is necessary to produce a crop. This simple tool will help you to determine whether the enterprise will be profitable, given all the assumptions you must make for costs and revenues. This is the stage at which many people rethink their ideas. The more demanding an enterprise, the more complex the business plan will be, but all of the business, financial, and marketing components in this guide must be addressed. After going through this process, you will be able to start the venture intelligently and have a good idea of what—or what not—to expect.

Many individuals who complete the various steps of the sieve process of enterprise development abandon some or all of their ideas along the way. Typically, once individuals become aware of what is involved in an enterprise—the time, resources, and possible financial return (which is usually lower than expected) or loss—they either abandon their effort or consider other options that are more compatible with their objectives. For example, landowners who do not live on their property might realize that their idea will not work unless they live on the land. Landowners who have the modest financial objective of paying the property taxes or who just wish to pursue a hobby may opt for a less intensive venture than landowners who want an enterprise to generate significant income.

In the end, landowners who base their enterprise decisions on what they learn by going through the sieve process described here will generally be more successful than landowners who bypass the process.

In leading you through the process of evaluating and selecting an enterprise that is compatible with your situation, we will examine each of the following steps in the sieve or business-planning process:

- Examining personal and family beliefs
- Considering personal goals, attitudes, and skills
- Determining family labor and management resources
- Assessing the site and taking an inventory of resources
- Choosing a new enterprise
- Planning and developing the new enterprise, which involves
  - developing a marketing strategy
  - examining legal, regulatory, and liability issues
  - determining labor and management needs
  - creating an enterprise budget
  - creating a cash-flow budget
- Reaching a decision to start or abandon the enterprise

EXAMINING PERSONAL AND FAMILY BELIEFS

A family business has to take into account the needs and opinions of all family members. Too often in family-run or home-based enterprises, the principal manager is much more enthusiastic about the idea than the rest of the family, which can spell trouble. For example, many forest plantations originally planted with Christmas trees have been abandoned because the landowner assumed wrongly that a spouse or child would help with pruning, mowing, or other management activities. It is imperative, therefore, that you and your spouse, children, parents, or whoever will be involved in the enterprise individually address the statements posed in the exercise on page 14, "Reality Check—Is the Rest of the Family with You?" Then, with the responses in hand, discuss them among your family or team members—those who will be involved with the enterprise. Misunderstandings or disagreements should be reconciled before the enterprise idea gets beyond this point.

EXERCISE: Reality Check – Is the Rest of the Family with You?*		
If we undertake this enterprise, our family will spend too little time together.	❑ Agree	❑ Disagree
I will really enjoy working hard to make the natural resource enterprise a success.	❑ Agree	❑ Disagree
I'm very enthusiastic about our proposed natural resource-based enterprise.	❑ Agree	❑ Disagree
A new enterprise is too much for us to handle now.	❑ Agree	❑ Disagree
I often sacrifice the things that I like to do for the sake of our current activities. Adding this enterprise will make matters worse.	❑ Agree	❑ Disagree
I am not worried about having enough spending money.	❑ Agree	❑ Disagree
Being able to work the land is more important than having lots of money.	❑ Agree	❑ Disagree
The family should always come before the enterprise.	❑ Agree	❑ Disagree
I believe we could handle some financial risk with our new enterprise.	❑ Agree	❑ Disagree
It's more important for the children to work the land than to have a lot of other activities.	❑ Agree	❑ Disagree
My opinions and feelings about the potential new enterprise are taken seriously.	❑ Agree	❑ Disagree

**Not all statements may apply to your situation.* *Adapted from Grudens-Schuck et al., 1988.*

CONSIDERING PERSONAL GOALS, ATTITUDES, AND SKILLS

Entrepreneurs must have or develop a number of skills: recordkeeping, financial, and marketing skills; interpersonal skills; and production and management skills. Evaluating each individual's strengths and weaknesses will make it easier to decide who should handle what task and what additional education or training may be necessary. Therefore, it is important for you and your team members to evaluate individually the statements in the exercise, "What Are My Goals, Attitudes, and Skills?" Then, with the various responses in mind, discuss them with one another regarding the proposed enterprise. You may find that certain skills are lacking and must be developed or filled by finding another team member.

If you came out with many "disagrees," consider how the statements with which you disagreed relate to the enterprises you're thinking about. You may need to reconsider becoming an entrepreneur.

As you assess your qualities and skills, it helps to consider which of the five broad categories of landowner you fit into. Which of the following categories best represents you and each of your team members?

Traditional Farmer

Goal: Wants to diversify income, improve cash flow at certain times of year, and find an enterprise that fits with an existing business.

Qualities: Is good with production, needs help with marketing, is wary of fads.

Part-Time Farmer

Goal: Wants to supplement income from day job.

Qualities: Is innovative and self-motivated; may be hesitant to share ideas with others; has good

EXERCISE: What Are My Goals, Attitudes, and Skills?		
I like to work with machinery.	❑ Agree	❑ Disagree
I like to work with crops.	❑ Agree	❑ Disagree
I like to work with the forest.	❑ Agree	❑ Disagree
I like to keep records and am well organized.	❑ Agree	❑ Disagree
I like to repair machinery and other things.	❑ Agree	❑ Disagree
I would enjoy having people come onto our property and making them feel at home as part of a home-based business.	❑ Agree	❑ Disagree
I like to work really hard for a few months and then have a slower period in which I can rest.	❑ Agree	❑ Disagree
I like to have a steady workload throughout the entire year.	❑ Agree	❑ Disagree
I would like to supervise workers.	❑ Agree	❑ Disagree
I would be good at sales because I enjoy seeing a satisfied customer.	❑ Agree	❑ Disagree
I would like the business to be compatible with my status as a landowner whose primary residence is not on the property.	❑ Agree	❑ Disagree
I believe management of forest and wildlife resources for pleasure and profit is worthwhile.	❑ Agree	❑ Disagree
Being in the woods with nature is more important than profit from my enterprise.	❑ Agree	❑ Disagree
If I just break even on this, that is enough.	❑ Agree	❑ Disagree
The most important quality of the new enterprise(s) is the ability to make a good profit.	❑ Agree	❑ Disagree

Adapted from Grudens-Schuck et al., 1988.

production and marketing skills; is willing to read, explore, and apply new information.

Lifestyle or Career Changer

Goal: Wants out of the rat race; wants to go back to the land; is attracted to high-profit ventures.

Qualities: College-educated; needs a push to get started; has good marketing skills; may lack production skills; will ask for help from professionals.

Private Forest Owner, Absentee Landowner

Goal: Wants production for personal use only; wants income to pay taxes; wants to invest minimal effort; views enterprise as a future means of support during retirement.

Qualities: Usually retired or has a full-time job that may provide useful skills if applied; is less likely to develop a detailed business plan because of hobby nature of activity.

Nonlandowner Who Leases Land or Uses Public Land

Goal: Wants production for personal use only; wants income for getting by, using public and private natural resources for hunting, guide services, collecting native plants (e.g., mushrooms, ginseng).

Qualities: Is resourceful at locating markets and resources; may be distrustful or suspicious of strangers.

DETERMINING FAMILY LABOR AND MANAGEMENT RESOURCES: AN INITIAL ASSESSMENT OF RESOURCES, GOALS, AND POSSIBLE ENTERPRISES

Now that you and your family or team have considered personal goals and skills and started to seek information on possible enterprises, it is time to complete the exercise, "Assessing My Resources, Goals, and Possible Enterprises." This initial assessment will help you focus your thoughts and target those goals most important to you. Many of the physical and personal resource items will be covered in greater depth under "Assessing the Site and Taking an Inventory" (page 18).

EXAMPLE: MEET THE SMITH FAMILY

To give you an example, consider the Smiths, who own a hypothetical family property.

Property Description

The Smiths own a 50-acre farm on a maintained gravel road, with 35 acres of forest and 15 acres of cropland, including a 10-acre alfalfa field and a 5-acre overgrown pasture field. A half-acre pond is on the property, along with an old dairy barn with stalls, an old renovated farmhouse where the family lives, a few outbuildings, and a livable cabin. The property is located one and one-half hours from a major metropolitan area.

Smith Family Goals

In the short term, the Smiths want to better manage and use existing forest and natural resources, pay property taxes, improve their quality of life, and provide a profit-making opportunity for themselves and their children. They are interested in pursuing one or more enterprises to meet their goals. In the long term, they will expand the enterprises to provide retirement income about ten years from now.

Residency Status and Responsibilities

The Smiths will be involved as resident landowners. Mr. Smith commutes one hour each way to work. His wife works ten hours a week at a job located within ten miles of home. Labor is available only on weekends and for three- to four-day periods when school schedules allow. Family members and their responsibilities are as follows:

Joe (husband): Managing, labor, marketing
Sarah (wife): Recordkeeping, organization, marketing, production
Noah (son, age 12): Labor, sales
Holly (daughter, age 14): Labor, sales

Enterprises under Consideration

The Smiths are considering forest management; selling grapevine wreaths, pumpkins, and ginseng; horse boarding; and leasing hunting privileges.

Enterprise Roles throughout the Next Three to Five Years

The enterprise should provide $2,000 per year to pay the taxes and make improvements to the property, such as fences, roads, and outbuildings. The Smiths do not want to risk more than $1,000 in business startup. More than one enterprise is okay if the enterprises are compatible. A neighbor has indicated that he could provide security for the property when the Smiths are not present.

EXERCISE: Assessing My Resources, Goals, and Possible Enterprises

1. Briefly describe your property, using the following characteristics: (a) distance from home; (b) location; (c) acreage in different uses (forest, cropland, pasture, pond, etc.); (d) number and type of structures; (e) access; and (f) other pertinent information.

   (a)

   (b)

   (c)

   (d)

   (e)

   (f)

2. Describe the long- and short-term goals that you and your team hope to achieve by starting this new enterprise.

   (a) Long-term goals

   1.

   2.

   (b) Short-term goals

   1.

   2.

3. Will you be involved in the enterprise as resident or nonresident landowners? How will that affect your enterprise options?

4. Name up to five enterprises you are considering. Describe your background in or experience with each type of enterprise.

   1.

   2.

   3.

   4.

   5.

(Continued on next page)

(Exercise: Assessing My Resources, Goals, and Possible Enterprises—continued from previous page)

5. List the family members or team members who want to be actively involved. Describe each person's responsibilities.

6. Specify how much time each week you and your teammates will have available to spend on your new enterprise.

7. How much money can each team member provide now to initiate the enterprise?

(Read and fill in number 8 only if you currently run a natural resources–based enterprise; otherwise, go to number 9.)

8. Check the responses that best characterize your business goals during the next three to five years for your current enterprise. Answer any follow-up questions.

   ☐ Maintain at about the same level as in the past. _____

   ☐ Expand. How? _____

   ☐ Cut back some. How? _____

   ☐ Get out altogether. Why? _____

   ☐ Other: _____

9. The following information will help you determine your financial goals for any current or new enterprise. List the yearly income you (and your family or teammates) expect from the sources listed below:

   Current farm/forest enterprises _____ Other _____

   New enterprise (once it is established) _____ **TOTAL** _____

   Non-natural-resource employment (current job) _____

Adapted from Hilchey, 1998.

ASSESSING THE SITE AND TAKING AN INVENTORY

Once you have some ideas for enterprises, plus a good idea of your goals, carefully assess all of your resources. Your assessment will likely spark some totally new ideas and change your opinion of some of the ideas on your current list. Although you can complete part of your assessment from your couch, walking the property with a natural resource management professional, such as a forester or cooperative extension agent, will help you discover opportunities of which you may not have been aware. (Natural resource professionals' time is scarce. Be prepared with your assessment of resources, goals, and responsibilities to make the best use of their time, and be prepared to pay a consulting fee in some cases.)

Resources include land, natural resources, physical

Effect of Residency Status

In our example, the Smith family lives on the property. However, if the Smiths lived over an hour away from the property, their options would be profoundly affected. Residency status (whether the landowner lives on the property or elsewhere) is a crucial consideration for landowners. Living offsite has the following implications:

1. *The lack of security limits opportunities that require a daily presence in order to stop theft; enterprises such as growing and selling ginseng would be very risky.*
2. *Available time and labor for intensive activities is limited or at least requires special arrangements.*
3. *Practicing forest stewardship is an attractive option; management activities can usually be completed when time is available on weekends throughout the year.*
4. *Other options — renting the house, renting cropland, and leasing hunting rights—are attractive and can also provide needed security to reduce problems with trespassing and vandalism.*

resources, and personal resources. When most people consider assets, they think of things like houses, other structures, equipment, and land. Few, however, consider the economic value of their natural resources (such as timber, wildlife, and water) and intangibles (such as scenic beauty). Evaluate these resources realistically; each could be the basis of an enterprise opportunity.

Each person involved in the enterprise can contribute personal skills and experience, which are valuable assets in themselves. Skills in producing a product or service and in marketing, communications, computers, bookkeeping, or organization all have value and need to be considered.

Now it is time to complete an inventory of your resources. Complete the exercises on pages 20–25. Pages 26–33 go step-by-step through the enterprise assessment and inventory using the Smith property as an example.

Before you start, however, obtain or draw a map of the property on which to identify fields, forests, and water and the location of structures, roads, and other physical resources. The map should be large enough to allow you to mark the location of natural resources and make notes as you walk the property. Maps are available from the following sources:

1. ***Aerial photograph:*** You can purchase an aerial photograph of the property for a nominal fee from the county office of the USDA Farm Services Agency (formerly the Agricultural Stabilization and Conservation Service). The agency is typically listed in the blue pages of the phone book, under "U.S. Government."
2. ***Existing map:*** If you have an existing forest- or farm-management plan, use the map included with the plan.
3. ***Internet photo:*** You can download a photo at <WWW.TERRASERVER.COM>.
4. ***Soil survey:*** Obtain a CD or published copy of your soil survey from the local office of the Natural Resources Conservation Service, which is often located at a USDA Service Center or with the county cooperative extension offices. Look in the blue pages of the phone book under "U.S. Government, Department of Agriculture."

Continue to seek educational information about your enterprise ideas and measure your ideas against your available resources.

After you complete all the exercises in this book and decide on an enterprise, review your responses to the exercises again to make sure that your answers align with the realities of the enterprise.

EXERCISE: Inventory Your Land and Natural Resources

Agricultural Land Resources: Cropland and Pasture

Who can help? Your local extension agent or NRCS (Natural Resources Conservation Service) office can look at your property, indicate whether your present farm-management plan is sound, and recommend other options that could enhance your operation. Cost share, grant programs, and sale of your agricultural development rights are other programs that may be of value to you.

Number of acres of tillable land _____ Number of acres you farm _____

Number of acres of pasture _____ Number of acres rented _____

Number of acres left idle _____

Current crop(s) _____

_____

Number of head of livestock _____

Total annual rental income from land rented to others who grow crops _____

Total annual rental income from land rented to others who raise livestock _____

Fertility of land for agricultural crops: ☐ Excellent ☐ Good ☐ Poor

Fertility of land in forests: ☐ Excellent ☐ Good ☐ Poor

Total annual income from pasture and livestock _____ How much of the annual pasture and livestock income is from land rented to others? _____ Rented from others? _____

Total annual income from cropland _____ How much of the annual cropland income is from land rented to others? _____ Rented from others? _____

Natural Resources

Forest. *Who can help? You may want to contact a state forester to assist you with the inventory and evaluation of your forest resources. He or she can advise you on the procedure for developing a forest stewardship plan. In some states, the state forester can help you prepare a forest stewardship plan. In all states, they can provide names of private consultant foresters to assist with a timber sale or assess the potential of your forest under different management options.*

Total number of acres of forest _____

Three most common tree species *(oak, poplar, pine, hickory, ash, etc.)* _____

_____

Do you have a written forest management plan? _____ If yes, what year was it prepared? _____

Have your property taxes been reduced because you are enrolled in a land-use-tax assessment program for forestry? _____

(Continued on next page)

(Note: See pages 26–29 for an example of this exercise using the Smith family.)

(Exercise: Inventory Your Land and Natural Resources—continued from previous page)

What nontimber forest products, if any, are present on the property? *(Include edible and medicinal plants, decorative or floral products, specialty wood products, and native wild plants.)* _____

_____

Have you or has a past owner sold timber to a commercial timber harvester? _____

_____

If yes, when? _____ How many acres? _____

(Developing a forest stewardship plan will provide the information to answer these last two questions.)

How many acres of forest could a commercial operator potentially harvest during the next five years? _____

Within the next five years, what is the estimated income from a commercial timber harvest(s) that is compatible with your forest stewardship objectives? _____

_____

Wildlife. *Who can help? State wildlife biologists have limited time but may be able to visit and discuss options. Leasing the hunting rights while keeping them for the immediate family is an option that could generate income to pay taxes or more. Investigate educational materials on hunting options and discuss them with your extension wildlife specialist. Also contact the U.S. Fish and Wildlife Service.*

Are deer causing significant crop or forest damage? _____

_____

Are other wildlife species causing crop damage? _____ If yes, what species? _____

Do you have large numbers of geese on your property? _____

Do you have quail or pheasant on your property? _____

Do you have wild turkeys on your property? _____

What other types of wildlife have you seen on the property? _____

_____

What types of habitat improvements could be made to attract the wildlife you are interested in introducing to the property *(timber harvesting, food plots, tree planting, etc.)*? _____

_____

Do you or other family members hunt on the property? _____

_____

(Continued on next page)

(Note: See pages 26–29 for an example of this exercise using the Smith family.)

(Exercise: Inventory Your Land and Natural Resources—continued from previous page)

Do neighbors or other local residents now hunt on the property, with or without permission? _____

_____

Do existing hunters pay you for the right to hunt on the property? _____

If yes, how much are you paid a year? _____

List any unique wildlife habitats or species on your property *(e.g., forest ponds, wetlands, old forests, caves).*

_____

_____

Aesthetic or Intangible Resources

List locations on your property that have aesthetic appeal and could be developed for recreational enterprises, such as a vacation cabin or hunting camp. Unique locations include rivers, streams, scenic overlooks, rock cliffs, and wetlands. _____

_____

Water Resources

If you have more than one pond, stream, or spring, assess each. Who can help? For assistance with evaluating your water resources, you may want to contact your local cooperative extension office. An extension agent should be able to direct you to a water-quality specialist in your area.

Ponds. Pond size (in acres) _____ Maximum pond depth (in feet) _____

Maximum summer water temperature at 2 feet _____ pH _____

Alkalinity (in parts per million) _____

What types of fish live in the pond? _____

Do livestock have full access to the pond? _____ Does livestock waste drain into the pond? _____

Streams/Rivers. Stream width _____ Stream depth _____

Does the stream run all year? _____

What types of fish live there? _____

Do livestock use the stream or does livestock waste run into the stream? _____

Is the stream bordered by forest of at least 25 feet in width along each side? _____

_____

Springs. Number of springs on the property _____

Rate of flow of largest spring (gallons per hour) _____

(Note: See pages 26–29 for an example of this exercise using the Smith family.)

EXERCISE: Inventory Your Physical and Personal Resources

Buildings: Houses, Barns, and Other Structures

List size, age, condition, and the cost to convert or upgrade structures for use in the enterprise.

House _____

_____

Barn 1 _____

_____

Barn 2 _____

_____

Other _____

_____

List rental cost and location of any available public or private structures or facilities that you can use for your enterprise *(for example, kitchen, storage facility, or processing facility)*. _____

_____

_____

Machinery and Equipment

For each piece of equipment *(tractor, chainsaw, wagon, rototiller, backhoe, bulldozer, etc.),* list make, horsepower, age, condition, attachments, or other relevant information.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

Use of Byproducts of Farm/Forest Operation

Is animal manure produced from the farm operation? _____ Can it be used onsite? _____

List other byproducts, if any, from farm operations. _____

Can they be used onsite? _____

(Continued on next page)

(Note: See pages 30–33 for an example of this exercise using the Smith family.)

(Exercise: Inventory Your Physical and Personal Resources—continued from previous page)

How and where? _____

_____

Are limbs and other wood from a recent timber harvest currently available for use? _____

What is the type and quantity of this material *(e.g., cords of firewood that it would produce and number and species of vines)*? _____

_____

Labor and Management Resources

Time for management and labor involved in an enterprise must come from the team members or from outside sources. The chart below will help team members determine how much time they have available during each quarter of the year for management and labor activities. The time available can be on weekends or weekdays. Completing the chart will help you look at your time realistically and determine whether the enterprises you are investigating are compatible with the time you have available.

Resource Person	Total Hours Available/Year	HOURS BY SEASON AND TIME OF THE WEEK			
		Jan–Mar Weekday/Weekend	Apr–June Weekday/Weekend	July–Sept Weekday/Weekend	Oct–Dec Weekday/Weekend
Management/labor					
Labor					
Potential labor sources outside of team					

Adapted from Thomas and Erven, 1989.

(Continued on next page)

(Note: See pages 30–33 for an example of this exercise using the Smith family.)

(Exercise: Inventory Your Physical and Personal Resources—continued from previous page)

Financial Resources

How much startup money can you raise by using personal or family resources? _____

Where will the startup money come from *(e.g., personal savings, family member, farm credit, bank, cooperative)*?

_____

_____

Do you plan to borrow money from a bank for the enterprise? _____

_____

Is there a grant program that could provide some startup money? *(See appendix B for agencies to contact about grants.)*

_____

_____

Special Skills that Are Commonly Overlooked

If you or any of your team members have any of the following skills or experience, fill in the names. Also, add the names of relevant agencies or organizations with which you or your team members may have connections (such as cooperative extension, university agricultural experiment stations, the U.S. Department of Agriculture, state departments of agriculture, and state forestry agencies).

Relevant Experience	Name of Person	Short Description of Skill or Experience
Marketing skills		
Computer skills		
Production skills		
Sales ability		
Special skills, such as innovative thinking		
Other *(list skill)*		

(Note: See pages 30–33 for an example of this exercise using the Smith family.)

EXAMPLE FOR THE SMITH FAMILY: INVENTORY OF RESOURCES

Now let's analyze the Smiths' resources and see what kinds of enterprises might be appropriate for them.

Example EXERCISE *for the Smiths:* Inventory Your Land and Natural Resources

Agricultural Land Resources: Cropland and Pasture

Who can help? Your local extension agent or NRCS (Natural Resources Conservation Service) office can look at your property, indicate whether your present farm-management plan is sound, and recommend other options that could enhance your operation. Cost share, grant programs, and sale of your agricultural development rights are other programs that may be of value to you.

Number of acres of tillable land 10 Number of acres you farm 0

Number of acres of pasture 0 Number of acres rented 10

Number of acres left idle 5

Current crop(s) Alfalfa on 10 acres currently rented at $50/acre/year; 5 idle acres are old pasture slowly being overtaken by shrubs & small trees

Number of head of livestock 0

Total annual rental income from land rented to others who grow crops $600

Total annual rental income from land rented to others who raise livestock 0

Fertility of land for agricultural crops: ☐ Excellent ☒ Good ☐ Poor

Fertility of land in forests: ☐ Excellent ☒ Good ☐ Poor

Total annual income from pasture and livestock 0 How much of the annual pasture and livestock income is from land rented to others? 0 Rented from others? 0

Total annual income from cropland $600 How much of the annual cropland income is from land rented to others? $600 Rented from others? 0

Assessment ▶ *The Smiths' tillable land is small but could be used for growing vegetables, fruits, flowers, herbs, or other high-value products. It could be converted to pasture for small livestock or hay production. Agroforestry practices that combine trees and agricultural crops could also be investigated, as well as total conversion to trees using government cost-share programs.*

(Continued on next page)

(Example Exercise: Inventory Your Land and Natural Resources—continued from previous page)

Natural Resources

Forest. *Who can help? You may want to contact a state forester to assist you with the inventory and evaluation of your forest resources. He or she can advise you on the procedure for developing a forest stewardship plan. In some states, the state forester can help you prepare a forest stewardship plan. In all states, they can provide names of private consultant foresters to assist with a timber sale or assess the potential of your forest under different management options.*

Total number of acres of forest 25

Three most common tree species *(oak, poplar, pine, hickory, ash, etc.)* Oak, poplar, hickory

Do you have a written forest management plan? no If yes, what year was it prepared? _____

Have your property taxes been reduced because you are enrolled in a land-use-tax assessment program for forestry? no

What nontimber forest products, if any, are present on the property? *(Include edible and medicinal plants, decorative or floral products, specialty wood products, and native wild plants.)* Have seen different mushrooms and some ginseng. Grapevines found in many areas.

Have you or has a past owner sold timber to a commercial timber harvester? Yes, the previous owner did sell timber prior to selling the property.

If yes, when? 5 years ago How many acres? 10 acres

(Developing a forest stewardship plan will provide the information to answer these last two questions.)

How many acres of forest could a commercial operator potentially harvest during the next five years? 15

Within the next five years, what is the estimated income from a commercial timber harvest(s) that is compatible with your forest stewardship objectives? Not sure, but many large trees are found on the unharvested 15 acres.

Assessment ▶ *The Smiths may want to contact a state forester to find out how to get a written forest stewardship plan. They could contact a consultant forester to initiate a timber sale and develop the stewardship plan at one time. Also, they may want to plant a trial patch of ginseng where they have found it growing naturally. Grapevines could be used to make decorative wreaths.*

(Continued on next page)

(Example Exercise: Inventory Your Land and Natural Resources—continued from previous page)

Wildlife. *Who can help? State wildlife biologists have limited time but may be able to visit and discuss options. Leasing the hunting rights while keeping them for the immediate family is an option that could generate income to pay taxes or more. Investigate educational materials on hunting options and discuss them with your extension wildlife specialist. Also contact the U.S. Fish and Wildlife Service.*

Are deer causing significant crop or forest damage? Yes, farmer complains of losses of alfalfa to deer and is questioning whether to continue farming the area.

Are other wildlife species causing crop damage? yes If yes, what species? Canadian geese

Do you have large numbers of geese on your property? In and around the pond

Do you have quail or pheasant on your property? I have seen a few in overgrown pasture area

Do you have wild turkeys on your property? Yes, flock of 10 birds seen around

What other types of wildlife have you seen on the property? Woodpeckers, groundhogs, bats, squirrels, and other assorted wildlife

What types of habitat improvements could be made to attract the wildlife you are interested in introducing to the property *(timber harvesting, food plots, tree planting, etc.)*? Commercial thinning of the woodland area, increase width of field edges to provide quail habitat

Do you or other family members hunt on the property? Yes, Mr. Smith and his brother-in-law hunt on the property.

Do neighbors or other local residents now hunt on the property, with or without permission? We give permission to a few friends.

Do existing hunters pay you for the right to hunt on the property? no

If yes, how much are you paid a year? _____

List any unique wildlife habitats or species on your property *(e.g., forest ponds, wetlands, old forests, caves).*

Wetland area near the creek

Assessment ▶ *The Smiths could probably operate a successful hunting-lease enterprise if they are willing to share their land with hunters. Deer, turkey, and squirrels seem to be abundant. There are local hunters who may be interested. Because the Smiths' property is only one and one-half hours from a metropolitan area, hunters may be available by advertising in that market.*

(Continued on next page)

(Example Exercise: Inventory Your Land and Natural Resources—continued from previous page)

Aesthetic or Intangible Resources

List locations on your property that have aesthetic appeal and could be developed for recreational enterprises, such as a vacation cabin or hunting camp. Unique locations include rivers, streams, scenic overlooks, rock cliffs, and wetlands. Low ridge overlooking stream and old pasture accessible by old woods road; area around pond has good view of surrounding farmland

Assessment ▶ *This area may be a good place to construct a rustic vacation cabin to lease to the hunters along with hunting rights. It could be rented at other times of the year to families or couples.*

Water Resources

If you have more than one pond, stream, or spring, assess each. Who can help? For assistance with evaluating your water resources, you may want to contact your local cooperative extension office. An extension agent should be able to direct you to a water-quality specialist in your area.

Ponds. Pond size (in acres) 1/2 acre Maximum pond depth (in feet) 15 ft

Maximum summer water temperature at 2 feet 67° pH not sure

Alkalinity *(in parts per million)* not sure

What types of fish live in the pond? Bass, trout, and bluegills

Do livestock have full access to the pond? no Does livestock waste drain into the pond? no

Streams/Rivers. Stream width 10 ft Stream depth 6 in

Does the stream run all year? yes

What types of fish live there? Very small fish about 1-3 inches in length

Do livestock use the stream or does livestock waste run into the stream? no

Is the stream bordered by forest of at least 25 feet in width along each side? Yes, except near the open pond area.

Springs. Number of springs on the property none

Rate of flow of largest spring (gallons per hour)_____

Assessment ▶ *Because of the cool water temperature, the water depth, and the beautiful location, the pond has high potential for a trout aquaculture operation or a fee-fishing operation.*

Example EXERCISE *for the Smiths:* Inventory Your Physical and Personal Resources

Buildings: Houses, Barns, and Other Structures

List size, age, condition, and the cost to convert or upgrade structures for use in the enterprise.

House 1,800-square-foot, two-story wood farmhouse occupied by family. Renovated in last 10 years with modern electric, plumbing, septic, well, etc.

Barn 1 20-stall stanchion bank barn used for dairy cows – out of use 12 years

Barn 2

Other 20x15 storage shed with wood floor, tin roof & minimal electric; fair condition

List rental cost and location of any available public or private structures or facilities that you can use for your enterprise *(for example, kitchen, storage facility, or processing facility).* Local grange hall with commercial kitchen could be rented at a fair cost.

Assessment ▶ *A barn in good condition could serve as a stable for horses or a work area for an enterprise. Depending on the enterprise, it may not be worthwhile for the Smiths to fix up their barn, but the storage shed could serve as a workspace for many different enterprises, including a drying area for ginseng and an assembly area for grapevine wreaths. Alternatively, a steel-sided pole building can be purchased for a reasonable price; it can serve many needs.*

(Continued on next page)

(Example Exercise: Inventory Your Physical and Personal Resources—continued from previous page)

Machinery and Equipment

For each piece of equipment *(tractor, chainsaw, wagon, rototiller, backhoe, bulldozer, etc.)*, list make, horsepower, age, condition, or other relevant information.

1. John Deere 4020 65hp 2WD tractor in good condition
2. Tractor attachments in fair but working order: 3-bottom plow, bushhog, 12ft disk harrow, 2-row corn planter, and a hay wagon
3. Pickup truck: 1985 Ford F150 in fair condition
4. Stihl chainsaw in good condition
5. Five acres of fenced pasture with electric charger, wires, watering troughs, and water source

Assessment ▶ *The Smiths have most of the machinery they need for some forest products and alternative agriculture enterprises. The fenced pasture is probably too small to make a horse-boarding enterprise economical.*

Use of Byproducts of Farm/Forest Operation

Is animal manure produced from the farm operation? Not since cattle left Can it be used onsite? _____

List other byproducts, if any, from farm operations. Corn fodder

Can they be used onsite? yes

How and where? Could be used as animal bedding

Are limbs and other wood from a recent timber harvest currently available for use? no

What is the type and quantity of this material *(e.g., cords of firewood that it would produce and number and species of vines)*? none

(Continued on next page)

(Example Exercise: Inventory Your Physical and Personal Resources—continued from previous page)

Labor and Management Resources

Time for management and labor involved in an enterprise must come from the team members or from outside sources. The chart below will help team members determine how much time they have available during each quarter of the year for management and labor activities. The time available can be on weekends or weekdays. Completing the chart will help you look at your time realistically and determine whether the enterprises you are investigating are compatible with the time you have available.

Resource Person	Total Hours Available/Year	HOURS BY SEASON AND TIME OF THE WEEK Jan–Mar Weekday/Weekend	Apr–June Weekday/Weekend	July–Sept Weekday/Weekend	Oct–Dec Weekday/Weekend
Management/labor					
Joe	364	0/52	52/52	52/52	52/52
Sarah	208	26/26	26/26	39/26	26/13
Labor					
Noah	169	0/26	13/26	65/26	0/13
Holly	169	0/26	13/26	65/26	0/13
Potential labor sources outside of team					
Nearby teenagers	When needed	Weekend	Weekend	Both	Weekend
Joe's brother	By arrangement			Weekend	

Assessment ▶ *Much of the burden will fall on Joe. Sarah works part-time, and the kids have athletic and other school activities that demand a good bit of the family time. Most labor is available on the weekends and in the summer. Ginseng must be planted and harvested in the fall, so that may be a good alternative. The Smiths may also be able to get sufficient help from neighborhood teenagers, if they are trustworthy. Grapevine wreaths and a hunting lease are definite possibilities. Horse boarding would probably not work because of the need for daily labor. Shiitake mushrooms may be a possibility, as may aquaculture or a fee-fishing operation. Both require sizable time commitments.*

(Continued on next page)

(Example Exercise: Inventory Your Physical and Personal Resources—continued from previous page)

Financial Resources

How much startup money can you raise by using personal or family resources? $2,000

Where will the startup money come from *(e.g., personal savings, family member, farm credit, bank, cooperative)*?

Personal savings

Do you plan to borrow money from a bank for the enterprise? Not in foreseeable future

Is there a grant program that could provide some startup money? *(See appendix B for agencies to contact about grants.)* no

Special Skills that Are Commonly Overlooked

If you or any of your team members have any of the following skills or experience, fill in the names. Also, add the names of relevant agencies or organizations with which you or your team members may have connections (such as cooperative extension, university agricultural experiment stations, the U.S. Department of Agriculture, state departments of agriculture, and state forestry agencies).

Relevant Experience	Name of Person	Short Description of Skill or Experience
Marketing skills	Joe	Job-related
Computer skills	Holly Sarah	-Lot of interest and good with word processors -Good with spreadsheets and recordkeeping, which she does at work
Production skills	Joe	Good with machinery, fixing things, and figuring out how to make something work
Sales ability	Noah, Holly	Like working with people and are outgoing
Special skills, such as innovative thinking	Joe Sarah	-Lots of ideas and can find information -More practical and adds more reality to discussion
Other *(list skill)*	Sarah Joe	-Completed Master Gardener training and is good with plants as well as creative design -A hunter and sportsman and enjoys working with wildlife

CHOOSING A NEW ENTERPRISE

By now you should have a good idea of your resources and a list of possible enterprises to pursue. Use the exercise below to compare the relative merits of one enterprise with another. This will help you decide what type of enterprise is the best match for your resources. The exercise might show that the highest-ranked enterprise is not your personal first choice. Also, you may decide to pursue more than one enterprise to diversify your efforts. Weight the different criteria according to your needs.

As an example, the Smith family has chosen five possible enterprises and eight criteria to judge how compatible each choice is with the family's goals and resources. The five enterprises were chosen on the basis of the preceding assessment of available natural, physical, and personal resources. The exercise below shows how the Smith family has ranked their choices on a scale of 1 to 10, with 1 being least compatible with the criteria and 10 being most compatible.

EXERCISE: Relative Merits of Various Enterprise Ideas*

	ENTERPRISE IDEAS				
CRITERIA					
TOTAL					

Source: Grudens-Schuck et al., 1988. **Rated on a scale of 1 to 10, with 1 being least compatible and 10 being most compatible.*

Example* EXERCISE *for the Smiths:* Relative Merits of Various Enterprise Ideas

	ENTERPRISE IDEAS				
CRITERIA	Shiitake	Grapevine wreaths	Hunting lease	Ginseng	Aquaculture
Compatible with residency status	10	10	7	10	10
Preferred by family	9	6	7	9	3
Meets financial goals	9	9	5	10	9
Uses underused physical resources	4	9	8	6	8
Uses mgmt/labor resources	8	6	5	3	6
Potential market exists	10	5	9	10	6
Uses farm and forest byproducts	9	9	3	7	5
Family financial resources available	10	8	10	4	8
TOTAL	69	62	54	59	55

Source: Grudens-Schuck et al., 1988. **Rated on a scale of 1 to 10, with 1 being least compatible and 10 being most compatible.*

PLANNING YOUR NEW ENTERPRISE

After you have selected the enterprise(s) you wish to pursue, assess the marketing and financial concerns for each one.

Planning a Successful Marketing Strategy

To develop a successful marketing strategy, you need the four Ps:

1. A ***product or service*** that consumers are looking for
2. A unique ***position*** in the marketplace
3. An appropriate ***price***
4. Effective ***promotion***

The exercises that follow are intended to help you (1) define your product or service; (2) determine what marketing resources are available; (3) assess your marketing options; and (4) analyze and understand your competition. Remember that you may not be selling just a product or service. You may be selling status, good health, or an image.

Defining Your Product or Service

Before you can market a product or service, you have to know something about its features, the appropriate marketing season, and its benefits to the consumer. Complete the exercise, "What Am I Selling, Anyway?" on pages 36–37 to help you in this endeavor.

Market Research Techniques

Marketing your enterprise requires that you conduct some market research about past and future trends in production, consumer demand, and price for your product or service. The easiest way to compile the information you need is by (1) gathering data from a variety of publications, the Internet, or information surveys; (2) making personal observations; (3) contacting and visiting existing businesses, suppliers, and wholesale buyers; and (4) surveying potential buyers and sellers.

Consider conducting your own test marketing by offering your product or service on a small scale to evaluate potential sales and problems. Before you actually have the product or service developed, advertise it in the newspaper or other publication outlets to gauge the amount of interest. Try marketing it different ways. For example, grapevine wreaths could be listed in the yellow pages under *decorating, household,* or *gifts.* Which category gets the most replies? Is it worth the cost to advertise in each category? Beware of counting on the opinions of friends or relatives for market research, since they may be less than honest to try to please you. Complete the marketing options exercise on page 38 to help you determine your marketing plan. Research on this topic indicates that word-of-mouth is effective.

Examining your customer base is also important to a successful marketing strategy. You will need to choose your target market carefully and develop a marketing strategy to reach it successfully. For example, the marketing strategy to find a hunt club to lease your hunting rights would differ from the approach you would use to locate buyers for grapevine wreaths. Try different approaches to see which is most effective in the area. Make sure that you ask customers how they found out about your business, which will help you put your money into those marketing options that bring the best return. Complete the exercise, "Who Is My Target Market?" on pages 39–40 to help in this endeavor.

For more information about market research techniques, see *Farming Alternatives: A Guide to Evaluating the Feasibility of New Farm-Based Enterprises,* available from the Natural Resource, Agriculture, and Engineering Service (see page 100 for more information). Also contact the U.S. Small Business Administration, small business development centers (SBDCs), SCORE, and other agencies listed in appendix B (page 95). *Marketing Specialty Forest Products* is also helpful and is available at <WWW.UNL.EDU/NAC/FOREST-FARMING.HTML>.

Understanding Your Competition

Knowing who your competitors are, the specific types of buyers they serve (their target market), and their competitive strengths and weaknesses will help you define your own position in the

EXERCISE: What Am I Selling, Anyway?

In 50 words or less, describe each product or service that you will sell and what benefits it offers the user. Why is your product better than the competition's?

If you are considering more than one enterprise, explain how the enterprises will work together.

DEMAND FOR PRODUCTS OR SERVICES

Describe the current demand for your product or service.

Describe what the demand for your product or service will be three years from now.

List the sources of information on which you based your answers above and the date of each source *(e.g., date of publication, date you acquired the information).*

CHARGING FOR SERVICES

What price are you planning to charge for your product or service?

What price are you planning to charge for your product or service three years from now?

List the sources of information on which you based your answers above and the date of each source.

(Continued on next page)

(Exercise: What Am I Selling, Anyway?—continued from previous page)

POTENTIAL BUYERS

Describe who your current potential buyers are.

Describe who your buyers will be three years from now.

List the sources of information on which you based your answers above and the date of each source.

OTHER

Describe your ideas for promoting your enterprise.

Record other marketing notes (whom to talk to, questions, ideas, etc.).

marketplace. Your direct competitors are businesses supplying the same types of products and services that you do to the same potential customers. Indirect competition comes from any other type of product or service customers might buy or use instead of yours. Anything that your target market can substitute for your product or service is indirect competition. The reason for this substitution may not be just price but also ease of access, quality of service, and other variables. Your market research will provide some insights about indirect competitors. Make it your business to find out all about your direct and indirect competition. Answer the questions in the exercise, "Who Are My Competitors?" on page 41.

Examining Legal, Regulatory, and Liability Issues

In today's society, it is necessary to consider legal, regulatory, and liability issues as they apply to your enterprise. Complete the exercise, "What Are My Legal, Regulatory, and Liability Issues?" on page 42. State your plans for handling each of the issues. If any of these issues present obvious hurdles, state your plans for overcoming the hurdles.

This area is one of the most overlooked but potentially damaging issues for many enterprises. Check zoning and tax regulations. Many landowners with agricultural land use may find that their property tax assessment is affected by certain enterprises.

EXERCISE: Marketing Options for a _____ Enterprise

Describe Your Marketing Options for the Enterprise(s)	PROS	CONS
Option 1:		
Option 2:		
Option 3:		
Others:		

Example EXERCISE: Marketing Options for a *Fee-Fishing* Enterprise

Describe Your Marketing Options for the Enterprise(s)	PROS	CONS
Option 1: *Advertise in the local paper, radio station*	*Large local audience*	*Paper expensive but radio cheaper; need phone or Web site support for follow-up*
Option 2: *Word-of-mouth*	*Inexpensive; conveys good reputation of business to other potential customers*	*Takes time to develop new customers from word-of-mouth*
Option 3: *Brochure in tourism outlets*	*Good exposure to local people and visitors if in right places; allows promotion of business strengths; coupons and incentives*	*Can be costly, needs good exposure at proper outlets to catch people's attention*
Others: *1. Sign at road 2. Ad on state tourism Web site*	*1. Informs people passing by of business 2. Reaches large audience*	*1. Sign can be costly, little impact for attracting passersby in remote areas; need phone or Web site for follow-up 2. Expensive?; need phone or Web site for follow-up*

EXERCISE: Who Is My Target Market?

Use whatever resources you can to determine the following information about your target market.

Market demographics. *(Ethnic groups, age groups, average income, place of residence or work, number of children, marital status, education level, religion, etc.)*

Customer lifestyle patterns. *(Common interests, beliefs, values, wants, and needs)*

Customer expectations. *(What buyers want and expect from your product or service)*

Local resources for reaching the target market. *Use specific company names and contacts if possible.*

Farmers markets, roadside stands, field days, fairs

Wholesalers, brokers, distributors

Marketing cooperatives, food cooperatives

Restaurants, groceries, supermarkets, specialty stores

Cooperative extension, local or state tourism agencies, and county and state economic development agencies

(Continued on next page)

(Exercise: Who Is My Target Market?—continued from previous page)

Fish and wildlife agency, wildlife consultants _____

_____

_____

State foresters, private foresters, forest product companies _____

_____

_____

Sportsman clubs, forest associations, farm bureaus, other associations _____

_____

_____

Yellow pages, newspapers, magazines, trade journals, fliers, inserts, Internet Web sites, list servers _____

_____

_____

Determining Labor and Management Needs

Complete the exercise on page 43 ("Can I Meet My Labor and Management Needs?") to estimate the number of hours or days of labor required to start and maintain the enterprise. Consider the following questions:

1. Is the business seasonal or year-round?
2. Is the labor and management available on weekdays, weekends, or both?
3. Determine whether and how the time needed to manage this business might conflict with other obligations. If conflicts exist, state what they are and how you plan to handle them.

Creating an Enterprise Budget: Startup Costs and Profit Potential

It is now time to address the production and financial management planning for your new enterprise(s). Will the enterprise you are considering actually make money, and how much? Many individuals start an enterprise without completing this step, only to find out much later that the business will never make enough money to compensate them fairly for their efforts. First, determine the costs of producing your product(s) or service(s). The exercise, "What Will It Take to Produce My Product or Service?" on page 44 will help you get started. Then do some basic financial management planning.

The Enterprise Budget

The enterprise budget is the most common financial tool used to determine the profitability of an alternative enterprise. Enterprise budgets always project costs and revenues, but they may look different, depending on the type of enterprise and the circumstances.

Every landowner has a different set of circumstances, commonly called assumptions, that set the background for his or her situation. Therefore, when you are examining enterprise budgets to find one that meets your needs, you

EXERCISE: Who Are My Competitors?

1. List the names and addresses of your direct competitors.

   A.

   B.

   C.

2. Describe the price and quality of your competitors' products or services.

   A.

   B.

   C.

3. According to your observations and experience, try to estimate how much market demand for your product or service your competitors satisfy. Answer in terms of gross number of products sold or services rendered yearly. If you are unable to estimate this information, you may have to do some research to find the answers. It is critical that you have this information before you proceed with your enterprise.

   A.

   B.

   C.

4. Describe the type of buyers your competitors target.

   A.

   B.

   C.

5. Describe the strengths of your competitors' products or services.

   A.

   B.

   C.

6. Describe the weaknesses of your competitors' products or services.

   A.

   B.

   C.

7. Describe your indirect competition. *(List the products or services along with the individuals or companies offering them. Also describe how you will deal with your indirect competition.)*

EXERCISE: What Are My Legal, Regulatory, and Liability Issues?

1. Have you determined whether the enterprise will be allowed under existing federal, state, and local regulations for zoning and other uses? How do you obtain the necessary permits and what do they cost? How likely are you to get approval of the necessary permits?

2. Have you considered the laws that apply to sales tax collection in your state? Does the way you plan to charge for the product or service meet the legal requirements for collecting taxes?

3. Do you know how to set up the enterprise to minimize the risk of liability (for example, of someone's getting hurt)? Taking steps to minimize risk is known as risk management. Insurance agents can often advise you about ways you can reduce risk; reducing risk may be a requirement of insurance coverage.

4. Do you need special insurance and is it affordable? From which insurance agency can it be purchased?

5. Have you contacted a lawyer to check on all necessary contracts and agreements?

6. List other problems and concerns related to legal, regulatory, or liability issues and how you will handle them.

EXERCISE: Can I Meet My Labor and Management Needs?

	Total Hours for Year	Distribution of Hours (for One Year or for Production Period) Jan–Mar	April–June	July–Sept	Oct–Dec
Suggested hours for full-time worker *(~40 hours/week)*	2,000	500	500	500	500
My estimate for cost of wages for a full-time worker *($5.15/hour minimum wage)*					
Labor and Management Hours Available *(Available from the table, "Labor and Management Resources," page 24)*					
Principal manager					
Team member no. 1					
Team member no. 2					
Team member no. 3					
Hired labor					
TOTAL HOURS AVAILABLE					
Direct Labor and Management Hours Needed by Enterprise					
Enterprise 1					
Enterprise 2					
Enterprise 3					
TOTAL LABOR HOURS NEEDED					
TOTAL LABOR HOURS AVAILABLE *(from above)*					
Additional labor hours required *(total hours needed minus total hours available)*					
Excess labor hours available *(total hours available minus total hours needed)*					

will have to change some of the values and factors, given your own set of assumptions.

To provide you with a selection of models to choose from, examples of enterprise budgets for selected natural resource income enterprises follow in appendix A beginning on page 49.

The budget tables can be recreated in any computer spreadsheet program, such as Microsoft Excel, QuattroPro, or Lotus. For more information on developing an enterprise budget, ask for a copy of *Enterprise Budgets in Farm Management* (fact sheet 545) from a Maryland Cooperative Extension county office or download it from <WWW.AGNR.UMD.EDU/MCE/PUBLICATIONS/>;

EXERCISE: What Will It Take to Produce My Product or Service?

You will probably have to make some capital purchases, such as buying buildings, equipment, or land and making major improvements, to start your new business. List the capital purchases and their costs.

