Developing a Viable Log-Grown Shiitake Farming Enterprise in New York State

Section 1
The Production Chain: From Harvest to Market

a. Safety & Sanitation……4
b. Harvest, Cleaning, & Storing ….5
c. Grading ……..8
d. Weighing……9
e. Packaging & Labeling……9
f. Pricing……10
g. Dehydration……..11
h. Value Added Products……..14

Section 2:
Enterprise Planning

a. Risk Management……17
b. Taxes & Ag Assessment …….22
c. Business Planning……...24
d. Budgeting & Cash Flow……..25
e. