

**USDA Rural Development
Rural Business Enterprise Grant**

**Goods from Your Woods:
A Feasibility Study of Understory Crops in Western Massachusetts**

Landowner Overview

**Conducted by the
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Project Description:

There's nothing new about cultivating forest plants for food, medicine, household objects and decoration. What is only a few generations old is our society's rapid industrialization and light-speed technology that has distanced so many of us from the land and its lore. Thus, forest products other than logs seem like a new idea for many folks. This study was conducted to rediscover some old traditions and identify new understory crop possibilities that will enable forest landowners in western Massachusetts to diversify their economic activities.

Another goal was to identify value-added markets for locally produced understory forest products that will enable landowners and others in western Massachusetts to expand their sales and marketing of these products in the future. Marketing and evaluation information gathered from researchers, educators and current producers provide an overall perspective on the distribution channels and potential markets for understory crops that can be grown in western Massachusetts.

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Section 1: Introduction

It has been said that understory crops can allow a landowner to harvest as much from their woods each year as they do at the end of 80 years of timber management. An understory crop is a product with commercial value made from a plant that grows in one of the layers of the forest beneath the shaded canopy. There is a long history of harvesting food, medicines and decorative products from the New England woodlands, practiced first by Native American inhabitants and later by European settlers. Many of these traditions have been forgotten over time, but once the forests gave sustenance to human life as do the fields and pastures. Today, forest owners are rediscovering old ways to “farm the forests”, as well as exploring new ventures. With modern understanding of the plant and animal communities that forests support, and a long-term vision for both the economic and environmental future of western Massachusetts, people are looking to find opportunities for income and fulfillment in their woodlands.

Maple syrup is an example of a highly successful understory crop in western Massachusetts. Part of a long history of utilization, settlers in the late 18th century tapped trees, as Native Americans did here long before European settlement. Each year, 350 maple producers tap thousands of trees. This \$2 million dollar industry in western Massachusetts is complemented by a thriving \$1 million tourist economy. Each year more than 60,000 visitors spend approximately \$1 million in Massachusetts during trips to the area for maple products including syrup, candy, and creams and visits to sugar houses.

Understory crops are a way for families with woodlands to gain additional revenue and deepen their involvement with the land. Also known as specialty forest crops or non-timber forest products (NTFP), examples of understory crops are maple syrup, wild or cultivated mushrooms, nuts, fruits, and herbs for tea or with medicinal virtues. Understory crop production may fit nicely with a landowner’s current gardening or farming operations. An understory crop enterprise can be small scale or large depending on the energy, time and resources that a family or individual has to put into the project. However, an important part of choosing to undertake such an enterprise is determining if it is economically feasible.

Feasibility of an Enterprise

If the idea of farming the woods appeals to you, how can you tell if it is the right choice? Begin by weighing out cost and risks as they compare with potential benefits and opportunities. Before beginning an understory crop business, assess your resources. Do you have access to suitable land, equipment, labor and capital? Are your experience, enthusiasm and knowledge adequate to the tasks involved? This report includes information and references to resources for the potential producer to assess the feasibility of an understory crop business.

About the Report

The second section, Understory Crop Profiles, gives an overview of technical and financial information about four specific products: cultivated edible mushrooms, the medicinal plants ginseng and goldenseal, native shade plants for landscaping and evergreen boughs for holiday decorations. Current and potential producers are described, and at the end of each section a SWOT analysis is presented: potential strengths, weaknesses, opportunities and threats facing producers. The third section of this report, Choosing an Understory Crop Enterprise, offers tools for the potential understory crop producer to determine if it makes sense for them to begin a venture, and if so what understory crop is right for them. This section presents information on business planning, site assessment and marketing. The fourth section, Opportunities and Resources, discusses special opportunities and related programs that may assist producers of understory crops in our region.

Farmers, landowners and small business owners from the Connecticut River valley and Berkshire county regions were interviewed about their experiences with cultivating, processing and selling these crops. Others discussed their visions for beginning a new enterprise, and began the process of looking at the resources at their disposal: land and growing sites, buildings, equipment, people power and family interest. The experience and interest of the people interviewed for this project are responsible for many of the insights shared here.

Choice of Understory Crops for the Study

There are many possible understory crops that may be produced in western Massachusetts. Four criteria were used to choose which to study in depth for this report:

- 1) viability of cultivation in Massachusetts
- 2) strength or development of markets
- 3) scalability of operation
- 4) interest by participants

Four understory crops were chosen: cultivated edible mushrooms, medicinal plants such as ginseng and goldenseal, native shade plants for landscaping and evergreen boughs for holiday decorations.

- Edible mushrooms such as shiitake and oyster mushrooms are experiencing growing demand and interest among consumers, and may be developed at a small or large scale.
- Ginseng and goldenseal are well suited to being grown in rich, hilly forests of western Massachusetts and ginseng especially has a very high market value due to strong east Asian consumption.
- Native shade plants are growing in popularity for landscaping and restoration projects as popular understanding about exotic invasives and desire for local plants increases.

- Evergreen boughs from white pine are plentiful in Massachusetts forests, and the sale of wreaths and other holiday decorations can be developed on small or large scales for a given operation.

Section 2: Understory Crop Profiles

Cultivated Edible Mushrooms

Edible mushrooms are delicacies which enjoy growing popularity worldwide. Preparation of logs for mushroom growing is time and labor intensive at the start, but afterwards requires relatively low maintenance. For the small woodland owner, cultivating edible mushrooms is an activity very compatible with forest management that offers additional profitable income on an annual basis with relatively little overhead. Interest in edible mushrooms is growing, and consumption increasing, though supply is as well which has made prices stable or falling. However, there is a strong market for local produce in western Massachusetts supported by networks of Consumer Supported Agriculture farms and farmers markets as well as the Local Hero campaign by CISA. For those interested in producing mushrooms there are ready made marketing outlets present. Mushrooms can be produced on wood normally split for firewood which raises the profitability of the log by several hundred percent. A cord of split firewood that could be sold for \$150 per cord may produce shiitakes worth \$500 or more.

Current Producers

Casey Steinberg and Missy Bahret of Old Friends Farm in Amherst have added mushroom cultivation to their farming business. Primarily producing salad greens for sale to restaurants and grocery stores along with cut flowers for events and weddings, the mushrooms have added a cachet to their business that makes them known among CSAs and other marketers of local, fresh produce. The mushrooms are a modest sideline to their business. With 200 stacked logs it takes up a small amount of room in the land they lease. With no forest land of their own, they acquired their logs from a friend's thinning of their woods. They use mostly dense hardwood logs such as oak, but are experimenting with lighter wood and have found that paper birch, for example, produces mushrooms well and quickly but for a shorter period of time. The mycelia "run" quickly through the wood, but then run their course more quickly. Flushing six logs a week, each of which produces about one pound of mushrooms, they sell all they produce in a season.

Types of Edible Mushrooms:

- Shiitake (*Lentinula edodes*)
- Tree oyster mushroom (*Pleurotus ostreatus*)
- Black Morel (*Morchella elata*)
- Yellow Morel (*Morchella esculenta*)
- White button, Portabella and Crimini (*Agaricus bisporus*)
- Chanterelle (*Canterellus cibarius*)
- Maitake (*Grifola frondosa*)
- Lion's Mane (*Hericiium erinaceous*)
- Porcini (*Boletus edulis*)
- Hedgehog (*Hydnum umbilicatum*)
- Yellowfoot Chanterelle
- Enoki (*flammulina velutipes*)

Shiitake and oyster mushrooms have advantages for the beginning mushroom farmer (Beetz and Kustodia, 2004). There is much information available about their cultivation, and they are among the easiest to cultivate. Markets for shiitake mushrooms are well-developed and the mushroom enjoys a reputation for good taste and desirability. Oyster mushrooms have the drawback of causing allergies in some growers: the spore can be a source of irritation. However, wearing a mask while harvesting can reduce this problem and the fact that this mushroom is native to our forests may be a strong selling point.

Cultivation

Mediums: Edible mushrooms may be cultivated on a variety of materials called the medium or substrate. Woodchips, sawdust and straw are commonly used. Small diameter logs are drilled with holes and impregnated with mushroom spawn. Synthetic logs made of wood chips or other organic matter mixed with grain, are increasingly being used in large-scale industrial production. (Royse, 2001)

Inoculant: The medium is inoculated with mushroom spawn which comes in two main forms: mixed with sawdust, or impregnated into small pegs or plugs of wood.

Preparation of the logs: Logs for mushroom cultivation must be cut when the trees are dormant but the sap is flowing. During fall after the leaves have fallen or in late winter before the buds have broken are suitable times. Inoculate as soon as possible after the logs are cut. If it is necessary to store them, keep in a shady, moist spot to keep them from drying out. Logs cannot be drier than 29% in order to grow mushrooms, anything drier should go in the firewood pile. Choose healthy, live trees to cut, and do not allow them to touch the ground until inoculated, in order to avoid contamination by wild spores.

Logs should be cut to a size that will make them manageable to move. Use logs that are three to eight inches in diameter, with 4-6 being the optimal range. Logs smaller than 3 inches dry out quickly, and those larger than 6 inches require more spawn due to their larger volume.

Inoculate the logs by drilling holes and filling them with spawn. Using a power drill, make holes perpendicular to the surface in straight lines along the length of the log. Stagger the lines to make a diamond pattern with the holes. A rule of thumb is to make a number of lines of holes equal to the inches of the logs diameter. (Hill, 1999) The depth of the hole will be approximately 1 inch or as appropriate for the species of mushroom.

Insert the spawn plug into the hole, or fill it with sawdust using an injector available from spawn suppliers for this purpose. Plugs need to be hammered into the hole until flush with the surface. After the spawn is inserted, seal the hole with wax to retain moisture for the spawn and to keep loose spawn from falling out. Use food grade or cheese wax. In one day, 2 people can reasonably expect to drill and inoculate 80 logs.

Stack logs in alternating layers that are lined up perpendicularly with one another for the incubation period lasting 6 to 18 weeks, called the "spawn run". The logs should be heavily shaded and moist. The mushrooms will die if the logs dry out. The spawn run is complete when mycelia may be seen at the ends of the log.

Harvesting and Processing

Flush logs to encourage fruiting by soaking them in water over night. Check daily for mature mushrooms to harvest during fruiting period. Mushrooms may be dried or sold fresh. Fresh mushrooms should be refrigerated or sold immediately. Packaging should allow a flow of air, such as through paper or cardboard, or perforated plastic. Mushrooms may be dried to increase storage time.