_____

_____

_____

_____

What will be your major production tasks, such as planting, harvesting, building, advertising, sales, and maintenance? Describe the tasks according to the month they should occur. Also indicate which months you expect to receive income.

Month	Task
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

click on the category "Crops, Livestock & Nursery" and select fact sheet 545 from the list.

It is important to consider various price and production scenarios so you can estimate what will happen to your enterprise under favorable and unfavorable conditions. It is also useful to look at total income and expenses, as well as income and costs per unit produced. The total costs per unit will tell you the market price needed to break even.

Costs will usually be of two types: *variable* costs that are incurred each year and *overhead* or *fixed* costs, such as buildings, equipment, signs, and long-term improvements, that can be expensed throughout the years of useful life of the item. Variable costs for a holiday greenery enterprise, for example, include purchasing wreath rings and wire, advertising, yearly maintenance, and packaging. Fixed costs might include constructing a shed for workspace and storage. The cost of constructing a shed may be spread across ten years, so only 10% of the cost would be included in an annual enterprise budget.

How to Handle Labor Costs

Enterprise budgets for different enterprises tend to incorporate labor costs and profit differently. In many cases, the labor to run the enterprise and carry out much of the work is not detailed; only the labor of people outside your team is typically included, because it must be paid for directly. In this case, the net income at the end of the enterprise budget is the return for your time as well as your profit. It is a better practice to include a reasonable rate for the price of your labor in the enterprise budget. Then the net income at the end of the budget is the true profit for the business.

Net Present Value: The Time Value of Money You Invest

If you were offered either $1,000 today or $1,000 a year from now, which would you choose? Most people would choose the money today, which shows that money has a positive time value. *Net present value* (NPV) is used in enterprise analyses to take into account the effects of time, risk, and inflation on the money invested and the revenues over costs received. This is often done if the period required to produce the product or service is more than one year. Calculating NPV can be challenging and requires the use of financial formulas that are available in many spreadsheet programs or from other sources in the references section (see Hanson et al., 1991, on page 99).

In the example for Christmas trees beginning on page 59, the discount rate is 7%, and the NPV for each year is provided. For example, the $8,015 earned in year nine is actually worth $5,167 in today's dollars. The total NPV for all nine years is $14,619, which is the value of the investment in today's dollars. An investment with an NPV greater than zero is profitable, which means that the rate of return is greater than the discount rate used—in this case 7%.

A Note about Marketing and Marketing Costs

Marketing is probably the most important part of a new business plan. Be sure to carefully consider the components of marketing before you begin production. Here are some questions that will help you think about marketing.

- If you are producing a product, how will you sell it—wholesale or retail?
- Will you take the product to craft shows? There may be booth fees, and you may need to account for the labor costs of the time spent at the shows.
- Will you sell the product from your home?
- Is your home in a busy enough place that you'll have the business you want?
- How will the timing of the sales season affect your family life and your ability to travel if you choose?
- How will you advertise the business? Include costs for signs and advertisements.
- Will you sell the product through established stores in your area? Don't forget to figure in the store owner's share of your proceeds. And don't forget to account for transportation and

packaging fees and the time it will take to line up these markets. Retail options to consider, depending on your product, include craft stores, grocery stores, hardware stores, festivals, nurseries, roadside stands, and the Internet.

Developing an enterprise budget allows you to plan an enterprise in a financial form. The budget should give you a good idea whether the enterprise will actually provide profit before you put money into the venture. Regardless of the enterprise, create an enterprise budget by using the best information available, along with your best judgment.

Creating a Cash-Flow Budget

A *cash-flow budget* also may be useful as you develop your idea. A cash-flow analysis breaks a business down into monthly or yearly increments to assess when additional capital is required for expenses and when revenues can be expected. Lack of adequate cash flow is one of the biggest reasons that small businesses fail.

For some enterprises, such as a choose-and-cut Christmas tree operation, costly investments in material and labor are required for six to seven years before any revenue is generated, which means you must have the money to cover these costs until revenues are realized. If not planned for, this expense can lead to financial problems that can cripple the success of the enterprise.

The Christmas tree budget in appendix A (page 59) provides an example of an enterprise budget and general cash-flow outline. The cash-flow analysis is shown in the table below. Negative cash flows of $670 to $1,920 occur in each of the first six years. You'll have to invest almost $8,000 before you earn any money. If you're not prepared for this investment, the business could easily fail.

For more information on cash-flow analysis, ask for a copy of *Assessing and Improving Farm Cash Flow* (fact sheet 541) from a Maryland Cooperative Extension county office or download it from <WWW.AGNR.UMD.EDU/MCE/PUBLICATIONS/>; click on the category "Crops, Livestock & Nursery" and select fact sheet 541 from the list.

THE BIG DECISION: TO START OR ABANDON THE ENTERPRISE?

At this point you should have all the basic information you need to make a well-informed decision about whether the enterprise you've been considering will make it out of the sieve. By now, you may have abandoned many ideas. If you have gotten this far, however, your chances for success are much better.

Before making a final decision, test-producing or test-marketing your product or service may be beneficial. For instance, if you will be growing a particular crop, you may want to conduct some

Cash-Flow Analysis for a Choose-and-Cut Christmas Tree Operation

	Year									
	1	2	3	4	5	6	7	8	9	Total
					($/Acre)					
Receipts	0	0	0	0	0	0	9,000	9,000	9,000	27,000
Costs	670	250	250	250	250	250	985	985	985	4,875
Net annual returns	-670	-250	-250	-250	-250	-250	8,015	8,015	8,015	22,125
Cumulative net returns	-670	-920	-1,170	-1,420	-1,670	-1,920	6,095	14,110	22,125	
Net present value (NPV)*	-638	-227	-216	-206	-196	-187	5,696	5,425	5,167	14,619

**See page 45 for an explanation of net present value (NPV).*

trials during one complete growing season to make sure the crop will thrive. If you are marketing a service or unique product, you may want to perform some tests in potential markets, which would include surveying potential customers by phone, at a trade show, or through other means. Be aware that what people say they will pay for a product or service may be different from what they will pay in reality. You may wish to try a consumer focus group made up of distant acquaintances to get feedback on your product or service.

WHAT ABOUT THE SMITH FAMILY?

After working through this guide, the Smiths realized that their first step was to contact a state forester. A professional forester developed a forest stewardship plan for their property, which made them eligible for a lower property tax assessment. A 10-acre area of the property was recommended for commercial thinning. A private consulting forester was hired to mark the timber, put it out for competitive bid, and oversee the operation to make sure it was carried out according to the Smiths' wishes. The $9,000 in harvest income helped to improve timber growth, wildlife habitat, and road access for recreational uses. Mr. Smith found it interesting that a local timber buyer had stopped by the previous year and offered him $3,000 for the larger trees. Because he had consulted with professionals, fewer trees were cut, and the forester said another sale would be possible in ten years.

Other forest areas on the Smiths' land needed to be thinned to improve the growth of high-quality trees, but the trees were too small to have commercial value. Mr. Smith and his son, who already cut their own firewood, carried out the timber stand improvement practices their forester recommended. They plan to rent the services of a portable sawmill to cut some of the larger trees to make boards for new floors in the farmhouse.

Income from the timber sale was used to repair some of the old sheds for use in a business and to purchase some tools and gates. Although slash from the timber harvest could have been used to grow shiitake mushrooms, sold as firewood, or used to boil maple syrup, these enterprises were not of major interest to the family. The harvest did provide easy access to grapevines for making wreaths, and the Smiths decided to make this into a profit-making opportunity for the teenagers to pursue. Wreath making also allowed Mrs. Smith to use her creativity and design skills. Mr. Smith and his son harvested the vines and are investigating various channels for marketing the wreaths. They have begun to put together a business and marketing plan that includes an enterprise budget.

Remember:

Start small and do not risk more than you are willing to lose.

Always think like a consumer first and a producer second.

Ginseng production can provide a long-term opportunity, but it is unclear how well the plants will grow on the Smiths' land and whether security can be maintained to prevent theft. Mr. Smith purchased some ginseng seeds and roots from a commercial company and conducted a few test plantings. He selected the locations after reading several publications and talking with a couple of natural resource professionals. He developed an enterprise budget to see whether it was possible for him to make a reasonable profit. His budget was based on several examples he had studied.

The Smiths have decided to continue to rent the 10 acres for alfalfa production to the present farmer, who may not continue the rental because of high losses he has suffered from deer damage. They are planning to contact their local cooperative extension agent for information on alternative crops or deer fencing options. They plan to attend a small-farm educational seminar a

few counties away, which should help them better understand their options.

Mr. Smith has been approached by a local hunter who wants to lease hunting rights for himself and three or four family members. Mr. Smith wants to continue hunting the property, as does his brother-in-law. Additional hunters could help reduce the deer herd, which would in turn reduce the associated crop damage. Mr. Smith will include in the lease the opportunity for his brother-in-law and him to continue hunting the property. Income from a hunting lease would be enough to pay the property taxes. The local cooperative extension agent provided Mr. Smith with contacts for obtaining hunt club liability insurance, a sample hunting lease, and other information. Beyond the initial work of setting up the lease, Mr. Smith expects that the lease will take little time to maintain.

One idea to grow pumpkins was not seriously pursued. After figuring out the amount of hours available to work at enterprises throughout the year, family demands, sports, and other activities left insufficient time for marketing pumpkins in the fall.

Holly, the Smiths' daughter, is interested in horses and would like to have one. The Smiths considered the cost of fixing the barn and using the 5 acres of idle land and 10 acres of rented land to board other horses in addition to a horse for Holly. Holly planned to be responsible for caring for the horses. However, it has proven difficult to make this idea financially possible, given the small acreage and various costs involved. Boarding other horses will provide only a marginal income.

The Smiths are not unlike many landowners with limited time who would like to earn supplemental income from their property. By using the approach in this guide, the Smiths have avoided the common mistakes that often befall other landowners. Working as a team, they've discussed their goals and developed a realistic plan. Now they are ready to implement it. Do you have your plan ready?

Some Final Thoughts

As you develop and implement your own ideas, make sure you consider the following:

1. *Do the easy things that are long-range, take minimal effort, and can save property taxes, such as contacting a state forester about developing a forest stewardship management plan. Consider that a well-planned timber sale can provide capital to start an enterprise and improve other nontimber benefits. A poorly planned timber harvest will likely degrade the forest and your enjoyment of it for generations to come.*
2. *Evaluate the full range of income opportunities using forestry and natural resources, alternative and traditional agriculture, and recreational access before you make a decision. Make sure the enterprise is a good match with your interests and lifestyle, as well as those of other family or team members.*
3. *Start small. Never invest more than you can afford to lose. Look at the bottom line. Can you really make enough money from the enterprise, given the effort required?*
4. *Always think like a consumer first and a producer second!*
5. *Things always take longer than expected. Be optimistic, but also be realistic.*
6. *Make sure you understand how your residency status (whether or not you live on the property) and lifestyle affect the opportunities you consider.*
7. *Markets and opportunities change, so always look for ways to improve or diversify your enterprise choices.*
8. *Complete all components of the business planning process in this guide as they relate to your situation.*
9. *Use the strengths of those involved and develop skills in the areas in which your team is weak.*

Appendix A: Enterprise Budgets

AQUACULTURE ENTERPRISE

In deciding whether to develop a pond for aquaculture and in determining which species of fish to produce, it is important to consider the financial impact of the various alternatives. This decision will affect you for many years, so it is useful to evaluate different scenarios and estimate the value of the pond in economic terms. Salmon and trout are the most common farm-raised fish in the mid-Atlantic states.

Water source and quality are big concerns for aquaculturists. Springs and wells often produce high-quality water. Springs have the added advantage of requiring no pumping cost.

Production Methods

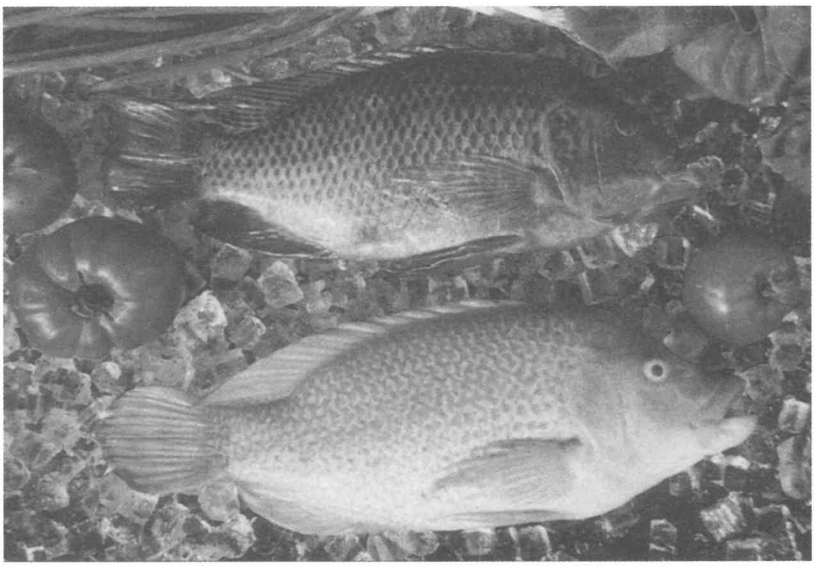
Aquaculture can entail growing cage-cultured or loose fish in ponds or springs. Fish can also be grown in tanks or raceways using water that flows through once or is cleaned and recirculated. Aquaculture may entail a fee-fishing enterprise in which people pay for the privilege of fishing and pay for each fish kept. Successful fee-fishing operations usually have a sizable pond with high-quality water, preferably on a property with a scenic location, within 50 miles of a large population area. The type of operation you set up will determine your costs and profitability. (For more information on a fee-fishing enterprise, see page 80.)

Pond-based culture is the most common form of aquaculture in the United States. The minimum pond size for a commercial aquaculture operation ranges from 1 to 5 acres. At least one-third of the pond should be at least 6 feet deep. About 2,000 pounds of fish can typically be produced per acre of lake surface.

Most smaller operations purchase fingerlings to grow to avoid the more difficult to manage fry-to-fingerling stage. The price varies, depending on species, quantity, and availability.

Skills and Time Needed

You'll need specific knowledge of the kinds of fish that thrive in the type of setup and the water chemistry that you have. A member of your team will have to be vigilant to make sure that the fish eat regularly; for instance, some species won't eat if the water temperature does not suit them. Aquaculture is a delicate balance of trying to maximize gains (fish flesh) while minimizing inputs (feed). If you can maintain fish in an optimal setting, they will gain optimal weight for the food they eat. The more you know about fish to start with, the better. Because fish can be difficult to observe, it's important that you have a patient and diligent fish tender on your team, especially if your fish are not in cages. It would also be valuable to have a person on the team who can identify fish diseases and parasites. You should remove debris and algae from the cage mesh once a week, because they can clog water flow.



Legal, Equipment, and Resource Concerns

Of course, aquaculture is most profitable if you already have a suitable pond or spring on your property. It will probably take a long time to earn back the money spent to dig a pond.

You will probably need a license from the state agricultural or fish-and-game agency for your enterprise. Depending on the size of your operation, you may need a permit from the state environmental agency to discharge water from the operation. If you want to dig a pond, you'll probably have to talk with the county soil conservation district.

Water-testing equipment, treatment chemicals, aeration devices, nets, a scale, feeding equipment, and processing equipment are all necessary in a typical aquaculture enterprise. You'll need electricity for pumps and, if you're using a pond, a floating pier. Feed accounts for about one-third of production costs. Treatments for parasites and pathogens may be necessary. Predation by birds and raccoons can be significant and should be considered when the facility is designed.

Marketing Concerns

It's wise to research the market possibilities before deciding what kind of operation to open and which species to raise. Possibilities include retail sales at the farm or a farmers market; sales to supermarkets, restaurants, or food brokers; and mail-order or Internet-based sales. Fish can be sold whole or processed. Value-added products, such as smoked trout, can bring a premium price. You might be able to sell your cage-raised fish to a fee-fishing operation or use them in your own. Don't forget to include in your cost estimates the labor cost of setting up markets for your fish and for bookkeeping.

Financial Picture

The sample enterprise budget on page 53 provides the framework to allow you to develop your own aquaculture budget specific to your needs and resources. The numbers used in this example do not necessarily represent a typical aquaculture operation. Each operation is different, and it is up to you to estimate your income and expenses according to your conditions and resources. This budget is meant to serve only as a starting point. It assumes that the landowner is having a pond dug specifically for the aquaculture operation.

The first section of the budget contains the income calculations. The number of fish stocked is multiplied by the estimated survival rate to get the total fish produced, which is multiplied by the average sale weight per fish to get the total selling weight in pounds. The total pounds produced is multiplied by the price per pound to get the total yearly income for the pond.

The next section estimates the variable costs, which depend on the number of fish produced. The number of fingerlings is multiplied by the price per fingerling to get the total costs for fingerlings. The total weight gained is estimated by subtracting the initial weight of the fingerlings from the total selling weight. The total weight gain is multiplied by an estimated feed conversion ratio to get the total feed consumption in pounds, which is multiplied by the feed price per pound to get the total feed cost.

The labor hours are estimated and multiplied by the wage rate to calculate labor costs. If you are providing the labor yourself, then this cost could be considered the opportunity cost for your labor (the financial and social price you pay for using your time in the enterprise versus in some other way). Some people choose not to value their labor and consider the net income as the return to their labor.

Variable costs are estimated for electricity, marketing, packaging, and miscellaneous. You should also consider any other variable costs that you will have that are not included in this analysis. Interest on operating capital is either the cost of borrowed money used in production or the opportunity cost of using your money, which could be invested in other alternatives. In this example, the total variable costs are multiplied by a 5% interest rate, which is equivalent to a 10% interest rate for half a year. The total variable costs are calculated and subtracted from the net income to get the return over variable costs.

The next section of the budget estimates the fixed costs, which are incurred regardless of the number of fish fed. This example includes the cost of developing the pond and the costs of a storage shed and equipment needed to produce the fish. The cost of each item is allocated over its years of useful life to get a cost per year. If you anticipate a salvage value (saleable value after the designated lifespan) for any item, then you would subtract the salvage value from the cost before dividing by the years used. Interest on fixed costs is estimated as the average value (beginning value plus ending divided by two) multiplied by the interest rate. The total fixed costs are calculated at the end of this section.

The last two lines of the budget show the total variable and fixed costs and the net income over variable and fixed costs. This example estimates profit of $1,325 per year for the pond or $0.12 per pound of fish produced. In summarizing this financial analysis, it appears that the pond will turn a profit. For the same operation in which the landowner already has a suitable pond, profits would be considerably higher. However, there is a lot of market and production risk involved. If you are inexperienced in aquaculture, you may have higher costs or lower yields and income than the estimates used in this analysis. Individuals considering aquaculture are advised to do a financial analysis by using their own income and expense estimates.

Text adapted from Dale M. Johnson, Farm Management Specialist, Western Maryland Research and Education Center, University of Maryland and from Daniel Terlizzi et al., 1995, Introduction to Aquaculture: Agricultural Alternatives, *College of Agricultural Sciences, Penn State Cooperative Extension.*

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AQUACULTURE ENTERPRISE BUDGET

POND SIZE	1 ACRE				
PRODUCTION TIME FRAME	1 YEAR				
INCOME					
Number of Fish Stocked	8,000				
Survival Rate	0.9				
Total Fish Produced	7,200				
Average Sale Weight (Pounds)	1.5				
TOTAL SALE WEIGHT (Pounds)	10,800				
PRICE/POUND	x $2.50				
TOTAL INCOME	$27,000.00				

VARIABLE COSTS	Unit	Amount	Price, $	Total cost, $	Cost/pound, $
Fingerlings	Each	8,000	0.90	7,200.00	0.67
Total Weight Gained	Pound	8,800			
Feed Conversion Ratio	Ratio	1.75			
Total Feed Consumption	Pound	15,400	0.30	4,620.00	0.43
Labor	Hour	400	10.00	4,000.00	0.37
Electricity	Month	12	75.00	900.00	0.08
Marketing and Packaging	Fish	7,200	0.25	1,800.00	0.17
Miscellaneous	Year	1	500.00	500.00	0.05
Interest on Variable Costs	$	19,020.00	5%	951.00	0.09
TOTAL VARIABLE COSTS				**19,971.00**	**1.86**
RETURN OVER VARIABLE COSTS				**7,029.00**	**0.64**

FIXED COSTS	Costs, $	Salvage value	Years used	Cost/year, $	Cost/pound, $
Excavation	15,000.00	0	15	1,000.00	0.09
Lining	15,000.00	0	15	1,000.00	0.09
Stabilization	1,000.00	0	15	67.00	0.01
Plumbing	500.00	0	15	33.00	0
Electric Hookup	2,000.00	0	15	133.00	0.01
Storage Shed	2,000.00	0	15	133.00	0.01
Aerator	700.00	0	5	140.00	0.01
Floating Pier	2,000.00	0	5	400.00	0.04
15 Cages at $100 each	1,500.00	0	5	300.00	0.03
Scale	250.00	0	5	50.00	0
Water Analysis Gear	400.00	0	5	80.00	0.01
Miscellaneous	1,500.00	0	5	300.00	0.03
Interest on Fixed Costs	2,068.00			2,068.00	0.19
TOTAL FIXED COST				**5,704.00**	**0.52**
TOTAL VARIABLE and FIXED COSTS				**25,675.00**	**2.38**
NET INCOME OVER VARIABLE and FIXED COSTS				**1,325.00**	**0.12**

HOLIDAY GREENERY ENTERPRISE

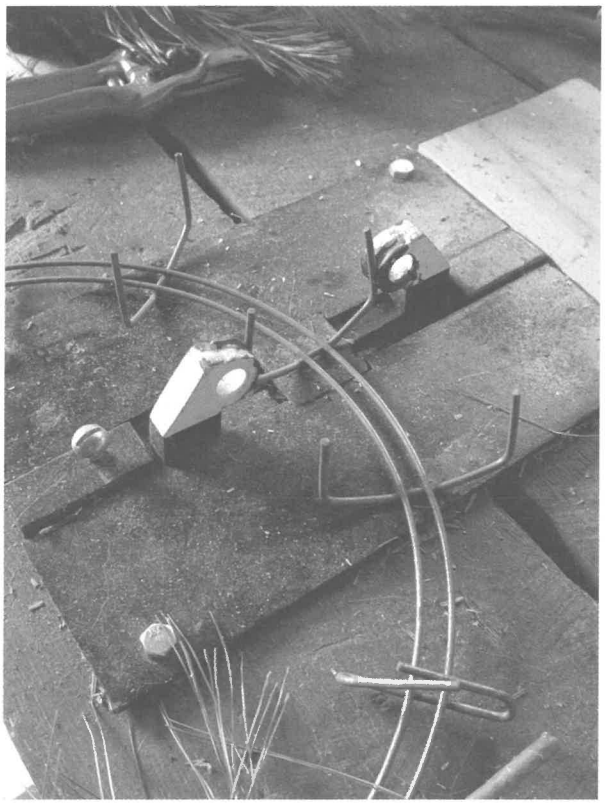
The holiday greenery business has exploded into a multimillion-dollar industry. In just five counties in southwest Virginia and northwest North Carolina, about 50 growers employ 2,000 people and take in about $20 million in yearly revenues. The market is also growing in New England and the mountainous regions of the mid-Atlantic. The Virginia Department of Forestry estimates that about two-thirds more acres of white pine plantings for tips are needed to sustain the industry's growth rate, so there is plenty of room for newcomers.

There are essentially three markets within the industry of holiday greenery: raw tips, undecorated wreaths, and decorated wreaths. The budget for each of these will be somewhat different. Decorated wreaths are value-added products, but they require more materials, labor, and creativity to produce. Your revenues and business operations will also depend on the species of tree you tip. Fresh boxwood tips bring more per pound than white pine tips, but if your site is better suited to white pine, it's best to go with that species, because lower-quality greenery does not bring premium prices.

Skills and Time Needed

To run a successful holiday greenery enterprise, you'll need a person on your team who likes to be outdoors to plant, tend, and tip the trees. Planting labor will be needed in the spring of the establishment year. Tipping labor will be needed from about the second week of October through December. Wreath-making labor will be needed in November and December. You can choose to sell wreaths wholesale or retail, plain or decorated. By decorating the wreaths, you'll be able to sell them at a higher price. If you choose this route, you'll need a person who is creative and has a flair for decorating. This work could potentially disrupt traditional Thanksgiving and holiday preparations and plans, so be sure to consider how important things like that are to your team members before you start.

How you choose to market your greenery will affect how much time sales will take. If you plan to sell retail at craft shows, consider the transit time and the time spent at the fair. If you plan to sell wreaths from your home, you or another member



of your team will need to be at the house throughout each late November and December weekend to make the sales, which could put a crimp in your family's holiday preparations. Many tip growers sell unprocessed tips direct to wholesalers by weight or volume. Some wholesalers purchase tips on the tree on an acre-per-year basis.

Equipment Needed

You'll need some or all of the following equipment, depending on your personal work preferences and the scale and type of operation: clippers or a sharp knife, wreath rings, wire, a place to assemble the wreaths, a wreath-making machine, and a truck or van. You may need a mower or bush hog to keep competing plants down. Tips can be stored for a short time, provided that there is sufficient cool air flow.

Financial Picture

The table on page 57 provides an example of a nine-year enterprise budget for a white pine wreath-making operation in Virginia. The budget assumes that the landowner is cutting all tips from his or her own land and bundling them into undecorated wreaths for retail sales and wholesale.

In this example, all costs and revenues are averaged throughout a three-year period when the operation is producing wreaths. Assumptions on tip volumes are based on a 3-acre white pine plantation. All wreath revenues take place in years seven, eight, and nine, and all variable costs occur in years seven, eight, and nine, except stand maintenance and labor, which occur every year. No tips are purchased, and the calculations do not account for reimbursements from cost-share programs that may assist with tree planting. Taxes are not considered in this example.

Deciding whether or not establishing a white pine plantation and producing wreaths is a good investment will require a careful consideration of production costs, expected returns, the value of your time, and whether you would prefer to make use of the time and money in some other way.

Trees take much longer to grow than traditional crops, and your money will be invested for seven years in this example before you earn any return on it. The returns you receive from wreaths in years seven, eight, and nine will come from trees planted initially and maintained years one through nine. Therefore, the income and costs must be discounted, because a dollar received tomorrow is not worth the same as a dollar received today. Whether "a bird in the hand is worth two [or even three] in the bush" depends on your time preference for money and your risk evaluation.

Tipping can provide income while you wait for timber to grow to marketable size, which is the assumed end point for the trees in this example. According to people in the industry, there is tremendous opportunity for more tip growers.

Costs

Physical and natural resource costs. Site preparation costs for the landowner or grower will depend on the previous use of the site to be planted in pine. Costs on abandoned agricultural fields can range from zero to $100 an acre, depending on the need for chemical or fire control of multiflora rose, briars, autumn olive, and other species that compete with small pines for sunlight, nutrients, and water.

White pine seedlings from the Maryland state nursery cost $115 for 1,000 trees, or $57 an acre (500 trees) if planted on a 9-foot-by-9-foot spacing. Costs in surrounding states are similar.

Labor and management costs. Hand-planting and machine-planting costs average $50 an acre, again assuming planting on a 9-foot-by-9-foot spacing. Landowner cost-share incentive programs can greatly offset site preparation and establishment costs incurred by the landowner. If obtained, cost-share assistance will greatly increase the returns from an investment in growing white pine for tips. You will need to allow a lot of time in late autumn for tipping and making the wreaths. If you can't commit a lot of time during this period, this enterprise may not be for you. Labor for wreath making costs about $6 an hour. The amount of labor involved in wreath making, of course, depends on the scale of your operation. If you will pay someone to sell the wreaths from your home, don't forget to account for that in your budget.

Site-maintenance and equipment costs. Like site-preparation costs, site-maintenance costs vary, depending on previous land use. If the last use of the site was forest, then pine trees will likely need to be sprayed with a chemical herbicide about three years after planting to kill hardwood stump sprouts and other competition. This spraying costs around $50 an acre. Mowing may be sufficient to control plant competition if the site was previously in agriculture. Mowing costs are typically about $20 an acre. Growers must remain vigilant for pests and diseases and control them. Chemical treatments for pests generally cost $50 an acre. When white pine are managed for tips, few other costs are incurred before tipping.

Wreath-making costs. Wreaths are produced by hand either with or without the use of a wreath-making machine. Simple wreathing machines consist of a foot-operated device that clamps greenery into the wreath frame or ring. Simple wreath-making machines cost $150 to $200. The cost of wreath rings varies, depending on diameter width; 10-inch frames (which yield a 16- to 18-inch finished wreath) cost about $1 a unit. Buying rings and other supplies in bulk will significantly reduce the per-unit cost of these items. Each wreath takes about 6 pounds of tips. Other costs include a quality pair of hand clippers ($25) and greenery preservative ($35 per 3-gallon jug). You may need to purchase refrigerated storage space to keep your greenery fresh. If you are producing decorated wreaths, add in costs for ribbon, dried flowers, and other decorations and books or magazines for instruction and design ideas.

Revenues

Tip revenues. The price landowners receive for their tips depends primarily on who harvests them. You will receive the most for your tips if you harvest them yourself, but figure this price against your cost of labor and transportation. Tips must be fresh and free of large stems to receive top dollar. On average, white pines produce between 10 and 13 pounds of tips per tree each year, which translates into 3,000 to 4,000 pounds of tips an acre per year (assuming trees are planted on a 9-foot-by-9-foot spacing, but only 60% of trees have quality tips). Also, on average, any given tree will be tipped only twice, so a "tipping rotation" equals two years.

Given the above assumptions, prices received for tips in the southern Appalachians averaged $1,000 to $1,400 an acre per tipping rotation, or $0.18 per pound harvested and delivered to the production facility. However, the price may be as low as $0.04 a pound ($240 to $320 an acre per rotation) for poor-quality tips. Boxwood tips can bring $0.30 to $0.35 per pound. Contract prices for buyer-harvested white pine tips from landowner-planted and -grown trees varied

WHITE PINE HOLIDAY WREATHS ENTERPRISE BUDGET

PRODUCTION TIME FRAME	9 YEARS			
INCOME (3-year average for years 7, 8, 9)	**Unit**	**Amount**	**Price per unit, $**	**Average $ per year**
Sale of Wreaths, Retail (16-inch wreath)	Pieces	250	20.00	5,000.00
Sale of Wreaths, Wholesale (16-inch wreath)	Pieces	150	6.50	975.00
TOTAL GROSS REVENUE				**5,975.00**
VARIABLE COSTS (3-year average for years 7, 8, 9)				
Transportation to Market	Miles	500	0.35	175.00
Packaging (Boxes)	Per 25 pounds	293	0.50	146.50
Labor–Tip Harvesting	Hour	63	6.00	378.00
Labor–Hauling	Hour	12.5	6.00	75.00
Labor–Equipment Maintenance	Hour	10	6.00	60.00
Labor–Wreath Making	Hour	50	6.00	300.00
Wreath Rings	12-inch ring	300	1.00	300.00
Bundling Wire (24-gauge, galvanized steel)	250-foot roll	3	4.50	13.50
Advertising	Hour	70	6.00	420.00
Equipment Maintenance Costs	Acre	3	70.00	210.00
SUBTOTAL VARIABLE COSTS (years 7, 8, 9)				**2,078.00**
VARIABLE COSTS (Yearly average for years 1–9)				
Yearly Maintenance (Stand)	Acre	3	25.00	75.00
Labor–Stand Maintenance	Hour	50	6.00	300.00
SUBTOTAL VARIABLE COSTS (Years 1–9)				**375.00**
TOTAL VARIABLE COSTS (Years 1–9)				2,453.00
FIXED COSTS (First year of establishment)				
Building (10-year life)		10%	2,500.00	250.00
Site Preparation Costs	Acre	3	100.00	300.00
Trees (500 trees/acre; $57/acre)	Acre	3	57.00	171.00
Planting Costs	Acre	3	50.00	150.00
Tools (Clippers, etc.)	Pieces	3	25.00	75.00
Miscellaneous Equipment		1	100.00	100.00
SUBTOTAL FIXED COSTS (First year of establishment)				**1,046.00**
FIXED COSTS (Sixth year of establishment)				
Wreath-Making Machine (Purchase in year 6)			200.00	200.00
Storage Space (Cool box)			250.00	250.00
TOTAL FIXED COSTS				**450.00**

(This assumes 7% annual interest rate, 1% annual inflation rate, and equal revenue/year)
Adapted from budget prepared by Dylan Jenkins, extension associate, Virginia Tech, and A.L. Hammett, assistant professor–forestry, Virginia Tech.

Assumptions for enterprise analysis

(1) All costs and revenues were averaged throughout the 3-year production of wreaths.

(2) Wreath revenues occurred in years 7, 8, and 9.

(3) Variable costs occur in years 7–9, except stand maintenance/labor, which occurs every year.

(4) The volume of tips produced was based on a 3-acre white pine plantation.

(5) Six pounds of tips per wreath. Plantation produces 4,000 pounds of tips/acre/year (x 60% cull rate).

(6) All tips gathered from landowner's Christmas tree farm. None are purchased.

(7) Calculations do not account for cost-share payments or taxes.

between $300 and $450 an acre per tipping rotation, or $0.05 to $0.08 a pound, depending on the distance of the site from the production facility and on tree quality. Contract prices for buyer-harvested tips from buyer-planted trees were about $100 an acre per tipping rotation, with the landowner keeping the trees and having no further obligations to the tip buyer who planted the trees. According to the above figures, it is obvious that even small variations in site productivity and price will have a large effect on tip revenue.

Greenery revenues. Retail prices for wreaths vary, depending on size, decoration, and freshness. Assuming the wreath is fresh, a simple 16-inch white pine wreath may be sold for $10 to $15. However, highly decorated 16- to 18-inch wreaths can bring as much as $40. Simple white pine wreaths may be sold wholesale for about $6 to $7. Retail prices in southwest Virginia and northeast North Carolina during the 1998 season averaged $0.22 a foot (75-foot white pine rope) and $0.40 a foot (75-foot Fraser fir rope).

Cost-share programs. Many federal, state, and private natural resource agencies have financial assistance programs designed to help landowners establish and maintain trees on private property. Examples of cost-shared practices include site preparation, tree purchasing, tree planting, and control of competing vegetation. If available, cost-share assistance can greatly increase the profitability for any forest product enterprise, usually by reducing establishment costs.

The availability of some forestry cost-share assistance will depend on the final product for which trees are grown. That is, trees that are grown solely for tipping and are harvested after age 14 years may be viewed as an agricultural crop and may not qualify for forestry cost-share. However, trees tipped and then grown for pulpwood or sawtimber products may qualify for forestry cost-share assistance.

Because the requirements and availability of cost-share programs vary greatly by state and year, details of specific programs are not listed here. Check with your local state forestry office and agricultural service center for details on cost-share programs and availability in your area.

Adapted from text prepared by Dylan H. Jenkins, Extension Associate–Forestry, Virginia Tech; Jonathan S. Kays, Regional Extension Specialist–Natural Resources, Maryland Cooperative Extension; and A. L. Hammett, Assistant Professor–Forestry, Virginia Tech.

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CHRISTMAS TREE ENTERPRISE

Most Christmas tree growers work part-time at their enterprise. The number of growers has expanded recently, and prices have declined. In Vermont, for example, there are about 250 Christmas tree farms, for a total of about 8,000 acres in production. Most of the trees grown in Vermont are sold in southern New England, New York, and New Jersey. The Virginia Christmas tree industry consists of at least 1,400 growers whose farms average 15 acres. Christmas trees can be grown economically on lots as small as an acre. Per-acre returns are higher than for timber and many agricultural and horticultural crops.

Christmas tree marketing operations differ greatly. Wholesale growers sell directly to retailers and have little direct contact with the public. Retail growers produce their own trees and then direct market their trees at retail outlets in lucrative suburban or urban markets. Choose-and-cut growers produce their trees on their own property and then invite the public to their property to select their trees. The customer or owner will then cut down the tree and load it on the customer's vehicle.

For many families, choosing the Christmas tree has turned into an event. Many choose-and-cut operators have capitalized on this fact by offering hot chocolate, snacks, decorations, wreaths, and crafts that customers can buy and tours and special events they can participate in, such as visits with Santa. Some landowners may relish the opportunity to provide family entertainment for several hours; others may be interested only in growing and selling trees for wholesale markets. Depending on the other operations in your area, there may be room for either or both types of operations.

Production Considerations

Trees planted as seedlings typically grow to harvest size in seven to ten years. Species most often grown for Christmas trees in the Northeast are balsam, Douglas, and Fraser firs. In the mid-Atlantic, the most common species are white, Scotch, and Virginia pines. Different species have different establishment costs, management requirements, and marketability. In Virginia, for instance, white pine is the easiest and least expensive species to grow, but consumers desire it less than species such as Fraser firs, which bring a higher price.

You should plant in one year only a fraction of the plot you eventually want to fill with Christmas trees. For example, if the species you choose takes ten years to grow to saleable size, you should plant only one-tenth of your land each year so you will have a continual supply of mature trees

throughout the years after the first ones reach maturity. Other experts recommend that new growers plant only ½ to 1 acre each year until a full rotation is completed. For first-time growers, this procedure helps prevent mistakes from being made throughout large areas of the plantation. It also allows your customer base to build up gradually and makes the workload more manageable. You'll have a less expensive way out if you decide partway through the rotation that the life of a Christmas tree grower is not for you.

Before you buy trees, you should consult with an expert from the county cooperative extension office, a local office of the federal Natural Resources Conservation Service, or the county conservation district to select the site on your property that is best suited for production. The characteristics of the site will determine which species is the best bet.

For a choose-and-cut operation, you should consider access to the site by customers on foot, with wagons or carriages, or in cars. You may want to make the site accessible to handicapped persons. Choose-and-cut operations tend to be more profitable than wholesale operations if the location is prime. Another advantage of choose-and-cut operations is that unsold trees can be grown for another year and remarketed. A disadvantage is the loss of privacy from having customers tramping through your fields. You can also count on spending the weekends from Thanksgiving to Christmas waiting on customers.

Most trees are cut and sold, but the sale of live trees with root balls is growing. If your customers are affluent and environmentally aware, this market may be worth exploring.

Skills and Time Needed

Experienced growers find that after trees are more than 3 feet tall, each acre requires about 40 hours of care a year. Labor is needed for planting, pest control, shearing, mowing, harvesting, and marketing. Land may need to be cleared of brush or trees before Christmas tree seedlings are planted; this is best done in the fall before planting in the spring. Shearing is often done during a five-week period in early summer to give the trees the desired cone shape. Mowing is needed throughout the growing season.

Legal, Equipment, and Resource Concerns

If customers will come to your farm to choose or cut their trees, you'll need business liability insurance. You may need to upgrade roads and paths on your land and remove potential hazards so that visitors' cars don't get stuck and people don't get hurt. This upgrade involves implementing risk-management techniques, which involves reducing potential hazards so that accidents are prevented.

On small plots, all work can be done by hand so equipment costs can be kept low. Because of minimal machinery requirements, Christmas trees

can often be grown on sites too rough or steep for other crops. Most small-time growers will need shovels, a small tractor, a mower, a pesticide or herbicide sprayer, shears, herbicides, pesticides, fertilizers, and trees. Generally, pines are not fertilized, but spruces and firs are. If your operation is choose-and-cut, you'll need signs, flagging, and gates.

Many states have state tree nurseries that sell seedlings for commercial use at bargain prices. Check with your state forestry agency for more information and your county cooperative extension office for information on educational programs and publications.

Marketing Concerns

It pays to advertise your business long before the Christmas season. Area residents need to know that your business is there before they are ready to buy. The season is too short, and the market area is small. A study in Virginia found that most people travel no more than 25-50 miles to a choose-and-cut farm.

The wholesale season may start in October. The retail season generally starts immediately after Thanksgiving and is busiest on weekends in December. Staffing a sales area can cut into the time you have for traditional holiday preparations and celebrations as early as Thanksgiving. Experienced growers in Virginia say that it takes on average one-third to one-half person-hour to sell each choose-and-cut tree. Before you begin a Christmas tree plantation, you should consider whether this time would pose a problem for your family.

If you intend to have a choose-and-cut operation or to sell trees at your farm, think about its accessibility. Do the roads near you get enough traffic that people would know about or be able to find your operation? How far are you from a population center? How are the roads, especially in the winter?

The weather can affect Christmas tree sales. If December is usually rainy, snowy, or icy in your area, a choose-and-cut operation may not be as profitable as selling trees wholesale or at a lot.

Trees must be top quality if they are to sell. The expanding ranks of growers allow customers to choose only the very best trees.

Financial Picture

Because Christmas trees take about a decade to grow to saleable size, the enterprise will probably operate at a loss for several years in the beginning. The loss can be partially offset by cutting and selling greenery tips for wreaths (see "Holiday Greenery Enterprise" on page 54). However, trees that are tipped will not be saleable as Christmas trees.

Costs of operating a Christmas tree plantation vary widely ($3,000 to $12,000 an acre for one production cycle), depending on the size of the operation. For a plot smaller than 10 acres, you may need only a small riding tractor, a backpack sprayer, and shearing equipment. Larger operations will need more expensive tractor-mounted equipment.

Prices for finished trees vary widely with region of the country, species of tree, and type of sale. Scotch and white pines bring less than firs and blue spruces. Prices of about $25 a tree for pines and $35 for spruces and firs are fairly common. Prices may be higher in urban areas.

Growing Christmas trees carries considerable risk. Trees can be rendered unsaleable by drought, wildfire, insects, diseases, and wildlife damage.

The cash-flow analysis that follows the enterprise budget on page 63 breaks the costs and income down into yearly increments for assessing when additional capital is required for expenses and when revenues can be expected. Lack of adequate cash flow is one of the biggest problems small businesses face. For more information on cash-flow analysis, ask for a copy of *Assessing and Improving Farm Cash Flow* (fact sheet 541) from a Maryland Cooperative Extension county office or download it from <WWW.AGNR.UMD.EDU/MCE/PUBLICATIONS/>; click on the category "Crops, Livestock & Nursery" and select fact sheet 541 from the list.

Net present value (NPV) is used in this cash-flow analysis to take into account the effect of time on the money invested and revenues received. NPV is similar to profit. The use of NPV removes the effect of inflation on expected returns over costs, and returns are discounted to the present. An investment with an NPV higher than zero is profitable. In our example, we assume an interest rate of 7% and an inflation rate of 1% a year.

Calculating NPV can be challenging. For more information on developing an enterprise budget, obtain a copy of *Enterprise Budgets in Farm Management* (fact sheet 545) from a Maryland Cooperative Extension county office or from <WWW.AGNR.UMD.EDU/MCE/PUBLICATIONS/>; click on the category "Crops, Livestock & Nursery" and select fact sheet 545 from the list.

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CHOOSE-AND-CUT CHRISTMAS TREE ENTERPRISE BUDGET

PRODUCTION TIME FRAME	9 years	**TREE PLANTED/ACRE**	1,200
ACRES IN TREES	1	**TREES SOLD/ACRE** (75%)	900

INCOME (3-year average for years 7–9)	Unit	Number per year	Price per unit, $	Average $/year
SALE OF TREES, CHOOSE-AND-CUT	Tree			
White Pine		300	30.00	9,000.00
Scotch Pine			25.00	0.00
Douglas Fir			35.00	0.00
Other			0.00	0.00
TOTAL NUMBER TREES SOLD/YEAR (Not to exceed)		**300**		
TOTAL GROSS REVENUE				**9,000.00**
FIRST-YEAR ESTABLISHMENT COSTS				
Site Preparation Costs	Acre	1	200.00	200.00
Trees/Acre	Tree	1,200	0.10	120.00
Planting (Chemicals, machinery, labor)	Acre	1	100.00	100.00
Tools (Clippers, etc.)	Pieces	1	50.00	50.00
Miscellaneous		1	200.00	200.00
TOTAL FIXED COSTS (First year of establishment)				**670.00**
VARIABLE COSTS (3-year average for years 7–9)				
Selection and Coloring	Acre	1	125.00	125.00
Harvesting	Acre	1	250.00	250.00
Advertising	Year	1	60.00	60.00
Insurance	Farm	1	300.00	300.00
SUBTOTAL VARIABLE COSTS (Years 7–9)				**735.00**
VARIABLE COSTS (Yearly average for years 1–9)				
Yearly Stand Maintenance	Acre	1	150.00	150.00
Shearing	Acre	1	100.00	100.00
SUBTOTAL VARIABLE COSTS (Years 1–9)				**250.00**
TOTAL COSTS				**1,655.00**

Assumptions for enterprise analysis

(1) Area planted is a recently abandoned pasture.

(2) The farm is in a suburban area 30 miles from a large city and has good road access.

(3) The grower owns the land on which the trees are planted.

(4) The grower owns a small tractor or driving mower.

(5) Calculations do not account for cost-share payments or taxes.

(6) Trees are white pines. Spruces and firs will bring higher prices, but costs may differ.

(7) Each seedling is planted on a 6-foot-by-6-foot area; total planting area is 3 acres.

(8) Stand maintenance includes replacement of lost trees, herbicide application, and machinery and labor for mowing three times per year.

(9) Shearing starts in year 3 and is most time-consuming in years 5–8. The number provided is an average for the 9 years.

(10) All costs and revenues were averaged over the three-year production of trees.

(11) Tree revenues occurred in years 7, 8, and 9.

(12) All variable costs occur in years 7, 8, and 9, except stand maintenance/labor, which occurs every year.

(13) Average tree price is $25 for a 5-foot tree, $30 for 6-foot, and $35 for 7-foot. It is assumed that there are equal numbers of each size.

CASH-FLOW ANALYSIS (Year)	1	2	3	4	5	6	7	8	9	Total
					($/Acre)					
Receipts	0	0	0	0	0	0	9,000.00	9,000.00	9,000.00	27,000.00
Costs	670.00	250.00	250.00	250.00	250.00	250.00	985.00	985.00	985.00	4,875.00
Net Annual Returns	-670.00	-250.00	-250.00	-250.00	-250.00	-250.00	8,015.00	8,015.00	8,015.00	22,125.00
Cumulative Net Returns	-670.00	-920.00	-1,170.00	-1,420.00	-1,670.00	-1,920.00	**6,095.00**	**14,110.00**	**22,125.00**	
Net Present Value (NPV)	-638.00	-227.00	-216.00	-206.00	-196.00	-187.00	5,696.00	5,425.00	5,167.00	14,619.00

CUSTOM PORTABLE SAWMILL ENTERPRISE

Portable sawmills have become an attractive enterprise option in recent years. With improved technology, a small unit run by one or two people can economically produce high-quality lumber. There are more than 70 manufacturers of portable sawmills from which to choose and a wide variety of models. The simplest and least expensive rely on manual labor for all operations except powering the saw blade. The more automated (and therefore expensive) models include hydraulic or electric accessories that allow the operator to do a minimum of physical labor.

The demand for services provided by portable mills is a relatively new phenomenon. Much of the north central and northeastern United States is heavily forested with maturing stands of mixed hardwood and softwood species. The wood resource for smaller mills is virtually limitless. Whereas acreage of forest and standing volume of timber is generally increasing, land parcel size and ownership tenure is decreasing. Large-scale sawtimber management is just not realistic for most owners.