Marketing

Production of mushrooms has increased by from 350,000 tons in 1965 to 7.5 million tons in 2000. (Royse, 2001) Demand in the United States has quadrupled since 1966, with per capita consumption increasing from 1 lb per person at that time to 4 pounds in 2002. (Vegetable and Melon Outlook, 2002)

There are many venues available: Niche markets include gourmet stores and health food stores. The health benefits of mushrooms are being researched and may create new niche markets for this product. (Stamets research) Direct markets include farm stands, farmer's markets and mail order via catalog or the internet. Indirect markets include grocery stores, CSAs and farm stands. Wholesale markets are restaurants and mass market brokers. Wholesale offers the lowest price per unit, while direct sales involves the greatest amount of effort and overhead.

CSAs offer an excellent opportunity for producers in this area since they are strong markets which are already well-established and have a customer base, and these farmers welcome diversifying their product base to offer more to their share holders.

Potential Producers

Rick and Nancy Intres of Bear Meadow Apiary in Ashfield are thinking about several other enterprises they could add to their new farm in the forested hills. They are currently selling raw and processed honey, beeswax, candles and other products like ointments and lip gloss. The old remains of a Christmas tree plantation border one meadow, perhaps the remaining trees could be sold for brush or turned into holiday decorations. A few acres of sugar maple will become a sugar bush with the syrup and honey to be stored in their new barn, built with wood from their own land. Shiitake, oyster or maitake mushrooms could be a nice side crop. Their woods yield plentiful small diameter logs and offer shaded areas close to their house. They could sell the mushrooms at Ashfield and Catamount farmers market, or sell them through Green Field's Cooperative Market in Greenfield or Commonwealth CSA.

SWOT Analysis

Strengths: Having several acres of forested land with vigorous growth of small diameter hardwoods is an ideal start for the cultivation of mushrooms. The Intres with 45 acres of woods have plenty of material to work with. Oak stems of 8 inches or less are highly sought after. Having a source of logs, either on your own land, or from clearing being

done nearby is a resource that will give you a strong basis for beginning this project. Owning your own land with such trees will allow you to be able to have access to the logs over the long term, creating conditions that will let you be able to maintain a steady supply of the logs. People like the Intres family who are involved in the management of their own land might be good candidates for this endeavour. If you are cutting firewood for your own use, it would be an easy thing to set aside so many stems for the production of mushrooms.

Forming a partnership with someone who owns such land, as Casey and Missy of Old Friends farm did is an excellent option as well as leasing their land from other farmers. Logs can produce for up to 5 or so years, but peak production occurs at 2-3 years. Having new logs to replace them is key. Many of these hardwood species can be managed by coppicing them—cutting them down to the ground and allowing them to grow up again. The stump sprouts grow with many stems encircling where the original stem stood, increasing the number of the trees available for harvest. This is excellent for firewood production as well as for making small diameter trees for mushrooms.

Weaknesses: Not having a ready supply of water at hand can be a deterrent from being able to produce mushrooms. Depending on the mode of management, logs may need to be submerged overnight in order to flush them, producing strong growth. Growing the mushrooms near to a home allows you to use the water from hoses. Barrels can be used to collect rain water. Water from a pond can be utilized if the site is remote from buildings and utilities. When deciding where the logs will be stacked keep in mind access to water.

Artificial shade can be constructed easily: at Old Friends' farm they lay black landscaping material across the south side of a pole structure built around the logs. The fabric is taken down during the winter to keep it from being crushed by the weight of snow, but provides adequate shade to keep the mushrooms from drying out during the heat of summer.

Opportunities: In western Massachusetts there is a vibrant market of direct sales to customers through CSAs, farm markets, farm and roadside stands. CSAs have been a very successful way for Old Friends' Farm to sell their mushrooms. The local hero campaign has successfully brought local produce to visibility within the area, and people actively seek out sources of local food. As yet, there are relatively few local producers of mushrooms. Farmers running CSAs value increasing the diversity of products available to their members for shares, and those who had sold mushrooms reported that they were well received by shareholders. Existing markets give strong potential outlets for producers of cultivated exotic edible mushrooms.

Threats: Mushrooms as a product tend to depress the price as more are available in a given market. As more producers begin to grow mushrooms for commercial sale, this enterprise of Old Friends' Farm will become less unique. Also, a variety of mushrooms are available in alternative food stores such as Green Fields Market and Whole Foods. However, these stores represent a potential outlet for locally produced mushrooms. Fresh, organically or naturally grown log-cultivated mushrooms command a higher price in many markets (NY, Cornell class), however, as more of these are sold the competition may make it less feasible for small producers to compete. Value added products and

selling the mushrooms on the strength of the story or background of the producers may be necessary to make the product stand out to local consumers. Whole sale and international markets may need to be explored as alternative markets if success is found for producers. Increased quantities can be produced using chips or synthetic substrate. Producers may need to increase their quantity in order to remain competitive.

Resources:

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Medicinal Plants

The New England countryside was a pharmoecopia to Native American peoples who lived here before European settlement. Many of these herbs and plants have been incorporated into modern medical remedies. Medicinal plants are generally sold in dried or powdered form. Some have international markets and in one case, ginseng, are worth hundreds of dollars per pound. Others have a domestic market and may be sold for \$40 or \$50 a pound. The parts of medicinal plants that are used include all parts of the plant, depending on which parts have the active chemicals in a given plant. In ginseng and goldenseal, the roots hold the medicinal value.

Current Producers

Suzanne Webber and Alan Miller of Montague run the small but nicely diversified Brook Bend Farm. They raise sheep and goats, sell vegetables and cut flowers, and produce honey from their own apiaries. Al and Suzanne come to farming as a second career, and are partnering with others to help quicken their progress along the learning curve. Their garden will be managed by an experienced gardener to oversee the crop, and they are establishing medicinal plants with the help from Chris Marano of Clearpath Herbals. Chris has a medicinal plant business in which he conducts workshops, nature walks and trains students interested in learning about Chinese, Native American and Holistic use of medicinal plants. At Brook Bend Farm, apprentices of Clearpath Herbals will create new beds of medicinal plants in the meadows and among the trees of the farm. The students will maintain records of what is planted, when and how it grows, allowing themselves and others to learn from the experiences of those who work on the project at this time. Suzanne and Al benefit from development of their land in new areas and with plants they have no experience with, while the students benefit from gaining first hand experience growing, gathering and processing the plants they have been learning about. Suzanne and Al plan to have their farm function as a destination for school children and others who wish to learn about farming and agriculture. The medicinal plant beds add another layer to the educational aspect.

Cultivation

The medicinal plants that you may grow in your forest are generally small herbaceous plants that are adapted to growing in the deep shade of the forest understory, or in dappled shade at the forest edge. Many of these plants are rare or endangered. Goldenseal and Ginseng, once plentiful in North American woods are both listed on state and federal lists of threatened species. Cultivating ginseng or goldenseal in a working woodland can be a way to restore these plants to the natural landscape as well as gain income from the commercial value of these or other plants.

American ginseng is difficult to cultivate, and takes a long time to mature. However, a high value of ginseng can be grown on a small amount of land. On just ½ acre, over \$30,000 worth of ginseng can be grown in six years. A half acre can produce up to 200 pounds of dried ginseng roots in six to ten years. The grower in New York state raised 80,000-100,000 plants on 4-5 acres of land. (Chenango County Extension Course, 2007)

Before undertaking cultivation the steps of site identification and cost-benefit analysis are critical. The process is labor intensive, long-term and entails risks. However, if done successfully, the profits in producing ginseng can be great. Ginseng grows best in humus-rich soil that is moist but well-drained with a loose texture. It needs 70% shade and thrives in strongly to moderately acidic soils with pH from 4.5 to 6. Certain other plant species are indicators of sites best suited to growing ginseng. These plants also grow in rich, mesic forest sites. They include: spikenard, rattlesnake fern, maidenhair fern, (true) solomon's seal, trilliums, blue cohosh, herb Robert, wild ginger, and jack-in-the-pulpit.

Field grown ginseng

There are three forms of cultivation for ginseng available to the prospective grower: field cultivation, woods cultivation and wild simulated. Field grown ginseng grows rapidly, but lacks the characteristics which give forest cultivated and wild simulated a much higher value. Very large scale production is required for sufficient profit.

Woods cultivated ginseng

A three year process is recommended for preparing woods for the cultivated growth of Ginseng. In the first year, the area to be planted is weeded and cleared of brush in the understory. Small trees may be felled to open space for planting of rows beneath the forest canopy. In the second year, the soil is loosened for planting. Planting and cultivation begin in the third year. Stratified seeds are planted in August.

After growing for a year in these rows, they small plants are transplanted they are transplanted into small beds of 4 feet by 10 feet. After two years of growth they may be sold as 2 year seedlings to other growers. Two to three year rootlets are generally valued at \$1 a piece. Five to six year rootlets cost or may be sold at \$5 a stem, or planted in raised bed rows spaced 18 inches apart to grow until mature at six to nine years.

Wild simulated ginseng

Beds of wild ginseng are intended to emulate the conditions under which ginseng grows naturally. The plants are scattered widely, and little effort is made to improve the texture or composition of the soil where the plants grow. Little maintenance is done over the course of the plants lives. Mortality is expected, and long-term growth is the goal. The plants grow slowly, establishing the tight growth rings and darker appearance that is the mark of high-quality ginseng roots.

Goldenseal can be cultivated in areas similar to those beneficial for American ginseng. It does best in rich, loamy soil which has good amounts of moisture, but which is well-drained. Goldenseal does not do well in wet, poorly drained areas. It prefers more neutral conditions than ginseng, however. Indicator plants of conditions positive for goldenseal are trillium, bloodroot, mayapple, and black cohosh. The shallow roots of conifers may compete with goldenseal to its detriment, making hardwoods more compatible with their deeper roots.

Propagation

Goldenseal may be propagated from the rhizome, seedling or seed. Rhizome is the most reliable method. Cuttings from the rhizome of ½ inch or more may be planted in narrow trenches two to three inches deep (Davis, 1999). Cuttings with buds grow best.

Beds

Beds for goldenseal may be prepared in the forest understory. Rake away leaf litter, remove root, debris and weeds. Till the soil six inches down, with care to avoid negative impact on surrounding trees. Do not compact the soil, this may damage surrounding trees. Raised beds may be constructed to increase drainage and to increase the temperature during the early spring. Beds two to six inches high, three to four feet across are recommended, leaving space in between for access. (Davis, 2000) Mulching is recommended to help the soil retain moisture and minimize weed competition, as well as to protect the plants from extreme cold in winter.