Portable mills can fill the niche that the traditional forest industry has lost. These mills can often turn a profit from relatively small volumes of low-grade sawlogs from onsite forest thinnings that otherwise would be harvested as low-value firewood. Owner-operators can often gain access to free or inexpensive logs, seek out specialty character wood, saw custom dimensions, and saw on sites with low sawtimber volumes, thereby saving trucking to and from a mill.

Skills and Time Needed

It may be a good idea to assess your interests and capabilities by hiring on with an established owner-operator for a few weeks or months before you take the plunge and buy your own mill. You'll learn about the realities of running a mill and a business. You'll also get an appreciation of your physical limitations and be better able to decide how much automation is appropriate for your enterprise.

Portable-sawmill operators need to be physically able to lift and stack logs and operate the sawmill. Some higher-priced mills almost fully automate these processes. You should be comfortable maneuvering equipment and a truck in small clearings. You should be able and willing to drive between work sites and the lumber buyer. You'll save money and time if you are able to perform regular maintenance, such as blade sharpening, and fix problems with the mill as they arise. And don't forget that you must provide good customer service. Your business will grow faster if you enjoy meeting and talking with new people.

Equipment Needed

You'll need a truck to pull a portable sawmill and, of course, you'll need a mill. Prospective buyers should not rush into a purchase. It is crucial to gain firsthand familiarity with as many mills as possible before making a purchase. If at all practical, don't

buy a mill until you see it being used by a satisfied, competent, and experienced private owner-operator. *Independent Sawmill & Woodlot Management* magazine is an excellent source of information on various mills. Most new portable mills range from around $5,000 to $35,000. New manual mills (in which you load the logs and push the bandsaw through the log) run about $5,000 to $12,000. Fully hydraulic mills (which load and turn logs and have a powered carriage feed drive) cost about $16,000 to $35,000. Production for the manual mills is only about 1,000 board feet per eight-hour day, whereas hydraulic mills may cut 3,000 board feet a day.

If, for instance, you have only about $10,000 to spend, you could afford a new mill on the low production end, a used mill in good condition from the middle range, or a "fixer-upper" from the upper end. Depending on your circumstances and mechanical abilities, you may consider learning about and eventually looking at mills that may seem initially out of your price range.

As owner-operator of the mill, your time is best spent sawing lumber, not loading logs and offloading and stacking lumber. Production will be a lot higher with you at the controls, plus you can run the mill for longer stretches if you're not doing a lot of backbreaking labor. For these reasons, you might consider hiring a laborer. Of course, the price of finding and keeping a good worker often comes at a premium. You could also consider requiring the customer to supply labor for such tasks, but there are liability and production considerations involved with depending on a novice and unknown "customer helper."

Insurance Concerns

A critically important aspect of your business is that of liability and insurance. If you have one or more employees, you may be required to cover them with workers' compensation insurance. Self-employed individuals do not have to obtain this insurance in many states, but it is worth a check. You may choose to purchase it through a private insurance firm. Clients may request evidence of a workers' compensation policy before they allow work to begin.

General liability (third-party) insurance covers you should your business cause damage or injury to your client or a third party, such as if you happened to knock over your client's neighbor's fence when maneuvering the mill. If you have clients assist with the work, you must ensure that any injuries they sustain will be covered. It may also be wise to get an "equipment floater" or "inland marine" rider to insure your mill as a piece of mobile equipment. That rider will cover damage to the equipment when it is on the road, at your home, or at a job site. Your regular automobile insurance may cover damage you cause to other vehicles while on the road for the business. It is wise to inform your automobile insurance agent of your new business to be sure you are covered under various scenarios.

Marketing

Don't expect to be able to outcompete prices offered by retail lumber dealers. If you are to stay in business and make a profit, you must be able to offer something that your competition (retailers or other portable sawmill owners) can't. Find your niche. Your service (availability, custom sawing, low prices, production rate, production efficiency, etc.) or product (species, kiln-dried, finished lumber, etc.) must be unique. It's important that you research how you can beat the competition and then capture and hold on to that market.

Many established owner-operators don't feel the need to market or advertise their business. They have all the business they want just from word-of-mouth. Still, for operators just starting out, or in more competitive markets, it is wise to spend some time and effort on mounting a marketing campaign based on your niche. Some places to advertise include the yellow pages, hardware stores, tree nurseries, realty offices, penny-saver papers, farmer newsletters and magazines, and forest owner

magazines. Advertise to foresters, loggers, plumbers, electricians, carpenters, appliance repairmen, cooperative extension offices, chainsaw dealerships, farm equipment service and dealers, and even other sawyers. Create a Web page for your business. Look for opportunities to demonstrate your mill and your services at county, agricultural, and forestry fairs; trade shows; forestry workshops; and dealerships. Post a sign at sites where you are sawing so passersby can get in touch with you if they are interested in your services.

Financial Picture

The budget on the following page contains information based on hourly charges and board-foot charges. When you figure the number of days you will cut per month, allow for downtime for machinery maintenance. There may be times when it is too wet to get into the woods, so you will probably not cut every month. You'll need to estimate your average board feet per day, based on an eight-hour day. Consider what you could cut with and without help, on good and bad days, and days with and without breakdowns. Guidelines from equipment manufacturers may be overly optimistic. Sawing rates vary regionally. In central New York, for example, cutting charges range from $0.20 to $0.35 per board foot.

Some expenses will vary, depending on the amount of lumber sawn, the number of days worked, the number of times the mill is moved, employee expenses, etc. Manufacturers typically provide estimates of the operating cost per board foot or hour. Other costs include moving the portable sawmill from job to job and the time spent setting up the mill and doing miscellaneous repairs, such as sharpening used saw blades or buying new blades.

A typical wage for an employee might be $10 an hour. Some forest industry associations offer workers' compensation insurance at rates significantly less than the state rates, which is well worth looking into. You will probably have to pay into the state unemployment insurance fund at a percentage of gross annual employee wages. The percentage varies by business and employer, but for seasonal and temporary employment such as sawmilling, the rate is often relatively high.

Fixed expenses do not vary with the amount of work you do. You'll have these expenses regardless of how much time you work or your production level. Insurance coverage is one fixed expense. At the very least, it should include liability, comprehensive, theft, and transportation, which will typically cost from $900 to $1,400 annually. Mills are often purchased with a loan. Your loan officer will figure the monthly loan payments.

Financial analyses have been run of potential profits for three mills with different worker requirements, manual labor needs, and daily board-foot capacities. On the basis of a sawing charge of $0.20 per board foot, results show that it is usually most profitable to either buy a small, lower-cost production unit and have no employees or buy a large unit with a substantial startup cost and have one employee. The larger daily production possible with the higher-priced mill compensates for the higher startup cost. However, these results should be interpreted with some caution. For example, achieving the high annual output for the large unit could require active marketing to find enough clients to keep the machine busy.

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PROFIT AND CASH-FLOW ANALYSIS OF A PORTABLE SAWMILL

PROFIT ANALYSIS EXAMPLE (Work charged on an hourly basis)	Cost, $
Purchase Price of Mill	18,000.00
Salvage Value of Mill after Years Used	3,000.00
Number of Years Used	5
Number of Hours Used Monthly	60
Depreciation Cost per Hour	4.17
Annual Interest Cost per Hour (Or opportunity cost)	10.00
Interest Cost per Hour	1.46
Maintenance Cost per Hour (Gas, oil, blades, etc.)	4.00
Labor Cost per Hour (Self)	0.00
Other Costs per Hour (Insurance, marketing, accounting, etc.)	5.25
Total Cost per Hour	14.88
Rate Charged per Hour	35.00
Net Profit per Hour	20.12
NET PROFIT PER MONTH (labor and time for owner)	**1,207.20**
CASH FLOW ANALYSIS	
Amount Financed	15,000.00
Months Financed	36
Loan Annual Interest Rate (%)	12
Monthly Loan Payment	498.21
Cash Operating Cost per Month	555.00
Total Cash Outflow per Month (Loan payback + operating costs)	1,053.21
Total Cash Income per Month	2,100.00
NET CASH FLOW PER MONTH	**1,046.79**
PROFIT ANALYSIS (Work charged on a board-foot basis)	
Board Feet Processed per Hour (1,000 per 6-hour day)	125
Total Cost per Board Food	0.12
Rate Charged per Board Foot	0.30
Net Profit per Board Foot	0.18
NET PROFIT PER MONTH (Labor and time for owner)	**1,357.50**
CASH-FLOW ANALYSIS	
Total Cash Income per Month	2,250.00
NET CASH FLOW PER MONTH	**1,196.79**

Notes

Cash flow does not consider depreciation, but it does include loan payments.

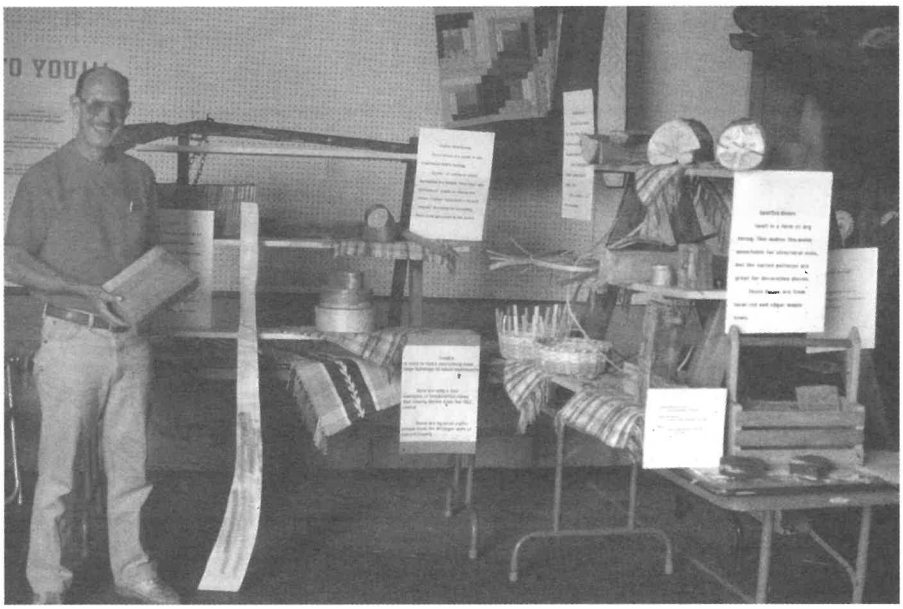
Include time spent traveling, setting up and taking down, moving logs, maintenance, and marketing.

TRADITIONAL WHITE OAK BASKETMAKING ENTERPRISE

In this day of mechanization, it still takes a pair of human hands to weave an oakwood basket. Traditional crafters who make baskets the old-fashioned way, with traditional tools, can market their sturdy wares for a premium price in niche markets. There are many sources of cheap, foreign-made baskets available in chain department stores, but traditional crafters have a unique market niche. Baskets come in all shapes and sizes, from small knickknack baskets to clothes hampers and laundry baskets to wine bottle or casserole dish baskets. Some basketmakers also weave chair and stool seats. The custom-order business can be lucrative. How you market your baskets is the real key. Locating lucrative outlets is important and takes time.

The easiest way to learn this craft is from a master. It may take an experienced weaver about five hours to make a basket, from cutting down the tree to finished basket. It takes a while to build up experience so that you can spot a tree that will make good baskets. It also takes practice to become proficient and quick at basketmaking.

Making oak baskets requires little capital investment and allows great flexibility in learning a skill and meeting people. The return can provide a supplemental source of income for those in rural or suburban areas who market their wares through fairs and festivals.



Production Methods

The first step to making a great basket is finding the right tree. White oaks are traditionally used. The ideal tree will be 4–8 inches in diameter at breast height and have soft, flaky, scaly bark. Trees suited for basket making usually grow on fairly rich soils. Trees growing on limestone or shale soils don't usually work well, because the wood tends to be wiry and stiff and may break easily. You want a tree that has grown straight up toward the sunshine. The first branches or knots should be at least 6 feet up. You'll use only the trunk from above the root swell to below the first branches. A tree grown in an open field usually won't do, because it tends to grow out rather than up. You don't want a tree whose growth has been suppressed by being overtopped by other trees. You also don't want a tree that has grown too quickly, because it can be difficult to split. Cut the tree at the ground about 1 foot above the basal root swell. If the tree cuts in a spiral when you're trying to split it, it won't work well for basketry.

Trees can be cut at any time of the year, but how the wood is stored will depend upon the weather conditions. During the warm, dry summer, the wood you're not working with has to be kept in a cool, moist place to keep it from becoming dry and brittle. During cooler and more humid

weather conditions, there are fewer problems with the wood drying out.

Once the unbranched trunk is cut, it is halved, and then one-half is set aside and the other half is halved again, and again, and so on. Once you have strips of wood, test their usability for basket making by bending them. If they snap at this stage, they will not work in a basket and you'll need to start over with a new tree. Splints are then made by separating the growth rings or thicker pieces, if that is desired. Some basketmakers then trim the splints on a shaving horse to make them a uniform thickness. The heartwood (central core) of the tree is often used to make basket handles and rims. The stripped bark can be soaked in water to make a dye for the splints. One tree trunk can provide material for as many as 30 baskets.

Skills and Time Needed

Some upper-body strength is needed to split the wood down to make traditional oakwood baskets. Finger strength and dexterity are also needed. A person who has experience with cutting, splitting, or carving wood will have an advantage.

Equipment and Resources Needed

The tools of the traditional basketmaking trade include a chainsaw, several splitting wedges, a hatchet, a maul, a knife with a strong stiff blade, and a wooden mallet. Many people already own some of these items, and most are not high-cost, which means that a person getting started making baskets will not have high capital costs.

Marketing Concerns

The most common way to sell traditional oakwood baskets is at craft fairs, festivals, and tourist locations. A person who does basket making only part-time—say an average of one day a week—might go to as many as 20 shows or sales events a year. To keep costs down, most sales should be within a few hours of home. It pays for experienced crafters to get a steady gig demonstrating the craft at a state or national park or heritage center, such as George Washington's Mount Vernon in Virginia or Plymouth Plantations in Massachusetts. These steady appearances help to build up a clientele, because word-of-mouth tends to be an effective advertising mechanism for such an enterprise. They also do not require payment of a booth fee. Experienced crafters may also be able to get exclusive contracts to meet all the basketry needs of historical sites.

It may be helpful to develop a marketing brochure showing some of the styles of baskets available. You may also want to pass out business cards that list some of your upcoming show dates on the back.

Financial Picture

Prices might range from $12 for a small simple basket to $125 for an elaborate egg basket. Casserole baskets and wine baskets, which tend to sell well, go for $30 to $40 each. A laundry basket might sell for $80. A person who makes about 100 baskets a year and sells them for an average of $40 each will gross about $4,000 annually before expenses, mainly for traveling to craft shows. Costs include gasoline; wear and tear on your vehicle; booth fees; packaging, if any; your time to drive there and back, set up, staff a booth, and take down your wares; and food and lodging, if necessary. It might cost about $300 to attend a show about eight hours from home; therefore, you need to carefully choose the events you attend and focus on those that bring the best return. There's also the opportunity cost of your time (time you could spend in some other way). You'll have bookkeeping costs, minimal tool costs, and costs of taking your vehicle to harvest trees.

Thanks to Alan Miller of ALMAR Creations for sharing the details of his operation with us. ALMAR Creations, HC 32 Box 33, Upper Tract, WV 26866.

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BASKETMAKING ENTERPRISE

INCOME	Baskets per year, #	Sale price per basket, $	Total income, $
Wine baskets	30	40.00	1,200.00
Laundry baskets	10	80.00	800.00
Casserole baskets	32	40.00	1,280.00
Egg baskets	4	125.00	500.00
Knickknack baskets	18	12.00	216.00
TOTAL INCOME			**3,996.00**

VARIABLE COSTS	# events	# days	$ per trip	Total cost, $
Travel to distant show	1	2	420.00	420.00
Mileage (360-mile round trip)			120.00	
Food and lodging			200.00	
Booth fee			100.00	
Travel to nearby shows	9	1	147.00	1,323.00
Mileage (120-mile round trip)			40.00	
Lunch			7.00	
Booth fee			100.00	
Travel to exhibitions	10	1	47.00	470.00
Mileage (120-mile round trip)			40.00	
Lunch			7.00	
TOTAL VARIABLE COSTS				**2,213.00**
NET INCOME OVER VARIABLE COSTS				
NET PROFIT				**1,783.00**

Assumptions

Operator obtains all wood free and from within 20 miles of home.

Operator already owns all tools needed and has a reliable and suitable vehicle for transporting logs and baskets.

Operator works at this enterprise only about one day a week.

Travel to distant shows includes gasoline (400 miles), wear and tear on vehicle, booth fees, food, and lodging.

Travel to nearby shows includes gasoline (120 miles), wear and tear on vehicle, booth fees, and lunch.

Travel to exhibitions includes gasoline (120 miles), wear and tear on vehicle, and lunch.

Mileage is charged at $0.345 per mile.

Wooden Utensil-Making Enterprise

If you're good with your hands and you like working with wood, you may also enjoy carving traditional kitchen utensils, such as spoons, spatulas, pie servers, and salad tongs. There are two basic market niches with this type of enterprise. The first involves utensils that are largely handmade with traditional techniques. Traditional artisans may use a bandsaw to cut the wood into the rough shape of the piece and then use gougers to complete the piece by hand. A high-quality, sturdy gouger may cost about $50 to $60. An assortment of wood rasps is also needed. Although some of the handworking tools can be costly, it is not difficult for most people to afford the startup costs. The second market niche involves using power tools (saws, sanders, etc.) to produce large quantities of utensils. This is a production-based enterprise that requires much higher investment in capital equipment and supervision of labor. Some artisans who start out using traditional techniques will sometimes move into a more production-oriented enterprise after they learn the business.

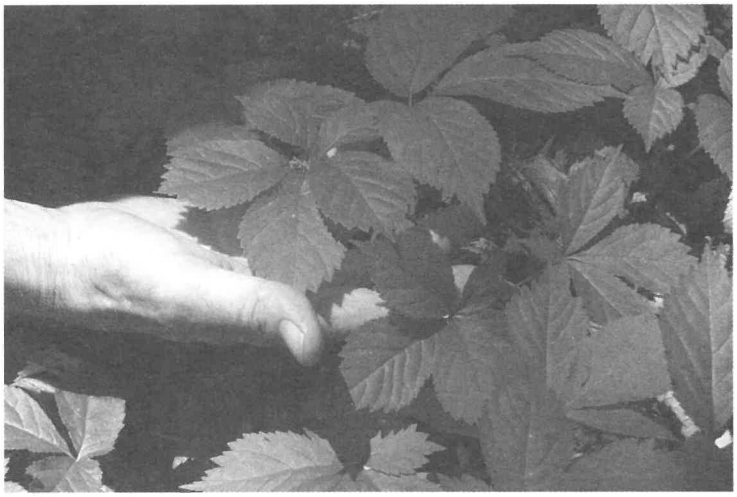
A large, traditionally made American chestnut spoon or a walnut or cherry pie server might sell for $20. Spatulas sell for $8 to $15, depending on the style. An experienced carver working in this field for one to two days a week on average and making about 200 utensils a year might gross about $2,000.

Common woods for utensils include black cherry, walnut, yellow birch, American beech, white oak, sassafras, American chestnut, and butternut. The use of different woods allows for great variety and creativity.

It takes about one hour for an experienced crafter to make a spoon. It pays to have a niche, such as being able to say that your utensils are made by hand with traditional tools.

Thanks to Alan Miller of ALMAR Creations for sharing the details of his operation with us. ALMAR Creations, HC 32 Box 33, Upper Tract, WV 26866.

GINSENG ENTERPRISE



The one resource you must have to start a successful ginseng production enterprise is appropriate land. Ginseng grows in hardwood forests in the eastern United States on well-drained, north- and east-facing slopes with rich soils. The best way to know whether your land might support ginseng is to look for indicator plants in the spring, such as May apple, jack-in-the-pulpit, and wild ginger.

Ginseng is in high demand in Asia, where it is used for medicinal purposes. Lore has it that the root has antitumor, antiviral, antioxidant, and metabolic effects. Wild and wild-simulated ginseng bring the highest prices, $400 to $600 a pound, although prices in the neighborhood of $300 a pound are more common. The appearance of the root is mainly what determines its value. Asian buyers prefer old, oddly shaped, forked, moderately sized, stubby but tapering, off-white roots that are firm when dry.

Production Methods

There are four methods of growing ginseng. Each has advantages and disadvantages and brings a different price for the roots. The following methods are presented in descending order of price that the roots will yield.

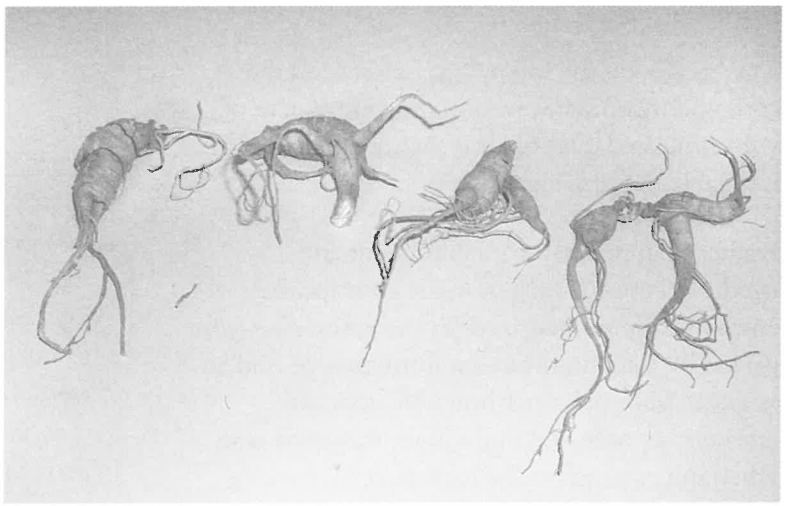
Wild ginseng is uncultivated. It is collected where it grows naturally. This species is internationally protected, so collection is prohibited or tightly regulated in states where it grows.

Wild-simulated ginseng is planted and grown in untilled soil under the forest canopy for nine to twelve years before it can be harvested. The dried roots of wild-simulated ginseng closely approximate the appearance of truly wild ginseng. If you want to grow wild-simulated ginseng, it might be wise to first plant a test patch to make sure you have the proper conditions for good growth.

Woods-cultivated ginseng is planted and grown in tilled beds under the forest canopy.

Field-cultivated ginseng is grown in tilled beds in fields under artificial shade cloth. The roots tend to be carrot-shaped and the least valuable (bringing about $10 a pound) among roots from the four methods of production. The price has been slipping for the past decade.

Skills and Time Needed



To run a successful ginseng enterprise, you'll need someone who likes to be outdoors to plant, tend, and harvest the ginseng. Planting is done in September or October of the establishment year. It takes about 400 mature plants to yield 1 pound of dried ginseng, so planting is no small task. The plants need to be checked periodically for fungal and rodent problems and to establish a presence to protect against theft. Harvesting labor will be needed in the fall of the ninth or tenth year, and this is also a time-consuming process. Experts estimate that it takes about three hours to harvest 3 pounds of root, which dries to about 1 pound of finished root. The roots need to be dried throughout a few days or weeks, depending on their size. Finally, you'll need to get the roots to the buyer.

Marketing Concerns

Ginseng is listed by the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), so harvesting and buying is documented to help ensure that the resource is used sustainably. Collecting and buying ginseng for resale is done by permit only. The following northeastern and mid-Atlantic states have ginseng certification programs that meet the legal requirements for trade in the plants: Maryland, New York, North Carolina, Ohio, Pennsylvania, Vermont, Virginia, and West Virginia. You can sell directly to a buyer or through a grower cooperative; the latter will probably get you a higher price. Cooperatives sell directly to Asian markets, cutting out the middleman and increasing profits. Your state agricultural agency should be able to steer you toward a grower cooperative or buyer in your area.

You might also consider making value-added ginseng products. A grower in Kentucky markets berry jam with a touch of ginseng added for about 1.5 times the sales price for raw root.

Industry analysts say that there is "a bottomless market" for U.S. ginseng growers, so if your land is suitable and you're in for the long term, this could be your thing.

Equipment and Resources Needed

Collect soil samples at the chosen site and have them tested before planting to determine the nutrient balance of the soil. Your county cooperative extension office can direct you to information about collecting and testing soil. Ginseng prefers soil that is acidic (pH approximately 4.5) but high in calcium (approximately 4,000 pounds of calcium per acre) and phosphorus, an unusual combination, which may account for ginseng's finickiness. Gypsum or rock phosphate should be applied if test results indicate deficiency.

You will need ginseng seed, shovels, hoes, and the like for planting. You may need fungicide or rodenticide and a backpack sprayer if problems develop. You'll need a place to dry the root and screen racks on which to dry it. For faster drying, you will need to supply electricity for heat and exhaust fans. You'll need a vehicle to transport the dried root to market.

Financial Picture

The budget on the following page reflects the costs and income involved in growing ½ acre of wild-simulated ginseng. It is assumed that the land is suitable for growing ginseng.

Rather than define the establishment and overhead costs for each year, the costs for the enterprise are summarized for the entire nine-year period by using information from growers and an assumed labor price per hour. All costs and revenues are averaged throughout the ninth year, when the ginseng can be harvested. All ginseng revenues take place in year nine. Taxes are not considered in this example.

Yields from crops with long growing periods, such as ginseng, can vary because of weather, soil conditions, theft, and other factors. Therefore, our example uses a range of root yields to determine gross income. Establishment costs are then subtracted to determine net income or profit, which can vary from $5,123 to $18,123 for the nine-year period.

Theft–A Major Concern

The greatest threat to a crop of wild-simulated ginseng is human theft. This problem is most common in regions where many people go out in the woods searching for wild ginseng. "Hunting sang" is part of the culture of the Appalachian region. Many "sang hunters" are honest people, but some are not. It is probably unwise to grow ginseng on land where you do not live year-round. A member of your team should check the plants biweekly for vandalism and pests. In areas where ginseng is a newer crop, such as the Piedmont, there may be fewer problems with theft.

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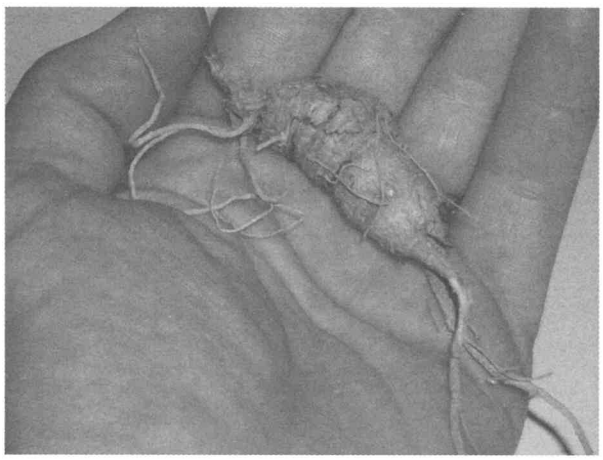


GINSENG ENTERPRISE BUDGET (Wild-Simulated)

PLOT SIZE	0.5 acre			
PRODUCTION PERIOD	9 years			
INCOME	**Root yield** (Pounds)		**Gross income** (@ $260/pound)	
	50		13,000.00	
	75		19,500.00	
	100		26,000.00	
COSTS	**Unit**	**Amount**	**Price, $**	**Total cost, $**
Ginseng Seed	Pounds	10	80.00	800.00
Planting Labor	Hour	160	6.00	960.00
Inspection/Troubleshooting Labor	Hour	500	6.00	3,000.00
Harvest Labor	Hour	270	6.00	1,620.00
Drying Labor	Hour	16	6.00	96.00
Gypsum	50 pounds	16	4.00	64.00
Rock Phosphate	50 pounds	16	8.00	128.00
Fungicide, Rodenticide		1	75.00	75.00
Backpack Sprayer		1	125.00	125.00
Hauling Labor (150 miles each way; two trips)	Hour	16	6.00	96.00
Energy ($0.50/pound)			37.50	37.50
Insulation, Drying Racks			400.00	400.00
Miscellaneous (tools, chlorine bleach, heat, phone, etc.)		1	100.00	100.00
Interest on Costs	$	7,501.50	5%	375.08
TOTAL COSTS				**7,876.58**
NET INCOME OVER COSTS	**Root yield** (Pounds)		$	
	50		5,123.42	
	75		11,623.42	
	100		18,123.42	

Income derived from growing 0.5 acre of wild-simulated ginseng depends on yield and future price.

A low price of $260 per pound was assumed. Note the variation in net income under different yield scenarios.

Budget developed by Andy Hankins, Virginia Experiment Station, 1999.

HUNTING LEASE ENTERPRISE

Lease hunting is an arrangement whereby the landowner grants access to his or her land for hunting for a certain period of time in exchange for fees or services. Landowners can lease some or all rights to hunt on their property by the day, week, season, or year. By choosing who you want to hunt on the property, you can solve many trespass problems, because those hunters will tend to keep others off the property. A hunting lease enterprise may be a good option for absentee landowners, because it can require little maintenance work once the arrangement is set up.

The disadvantages of offering a hunting lease include the loss of privacy, changes in your farm operation to accommodate hunters, liability concerns, safety concerns, and possible resentment from those who formerly hunted the property for free. Selecting responsible hunters, securing proper insurance, having a written lease, and communicating regularly with the hunters can minimize most concerns.

The profitability of a hunting lease enterprise will depend on the accessibility of other hunting lands, proximity to a population center, quality of the hunting, available species, facilities provided, and type of lease arrangement. You may decide to operate a full-fledged hunting lodge, let hunters camp on your land, or offer just hunting. You can charge by the acre, the day, the season, or the year. Most leases are done on a yearly or seasonal basis. These decisions will heavily influence the profitability of the enterprise and the skills and time needed to make it successful.

In most of the Northeast, hunting is primarily for white-tailed deer, wild turkey, and possibly squirrels. In coastal and river areas of the mid-Atlantic states, there is a sizable market for waterfowl hunting. Quail, pheasant, or dove hunting is sometimes offered at shooting preserves to which animals are brought.

Skills and Time Needed

Skills and time needed for a successful hunting lease enterprise depend on the type of operation. Seasonal and yearly leases tend to be best for landowners who do not themselves hunt and for those who want to minimize the time they spend dealing with the enterprise. For daily-charge operations, the landowner or hired manager must enjoy dealing with the public. This type of operation will require the greatest investment of time to ensure safety and generally provides a greater level of service to hunters. Food and guide services are often provided in daily-charge arrangements. In return for the extra services required, the profit per hunter can be considerably higher.

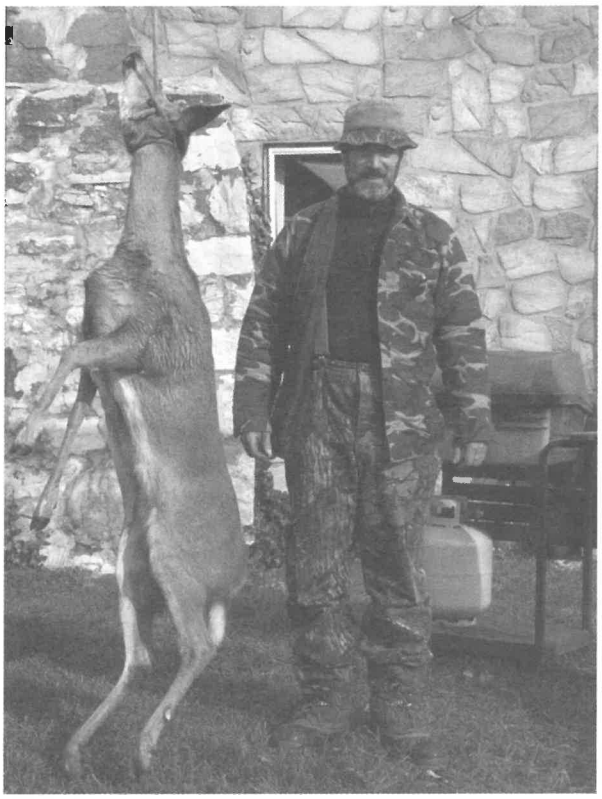
If you decide to do land management to improve the quality of hunting, you'll need to educate yourself on wildlife habitat management and understand what features will attract the target species. You'll need to carry out the practices you select or pay someone else to do it. Assistance on planning for wildlife is available from state wildlife agencies, cooperative extension, and nonprofit wildlife organizations.

Equipment Needed

For a simple seasonal or yearly lease in which the landowner provides no additional services, all that's needed to start the operation is a signed and notarized lease with a hunt club or group of individuals. If the hunt club is incorporated, then the club representative may be able to notarize the lease for the other members. More commonly, the landowner is leasing to a group of individuals who adopt a club name. In this case, all members must sign and notarize the lease for it to be fully binding. The landowner can specify in the lease any terms he or she wishes: archery or muzzle loader only, the number of hunters allowed at one time, maintenance of hunting rights for certain friends and family members, and so forth. You can even specify in the lease that certain jobs must be performed, such as planting or mowing food plots. Check with your state's wildlife management agency for applicable

regulations and seasons. A sample lease is available on the Internet at <WWW.NATURALRESOURCES.UMD.EDU/PAGES/HUNTING_LEASE.HTML>. It may be helpful to have a lawyer look over the lease before you offer it to hunters. However, be aware that some lawyers may not fully understand this type of enterprise and the liability considerations.

A daily-charge operation may require a building in which hunters can gather to receive instructions from the landowner or manager. Food, lodging, and guide facilities may be offered for daily or weekly arrangements. Some landowners may have existing cabins that they allow hunters to use, which can be an additional source of income. Many hunting-liability policies provide a reasonable level of protection for fire damage, but check the policy you select for the conditions that apply. For more information on budgeting for lodging facilities, see the vacation cabin example on page 84. If your customers will be mostly out-of-towners and you don't plan to offer overnight accommodations, consider whether adequate overnight facilities and restaurants exist nearby to meet hunters' needs.



Waterfowl hunting will probably require the construction of blinds, and tree stands may be necessary for deer hunting. You can improve habitat by timber cutting, planting, and mowing to increase the number or diversity of animals your land will support.

Liability and Licensing Concerns

Each state has recreational statutes that minimize liability for landowners who allow individuals to hunt on their property at no charge. The statutes vary by state, but none of these statutes apply when you charge a fee. General farm insurance usually does not cover fee hunting or hunting leases in which a fee is charged. This type of hunting is considered a business relationship, so special coverage is needed. Many landowners require hunters to sign a liability waiver as part of a lease agreement, but this waiver will not protect the landowner in the event of an accident. Special liability coverage is needed. Fortunately, a number of landowner associations and insurance companies offer reasonably priced insurance. A list of sources of liability insurance can be found on the Internet at <WWW.NATURALRESOURCES.UMD.EDU/PAGES/INSURANCE.HTML>. You may wish to check with your present insurance provider as well.

Your state may require that you obtain a license for a fee-hunting or hunting lease operation. Requirements will vary with the species. The costs are usually low, but penalties for not complying tend to be large. A special license may be needed to release and hunt pen-raised birds.

Marketing Concerns

To avoid resentment from neighbors, relatives, friends, and others who may have been hunting on the property, you may wish to offer them the first opportunity to lease the land. Absentee

landowners must be especially concerned, because vandalism can occur while they are away. You could try marketing your hunting lease rights through local sporting associations. County cooperative extension or state wildlife management agencies should be able to provide some contact information for these groups. You might place advertisements in sporting magazines or the sports section of local newspapers.

The largest amount of time spent in managing a hunting lease operation is in selecting a hunt club or individuals who will respect your property and your objectives. It is best first to conduct phone interviews to ask specific questions that are important to you. Check the references that potential leasers provide. You can then meet a few likely candidates at the property and make your decision. Once they are selected, cultivate a good working relationship that can last years and require minimal effort.

If you have an elaborate operation, you may want to develop an attractive brochure or make a video to display at hunting shows and to send to interested individuals. You'll need letterhead and envelopes and probably a logo to market your business.

Some hunting preserves promote their businesses as year-round family fun places. They stage frequent seasonal events for members' families, such as hayrides and barbecues, which fosters goodwill among the hunters and their families and can increase hunter loyalty to the preserve.

What to Charge?

It can be difficult to find published information on the going price for hunting leases. Prices for a yearly lease for deer and turkey commonly range from $3 to $10 an acre. Waterfowl leases may bring in thousands of dollars if the location is desirable. What you charge will depend on how the lease is structured and whether the land is actively managed—for example, with food plots, tree stands, and blinds. One way to find out is to talk with other landowners who are in the area and lease their land. Members of forest landowners associations and other agricultural associations will commonly share their experiences. Look in the newspaper and magazines and respond to advertisements to see what others are charging.

Financial Picture

The budget that follows is for a year-long lease on deer, turkey, and squirrel hunting rights on a 70-acre parcel at a rate of $7 an acre. Except for minor costs for marketing and telephone, the enterprise netted $440. If the owner had invested in tree stands or wildlife planting, the income would have been less, but the fee per acre may have been higher. Many landowners work out agreements with hunters to plant food plots and maintain roads and fences. You may decide to allow hunters to provide their own tree stands, but you should specify in the lease that they not damage your better timber trees.

Yearly hunting lease income typically will pay at least the property taxes, which is attractive to many landowners. When you consider the amount of money generated throughout 20 years, you may find that the income from a hunting lease is worth more than periodic income from timber harvests.

Hunting lease operations vary widely in charges, sources of revenue, and extent of services. The enterprise can be as plain or as fancy as you wish. Just remember that hunters are more likely to judge the experience by the quality of the hunting than by the quality of the lodge.

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HUNTING LEASE ENTERPRISE BUDGET

PROPERTY SIZE	**70 acres**
LEASE PERIOD	**1 year**
SPECIES	**Deer, turkey, squirrel**
NUMBER OF HUNTERS	**4**
LAND USE	**50 acres forested, 20 in agriculture**

INCOME	$/acre	$/year		
Lease	7	490		
Cabin Rental for Season, Year, etc.	0	0		
TOTAL		490		

VARIABLE COSTS	Unit	Amount	Price, $	Total Cost, $
Food Plot (labor and seed)	acre	3	0	0
Marketing (newspaper/magazine ad)		1	30	30
Phone	1 month	1	20	20
Tree Stand (labor/material)	stand	0	0	0
Lawyer Review		0	100	0
Insurance (if not paid directly by club)				
TOTAL VARIABLE COSTS				50
ANNUAL NET INCOME OVER VARIABLE COSTS				440

FEE-FISHING ENTERPRISE

Fee fishing can provide an attractive recreational opportunity for people who love to fish but lack the time to travel very far to do it, for families with small children, and for the elderly and the physically challenged. Most ponds have a steady base of repeat customers from the local area. Tourists and vacationers may also use the facility, because most states do not require people to have a fishing license to fish at a fee-fishing pond. The pond itself is licensed.

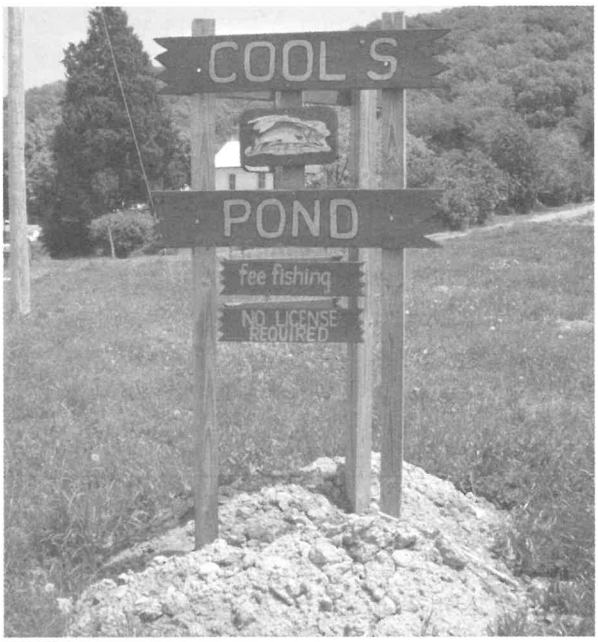
The keys to a successful fee-fishing operation are providing good fishing, having a good location, knowing your customers, and providing quality facilities. A "good location" is within 50 miles of a large population center; is close to other public attractions; and has good road access, pleasant scenery and surroundings, and plenty of parking.

Operational Considerations

The prime season for fee fishing runs from about the beginning of April through the end of October. The peak period is weekends during the prime season. Having to be available at these times could cut into your traditional vacation time, so be sure to discuss this aspect with your family before starting an operation.

Facilities with high-quality water in the mid-Atlantic and New England can stock coldwater fish such as trout and offer an extended season. The most common fee-fishing pond stock in Maryland are rainbow trout, largemouth bass, bluegill, and catfish. Bass and catfish tolerate variability in water quality more easily than trout. Most fee-fishing facilities buy stock from fish farms.

Concessions can be the most profitable part of a fee-fishing operation. Some items that may sell well include drinks, snacks, ice, bait, fishing tackle, newspapers, hats, sunscreen, first aid supplies, and



fish-cleaning services. (You may need a special permit to run a fish-cleaning service.) Many operations also rent fishing gear. Shaded tables and chairs should be available, as should covered trash cans.

Some enterprises have accommodations for nonanglers, including playgrounds, campgrounds, and picnic areas.

Skills and Time Needed

Every new operation requires time to become successful. Time is needed initially to set up the pond, locate sources of supplies, determine a marketing strategy, and set up other aspects of the business. Along with your hours of operation, long-term pond and fish maintenance must be considered. You will need to monitor specific water-quality characteristics, such as dissolved oxygen, twice daily and other characteristics weekly or semiweekly.

Many customers will have little or no experience fishing, and they may look to you or your workers for guidance. The most successful operators are

those who enjoy meeting new people. Remember that your product is primarily recreation, not fish, which means that fishing success, aesthetics, security, concessions, safety, and marketing are primary concerns.

Legal, Equipment, and Resource Concerns

If you're digging a new pond, you'll need a number of permits before you begin. You may also need permits to operate a fee-fishing enterprise using an existing pond; sell live fish, bait, and food; or construct restrooms.

Ideally, a fee-fishing pond will have gently sloping banks, a smooth even bottom, and easy access for a truck from which to stock fish. A high-water spillway may be needed. Optimum depth is 3-5 feet, except in very cold climates, where depth should be 5-8 feet to prevent freezing. Irregularly shaped ponds have a more natural feel. Trees, shrubbery, or hills should screen roads, buildings, and fences.

Ponds of about 1 acre are easy to manage, and fishing success is usually good. Ponds larger than 2 acres are difficult to manage for disease and water quality. They may also harbor many fish that are "hook-shy" and basically uncatchable, which reduces fishing success and the number of catchable fish that can be added. Some larger operations have more than one pond, which allows the operator to change fish densities and provides a place to quarantine freshly purchased fish to ensure that they are healthy.

The best water source for a fee-fishing pond is a continuously flowing, high-quality stream or spring. Spring water is best because it allows less chance of contamination or the import of diseased fish. The quality of water will determine what types of fish will flourish in the pond. Your county cooperative extension agent can offer advice or suggest whom to talk to.

You should make arrangements for the security of the site. This step helps to ensure that there are no vandals or unauthorized visitors. Some ponds are fully fenced discreetly, which helps keep visitors out of the private areas of the property. Lighting should be provided if you allow nighttime fishing. Special access accommodations will be needed if you intend to offer fishing for physically challenged people. Having designated paths will cut down on wear and tear on the property. Adequate clean restroom facilities are a necessity.

Special liability insurance will be needed. Most standard farm insurance policies will not cover the added liability of having paying customers visit your land. However, you may be able to obtain a rider to your current policy. You should implement risk-management techniques to reduce potential hazards and prevent accidents. Swimming and alcohol should be explicitly prohibited. First aid and lifesaving equipment should be readily accessible. All grass should be kept mowed to reduce habitat for snakes.

Pond rules should be posted in plain view. You'll need to decide at what age children can fish without supervision, whether you'll allow boats on the pond, what kinds of bait and hooks are allowed, and the like.

A fee-fishing operation will influence how you use the rest of your land. You need to be careful with pesticides and herbicides if you have a pond full of fish. You also need to spray when visitors are not present. Visitors may complain about excessive noise from other farm operations.

Promotional Concerns

The most effective form of advertising for a fee-fishing enterprise is a satisfied customer who tells his or her friends about the place. That's why it's so important to provide excellent customer service. Other common forms of advertising include roadside signs, brochures at visitors centers,

advertisements in newspapers and sporting and local magazines, Web pages, and advertisements on sporting and local tourism Web sites.

You could run occasional promotional events. You might mark some fish and award prizes to people who catch them. Some facilities hold annual fishing tournaments and give prizes for the largest fish or most numerous catch. Some operators take photographs of anglers with particularly large fish or large catches, which can encourage other customers.

The added foot traffic of fishing visitors provides an audience to which you can sell fruits, vegetables, or crafts, if you wish to supplement your income.

Financial Picture

Price varies widely among fee-fishing enterprises. The first step in determining your price schedule should be to visit your competitors and investigate their pricing structures and policies. Some operators charge a low price to fish but higher prices to keep each fish. Others charge slightly more but include one keeper fish as part of the fee. In some areas, many customers will not want to keep the fish they catch, so your daily charge must be high enough to cover the cost of replacing fish that die after being caught and released. You'll need to decide whether you'll offer discounts to senior citizens or children, season passes, or group rates.

The budget that follows assumes the following: a 1-acre pond that has high-quality water, is on a scenic property, and is within 50 miles of a large population area. No feeding of fish is required. Property taxes are not considered, and all profits are before taxes.

A fee-fishing enterprise requires a long-term commitment. It can take a few years to build a loyal clientele. But if you enjoy meeting new people and working with fish, it can be a great way to earn extra money and maybe even get some fishing in yourself!

Information Resources

Bogash, S. and J. Kays. 1998. *Developing a Fee-Fishing Enterprise: An Opportunity in Recreational Tourism.* University of Maryland Cooperative Extension FS-754. Available at: <WWW.AGNR.UMD.EDU/MCE/PUBLICATIONS/>; click on the category "Natural Resources & Water Quality."

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Chopak, C. 1992. *Promoting Fee Fishing Operations as Tourist Attractions.* Michigan State University Extension publication E-2409. Available at: <WWW.MSUE.MSU.EDU/MSUE/IMP/MODTD/33809023.HTML>

Cool's Pond: Fee Fishing, Farm Stand, and Crafts. 2001. Alternative Farm Enterprises: Agritourism Success Stories. USDA Natural Resources Conservation Service.