Harvesting and Processing

Harvesting ginseng roots or seeds is done by hand under all forms of cultivation. For simulated wild-grown this is especially important since completeness and quality of the root affect the high prices available for the roots, but in all cases the process is not easily mechanized. To gather roots, the dirt six inches around the plant is loosened by hand or with a small spade, and until the root may be pulled gently from the ground. The dirt is shaken from the roots. Young plants may be transplanted or removed for sale as bare roots or in containers for use by other cultivators. Harvest at desired maturity in the fall, after seeds have formed.

The rhizome of goldenseal is harvestable in three to seven years from planting depending on the method of propagation. From seed, the plant will harvestable in five to seven years; from rhizome, three to five. (Davis, 2000) Seeds can be saved for cultivation of the following crop.

Ginseng and goldenseal are washed and dried for sale. The process for each is similar. Wash the roots with care to keep the roots intact. Damaging the skin or breaking off lobes of the root reduce the value. Do not scrub. Wash gently with a soft brush, removing the loose dirt but leaving residue in folds or wrinkles on the roots. Small amounts may be sprayed with a hose. (Carroll and Apsley, 2004—Ohio)

Goldenseal and Ginseng reduce by 70% or to one third of their original weight when dried. (Davis, 2000; Beyfuss, 1999) It takes 100 to 300 fresh ginseng roots to produce 1 lb of dried root. (Chenango County Extension, 2007) Steady temperatures, even humidity and free flow of air around plants while drying are important to allow the roots to dry evenly. A room with good ventilation and temperatures between 70 and 100 degrees Fahrenheit may be utilized, in which it may take up to six weeks for larger roots to dry thoroughly (Persons, 1999)

Marketing

Markets for American ginseng go back 300 years in the United States. China, in which the growing and harvesting of Asian ginseng go back over 4,000 years, has been

importing American ginseng since the American Revolution. (Persons, 1998) As of 1998, 85% of the high value ginseng consumed was sold to persons of Chinese ethnic descent living in Japan, Taiwan, Malaysia, Indonesia, the Phillipines and other countries of the Pacific Rim. (Persons, 1998) Both cultivated and wild ginseng have been sold to China since that time, but the market for field cultivated ginseng has diminished greatly in the last 10 years. Now Chinese growers, as well as those in New Zealand, Australia, Ecuador and Chile are major suppliers. (Adams, 2004)

Ginseng is sorted into over 40 different grades, with which few growers are likely to be familiar. The highest value American ginseng is extremely long-grown wild roots. These can be sold for prices above \$600 (Beyfuss, 1999) These gnarled looking long-grown roots (up to 20 years old), with dark rings and wild appearance. Complete “hands” as these roots are called are highly prized. However, collection pressures have made it near extinct in most of the United States, and in most states it is unlawful to wild craft the roots. Wild simulated roots offer a sustainable way to supply these markets with high quality roots. They may bring \$200 to \$300 per pound.(Beyfuss, 1999; Persons, 1998)

These roots are sold to buyers who have connections to markets in China or southeast Asia. Buyers advertise in local papers where ginseng is grown. Once having established a relationship with a grower, they often visit annually in the fall when roots are harvested to look over the product first hand.

There is also an opportunity for cultivators interested in providing small plants and seeds to local growers interested in growing ginseng. The closest suppliers are in New York state and Pennsylvania. Cultivating a strain of ginseng suited to being grown in the Massachusetts countryside may be useful to growers and a way to fill a marketing niche.

The hillsides of western Massachusetts are well-suited to growing this plant, but have yet to find those interested in the enterprise due to the lack of historical involvement in the industry in this area. That is an advantage that this area has since it means there is not a well-establish group of people who hunt the woods looking for ginseng. The protection of wild plants can extend to cultivated patches grown by landowners.

A tagging process developed in North Carolina has been used to deter poaching of ginseng in the Great Smokies National Park. Wild populations were seen to triple in these areas. (Toops, 2005)

Goldenseal and field cultivated American ginseng roots have similar markets. They may be marketed directly or indirectly to consumers through herbal or health food stores, as well as through the internet. A steady supply and high quality roots would be needed, as well as adequate packaging for sale or delivery. Wholesale markets include brokers or large scale operations.

Selling the live plant opens up new markets. Landscapers may be interested in ginseng and goldenseal as attractive additions to native shade gardens (see Native Shade Plants for Landscaping section of this report). Other cultivators or farmers may be interested in one, two or three year plants to speed their own production. Health and vigor of the

plants would be especial concerns. Plants could be sold directly at farmstands, farm markets, directly to landscapers, or indirectly at garden centers.

New Producers

Ross and Alicia Hackerson are working towards living a sustainable lifestyle by working with the land. Recently moving to land they purchased in Huntington, they have moved their bees and have started raising poultry with dozens of layers and fryers in their basement waiting to move into a chicken tractor Ross is building. Beginning at the start with their land, they are working with forester Jeff Jourdain who is helping them set priorities for harvesting and advising them on clearing they are doing to create pasture for future livestock. Alicia and Ross have studied permaculture and are looking for ways to increase the bearing capacity of their land in sustainable ways. Looking to the forest understory, they would like to introduce medicinal plants, such as goldenseal, blue cohosh and perhaps ginseng for a long term crop. Getting a forest management plan and identifying areas with rich soils is their first step. Looking through the forest underbrush, they find trilliums and jewelweed. Perhaps this is a good place?

SWOT Analysis

Strengths: A strong start for cultivating medicinal plants for commercial sale is to have land that is ideally suited to their cultivation. At Brook Bend Farm, apprentice herbalists identify sites good for plants, beginning the process of experimenting to find the areas best suited to growth of each. Ross and Alicia Hackerson's forester can address soils and identify potential indicator plants in their management plan. Ginseng has fairly particular site requirements. (See Beyfuss "Visual Assessment and Grading Criteria for a Potential Woodland Ginseng Growing Operation in a Northern Forest") Forest with rich, mesic soil on a northeastern gradient with wild ginseng or other indicator species is a strong candidate for this growing wild simulated ginseng. Hardwood forests, especially those with a large sugar maple component, have good potential for woods cultivated ginseng, or goldenseal. For those lacking an ideal site suited to wild simulated growth of ginseng, woods cultivated offers an alternative.

Weaknesses: Cultivation and propagation of medical plants in forest understory can be labor intensive. Woods cultivation can require careful and widespread preparation of the forest floor, along with planting and transplanting of small plants. Seasonal or occasional labor pool is needed. Chris Marano's herbalist apprentices offer labor to dig beds at Brooks Bend Farm helping Suzanne and Alan to be able to accomplish much more than they would be able to alone. Wild simulated growth of ginseng requires the least labor, with little preparation of the soil done to simulate the conditions of wild ginseng, and no maintenance done to ensure the growth of high quality distresses roots over many, many years.

Opportunities: The strong demand for wild or wild-simulated ginseng creates an ongoing opportunity for growers in western Massachusetts to provide this product for profit. The natural landscape in New England is well suited to growing this plant. This is also an opportunity to return a plant to the natural landscape which is of special concern and

whose status in the wild is uncertain. Herbalists like Chris Marano are especially aware of the loss of these wild plants.

Threats: Theft is the primary threat for those wishing to grow and harvest ginseng. A whole crop which has taken years to grow can be wiped out overnight by an intrepid thief. Most growers maintain a low profile about the fact that they are growing ginseng and of the exact location of their beds. Maintaining a bed close to habited areas is a good disincentive for thieves, as well as addressing the issue through legal repercussions and enforcement. An association, or membership with agricultural groups may be a good venue to pursue protections for ginseng growers in this region.

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Native Shade Plants for Landscaping

A ten billion dollar industry as of 1998, plant nursery businesses accounted for 10% of the agricultural business in the United States. (Barton, 2002) A growing industry that supports nurseries, lawn and garden centers and independent landscape designers, the landscape nursery industry grew an average of 4% to 5% from 1990 to 2000. (Barton, 2002) A growing trend in this industry is demand for native shade plants. There are many native plants that are useful for decorative purposes, which grow naturally in western Massachusetts woodlands. These plants are suited to the climate in this region and often provide habitat and forage for native wildlife. For the landowner interested in an agricultural endeavor, starting a nursery of native shade plants for use by other landowners, gardeners and landscape designers may be an attractive and profitable venture.

Current Producers

Project Native of Housatonic, MA, is a not-for-profit nursery dedicated to cultivating and promoting the use of native plants in landscaping. Begun in 2000 by Raina Weber, it was originally part of a youth outreach program called the Railroad Street Youth Project. Starting out on a half acre with just 25 species of perennials, Project Native has been supported by the Berkshire Natural Resources Council and the Nature Conservancy, the nursery now includes more than 150 varieties of plants. They continue their educational mission by presenting workshops at local schools and by beginning in an urban community garden for children in nearby Pittsfield. The nursery business is operated by a small staff of 3-4, with interns and part time workers joining them in the summer. A small crew implements restoration and landscaping projects, such as an installation for MassMoca. The small store front sells container plants and stratified seeds, along with local hand-crafted items to homeowners, gardeners and landscape contractors. Project Native is currently extending their seed bank gardens to include a several acre patch of native shade plants. Having thinned the hardwood trees of the forest, beds will be created beneath the open canopy. Seed from these plants will join the Berkshire native seed bank maintained by Project Native, used to ensure that genetically native stock will be used to restore wetlands and re-seed forests and meadows.

Types and Characteristics of Native Shade Plants

Many forest plants have special characteristics that make them desirable for landscaping. Shade loving shrubs and small trees like wild raisin (*Viburnum lentago*) and shadbush (*Amelanchier canadensis*) produce edible berries. Joe-pye weed (*Eupatorium purpureum*) and foam flower (*Tiarella cordifolia*) are examples of wetland plants, used for plantings in landscape areas with wet soils. Wild bleeding-heart (*Dicentra eximia*) and wild ginger (*Asarum canadense*) make excellent ground covers under very different soil conditions, while spicebush (*Lindera benzoin*) and cardinal flower (*Lobelia cardinalis*) are striking decorative plants which also attract butterflies.

Steps for Native Shade Plant Cultivation:

- 1) Site Assessment: vegetation inventory, soils, climates, shade levels, water and drainage
- 2) Create map with zones of use and identify areas of cultivation
- 3) Choose plants based on site conditions, market choices and niche marketing
- 4) Learn about cultivation through experience and research
- 5) Choose cultivation type: container or bed
- 6) Remove unwanted vegetation: invasives and competing brush
- 7) Prepare soil: create beds, amend soil, mulch
- 8) Plant and maintain beds
- 9) Harvest
- 10) Process and sale of plants
- 11) Ongoing information gathering, research and sharing
- 12) Adapt choices each year based on experience, changing markets and new information gathered.

As with medicinal plants, conducting a thorough site assessment will help you identify the resources available to you for growing native shade plants. Vegetation present, soils and climate will tell you what types of plants may be suited to cultivation on your land. If container cultivation is desired, proximity to water, sheds or greenhouses for processing and winter storage as well are all important variables. Once information has been gathered via the site assessment, a map showing zones of use can be created. Zones of use reflect ease of access, proximity to habitation and site conditions and resources.

Plants to be cultivated may be chosen using these and other criteria: viability in given sites, market factors, and niche marketing. Given the light, soils, moisture and vegetation in your growing sites, draw up lists for each area of plants that are suited to cultivation in these conditions. Research competitive nature of the different plants in your market place. See Technical Report in Depth for list of popular selling plants. Consult local producers to determine if there are current favorites. Information from state agencies may provide information about plants recommended for wetland or other reclamation sites. For niche marketing, you may choose a category of landscape plant in which to specialize. Native shade plants is a niche market with growing demand. Other niche markets include wetland plants, butterfly plants, ground covers, organic or naturally grown plants, permaculture or edible plants.

Learn about Cultivation

Growing plants for landscaping purposes has a long learning curve. Different plants have unique needs, and many variables such as disease, irrigation and fertilizer levels have to be sorted out and accounted for. Beginning small is an excellent way to learn about the ways that plants grow in your land. Research and working with experienced growers help speed the process of learning. Agricultural ventures are always risky, so it may be best to delay the commercial aspects of a venture until the techniques for production have been well experimented with and implemented. Another major issue is timing of propagation to be sure to have a steady supply of needed plants at the times required for market.

Cultivation type

Plants may be grown in beds in the ground or in independent containers. Prior to 1950, all nursery production of plants was field grown. At this time, 80% of all ornamental plants are grown in containers. (Diver and Greer, 2000) Field (or forest) grown plants are planted in beds in the ground. Container grown plants are grown in pots.

Container cultivation can be an excellent way to produce plants in a small area of hard to utilize land. It can be accomplished in 5 or less acres of land. Since the plants are not grown in the ground, the grower is not limited to the soil types available on their land. Plants may be grown more densely, with yields from container growth giving ten times more sales per acre than field grown. (Diver and Greer, 2000) Plants raised in containers have higher transplant survival due to reduced shock to plant roots. Land unsuitable for field cultivation can often be used for container cultivation. Disadvantages to container cultivation include higher need for soil fertilization and watering.

Field cultivation is well suited to large scale plant production in areas with land well-suited to cultivation. It may require up to 15 acres of land. (Diver and Greer, 2000) Very small and very large plants are best suited to cultivation in the ground rather than in containers. Problems involved in field cultivation include high mortality rate with transplanting, the need for larger areas of land, and the loss of soil when plants are taken from the ground.

Shade levels

Cultivating plants in the forest has specific issues related to it that are very different from traditional field cultivation. Field cultivation in the shade may be accomplished through the use of artificial shade which reduces the need for much of the care and special attention to details that is needed in cultivation under the forest canopy.

Forest beds

Creating beds for plants in the forest understory involves different issues than cultivating plants in the field. The many-layered nature of the forest gives aspects to be aware of across the vertical length of the forest, unlike growing in a field in which the growing takes place at one plane with most vegetation kept under control of the growers. Growing in a forest requires working with more aspects of what is present, and manipulating them in a variety of subtle to over manners.

There are several approaches to making nursery beds under forest shade. One way is to open space beneath the trees by clearing brush beneath the trees, and preparing beds under the trees. Another is to clear trees, opening up larger areas in which the plants can grow. At Project Native in Housatonic, they are establishing a new set of shade plant beds to grow seed for shade plants. They have taken an acre of forest, cleared smaller trees and underbrush and are in the process of establishing plants that will grow beneath this shade in order to sell seed. Another possible arrangement would be to utilize the edges of the forest. Where meadow and forest meet is a highly productive area with a wide variety of species flourishing there. Plants that do best in partial shade can be planted at the edge of the forest, or beneath smaller shrubs and shade trees at the meadow's edge. Plants requiring deeper shade can be planted deeper into the woods.

Another way to create a shade nursery is to take open space and plant fast growing trees such as aspen, or small shrubs like persimmon and pawpaw.

Soils, Water and Mulch

Full composition of your soil may be acquired for a modest fee by sending soil samples to the Soils Testing Lab at University of Massachusetts Amherst. Daily watering of growing plants is a necessity for nursery production. Overhead irrigation is the least expensive option. It is intended to cover large areas. The equipment used for drip irrigation is more expensive and requires more maintenance, but it allows plants to be handled while being watered and produces less waste of water due to evaporation and wind loss. Mulching is highly recommended for nursery production of native shade plants as a practice with many benefits that emulates the natural cycles of the forest. Mulching improves the soil in which the plants are growing by adding organic matter.

Processing and Storage

Native shade plants can be sold in a variety of ways. The most commonly used commercial methods are listed below:

- Small containers (1-2 gal)
- Large containers (3-5 gal)
- Starts/shoots/plugs
- Seeds
- Bare root plants
- Balled and Burlapped (Large size plants/small trees)

When storing containers over winter they need to be protected from the cold. Roots in a small amount of dirt as those in containers or B&B, are more vulnerable to damage from cold (and also heat). Placing the plants in a covered or heated space such as a green house or store room will protect the plants. They may also be buried in the ground to over winter. Planting plants in containers in the ground is another strategy for cultivation—it reduces the loss of soil, and minimizes shock to roots since the plants are already contained.

When storing plants for sale, attention to watering is important to maintain the quality of the plant. How you market them may determine aspects of this storage. If your plants are sold through another vendor, they may or may not take appropriate care of your plants which will reflect on you and the perceived quality of your product. Situations like this might include selling small plants to a large plant center or garden center. Direct sales such as through farmer's markets, roadside stands or with visits to your nursery give you the most control over the status of your plants. However, travel can take a toll on plants damaged during transportation to and from a market place.

Marketing

The nursery business increased by 10% to 20% between 1999 and 2000. (Diver and Greer, 2000) In general, the nursery plant business follows the national economy. When the economy is up, people tend to invest more in landscaping and gardening. When the

market goes down, less is spent in these areas. The nursery industry is strongly tied to the building industry as well. When more building is occurring plantings are needed to beautify land surrounding new office buildings or homes. When building slows down, landscaping plants are less in demand. Local economics and employment factor in strongly in how much demand there will be in a given area.

Steps for Outreach and Marketing:

- 1) Pick your desired consumers
- 2) Determine size and type of plants they want to purchase
- 3) Research current trends in buying (popular plants, niche markets)
- 4) Choose plants that will maximize profits (ease of cultivation, price)

When beginning the process of creating a new nursery doing an analysis of the market and your ability to produce plants is a necessary place to start. The site assessment and plant/product choice outlined above are one part of that process. Looking at the surrounding markets, trends, customer demographics and marketing outlets is the next stage of the process. Doing market analysis before investing in plants can help producers avoid costly miscalculations.

Starting small

A modest start allows a new producer to learn and take small risks. For container cultivation, less than five acres are needed for a starting business, while for field or forest cultivation, up to 15 acres can be adequate. In starting small, the real potential of areas can be gauged. Experience with smaller areas can then be spread to larger areas as techniques are found to be effective and the needs of plants are known. Keeping good records is a tool useful to help create continuity and gain deeper knowledge about the process.

Niche markets

Specializing in plant types or selling to niche markets is a good way to help your business stand out from others in your area. Niche markets are specific types of products that consumers seek out for their unique qualities. Having an unusual or specialty product or line of products gives you a competitive edge. Landscapers also appreciate being able to go to a nursery and know that they can find certain products or plants that will fit a certain need.

Native shade plants is a particular niche, which builds upon demand people are expressing for plants that are part of the local natural environment. Other niche markets include organically or naturally grown plants, permaculture, edible, ornamental, butterfly or hummingbird and wildlife forage plants, bulbs, and ground covers. Some nurseries specialize in growing a wide selection of varieties of certain types of plants, such as lilies, orchids, bamboos, or lilacs.

Business type

There are various strategies available to people interested in beginning a nursery business. The three types of nursery are landscape nurseries, retail nurseries, and whole sale nurseries. A landscape nursery supplies landscaping contractors, or may be part of a

landscaping business. The plants grown are used to create decorative plantings around homes, office buildings, municipal spaces and other areas of outdoor design. A retail nursery markets to homeowners directly, as well as selling to landscape and gardening professional. Whole sale nurseries provide large scale quantities of plants to garden centers, landscapers or other nursery businesses. (Sellmer and Dana, 1994)

Customers

An important step is determining who your customer base will be. Factors that may influence this are the scale and type of business begun, the products best grown at the nursery site and characteristics of the local market place. Initial markets for small nursery businesses will be within a 50 mile radius. (Diver and Greer, 2000) Different marketing outlets will allow the grower to reach different groups of customers. Potential customers fall into several groups: mass merchandisers, lawn and garden centers, landscapers, mail order or internet customers, and home owners.

Types of Customers:

- Landowners/homeowners
- Landscapers
- Mass Merchandizers
- Lawn and Garden Centers
- Mail Order and Internet
- Farmer's Markets

Competition

Major competition for nursery plants comes from large scale producers. These growers often sell the most popular types of plants for landscaping. The massive scale on which they are grown reduces the price they need to charge, leaving the small producer outcompeted for price. These producers are using the "cost leader" strategy for business. Differentiation and specialization are the strategies which are open to small producers to counter this issue.

New Producers

Robyn and Dennis Crowningshield operate their farm in Ashfield, MA. On family land, Dennis continues the tradition of managing the land for firewood and is branching out into milling timber with his movable "swingblade" Peterson portable sawmill. Robyn runs the nursery, Cozie Nook Gardens, from the land, planting flowers for arrangements and for sale in containers that she sells from her home and at farmers markets. Her gardens are nestled among the pasture for the goats and sheep whose wool and meat they sell. As they clear land for more pasture, the Crowningshields look for ways to incorporate the forested land into their farming. Planting beds of shade plants in and among the edges of their forests is a possibility. But cultivation is tricky among tree roots, very different from field cultivation. They have stands of wild native plants such as witch hazel and rich mesic woods with indicator plants such as blue cohosh and wild ginger, but these areas are far from the house. Would native shade plants be a good bet for the Crowningshields?