FEE-FISHING ENTERPRISE BUDGET

VARIABLE COSTS	Unit	Quantity	Price/Unit, $	Total, $
Catfish	Pound	800	1.00	800.00
Trout	Fish	350	2.20	770.00
Portable Toilet	Month	7	70.00	490.00
Electricity	Month	7	10.00	70.00
Web Site Advertisement	Year	1	150.00	150.00
Advertising	Month	7	139.00	973.00
Insurance	Year	1	500.00	500.00
Permit	Permit	1	25.00	25.00
Labor (10% commission when working)	Commission	0.1	1,000.00	100.00
Bait	Dozen	450	1.00	450.00
Sodas	Each	500	0.25	125.00
Hotdogs	Each	250	0.50	125.00
Chips	Each	250	0.25	63.00
Mowing	Each	10	10.00	100.00
Flowers, Herbicide, Miscellaneous	Year	1	100.00	100.00
TOTAL VARIABLE COSTS				**4,841.00**

FIXED/OVERHEAD COSTS	Total cost, $	Yearly % of total cost	Cost/ year, $
Building (10-year life)	2,500.00	10	250.00
Landscaping (5-year life)	400.00	20	80.00
Gravel (5-year life)	250.00	20	50.00
Sign (5-year life)	150.00	20	30.00
Fishing Poles (5-year life)	80.00	20	16.00
Water-Testing Equipment (5-year life)	150.00	20	30.00
Used Refrigerator (5-year life)	100.00	20	20.00
TOTAL FIXED COSTS			**476.00**

GROSS INCOME	Unit	Quantity	Price/ unit, $	Total, $
Daily Fishing Fee	Person	1,500	5.00	7,500.00
Charge for Fish Kept (10% of all fishermen)	Fish	150	5.00	750.00
Bait Sales	Dozen	450	2.00	900.00
Pole Rental	Unit/day	100	2.50	250.00
Sodas	Each	500	0.50	250.00
Hotdogs	Each	250	1.00	250.00
Chips	Each	250	0.50	125.00
TOTAL GROSS INCOME				**10,025.00**
TOTAL INCOME OVER COSTS				**4,708.00**

Assumptions:

(1) Owner has an existing 1-acre pond with high water quality.

(2) Property is in a scenic location within 50 miles of a large population center.

(3) No feeding of fish is required.

(4) Property taxes are not considered.

(5) All profits are before taxes.

Source: Bogash, S. and J. Kays. 1998. Developing a Fee-fishing Enterprise: An Opportunity in Recreational Tourism. *University of Maryland Cooperative Extension FS-754.*

VACATION CABIN ENTERPRISE

Location, location, location...in the vacation cabin business, successful enterprises are in places where people want to be and generally are not far from where the target audience lives. Road, plane, or trail accessibility has to be good. Access to a body of water is a selling point, as well as a liability for the landowner.

Skills and Time Needed

Successful cabin keepers enjoy meeting new people and socializing. You must be able to deal with all kinds of people. You may need to sacrifice some of your privacy, depending on the type of operation—for example, if the vacation cabin(s) is on the same property as your house. Because of this, your whole family must agree to the enterprise, because it's their privacy, too.

Depending on your target market, the business may be particularly busy at certain times of the year. If you or members of your team are not able to commit the required time to the business during those times, it would be best to rethink your plan. You should have good organizational abilities so that you can keep accurate records of reservations, receipts, and expenses. You'll need a system for taking reservations and someone to answer the phone. Somebody must be responsible for cleaning the cabin or supervising a hired cleaner. For a rustic cabin used for weekend stays, it may be possible to clean only at the end of each stay rather than daily.

If you intend to build a cabin, you'll need the skills and time to do that or the money to hire a crew. You'll need someone to perform routine and emergency maintenance and someone to take care of the landscaping and snow removal.

Legal Concerns and Equipment Needs

Be sure to check with local government officials about any permits that may be necessary. Check the zoning regulations to be sure that you can operate a vacation cabin business on your land. There may be building and fire codes with which the cabin must comply. Be sure to consider additional liability insurance you will need for this new use of your property. It may be wise to develop a set of rules with which guests must comply and mail these to future guests along with the confirmation of their reservation. Things to consider include policies on smoking, alcohol, pets, children, guests of paying guests, times for arrival and departure, and conduct on your land.

The cabins may be outfitted with various appliances, such as coffeemakers, TVs, VCRs, irons, refrigerators, stoves, and furniture, depending on the kind of facility you choose. You'll need cleaning, maintenance, and landscaping equipment. You may need to purchase gravel to improve access roads.

Marketing Concerns

Is there a need for more affordable family vacation facilities in your region? Ask other accommodations owners and the local Chamber of Commerce. It is probably best to target a specific audience, depending on the recreational opportunities provided in your area. Do you have cross-country skiing, boating, hunting, or an antique center nearby? Play on those recreational resources.

How will potential customers find out about your business? It may be worthwhile to compile a Web page (or pay someone to do so) and link to your state's tourism Web site and other appropriate sites. For example, if a high-quality trout stream runs through your property, it would pay to advertise in fishing magazines and Web sites. You should supply contact information on the Web site and have someone available at most times to answer questions and take reservations. It also makes sense to develop an attractive brochure to place at strategic locations around your region. These places might include stores (especially those specializing in your chosen niche), restaurants, highway rest areas, visitors centers, and tourist attractions.

Your most effective means of promotion once you have opened the business may be word-of-mouth. That's why excellent customer service from all the members of your team is imperative.

Financial Picture

The budget example for this enterprise (see the following page) is based on the following scenario. The landowner owns 100 acres of farm and forestland with good access to the interstate highway. He has a full-time job with an office on the property and is looking for a source of retirement income.

He is investigating the possibility of building a cabin on the property at a scenic and secluded location. There is a demand for affordable family vacation facilities in the region. He also wants to make personal use of the cabin. The landowner and his extended family will do much of the work in building the cabin; therefore, he has not included this labor as a cost.

The landowner will lease hunting rights along with the cabin for the two-week hunting season. An estimated 125 nights of rentals yearly at a cost of $100 per night will produce $13,000 in income. Variable costs total $5,955. Fixed or overhead costs will be spread over five to ten years, depending on the expense. For example, it is estimated that the cost of the building should be spread over ten years. Therefore, only 10%, or $1,500, of the $15,000 in building materials is included in the first-year enterprise budget.

Net annual income over the total costs, or profit, is estimated at $3,345, which is lower than what the landowner expected given all the labor and time. Some of the costs could be lowered, such as the $2,640 for bookkeeping, if a family member did this job. This would increase the profitability to $5,985. Having a family member perform the housekeeping could further increase profitability. Obviously, a landowner who already has a suitable cabin or one that requires minimal work will have a better shot at building a profitable enterprise.

VACATION CABIN ENTERPRISE BUDGET

INCOME	Unit	Quantity	Price per unit, $	Total, $
Cabin Rental	Night	125	100.00	12,500.00
Hunting Lease	Year	1	500.00	500.00
TOTAL INCOME				**13,000.00**

VARIABLE COSTS	Unit	Amount	Price, $	Total cost, $
Insurance	Year	1	500.00	500.00
Permit	Year	1	50.00	50.00
Electricity	Month	12	25.00	300.00
Laundry	Month	12	20.00	240.00
Advertising	Year	1	200.00	200.00
Web Site	Year	1	150.00	150.00
Labor: Bookkeeping	Month	12	220.00	2,640.00
Labor: Maintenance, Cleaning	Night rented	125	15.00	1,875.00
TOTAL VARIABLE COSTS				**5,955.00**

FIXED COSTS (Cost per year)	Cost over 10 years, $	Yearly % of total cost	Cost per year, $
Building	15,000.00	10	1,500.00
Septic	2,500.00	10	250.00
Water	3,500.00	10	350.00
Electricity	4,000.00	10	400.00
Gravel: 1,000 feet	2,000.00	20	400.00
Home furnishings	2,500.00	20	500.00
Appliances	1,500.00	20	300.00
TOTAL FIXED COSTS			**3,700.00**
TOTAL VARIABLE + FIXED COSTS			**9,655.00**
NET INCOME OVER VARIABLE + FIXED COSTS			**3,345.00**

HORSE-BOARDING ENTERPRISE

Operating a horse-boarding enterprise requires a huge commitment of money and time, even if some hired labor is used, and it may be difficult to make the operation profitable. Boarding may help offset the cost of maintaining your own personal horse(s), however, and can be more economical if the necessary structures are already in place. Successful operators usually have years of experience with all aspects of horse care before they open their businesses. Inviting people onto your land to care for and ride their horses requires a loss of privacy for the landowners. Some clients can be demanding and particular about their horses, so operators are best served by a patient and caring demeanor.

Before you invest any money, find out approximately how many horses are in your area, the current number of boarding spaces filled and available in your area, and whether demand for boarding is likely to rise or fall. You could talk to your county cooperative extension agent, other boarding operators, feed store managers, veterinarians, and horse clubs for information. If you own land in an area on the outskirts of a wealthy metropolitan area where a lot of new houses are going up, chances are the market will be there. The local planning commission can tell you about proposed and approved housing developments.

Skills and Time Needed

Successful horse-boarding enterprises are typically run by people who've been around horses for many years. You'll have to recognize a sick or injured horse, know what horses need to stay healthy, and be able to spot possible dangers for horses and their owners. Many boarding facilities offer riding lessons and horse training. If you plan to do that, you need sufficient background in those skills. If a member of your team is a prize-winning participant in those activities, you can charge more for the services.

You'll need to tend your pastures by testing the soil and liming or fertilizing as needed, clipping, moving electric fencing to facilitate rotational grazing, and removing poisonous plants. Stalls should be cleaned every day, and temporary manure storage pits should be cleaned frequently. You'll have to hire someone to dispose of or spread manure or do this yourself. Operators should conduct regular safety inspections for potential hazards to horses and their owners. It would be handy and cost-efficient to have as a member of the enterprise team someone who can repair tools, tractors, and small engines.

The budget on pages 89–90 assumes that the operator and family members devote 240 hours a month to the enterprise. Do the members of your team have a total of 60 hours a week to spare? Depending on the type of operation you want to have, this number will vary. A budget developed by The Ohio State University assumes that each horse requires about 21 hours of work a month. This budget assumes about 37 hours of work a month for each horse, including hired and family labor.

Equipment and Resources Needed

You'll need 2-30 acres of open land for each horse. You'll need at least a simple barn and an outdoor riding area. You'll need a reliable fence in good repair. It should be at least 4½ feet tall to discourage jumping. You'll need a tractor, a truck, and a horse trailer. You may need a manure spreader. You'll need basic farm implements such as pitchforks and shovels, as well as feed storage bins, a bedding storage area, and a manure storage area. You'll need tack and riding and grooming gear, and you may want jumping and obstacle equipment for the riding area.

Other Facilities and Operational Considerations

The facilities should be clean and attractive. Ideally, you should supply restrooms and an accessible telephone for emergencies. There should be room

in buildings for tack storage. Most horse owners prefer individual stalls for their horses. Depending on your state and the size of your operation, you may need to comply with manure-management regulations. Check with your state department of agriculture. Each horse will produce about 45 pounds of manure a day and about 50 pounds of urine-soaked bedding.

Liability insurance can really eat up profits. Several kinds of insurance coverage are recommended for horse-boarding facilities: fire and theft; commercial liability; and care, custody, and control policies. Commercial liability covers riding lessons, horse shows, and the like, as well as property damage or injury to a third person. Care, custody, and control insurance covers a horse's death or injury caused by your negligence. It is also a good idea to require clients to have adequate insurance coverage for their horses.

Feeding regimens should be individualized for each horse, depending on its size, age, health status, degree of activity, and the weather. Full-grown horses typically eat 2–2.5% of their body weight in feed each day. At least 50% of the total feed should come from hay, pasture, or other forage.

Owners typically provide for routine health care, but operators still need to be alert for signs of illness or injury in the owners' absence. It is best to require that each new horse arrive with a health certificate stating that it is free from disease. You can suggest or require certain vaccinations. It may be best to establish an operation-wide deworming schedule that you take care of so you can ensure that it is completed. One horse that is not dewormed can infect all the other horses.

Marketing and Pricing

You may be able to attract sufficient business just by posting signs in local feed-and-tack stores and spreading the word among riding and horse clubs. You may want to advertise in equestrian magazines or in the farm section of the local newspaper. You might also have a brochure developed to distribute at local equestrian shows.

You might offer different levels of care at different prices, such as pasture, stall, and deluxe. With a pasture arrangement, the horse usually has some kind of shelter and the owner often provides food to supplement the pasturing. Deluxe board might include a stall that you clean, all feed, basic veterinarian care, grooming, and exercising. Boarding for a horse with a health problem is usually much more expensive.

Financial Picture

The budget presented here is for a fairly high-end enterprise. It includes costs for all new facilities: a barn, a run-in shed, a riding arena, and an indoor arena. Under this scenario, the operation is deeply in the red. Reducing costs or increasing revenues could improve the profitability. Revenues from training, riding lessons, trailering, leases, and sales commissions are not included, because they are variable and depend on the operator's commitment to developing each of these options.

Of course, as in everything, there are economies of scale in horse boarding. So if your family already has a horse or two and the required facilities, you can offset the cost of owning your own horse by boarding others.

SAMPLE HORSE-BOARDING BUDGET

BASED ON BOARDING 10 HORSES

REVENUES Income, $	Monthly per horse	Yearly per horse	Monthly 10 horses	Total yearly 10 horses
Board ($150–$500/month)	250.00	2,500.00	2,500.00	25,000.00
Training ($350–$700/month)*				
Lessons ($20–$50/hour)				
Trailering ($1–$2/loaded mile)				
Lease ($199–$300/month)*				
Sales Commission (10–20% of sale)				
Specialized Care ($30–$500/month)				
TOTAL REVENUES				**25,000.00**
VARIABLE COSTS				
Feed Requirements				
Commercial Feed ($6–$10/50-pound bag; 6 pounds/horse/day)	29.20	350.40	3,504.00	3,504.00
Hay ($2–$4/bale; 1/2 bale/horse/day)	45.63	547.50	456.25	5,475.00
Supplements ($0.25–$0.50/day)	9.13	109.50	91.25	1,095.00
Salt (block or brick)	0.50	6.00	5.00	60.00
Bedding				
Straw ($1–$3/bale); 3/4 bale/horse/day)	45.63	547.50	456.25	5,475.00
or Shavings ($2–$5/bale; 3/4 bale/horse/day)	91.25			
or Sawdust ($5–$7/cubic yard)	33.80			
Hired Labor ($6–$10/hour; 25 minutes/horse/day)	101.39	1,216.67	1,013.90	12,166.80
Repair and Maintenance				
Vehicles ($10/month/horse)	10.00	120.00	100.00	1,200.00
Pasture ($40–$80/acre; 2 acres/horse)	10.00	120.00	100.00	1,200.00
Building and Fences ($8/horse/month)	8.00	96.00	80.00	960.00
Utilities				
Electric ($5/horse/month)	5.00	60.00	50.00	600.00
Water ($5/horse/month)	5.00	60.00	50.00	600.00
Replacement of Supplies ($3/horse/month)	3.00	36.00	30.00	360.00
Insurance (depending on size, location, activities)				
Care, Custody, and Control	8.33	100.00	100.00	1,200.00
Riding Instruction	8.33	100.00	100.00	1,200.00
Commercial Liability	33.33	400.00	400.00	4,800.00
Workman's Compensation	10.42	125.00	125.00	1,500.00
TOTAL VARIABLE COSTS				**41,395.80**

(Continued on next page)

(Continued from previous page)

FIXED COSTS	Initial investment	Years depreciated	Yearly depreciation
Building and Facilities**			
Barn (10 horses)	50,000.00	10	5,000.00
Run-In Shed (10 x 25 feet)	4,000.00	10	400.00
Riding Arena (100 x 200 feet)	5,000.00	10	500.00
Indoor Arena (60 x 120 feet)	47,000.00	10	4,700.00
Fencing (10,000 feet)			
Five-Strand High-Tensile Installed ($1.75/foot)	17,500.00	10	1,750.00
or 3-Board Installed ($4/foot)		10	
Equipment			
Tractor (used)	8,000.00	7	1,142.86
Manure Spreader (used)	1,000.00	7	142.86
Two-Horse Trailer (new)	7,000.00	7	1,000.00
Four-Wheel-Drive Truck (new)	20,000.00	7	2,857.14
Insurance/Taxes on Buildings and Equipment (2%)			2,120.00
Family Labor (240 hours/month)			
Total Fixed Costs	159,500.00		19,612.86
Total Costs			61,008.66
Net Returns			-36,008.66

**Does not include boarding* ***New construction, barn, and arena costs will vary depending on design and materials used.*

INITIAL RESOURCE REQUIREMENTS *(Based on ten-horse capacity)*	
Land	25 acres
Labor	
Hired	Up to 1,600 hours/year
Family	240 hours/month
Capital	
Buildings	$50,000
Fencing (3- to 5-acre pasture)	$10,500–$18,000
Riding Arena (outdoors)	$3,000–$10,000
Tractor (used)	$8,000
Truck	$20,000
Trailer	$7,000

Comerford, P. et al. 1994. Boarding Horses. *Agricultural Alternatives. Penn State Cooperative Extension, University Park, PA.*

Information Resources

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SHIITAKE MUSHROOM ENTERPRISE

Shiitake mushrooms are specialty mushrooms that are grown on oak logs. Specialty mushrooms have been enjoyed locally and in small quantities by Native American and ethnic populations and have been widely used for centuries by Asian cultures. Behind the common button and oyster mushrooms, the shiitake mushroom is the third most widely produced mushroom in the world, and American production of shiitake has increased faster than any other specialty mushroom.

The shiitake is a large, umbrella-shaped, dark brown mushroom that is prized for its culinary and medicinal properties. Proven medicinal benefits include antiviral, antifungal, and antitumor effects. For example, the consumption of shiitake mushrooms significantly lowers blood cholesterol levels and is reported to lower high blood pressure in laboratory animals. Shiitake mushrooms contain all eight essential amino acids in better proportions than soybeans, meat, milk, or eggs, as well as a good blend of vitamins and minerals, including vitamins A, B, B12, C, D, and niacin. Shiitake mushrooms are a popular source of protein in Japan and a diet staple in China and other parts of the Pacific Rim.

Shiitake mushrooms have been commercially grown in the United States for more than 20 years and are now well accepted by American gourmet markets. Shiitake may be used as a meat substitute in vegetarian dishes and are valued for their full-bodied flavor, dark color, and meaty texture. In 1999, wholesale market prices for shiitake ranged from $4 to $8 a pound, and growers generally received between $4 and $6 a pound for fresh, well-formed mushrooms.

Production Methods

To grow shiitake, green oak logs are cut in the spring and inoculated with spores (also called spawn), which are purchased from commercial suppliers. Different strains are better suited for different environmental conditions. Using the most appropriate strain for your area will be a large factor in the success or failure of your operation.

Inoculation is perhaps the most time-consuming operation in shiitake production. The process of inoculation begins with taking harvested, cut-to-length logs and drilling rows of holes about 6 inches apart along the length of the log. Logs average 35 to 40 holes each. Hole depth and diameter vary, depending on the type of spawn used. To prevent bacterial or fungal competitors from entering the log, each inoculation hole should be sealed with a thin coat of hot wax applied with a sponge.

After inoculation, logs should be stacked in a shaded forest location or covered with 60% shade cloth. Proper moisture content is critical for optimal incubation and should be monitored regularly. Logs should never dry out but should not be wet enough to produce mold. It is important to allow the bark to dry out between waterings. Good air circulation will help prevent molding. Fruiting can be initiated by soaking the logs in a creek or water tank, which is usually done every few months to time the fruiting of the logs.

Logs will begin to fruit between six to 18 months after inoculation and will continue to produce mushrooms for about three to five years, depending on log diameter. Growers report the second and third years after inoculation as the

most productive, with double the production of that during the first and fourth years.

Mushrooms should be harvested when their caps are about two-thirds open, cutting the stem flush with the bark with a sharp knife. They may be stored in a cardboard box for up to a month at 36° to 41°F. They may also be dried whole or sliced before marketing, but they will bring substantially lower prices than fresh whole mushrooms. Ideally, mushrooms are sold immediately to places such as restaurants and retail outlets.

Each log may be used for four to five years. Mushroom production will occur only from spring through fall unless the logs are put in a heated location through the winter.

Skills and Time Needed

Of course, the more experience you've had growing mushrooms, especially shiitake, the better off you'll be. You or a member of your team will need to be able to regularly lift substantial logs and be comfortable hammering and drilling and working in damp areas. Inoculation, which is the most labor-intensive part of the proposition, takes place in the spring. If you are otherwise occupied in the spring, you might consider another enterprise. If you have the resources to cut your own logs, you will save money. Be prepared to harvest, pack, and transport your mushrooms in the fall.

Equipment and Resources Needed

To grow wild-simulated shiitake mushrooms, you'll need a shady forest location. You'll need a chainsaw and safety gear if you're going to cut your own logs. You'll need a dependable water source, sprinklers and hoses, or watering troughs. Mushroom spawn, polyfoam plugs, wax, a drill, drill bits, a hammer, and a sharp knife are also essential. You'll need packing boxes, and you may need at least one refrigerator to store your crop until it's ready. Last, you'll need a way to transport your finished product to market.

Marketing

The shiitake enterprise provides opportunities for local producers, but experience has shown that if many producers get into the market in one area, the supply can quickly outstrip the demand. The result is falling prices. Large-scale producers may also act to suppress the price that smaller producers receive for their mushrooms in local markets. Therefore, growers need to carefully assess the demand and supply in their area before diving in.

Local buyers and outlets for the small-scale producer include restaurants, bed and breakfasts, vacation resorts, organic retailers and markets, supermarkets, and farmers markets. If small producers are unable to find local buyers, wholesale buyers will buy dry product but offer only about half the price per unit of fresh mushrooms. Value-added products, such as gourmet shiitake dinners, mushroom samplers, gift tins, sauces, and soups, as well as fresh and dehydrated shiitake products, bring on average about three times the wholesale price of unprocessed mushrooms, so these products are something to consider.

Financial Picture

Cost and revenue calculations in the budget on page 94 cover the useful life of the logs (four years). In our example, overhead or establishment costs, which are incurred only in the first year of operation, are estimated at $2,406. Because of differences in mushroom production and

estimated sales, income and annual costs will vary by year; as a result, net revenue over costs is estimated for each of four years.

In our example, the $2,406 in establishment costs is charged completely against the first-year income. These costs could have been split four ways, with a quarter of the expenses charged to each year. This alternative would have changed the profitability for each of the four years.

In our sample budget, net revenue over total costs, commonly known as profit, is negative for the first year, with a loss of $2,373. The operation makes money during years two and three, $3,434 and $1,759, respectively. However, in year four, the operation loses money again.

Profitability for this operation will change, depending on labor and material cost savings and the price received for mushrooms. For example, harvesting logs from the property as part of a forest thinning would reduce the establishment costs by $750. Producing on more logs can lower overhead costs. The water tank and refrigerator are not essential until the second year. Targeting niche markets may increase the price received per pound, but it will also increase marketing costs. Higher prices received for fresh mushrooms and value-added products will significantly increase the grower's margin. Careful attention to inoculation and incubation, as well as thorough marketing, will greatly aid in the success of a shiitake enterprise. To get a true picture of potential sales revenues, prospective growers must do some specific marketing research for their areas.

The budget also provides a break-even price, which is calculated by adding the production costs for each of the four years ($9,815) and dividing that sum by the total pounds of mushrooms produced and sold throughout the four years (3,520), which equals a break-even price of $2.79. The break-even yield for the price throughout the four-year period is also provided and is calculated by totaling the production costs throughout the four years ($9,815) and dividing that number by the average price per pound that can be expected ($3.50). The result means that 2,805 pounds of mushrooms must be produced and sold to break even, give the costs provided. Total labor costs throughout the four years are calculated at $4,314.

The use of break-even prices and yields provides prospective entrepreneurs with another tool to help them gauge how much crop they will have to market to meet their monetary goals. For this enterprise, the entrepreneur will now have to decide whether the work involved is worth the potential returns. He or she may decide to continue with it, change the structure of the enterprise to make it more profitable, or drop the idea.

Information Resources

American Mushroom Institute, One Massachusetts Avenue NW, Suite 800, Washington, DC 20001; (202) 842-4344. Available at: <WWW.AMERICANMUSHROOM.ORG>

Appalachian Mushroom Growers Association, Route 1, Box 30BYY, Haywood, VA 22722.