SWOT Analysis

Strengths: If you have experience growing and cultivating plants, this is a critical resource for beginning a nursery business. Robyn Crowningshield's experience with cultivating flowering plants and annuals would help her greatly if she decided to explore cultivating in shaded areas. Developed over years, the knowledge of soils, fertilization, proper irrigation and treatment of pests, as well as the processes involved in propagating and maintaining plants is an asset for this business. The staff at Project Native take notes each year on the outcomes of each crop, allowing them to build upon their experiences. However, field cultivation is very different from cultivation in the forest floor. Knowledge of native shade plants and interest in developing plants that are part of the local ecology can help to educate consumers about the benefits of these products. If you do not have this experience, working with another grower by working on a farm or nursery, or by hiring someone to partner with you are ways to gain the needed experience without risking your own venture or waiting to develop the experience over time yourself.

Weaknesses: Lacking land or area to cultivate plants is a major stumbling block. Container cultivation can be done in under 5 acres, but field cultivation needs something close to 15 acres for a starting business. Although Project Native began on just a half acre, they have now expanded to land which is much more extensive in order to have a wider variety of species. Other issues may be that land is available, but is over run with pernicious invasive species, difficult terrain (such as steep slopes or sensitive wetlands) hard to cultivated due to tangled brush, or remote from traffic as at the Crowningshields' land. If land is not available or useable, a partnership with another landowner or farmer is an option. This is an excellent opportunity for both parties since one gains the land and the other benefits from having more energy dedicated to cultivating their land. The forest understory is an area of little use for agriculture other than timber harvesting. Turning a woodlot into a more productive area can benefit a farmer or landowner greatly.

Opportunities: As reported by nursery cultivators and landscapers spoken with, interest in native plants is growing at the present time. This may be due to increasing awareness about invasive species, burgeoning interest in local products and the fact that native plants have gained a cache. There are also relatively few producers at this time. It is a good time to explore this market and begin providing plants to those seeking them. Other niche markets such as this one (permaculture plants, edible plants, wetland plants and so on) may offer similar enhancements. Raina Weber of Project Native has taken native plants as the mission for the organization, which gives the products a unifying theme and a competitive angle.

Threats: Competition from large scale producers is a major threat. A small grower cannot compete against those who can produce popular varieties at a large scale. Robyn Crowningshield must choose her plants to be popular enough to be sold, and yet not get undercut by lawn and garden store sales. The advantage that a small producer has is being able to experiment and specialize. The profit available from a niche market can support a small producer, while large growers who supply mass marketers may have to streamline their production and grow the plants which are easiest and most profitable to grow. Robyn may experiment with different products, or develop specific cultivars which are suited to the local climate or other aspects of the region. Specialization can help the small

producer stand out and make them an expert on their area which allows them to make a name for themselves and offer a unique product. Another challenge is entering the supply chain. Marketing and outreach are necessary to offset this. Reliability and quality of product help to confirm a grower's market.

Resources:

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Evergreen Boughs for Wreaths and Holiday Decorations

A traditional holiday decoration is the evergreen wreath. This and many other decorations are sold by Massachusetts Christmas tree growers, as well as others who market just the decorations. Tips and brush may also be sold. If a landowner has desirable evergreens such as eastern white pine (*Pinus strobes*), balsam fir (*Abies balsamea*), mountain laurel (*Kalmia latifolia*) or others, they may wish to market evergreens. The Christmas tree industry has expanded greatly since the 1950s. However, the market has reached a down turn in recent years due to competition with artificial trees and mass produced products. In some ways a lost tradition, the part time wreath making industry has come under much competition from plain wreaths made in mass quantities in Canada and Maine. Markets that are strongest for the small producer are value added, natural and locally marketed wreaths which appeal to the values of those who buy them.

Current Producers

Profile 1:

J.P. and Marian Welch of Justamere Tree farm appeal to fellow folks who appreciate the qualities of country living. On their land in Worthington, MA, they grow Christmas trees, make wreaths, and tap their sugar maples to produce 500 to 600 gallons a year. They also continue a historic practice of making Shaker brooms, hand-made from sassafras saplings and cut and braided broom corn. In the past they also had a hand-made soap business, but a fire which took their home consumed a year's inventory and all their equipment, so they saw the loss of that part of the business as an opportunity to consolidate their efforts in the other areas they pursue. J.P. and Marian travel to many fairs and festivals a year, lending appeal by demonstrating their broom-making technique. Renowned for their brooms, they been interviewed by the Country Living Gardener Magazine and appeared on the Martha Stewart Show.

Profile 2:

The Emerson farm in Greenfield, MA is home to Debbie, Shane, Logan and Dalton Emerson. The family purchased their 60 acre farm in 2000 which included fields, horse barn and paddock, and a neglected Christmas tree plantation. They have established new, well-tended and orderly rows of Christmas trees, planting about 1000 trees per year since they purchased the farm. Along with delivered and cut-your-own trees, they sell holiday decorations including wreaths, cemetery logs and kissing balls which they sell at their farm store along with warm apple cider, and holiday handcrafts. The Emersons gather their own tips and branches to fabricate their wreaths and other holiday decorations. They use their own branches to create their decorations, which come from an area on their land which could otherwise have been simply a problem for the family. After they purchased their farmland, they were notified that one section of trees which had been left to grow for many years untended, would soon touch electrical wires above them. Much of the Christmas tree plantation is in an electrical right of way area. The overgrown trees needed to be cut and removed which could have been a costly and wasteful endeavor for the family. However, the electric company took care of trees which caused the greatest threat and cut back other trees. The family decided to retain trees in every other row which could become their "brush bush". They now harvest about 3,000 pounds of tips

from these 200 trees annually, giving them ample boughs to make 200 wreaths and other decorations to sell. Shane Emerson described this experience as “making a silk purse from a sow’s ear.”

Profile 3:

Cynthia and Thomas Cranston and their children are the third and fourth generations to farm their 170 acres in the hills of Ashfield. Together they operate the Cranstons’ Christmas Tree Farm where they grow 30,000 Christmas trees on thirty acres along with producing maple sugar from 900 taps. They harvest and sell up to 3,000 Christmas trees via retail and wholesale each year. In the past, the Cranstons regularly harvested three to four tons of branches as brush. This took a week of work from three to four people. The most they harvested in a year was nine tons. However, the return was low, and not worth the time and labor required, so they stopped selling their brush. Instead, they now harvest and process as much as they can after the second frost and beginning of November, at which time they produce approximately 200 hand-made, decorated wreaths. Working at the busiest time of year, they find they produce only enough to sell for the weekends between Thanksgiving and Christmas which provides another strong draw for customers to come to their farm and provides them profit in addition to their trees.

Cultivation

There are a variety of holiday decorations which may be made from evergreen boughs: wreaths, sprays, kissing balls, coffin boxes, garlands, swags, and table centerpieces. Unprocessed tips and branches may also be sold. Evergreen boughs must be harvested after two hard frosts have occurred in the winter, which hardens the branches and makes them retain their needles for a much longer period. Certain types of evergreens are more suited to making decorations than others.

Native trees used include eastern white pine (*Pinus strobes*), balsam fir (*Abies balsamea*), red spruce (*Picea rubens*), mountain laurel and princess pine (*Lycopodium obscurum*) and other clubmosses. Non-native evergreens include the highly sought after Fraser fir (*Abies fraseri*), English holly (*Ilex aquifolium*), noble fir (*Abies procera*), Scotch pine (*Pinus sylvestris*), Norway spruce (*Picea abies*) and Doug fir (*Pseudotsuga menziseii*). Eastern Hemlock (*Tsuga canadensis*) cannot be used since it does not retain its needles.

White pine grows best in soils which are deep, slightly-acidic, light-textured and well-drained. (Lassoie et al., 1996) However, it is often associated with sandy, well-drained soil on which it has a competitive advantage over hardwoods. A relatively shade intolerant tree, it is a pioneer species (grows soon after disturbance of forest canopy) in New England. Needing bare soil with much light to propagate by seed, abandoned fields are better for white pine cultivation than cleared hardwood forest stands. Many hardwoods sprout from cut sprouts which grows faster than seedlings, causing the hardwoods to grow faster than the seedlings, shading out and killing the pines.

Balsam fir tolerate a wide range of types of soils in cool climates, but do best on well-drained, moist soils with a loamy texture. They may grow in swamps or rocky mountainsides, and are often found in association with red spruce in our region. These trees may be raised from seed in beds and plantations or using regeneration techniques

similar to those for eastern white pine. Regeneration through planting or seeding in a forest setting has been found to be not very successful. (Lassoie et al., 1996) The seeds germinate in late May through early July and do best for the first 6 to 8 years under some shade. Trees with open crowns such as paper birch (*Betula papyrifera*) or aspen (*Populus spp.*) work well to shade the saplings.

Harvesting and Processing

Evergreen boughs may be made into raw materials or value added products. Raw materials are used by others to create the value added products. It is less time consuming to produce them, but give a lower return over all and require much larger quantities to be economically viable. Value added products give a higher return on each product sold, but require higher investments of labor, materials, marketing and sales.

Raw materials include cutting evergreen trees into branches or tips. Branches with a diameter of ½ inch or less are useful for making wreaths and holiday decorations. Tips are the ends of branches, from 8 to 10 inches long. Tips are of a size that makes them ready made to craft wreaths and other decorations directly from them. Branches require cutting into tip length before they can be utilized. Prices paid for branches were reported to be \$450 per ton. Tips should garner higher prices. (Cranstons P.R., 2007)

To process tips or branches for commercial sale, they are gathered either from living trees or from cut sub-par specimens that have been grown for Christmas trees. When cutting from living trees, a rotation of one to three years can be established between cutting a given tree. The limbs are gathered into bundles weighing 30 to 50 pounds. The bundles are weighed and wrapped two or three times around with twine. Roughly the size of a bale of hay, these bundles are easy to transport.

Value Added Products

There are various products that people create from evergreen boughs to decorate homes and businesses during the winter holiday season.

- Wreaths
- Sprays
- Kissing balls
- Coffin boxes
- Garlands or swags
- Table centerpieces

Decorations

Many items can be used to beautify wreaths, sprays and other holiday greens. Ribbons are important elements of decoration, and may be expensive items. Purchasing them wholesale after the holiday season is over is a good way to get a good deal. Using their pre-tied bows allow a wreath maker to charge a premium price. Natural items can be used such as pine cones, berries, dried flowers, seeds and seed pods, as well as manufactured decorative items.

Marketing

The market for holiday evergreens has changed dramatically over the last fifty years. In the middle of the 20th century, there was little commercial industry. As of 2005, \$1.374 billion were spent annually on live Christmas trees in the United States, with 32.8 million purchased in that year. Twenty-two percent of these trees were purchased at cut-your-own or farm sites. Sales of artificial trees have increased, from 7.1 million in 2001 to 9.3 million in 2005, but sales of natural trees and products far outweigh those of artificial. (National Christmas Tree Association, 2007)

Over the last 10 to 12 years industry standards and consumer preferences have changed. A wider variety of trees are now available and higher quality is demanded. Another change that has occurred in the last 20 years has been the loss of small producers. Many families in the past would grow a small number of trees to sell from the roadside during the holiday season for extra income. Families would harvest brush and then assemble wreaths together. These small producers are few and far between at this time.

Competition

Sales of evergreens are very different for raw materials as opposed to value added items. Competition is strong against lower investment items. Identifying outlets for marketing prior to beginning a business operation is important to ensure being able to recoup what is spent on producing the items.

Plain wreaths are currently being produced and imported seasonally from Canada and Maine to New England. Large discount stores such as Home Depot and Sam's Club carry simple wreaths for low prices (\$10 to \$12 or less). According to members of the Massachusetts Christmas Tree Association quality of these mass produced has improved recently. However, there is no way to know when these boughs have been harvested, and in the experience of some growers, mass produced wreaths sometimes lose their needles immediately. This is likely if the branches were harvested before sufficient frosts have occurred.

Marketing Raw Materials

Brush is sold by the ton, delivered by truck to producers who are making items from the raw evergreen boughs. They may be other producers in your region or large producers who are looking for materials from a larger area. If possible, it is best to identify contacts for sales prior to making a harvest. Running an advertisement in the Farm Bureau newsletter or the Massachusetts Christmas Tree Association (MCTA) newsletter are ways to contact purchasers.

Prices:

1999 brush \$.14-\$.17/lb

12 to 36 inch boughs, in 25 to 35 lb bundles.

Pickers harvest 1,000 lbs on a good day.

Value Added Marketing

Making greens into wreaths and other decorations allows a producer to charge higher prices, and to better compete with mass market producers by providing high-quality, unique products. Plain products that can easily be mass produced may be a loss due to the labor required versus the prices that can be charged. Decorative items and the form make up half of the cost for a wreath, however, the decorations greatly increase the value of the wreath and place the producer into a market in which they are able to compete.

Table 1: Wreath Prices

Product	Price
Decorated 12 inch wreath	\$20-26
Decorated 16 inch wreath	\$26-40
Four foot diameter wreath	\$35-40
Wholesale plain wreath	\$6.50
Cemetery box	\$17

As reported by Cynthia and Thomas Cranston, and Debbie and Shane Emerson, 2007.

Publicity

It may take some time to establish a market at a given outlet. Word has to spread about the availability, and people need to come to know about your presence. Publicity is critical in order to connect your desired audience with your product. Advertising by placing an ad or classified listing in newspapers, local magazines, and newsletters are ways to reach a broader audience. Signage is critical. It brings in passing traffic, as well as allowing those who find your information on the internet or through print advertisement to locate your site. Websites are a critical tool for marketing at this time. It gives space for product background and for the story of your farm or operation to be told.

Membership in associations gives growers and producers access to information, community networks and helps support the local (or national) industry through group advertising. The MA Christmas Tree Association meets regularly across Massachusetts.

Gaining coverage in the media through articles or appearances is another way to gain exposure. Offering workshops or presentations at conferences is a way to become known.

Continuity is an important part of marketing. For example if you sell at a site during the holiday season, people will come to rely on seeing you there, and look for you from year to year. Developing a relationship with consumers brings you long term repeat business. That is an aspect of being a local business.

Word of mouth is an important way that people hear about your product. Excellent customer service and personal connection, as well as professional appearance and publicity materials help make a good impression on consumers who may recommend you.

Potential Producer

Matt Barron lives in Chesterfield on just over 10 acres of field and forest. He manages his land actively, cutting firewood himself, enjoying the connection it gives him to his forests of oak, hemlock and pine. Matt is a political consultant having consulted on many successful campaigns. His work keeps him busy during part of the year, in the months leading up to election day, but he has interest in finding other work he could do to complement this schedule. On his property, he has a large barn. This could become a workshop where he and several local people he could employ might make wreaths. Harvesting branches from his evergreens he could start a small business. Issues he would need to address would be how to market the wreaths? His house is on a quiet road in rural Chesterfield. He might need to find a site on a busy street in a population center. Or work with a farm or garden center. Another possibility is that Matt could find an outlet in the Eastern part of the state. With contacts in many circles including party decoration coordinators who work for large corporation, it is possible he could contract with one or several purchasers to supply them with high quality, hand-made, natural wreaths that would be used for their holiday celebrations.

SWOT Analysis

Strengths: If you own land with white pine, balsam fir, red spruce or other evergreen good for this purpose, you will have raw materials to sell or produce wreaths from. For white pine or balsam growing into the forest, a producer can incorporate management into forest management objectives. For wreath making, an overgrown Christmas tree plantation can turn an unattractive or bothersome site into an asset. The Emersons' damaged trees beneath the power lines show the potential for a loss to become a gain in this way.

Weaknesses: A wreath making business requires a large amount of seasonal labor. You need to be available to work during this time of year and have labor to assist. If you have a seasonal job, having an additional business could fit into your yearly cycle. Matt Barron's seasonal consulting work would slow down just in time for him to switch over to harvesting pine boughs and overseeing the production of wreaths. Farm families often fit it into their various product seasons. The Welchs, Emersons and Cranstons work long hours during the year end holiday season. Employees could be local people such as retirees, parents home with children, or teenagers who might be interested in participating in a business during the season.

Opportunities: Niche and specialty products are benefited by campaigns to promote local products in western Massachusetts. CISA's Local Hero campaign identified a strong demand for local goods as well as a primary barrier to their purchase (lack of awareness about where to find them). Small, local goods have higher visibility due to this publicity campaign.

Threats: Mass marketed plain wreaths imported from Canada or Maine are sold at a low price in large home decoration stores. These take advantage of "cost leader" marketing strategy that small scale producers cannot meet without undercutting themselves. Cranstons and Emersons sell decorated wreaths to avoid competing with inexpensive, mass produced plain wreaths from Canada or Maine. Added value products offer a way

to realize a good profit and avoid competing with mass marketed products. Local products are in demand as CISA has shown with their Local Hero campaign. If a producer has the ability to reach high income markets, they could sell high quality product for better prices. Selling through the internet allows an operation to be able to sell to a wider group of consumers.

Resources:

Lassoie, James P., Valerie A. Luzadis and Deborah W. Grover. 1996. *Forest Trees of the Northeast*. Cornell Cooperative Extension Information Bulletin 235.

Krantz, John. The Minnesota Approach to Non-timber Forest Product Marketing: The Balsam Bouh Industry and Other Examples. *Forest Communities in the Third Millennium: Linking Research, Business, and Policy Toward a Sustainable Non-Timber Forest Product Sector*. Proceedings of a meeting held October 1-4, 1999 Kenora, Ontario, Canada.
<http://www.ncrs.fs.fed.us/pubs/gtr/other/gtr-nc217/>

Sikora, Michael, Jr. and H. Peter Wood. *Christmas Trees: A Massachusetts Crop*. L-330. Cooperative Extension Service, University of Massachusetts. Amherst, MA.

Section 3: Choosing an Understory Crop Enterprise

Are understory crops a fit for you?

As with any business venture, a new producer of understory crops should consider the Personal, Technical and Financial feasibility of a project before beginning. Personal feasibility refers to whether a given enterprise fits with the preferences and lifestyle of the producers. This can be gauged through discussion with family or business partners about goals and assumptions. Technical feasibility encompasses the physical resources of land, work and sales space available, knowledge of cultivation methods and business needs, as well as the equipment and supplies needed to make a project a success. Financial feasibility involves information about costs, potential profits and needed capital.

With this information, a choice can be made about what kind of crop can be produced and what level of involvement or size of business will be reasonable to start. Think about these levels as you read through the feasibility questions. Which fits your situation?

- Small: side income, hobby level, for self, family and friends' consumption
- Medium: part time business, one of several endeavors, side business. For local or moderate level consumption and marketing.
- Large: full time job for yourself and others. Mass marketing or large scale enterprise.

Personal Feasibility

- ✓ Participants: Who are the people who are most interested in and committed to this project? List all potential team members, and the tasks for which they will be responsible.
- ✓ Attitudes: How does everyone approach this project? Is everyone coming to it with the same level of interest? How will it fit into the different participant's lives? Take the time to sit down together and discuss these issues.
- ✓ Life Stage: Where are you in your life? What level of time, effort and financial commitments are suited to your current or soon to be realized life stages? If you are ready to retire your issues and resources will be very different from someone with a young family just starting out.
- ✓ Personal goals: How does this business fit into your personal goals for your life? Are you currently involved in farming, and is this a way to diversify your holdings and make productive land that is currently under utilized? Are you seeking to create a part time income to supplement your regular full time work? Is this a way for you to engage more deeply with land you may own or spend more time outside?

- ✓ Values and Ideals: Where does this business fit in with the values and goals of your life? Are you looking for a venture that can help you take part in the local economy or reduce ecological impact of commuting and working away from home? Are there ways that these ideals may cloud your vision of the hard realities of financial success or failure? Balance these with your financial cut-off points.
- ✓ Land Values and Objectives: If you own land, what are your land management goals and how can they work with your understory crop business? For example, small logs from timber stand thinnings can be used as mushroom logs. Sugar bush land could also be utilized for wild-simulated ginseng production. A forest management plan is an excellent tool for assessing suitability of an understory crop project.

Technical Feasibility

- ✓ Labor: Who are the primary members of your business team? Who else in your family or circle of friends may participate? Who else may be needed? Is this labor pool available?
- ✓ Time Investment: How much time will be required for initial site preparation, planting, maintenance and harvesting? How much time will be required for processing or cleaning the product? How much time will be needed for marketing or sales? How much time for accounts and records keeping? How much time for assessment of efforts and further planning each year?
- ✓ Scheduling: When are all these tasks to be accomplished? How many people are needed at different times of the year? Are there seasonal times when much more labor is required? You may wish to create a calendar for the year in this business, tracking how much time and how many people will be needed throughout the year.
- ✓ Additional Labor: If you have need of seasonal help, how will you find these workers? You may use word of mouth to find workers or advertise in the newspaper. Youth groups, schools or gardening clubs could be invited to take part for big projects. Teen-agers, retirees or stay at home parents may be interested in seasonal part time work. How will you contact them? Who has contacts with potential employees?
- ✓ Management needs: Who will manage seasonal or occasional workers? Do you or does someone in your team have experience leading groups or coordinating work teams? If no one has these skills, can they be acquired over time or is help and training available?