Hill, D.B. 2001. *Shiitake Production on Logs: Step by Step in Pictures.* University of Kentucky Cooperative Extension. Available at: <WWW.CA.UKY.EDU/AGC/PUBS/FOR/FOR77/FOR77.PDF>

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Missouri Alternatives Center [links to several publications on shiitake]. Available at: <HTTP://AGEBB.MISSOURI.EDU/MAC/LINKS/INDEX.HTM>

Royse, D. 2001. *Cultivation of Shiitake on Natural and Synthetic Logs.* The Pennsylvania State University, University Park, PA. Available at: <HTTP://PUBS.CAS.PSU.EDU/FREEPUBS/PDFS/UL203.PDF>

SHIITAKE MUSHROOM ENTERPRISE BUDGET

1,000-LOG OPERATION

INCOME	Year 1	Year 2	Year 3	Year 4
Number of Logs	1,000	1,000	1,000	800
Mushrooms Produced, Pounds	100	2,200	1,500	600
Sold (Fresh) 20% Cull Rate, Pounds	80	1,760	1,200	480
Price/Pound	$3.50	$3.50	$3.50	$3.50
TOTAL REVENUE	**$280.00**	**$6,160.00**	**$4,200.00**	**$1,680.00**

ESTABLISHMENT COSTS	Unit	Quantity	Price/ unit, $	Total cost, $
5-Inch x 48-Inch Green Oak Logs	log	1,000	0.75	750.00
Mushroom Spawn	gallon	25	16.00	400.00
Polyfoam Plugs	box	3	12.00	36.00
High-Speed Drill	drill	1	250.00	250.00
Drill Bits	bit	10	6.00	60.00
Water Tank	tank	1	100.00	100.00
Used Refrigerators	unit	2	100.00	200.00
Misc. (Sprinklers/hose)			100.00	100.00
Labor (Drill, plant, cut plugs, plug, rack)	hour	70	6.00	420.00
Labor (Inspect and water)	hour	15	6.00	90.00
TOTAL ESTABLISHMENT COSTS				**$2,406.00**

FIXED COSTS	Year 1	Year 2	Year 3	Year 4
Hauling ($0.26/mile) 200 miles year 1; 3,000 miles each years 2–4	52.00	780.00	780.00	780.00
Boxes ($0.50/3 pounds mushrooms)	13.00	293.00	200.00	80.00
Utilities ($0.07/kilowatt-hour)	25.00	200.00	200.00	200.00
Labor ($6/hour)				
Soak/rack yr 1: once x 1 min/log	100.00			
Soak/rack yrs 2–4: 4 times/yr x 1 min/log		400.00	400.00	320.00
Harvest (17.5 pounds/hour)	27.00	603.00	411.00	165.00
Hauling (wage x distance/40 mph)	30.00	450.00	450.00	450.00
TOTAL FIXED COSTS	**247.00**	**2,726.00**	**2,441.00**	**1,995.00**
Establishment Costs	2,406.00			
TOTAL COSTS	**2,653.00**	**2,726.00**	**2,441.00**	**1,995.00**
NET REVENUE OVER TOTAL COSTS	**–2,373.00**	**3,434.00**	**1,759.00**	**–315.00**

BREAK-EVEN PRICE AT THIS YIELD	2.79
Break-Even Yield at $3.50/Pound	2,805
Total Labor Costs	4,314.00
Total Labor Hours	719

Prepared by Dale Johnson, University of Maryland, and Andy Hankins, Virginia State University.

Appendix B: Sources of Information, Advice, and Counsel

Deciding from whom you will seek advice and counsel is important. An advisor who asks hard questions in learning about your business can provide valuable insight. Remember, you are seeking the new idea, niche, refinement, service, or production improvement that maintains and hopefully expands your income. It is easy to grow comfortable with an existing circle of advisors. New ideas might come from new or unexpected sources. Below is a list of potential advisors and other resources.

PAID CONSULTANTS: ACCOUNTANTS, ATTORNEYS, BANKERS, AND INSURANCE AGENTS

Seek advice and counsel from the consultants you hire, such as accountants, attorneys, or other business professionals who specialize in business consulting. Many will take time to talk to you. Be sure to ask about the fees they charge for services they provide. Also ask whether or how they bill for counseling time and whether phone conversations are included in the billing.

FREE CONSULTANTS: SUPPLIERS, CUSTOMERS, AND TRADE ASSOCIATIONS

Suppliers and salespeople see businesses from the unique perspective of inputs. They know what is happening in your market in terms of volume of inputs and changing input mix. They know what your competition is doing and have a vested interest in your continuing success. Some business managers have identified their suppliers as their most valuable source of information and assistance. But be careful: seek confirmation of their advice from a disinterested source.

Customers and potential customers are a prime information source. They can provide information and advice about your product or service. Asking is the key to accessing this source, and there are numerous techniques for obtaining answers, from surveys to focus groups. Always remember that customers ultimately vote when they do or do not make a purchase.

Trade associations provide information on starting businesses. Their information and assistance can be detailed for a specific business. Associations may charge money or require membership for their information. The Internet is a great source of free information about an endless number of topics. Just be sure to consider the source before you make decisions based on information from the Internet.

BUSINESS ASSISTANCE FROM THE PUBLIC SECTOR

Many government agencies and government-funded organizations provide business consulting and assistance. Many are free or subsidized. However, they may be concentrated in urban centers, and they tend to be understaffed because revenues to support their services are not directly tied to the customer base. Because these agencies and organizations may not market their services, the businessperson will need to be proactive in seeking them out.

Chambers of Commerce

Chambers of commerce vary drastically in the assistance they can provide. However, their membership meetings provide excellent

opportunities for interaction with other business owners. Chambers of commerce also furnish information on business issues and concerns. The staff of a chamber has contact with a wide variety of businesses and can offer unique insights.

Cooperative Extension Offices

These offices, which are an outreach of the land-grant university system, specialize in education. Located in most counties, extension offices offer personnel who are normally familiar with the business resources at the local level—especially with small and home-based businesses—and are staffed with an extension agent specializing in agriculture or natural resources. He or she can be an invaluable resource by recommending publications, leading workshops, and providing practical information.

Extension may also have information about other business specialties, either locally or through its statewide network. A contact for your state extension office can be found at <WWW.CSREES.USDA.GOV/QLINKS/PARTNERS/STATE_PARTNERS.HTML>.

City and County Government

Public officials have knowledge of many resources for business in their communities. Some cities and counties have business loan programs with agencies to manage them. Public officials also can help identify successful local businesses to visit. Some local governments have development departments that work with the business community. Each state has an Association of Counties that can be reached from the National Association of Counties Web page at <WWW.NACO.ORG>.

Libraries

The library is a prime access point for information. Interlibrary loan programs and Internet access make virtually any information available at the local level. Some libraries have research consultants who specialize in doing research for business.

Educational Institutions

Many high schools, vocational schools, and colleges offer business classes and seminars. Some have business libraries and provide individual consulting.

State Forestry Agencies

Each state has a forestry agency that can provide contacts for developing forest stewardship plans, marketing timber, enrolling in cost-share programs, and more. Further, they can provide a list of professional consulting and industrial foresters. To locate your state forestry agency on the Internet, go to <WWW.STATEFORESTERS.ORG>.

Regional, State, and Federal Sources

There are numerous regional, state, and federal sources of business assistance. Many state and federal agencies have business or small-business departments to provide assistance. Examples include the Departments of Energy and Commerce; the U.S. Department of Agriculture, including the Forest Service; the Occupational Safety and Health Administration; the U.S. Fish and Wildlife Service; the Environmental Protection Agency; the Internal Revenue Service; the Office of the Attorney General; regional development districts; and the Appalachian Regional Commission. Always ask whether a department has a business or business advocacy division.

BUSINESS RESOURCES

U.S. Small Business Administration (SBA)

The SBA has numerous programs and sources of information. It provides funds to several business-assistance programs and has small-business loan programs in cooperation with local banks. Access the SBA toll-free at (800) U-ASK-SBA or on the Internet at <WWW.SBA.GOV>.

Small-Business Development Centers (SBDCs)

More than 900 SBDCs throughout the United States provide free technical assistance to new and existing businesses. They have access to databases and market information. Locate them on the Internet at <WWW.SBA.GOV/SBDC> or by contacting your local chamber of commerce.

SCORE: Counselors to America's Small Business

SCORE volunteers are retired business people who provide counseling assistance to businesses. SCORE offers years of business experience. They provide articles, e-mail counseling, and other services. Locate the local SCORE chapter in your area on the Internet at <WWW.SCORE.ORG>.

Public Officials

Staff members of governors, legislators, and other elected officials have information about assistance available to business. Some public officials have staffs that specialize in business assistance. Public officials can point you to loan programs, regulations, licenses, and more at their level of government.

Web Sites

The Internet provides a great resource. Below are a few Web sites to get you going.

Government Web Sites

National Agricultural Statistics Service <WWW.USDA.GOV/NASS>

USDA Economic Research Service <WWW.ERS.USDA.GOV>

U.S. Small Business Administration (SBA) <WWW.SBA.GOV>

SBA Library <WWW.SBA.GOV/LIB/LIBRARY.HTML>

U.S. government on-line information, services, and resources <WWW.FIRSTGOV.GOV>

Rural Business Cooperative Service <WWW.RURDEV.USDA.GOV/RBS/INDEX.HTML>

U.S. Department of Commerce <WWW.COMMERCE.GOV>

U.S. Department of Commerce: Manufacturing Extension Partnership <WWW.MEP.NIST.GOV>

U.S. Census Bureau <WWW.CENSUS.GOV>

National Association of State Development Agencies <WWW.NASDA.COM>

Sites Offering Technical and Educational Assistance

EBiz101.com. Provides assistance for Web-based businesses. <WWW.EBIZ101.COM>

State cooperative extension contacts <WWW.CSREES.USDA.GOV/QLINKS/PARTNERS/STATE_PARTNERS.HTML>

SCORE: Counselors to America's Small Business <WWW.SCORE.ORG>

USDA Forest Service Cooperative Forestry Programs <WWW.FS.FED.US/SPF/COOP/>

National Association of State Foresters <WWW.STATEFORESTERS.ORG>

Informational Web Sites on Alternative Income Opportunities

National Agroforestry Center
<WWW.UNL.EDU/NAC/>

University of Missouri Center for Agroforestry
<HTTP://AGEBB.MISSOURI.EDU/UMCA/INDEX.HTM>

Nontimber Forest Products
<WWW.SFP.FORPROD.VT.EDU/>

Forest Landowner's Guide to Internet Resources
<HTTP://NA.FS.FED.US/PUBS/MISC/IR/INDEX.HTM>

Maryland Cooperative Extension Forestry and Wildlife Education <WWW.NATURALRESOURCES.UMD.EDU/INCOME_HOME.HTML>

National Sustainable Agriculture Information Service: Appropriate Technology Transfer for Rural Areas (ATTRA) <WWW.ATTRA.ORG>

USDA Small Farm Program
<WWW.CSREES.USDA.GOV/PROGVIEW.CFM?PRNUM=1363>

Small Farm Success Project
<WWW.SMALLFARMSUCCESS.INFO>

The Small Farm Resource <WWW.FARMINFO.ORG>

Missouri Alternatives Center
<HTTP://AGEBB.MISSOURI.EDU/MAC/>

Penn State Cooperative Extension Agriculture Alternatives
<HTTP://AGALTERNATIVES.AERS.PSU.EDU/>

The Ohio State University Extension: Small Farm New Farm Internet Resources
<HTTP://NEWFARM.OSU.EDU/INDEX.HTML>

Alternative Agricultural Enterprises
<HTTP://AGGIE-HORTICULTURE.TAMU.EDU/ALTERNATIVES/ALTERNATIVELINKS.HTML>

Books, Magazines, Newspapers, and Business Guides

American Tree Farm System's *Tree Farmer: The Practical Guide to Sustainable Forestry.*
<WWW.TREEFARMSYSTEM.ORG>

Encyclopedia of Associations. A list of trade associations. Available at: <LIBRARY.DIALOG.COM/BLUESHEETS/HTML/BL0114.HTML>

Entrepreneur. Provides ideas, guides, and solutions for new businesses. <WWW.ENTREPRENEUR.COM>

Income Opportunities in Special Forest Products: Self-Help Suggestions for Rural Entrepreneurs. Agriculture Information Bulletin AIB-666. 1993 publication by the USDA Forest Service and Midwest Research Institute. Sixteen chapters cover a range of products and provide lots of good information. Available at <WWW.FPL.FS.FED.US/DOCUMNTS/USDA/AGIB666/AIB666IN.PDF>

Independent Sawmill & Woodlot Management
<WWW.SAWMILLMAG.COM>

Natural Resources Income Opportunities for Private Lands. Proceedings from a conference held April 5-7, 1998, in Hagerstown, MD. This 275-page proceedings provides practical information in the areas of legal liability, business planning, consumptive and nonconsumptive recreation, forest farming and use-related opportunities, aquaculture, and growing and marketing ginseng and goldenseal. Available from the Natural Resource, Agriculture, and Engineering Service (see page 100 for more information).

Small Business Plan Guides
<WWW.SMBTN.COM/BUSINESSPLANGUIDES/>

Small Farm Today — The Original How-to Magazine of Alternative and Traditional Crops, Livestock, and Direct Marketing <WWW.SMALLFARMTODAY.COM>

Thomas Register. Provides sources of products and services. <WWW.THOMASREGISTER.COM>

The Wall Street Journal <WWW.WSJ.COM>

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Kays, J. S., and R.L. Tjaden. 2002. *Developing a Forest Stewardship Plan: The Key to Good Forest Management.* Fact Sheet 625. University of Maryland Cooperative Extension. College Park, MD.

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Shimp, E. 1998. "Sources of Help for Income Enterprises." In Proceedings of *Natural Resources Income Opportunities for Private Lands Conference,* University of Maryland Cooperative Extension, Hagerstown, MD, April 5-7, 1998. (See page 100 for ordering information.)

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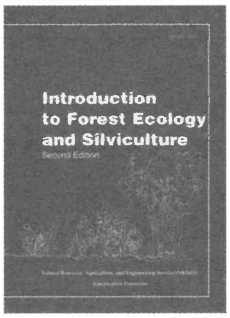
Other Books from NRAES

The books below can be ordered from NRAES (Natural Resource, Agriculture, and Engineering Service). Complete book descriptions are posted on the NRAES Web site. The Web page address for each book is given below its description. Before ordering, contact NRAES for current prices and shipping and handling charges, or for a free catalog.

NRAES
Cooperative Extension, PO Box 4557
Ithaca, New York 14852-4557

Phone: (607) 255-7654
Fax: (607) 254-8770
E-mail: NRAES@CORNELL.EDU
Web site: WWW.NRAES.ORG

NATURAL RESOURCES & FORESTRY



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2000 • ISBN 0-935817-55-7

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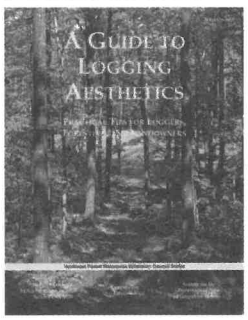
- **26 illustrations**
- **Northeast focus**
- **Glossary**



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Addresses timber harvest management to minimize the disruptive effects of cutting and removing trees. Topics discussed include concerns, solutions, truck roads, landings, skid trails, tree felling, and costs. Intended for loggers, foresters, and landowners.

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- **Glossary**
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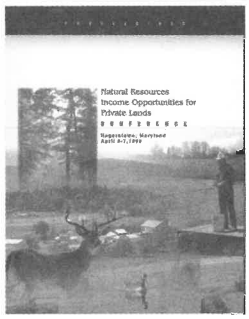


NATURAL RESOURCES INCOME OPPORTUNITIES FOR PRIVATE LANDS

NRAES-140 • 275 pages • 2000

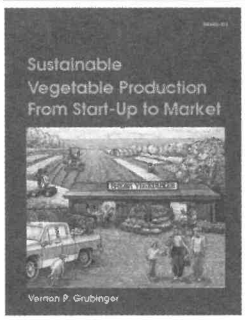
Discusses income opportunities, business planning, and legal and public policy issues. Intended for forest owners and farmers seeking to diversify income and educators seeking to develop educational programs. Proceedings of a 1998 conference.

WWW.NRAES.ORG/PUBLICATIONS/NRAES140.HTML

Features

- **38 papers**
- **Case studies**
- **Contact information**

COMMERCIAL HORTICULTURE



SUSTAINABLE VEGETABLE PRODUCTION FROM START-UP TO MARKET

NRAES-104 • 268 pages • 1999
ISBN 0-935817-45-X

Reviews all phases of moderate-scale vegetable production, including business management, marketing, crop rotation, cover crops, equipment, crop handling, pest management, and more. Intended for new and experienced growers, educators, and serious gardeners. Used as a college text.

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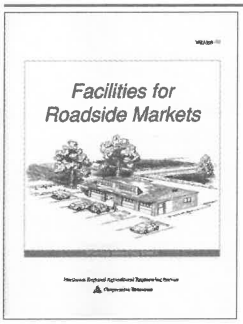
- **32 grower profiles**
- **91 illustrations**
- **Enterprise budgets**



FACILITIES FOR ROADSIDE MARKETS

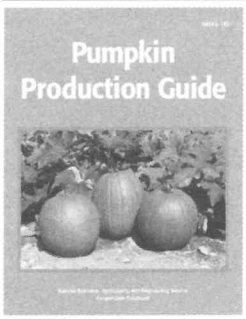
NRAES-52 • 32 pages • 1992

Discusses site evaluation (visibility, accessibility, utilities, drainage, and building ordinances); market layout (areas for sales, preparation, and shipping and receiving); structures; parking; lighting; and more. Useful to those who are looking to start, improve, or expand a roadside market.

WWW.NRAES.ORG/PUBLICATIONS/NRAES52.HTML

Features

- 26 illustrations
- Two sets of plans
- Sign guidelines



PUMPKIN PRODUCTION GUIDE

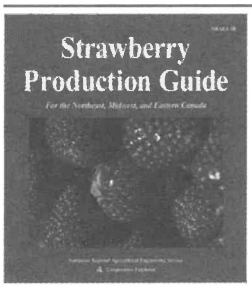
NRAES-123 • 152 pages • 2003
ISBN 0-935817-83-2

Provides in-depth coverage of all aspects of production, including site preparation, variety selection, cultural practices, fruit set and pollination, pest management, marketing, and more. Color photos help identify pests and diagnose diseases. For growers, their advisors, serious gardeners, and educators.

WWW.NRAES.ORG/PUBLICATIONS/NRAES123.HTML

Features

- 116 color photos
- 21 figures
- Key to diseases



STRAWBERRY PRODUCTION GUIDE FOR THE NORTHEAST, MIDWEST, AND EASTERN CANADA

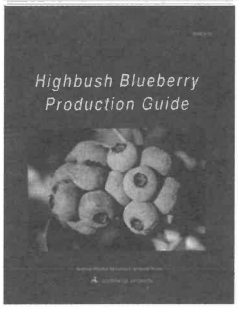
NRAES-88 • 162 pages • 1998
ISBN 0-935817-23-9

Includes in-depth coverage of all aspects of production, including site preparation, plant selection, water and nutrient management, pest management, marketing, and more. Color photos help identify pests and diagnose diseases. Intended for growers, their advisors, and educators.

WWW.NRAES.ORG/PUBLICATIONS/NRAES88.HTML

Features

- 115 color photos
- 37 figures
- 47 tables



HIGHBUSH BLUEBERRY PRODUCTION GUIDE

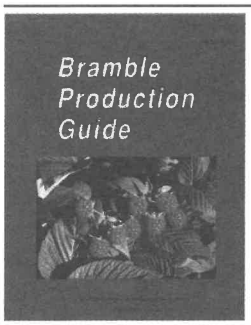
NRAES-55 • 200 pages • 1992

Includes in-depth coverage of all aspects of highbush blueberry production, including site preparation, plant selection, water and nutrient management, pest management, marketing, and more. Color photos help identify pests and diagnose diseases. Intended for growers, their advisors, and educators.

WWW.NRAES.ORG/PUBLICATIONS/NRAES55.HTML

Features

- 168 color photos
- 24 figures
- 27 tables



BRAMBLE PRODUCTION GUIDE

NRAES-35 • 189 pages • 1989
ISBN 0-935817-21-2

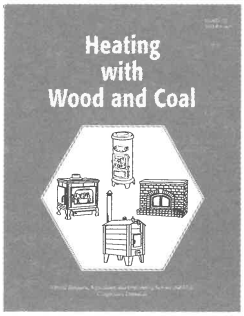
Includes in-depth coverage of all aspects of raspberry and blackberry production, including site preparation, plant selection, water and nutrient management, pest management, marketing, and more. Color photos help identify pests and diagnose diseases. Intended for growers, their advisors, and educators.

WWW.NRAES.ORG/PUBLICATIONS/NRAES35.HTML

Features

- 116 color photos
- 35 figures
- Glossary

OTHER TOPICS OF INTEREST



HEATING WITH WOOD AND COAL

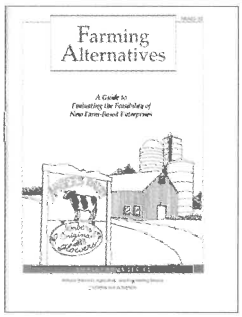
NRAES-23 • 69 pages • 2003 Revision
ISBN 0-935817-91-3

Highly practical book provides current information about technological advances and installation code changes. Includes sections on evaluating solid-fuel options, fireplaces, stoves, furnaces and boilers, installation, chimneys, wood as a fuel, and coal as a fuel. Also features an appendix about cutting firewood with a chainsaw.

WWW.NRAES.ORG/PUBLICATIONS/NRAES23.HTML

Features

- 45 figures
- 11 tables
- Stove installation checklist



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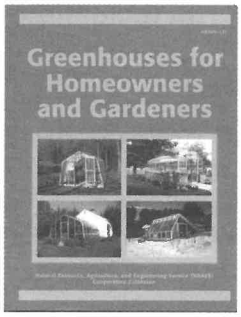

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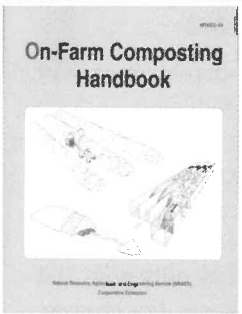

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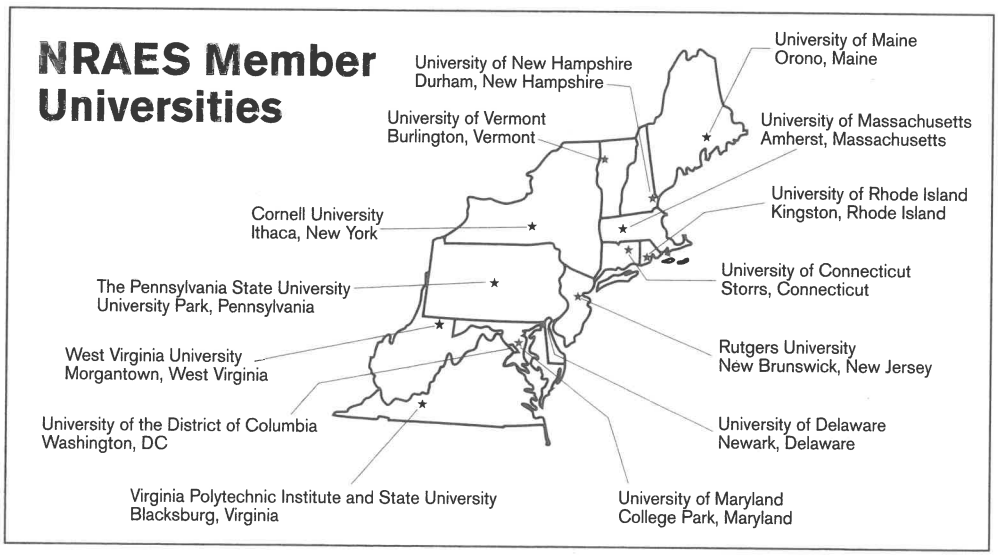

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