- ✓ Site Assessment: Having land with the required characteristics is critical for producing many understory crops. See the following section for a more detailed look at site assessment.
- ✓ Equipment: Many types of machines and tools are needed for these projects. Do you own a tractor, rototiller, trailer, chainsaws and so on? List growing supplies such as seed flats, watering cans, hoes, and rakes you may own and their condition. What specialty items may be needed such as refrigeration units or drying equipment? What else will be required? How can it be obtained? Will it need to be purchased? Can it be borrowed or rented on a short-term basis?
- ✓ Buildings: List all barns, sheds and outbuildings or rooms in the house that may be used for processing, storage or production of the understory crop. What outdoor space can be used? Is this adequate? If not, what is required? Is there access to water at these sites? Electricity?
- ✓ Enterprise Skills: What personal experiences through work or other activities give you and your team members' skills which will be useful in this endeavor? Skills may include experience with the understory crop or related plants, timber felling and forest management, growing plants or gardening, making wreaths or decorative projects. List the members of your group and the skills that they bring to the project.
- ✓ Business Skills: Business related skills such as book keeping, computer skills, as well as experience with managing, marketing and sales. Personal qualities such as being outgoing and having good interpersonal skills can be critical for sales and making business contacts. Special skills such as grant writing, production skills and innovative thinking can be listed.

Financial Feasibility

Fixed Costs:

- ✓ Equipment: What equipment will have to be purchased or rented?
- ✓ Buildings and Repairs: cost of shelter for production or storage.
- ✓ Manager wages: salaries
- ✓ Property Taxes: taxes for land needed to produce understory crop

Variable Costs:

- ✓ Production and Inventory costs: Seed, plants, spore, packaging, and all else needed for enterprise.
- ✓ Hourly Employee Wages: fluctuating cost of labor, may change seasonally, annually.
- ✓ Utilities: electricity, phone, heating, water.
- ✓ Interest on loans: commercial credit or personal loans

- ✓ Worker's Compensation, Liability, Insurance: variable based on labor needed or requirements of business.
- ✓ Taxes: Income, self-employment, matching FICA for employees, inventory taxes, costs of tax return preparation.
- ✓ Marketing: advertising, web sites, brochures, signs.
- ✓ Shipping: transportation costs, packaging.
- ✓ Loss: damage to crop due to weather, pests, theft.

Resources:

Forest Landowner's Guide to Evaluating and Choosing a Natural Resource-Based Enterprise. NRAES-151. 2004. Jonathan S. Kays and Joy Drohan. Natural Resource, Agriculture, and Engineering Service (NRAES) Cooperative Extension, PO Box 4557, Ithaca, NY, 24852-4557.

Evaluating a Rural Business: Marketing and Business Guide. 2002. Preston Sullivan and Lane Greer. Appropriate Technology Transfer for Rural Areas (ATTRA). www.attra.ncat.org 1(800)346-9140. PO Box 3657, Fayetteville, Arkansas, 72702.

Economic Analysis of a New Business – Doing it Right. 1996. Donald Erickson. Kansas State University. Department of Agriculture Economics. MF-2184. <http://www.oznet.ksu.edu/library/agec2/MF2184.PDF>

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Site Assessment

What is Site Assessment?

For each plant growing in the forest, it requires certain conditions to thrive. Understory crops are they same. They need different levels of moisture, light and nutrients. Learning about these variables in your land or land you may be working on is key to making decisions about what plants you may be able to grow there, and how well they will do. In an enterprise based on agriculture, knowing what is needed for each plant and how soils, climate and temperature may affect your crop is critical to success.

Why is it important?

In order to be sure that production of the understory crop of your choice is viable, you must ascertain if the needed conditions for growth are present. There is no point in planting ginseng if the soil is too acidic, or trying to grow mushrooms if the needed substrate is unavailable. The base conditions of the land available is the fundamental building block for your understory crop business. On the other hand, if you have detailed information about your land, it may be possible to address gaps or issues that arise.

What are the most important factors?

The most important factors are climate, soils, landform or topography, present vegetation and wildlife, and placement of water or hydrology. Maps of your land showing this information are used for planning and prioritization. If you have a forest management plan for your land, that is the first place to look for much of this information. Further

information can be acquired by observation and sampling. Your local Agricultural Extension Office can make available further information needed such as information about your soils. Climate information is available on line from national sources such as the National Weather Service. References and links are below as well as in the annotated bibliography at the end of the paper.

Site

First, what land is available for your use? Is it all of your land, some of your land, or land belonging to someone else? How many acres are usable for the understory crop project? How accessible is it? Are the buildings and equipment to be used for the project available on site, or do they need to be moved? If they are off site, can they be stored there for the duration of major times of work?

Maps

Creating a base map of your site or sites with all of the following information is a critical tool for your planning. If you have a forest management plan, it should include maps of the property that include information about the tree species present or other types of land present, as well as another that includes the topography of the land. If there is no management plan, maps showing the property boundaries may have been created by surveyors at the purchase of the property, or they may be acquired from the assessors office in your town. Maps showing the topography of your area can be found at the MassGIS site in a variety of specialized formats. They are also available for free at commercial web sites such as TopoZone (www.topozone.com).

Climate

Climate variables such as annual rainfall, minimum and maximum temperature, average light available (annual cloud cover), timing of last frost and first thaw in the year are all important information for growing agricultural products. Growing degree days (GDD) are a measure of heat above 50 degrees available during a growing season. Hardiness Zones are a standard measure used in much literature about plants to determine whether it will be viable in a given area. Most of western Massachusetts is in Zone 5-6. Climate changes may affect these zones over time. GDD can be used to determine if a crop will be able to have enough time to come to maturity and realize its full potential.

Microclimate can be variables with respect to the topography, hydrology or vegetative cover of a small area that increase or decrease the temperature significantly. For example, there is often a frost pocket at the foot of a hill caused by the chimney effect of heat rising up the hill.

Soils

Plants require different characteristics of the soil or substrate in which they will grow. Unlike in traditional agriculture, it may be impractical to amend woodland soils. Soil characteristics are determined by the bedrock substrate beneath soils, the plant matter that decomposes to form humus, the organic materials, the presence or lack of water, minerals present and also the deposition of materials from the air. Soils differ in structure (types), composition (types), compaction (types) and acidity (pH).

Soil acidity

Most plants will thrive in a narrow range of pH levels. Very acid soils will have a pH from 4 to 5, moderately acid soils have a pH from 5 to 6, slightly acid soils will have a pH from 6.0 to 6.9. Neutral soils have a pH of 7, and the most alkaline, or base, of soils will have a pH of higher than 7.5. Testing soil for pH can be easily accomplished with a simple pH testing kit. Further testing can be provided by the soils testing lab at the University of Massachusetts, Amherst (contact info below).

Topography Slope/aspect

Topography is the shape of your land. Is the land flat or hilly, are there steep or moderate slopes? Steep slopes allow water to run off more quickly, making these areas more likely to be well drained than flat areas, or depressions in the land. Also important is what direction a slope faces. This is called the Aspect, and it influences how much sun the land will receive during the day, determining temperatures and the speed at which water will evaporate. Plants that need cooler, damper conditions will do better on north-east facing slopes which receive the least sun. Plants that require more sun will do better on south-west facing slopes, which receive sunlight throughout the later parts of the day. Slopes can be measured using a special instrument called a clinometer, by measuring the run-over-rise, or may be roughly estimated by eye. Aspect is measured by using a compass to determine which direction a slope faces.

Vegetation (indicator plants, existing specimens)

The vegetation present in a forest can tell a great deal about the soils, the moisture levels and the stage of succession the forest is in. Plants that need similar conditions are likely to grow in the same area, making communities of plants, as well as animals that occupy similar environments. Some plants occur over a wide range of conditions, while others are rarely found out of certain specific areas. These plants that require a very specific environment are often called “Indicator Plants”. For example, there are plants listed in the Ginseng section of this publication which are indicative of the right conditions for Ginseng to grow. When thinking about beginning a forest product enterprise, one of the best things to start your research with is to see if the plants you are interested in growing already exist in your land. If so, you know that the conditions are present for them to grow.

Hydrology

Where is there running or standing water on your land? This may be important from a practical standpoint of having adequate access to water for irrigation of plants or flushing of mushrooms. It is also important to identify areas which may be protected by the Wetlands Protection Act or Riverfront Areas act. Areas such as swamps, streams and vernal pools are important resource areas that are protected from alteration by state regulations. Before planning any changes to these areas, it is best to schedule a visit by your local Conservation Commission and request a Determination of Applicability. They can counsel you on areas best left untouched, and on ways to minimize impact on areas that will be utilized for agricultural purposes.

Resources:

Soil and Plant Tissue Testing Lab. West Experiment Station, 682 North Pleasant Street
University of Massachusetts, Amherst, MA 01003 <http://www.umass.edu/plsoils/soiltest/>

How, When and Why of Forest Farming. Online Course. Spring 2007. Cornell
Cooperative Extension of Chenango County. <http://hwwff.cce.cornell.edu/index.php>

Marketing and Sales

- ✓ **Product:** What is your product? How is your product different from other similar products on the market? What is the story behind the product? Is it certified organically or naturally grown? A brochure and website is a good way to share this information with consumers.
- ✓ **Consumers:** Who will buy your product? Individuals, families, small businesses or large corporations? Write a description of a few typical purchasers your product. Where do they shop? How do they find out about new products? You may use a survey to find out more about your target demographic's interests and purchasing practices?
- ✓ **Marketing outlets:** What are your options for selling your product? National or international wholesale buyers? Retail outlets such as grocery stores, garden centers or farm stands operated by others? Or direct markets such as farm stands, farmer markets or internet sales as part of your own operation? Each of these avenues has advantages and disadvantages with higher profits and higher costs associated with doing it yourself. What market offers the highest price for your product?
- ✓ **Promotion and Advertising:** How will you spread the word about your product? You may use brochures, websites, newspaper ads and mailings. Marketing outlets can be a place to contact other consumers. Groups and associations often publish directories of producers.
- ✓ **Competition:** How else may your potential consumers acquire the product you are selling? Are there name brand mass-market versions of your product? Are there other local producers? How many people in your area produce the same product? Is there the possibility of partnering with any of them to produce, process or market your understory crops? Are there other producers who have recently gone out of business or stopped producing this product in your area? If so, why? Are there a lot of people thinking about producing this product? Is there an association of similar producers that you can join? Doing so can be an excellent way to find out more about the market from people already involved in producing crops like yours.

- ✓ Demand: What kind of demand is there for your understory crop in your local area? In your region? Nationally? Internationally? Is there rising interest in this product as reflected in articles in popular magazines or on discussion groups on the internet? Are there changing attitudes towards it, or changes in fashion of how it may be produced or presented? What is the price of your product in various markets? High prices are a sign of strong demand. What kinds of trends are there in demand for your product? Have prices been rising? Falling? Are there other areas in the world that are beginning to produce more of this product more cheaply than you are able to?
- ✓ Price: What price will you charge for your product? How will your price vary depending on what marketing outlets you use? Which will give you the best price? How does your price compare with prices found in the market? What is your “break even” price based on your costs and labor? How many units will you need to sell in order to break even, or to see a profit? How long can you afford to be in business producing this product before you need to see a profit? Do you need to see a profit or will this be a hobby activity? Would it be possible for you to begin producing the crop for some years before beginning to charge?
- ✓ Volume: What quantity will you be able to produce initially? How will this change over time? Will it increase rapidly, or will you need some years to determine the best way to produce the crop? Will you be able to sell the product initially or will there be an exploration and investment period? What volume will you need to sell in order to make a profit? How long do you anticipate it will take to produce that volume? How will you adapt your marketing to match the volume you are able to provide?

Resources:

Marketing Special Forest Products in New York State: A practical manual for forest-based enterprises. 2005. Jim Ochterski et al. Cornell University Cooperative Extension.

Keys to Success in Value-Added Agriculture. 2001. Holly Born. Southern Sustainable Agriculture Working Group and The National Center for Appropriate Technology’s AFTA Project. <http://www.aftaweb.org/>

Direct Market. 1999. Katherine Adam. Appropriate Technology Transfer for Rural Areas. National Center for Appropriate Technology. <http://www.attra.ncat.org>

Section 4: Opportunities and Resources

There are many opportunities and resources available to the producer of understory crops which can give them a competitive edge. These resources range from financial assistance through cost share and grant opportunities to begin a venture, to networking and connections with others who have gone through the same process by becoming a member of an association. Various types of certification such as organic, naturally grown and Forest Stewardship Council green certified make a product stand out and communicate to consumers that it was produced responsibly. Marketing assistance may be one of the most important resources available, since individual producers are often operating on a small budget which leaves little left for targeting large audiences. The Local Hero campaign by CISA and association memberships offer exposure through directory listings and media coverage. Forest management plans are a basic resource which can help in the process of creating a forest understory crop enterprise, as well as be a key tool in maximizing the output of the forest while taking into account ecological factors. Finally, cooperative efforts with other producers or landowners such as CSA farms offer access to resources through individual agreements.

Local and Regional Resources

Forest management plans

A Forest Management Plan is an in-depth analysis of your land which includes descriptions of the vegetation, topography, soils and other aspects of your forest land. It will include maps showing areas of distinct plant community types, as well as information about the slopes and altitude of your land. This information can give you a great deal of insight into the site conditions on your land and is an excellent foundation for site assessment (as described in Section 2). Forest management plans are a requirement of the Massachusetts Chapter 61 Current Use tax program. They are prepared by a licensed forester or the landowner. Cost share funds are often available through the Forest Stewardship Program.

MA Bureau of Forestry

<http://www.mass.gov/dcr/stewardship/forestry/>

MA Forest Stewardship Program

<http://mass.gov/dcr/stewardship/forestry/service/steward.htm>

Soil and Plant Tissue Testing Lab

University resources for soil testing for composition and structure available to the public. Excellent resource for site assessment and agricultural planning.

<http://www.umass.edu/plsoils/soiltest/>

Agroforestry Learning Communities in the Northeast

Supported by research done through the Cornell University Extension system in New York State, the Agroforestry Learning Communities was an initiative in 2000 of pilot projects with understory crop production in the Northeast. Lessons and demonstration projects are described online.

Agroforestry Learning Communities in the Northeast

<http://www.dnr.cornell.edu/ext/agroforestry/sare/>

Cooperative efforts

Community Involved in Sustaining Agriculture (CISA)

A non-profit organization which offers training, outreach and conducts research to support local agriculture. Responsible for the Local Hero campaign, which promotes visibility for locally produced agriculture and recognizes exemplary farms. Membership in CISA provides publicity through online and print listings in the Farm Products Guide. Trainings in production, marketing and business skills are offered.

Community Involved in Sustaining Agriculture (CISA)

<http://www.buylocalfood.com/>

Massachusetts Woodlands Cooperative (MWC)

The Massachusetts Woodlands Cooperative is a forestry cooperative in western Massachusetts which markets green certified local timber products. Members create or upgrade their forest management plan to meet FSC standards, and sell their timber harvests to the Coop which markets them in the local and regional green certified markets.

MA Woodlands Cooperative

<http://www.masswoodlands.coop>

North Quabbin Woods

The North Quabbin Woods is an initiative of the New England Forestry Foundation dedicated to promoting forestry, recreation and production of wood products from the forests of the North Quabbin region of central Massachusetts. Operating a storefront in Orange, MA and maintaining a referral website the project provides networking and outreach for forest product producers.

North Quabbin Woods

<http://www.northquabbinwoods.org/>

Certification Programs

Green Certification

The Forest Stewardship Council (FSC) is an international non-profit organization which offers certification for forest management and forest product manufacture, called “green certification”. FSC verifies that managers of land are maintaining it in a way that respects the ecological integrity of the land, supports the economic viability of the local community, and takes into account other factors such as indigenous peoples rights. Green certified products meet green building standards such as the Leadership in Environmental and Energy Design (LEED) criteria established by the United States Building Council. FSC green certification can be prohibitively expensive for the small landowner to acquire. However, landowners with 10 or more forested acres may gain green certification through membership in the Massachusetts Woodlands Cooperative and in the near future, FSC green certification will be available to all Massachusetts landowners who enroll their land in the Chapter 61 Current Use tax abatement program will be eligible for green certification. Landowners must have a management plan which meets the FSC standards.

Forest Stewardship Council

<http://www.fscus.org/>

MA Bureau of Forestry

<http://www.mass.gov/dcr/stewardship/forestry/>

MA Woodlands Cooperative

<http://www.mass.gov/dcr/stewardship/forestry/>

US Building Council

<http://www.usgbc.org/>

Organic Certification

Agricultural products can be certified organically grown. Organic products are grown without the use of pesticides and herbicides using responsible practices that emphasize long-term sustainability. Certification is overseen by the National Organics Program (NOP) and is regulated by the United States Department of Agriculture Organic Products Act. Small producers with revenue under \$5,000 fall under an exemption and may not have to file for organic certification. Cost share funds for certification have been available.

National Organics Program (NOP)

<http://www.ams.usda.gov/nop/indexNet.htm>

New England Organic Farmers Association (NOFA) Massachusetts Chapter

<http://www.nofamass.org/index.php>

Naturally Grown Certification

An alternative to organic certification is naturally grown certification. This process, overseen by the non-profit organization Certified Naturally Grown (CNG) is less costly and more streamlined than Organic Certification making it a more feasible alternative for many small farms. The CNG standards were developed from the national USDA Organic program.

Certified Naturally Grown

<http://www.naturallygrown.org/>

Grants and Cost Share

Farm Viability Enhancement Program

Administered by the Massachusetts Department of Agricultural Resources, the Farm Viability Enhancement Program provides technical assistance, business planning and environmental impacts advising to help farmers with five or more acres in agriculture to strengthen their operations. Farmers may enroll their farm in a 10 year covenant to retain the land in agriculture in exchange for capital investments.

Farm Viability Enhancement Program

<http://mass.gov/agr/programs/farmviability/>

Forest Viability Enhancement Program

Administered by the Massachusetts Executive Office of Environmental Affairs, this program offers technical assistance and business planning to private land owners with land enrolled in Chapter 61 who operate a forest based business. Landowners enroll their land in five or twenty year covenants depending on the level of involvement in the program and funds provided.

Forest Viability Technical Assistance Program

<http://www.mwcc.edu/programs/FWP/ForViab.html>

Forest Stewardship Program

A program of the Massachusetts Department of Conservation and Recreation, the Forest Stewardship Program offers cost-share funds for landowners seeking to develop long-

term management of their woodlands with emphasis on protection of forest ecosystems. Private landowners with less than 1,000 acres in total are eligible for this program.

Forest Stewardship Program

<http://mass.gov/dcr/stewardship/forestry/service/steward.htm>

North East Sustainable Agriculture Research and Education

A United States Department of Agriculture competitive grants program which provides grants to projects which support the economic and ecological viability of agriculture. The program offers various types of grants including grants for farmers to develop new crops or approaches to farming, to agricultural professionals who partner with farmers for demonstration projects or research, to educators, researchers and to community organizations.

North East Sustainable Agriculture Research and Education

<http://www.uvm.edu/~nesare/>

Association and Society Memberships

There are many associations in Massachusetts which support the efforts of farmers and other individuals who are engaging in forestry and agricultural endeavors. Resources provided by these associations include networking, technical assistance, contacts with industry professionals, trainings and publicity listings on websites and in print media. National memberships provide support for the industry as a whole, legislative initiatives and connections with broader networks of producers.

MA Christmas Tree Association

<http://www.christmas-trees.org/>

MA Maple Producers Association

<http://www.massmaple.org/>

MA Association of Roadside Farm Stands

<http://www.massfarmstands.com/>

MA Fruit Growers Association

<http://www.massfruitgrowers.org/>

Pioneer Valley Growers Association

<http://www.pvga.net/>

New England Wildflowers Association

<http://www.newfs.org/>

New England Small Farm Institute
http://www.smallfarm.org/programs_resources/index.htm

Growing New Farmers program
<http://www.growingnewfarmers.org/>

Massachusetts Nursery and Landscape Association
<http://www.mnla.com/>

Ecological Landscaping Association
<http://www.ecolandscaping.org/>

Berkshire Grown
<http://www.berkshiregrown.org/>

Community Involved in Sustaining Agriculture (CISA)
<http://www.buylocalfood.com/>

Northeast Organic Farmers Association (NOFA)
<http://www.nofamass.org/index.php>

Massachusetts Forest Landowners Association
<http://www.massforests.org/>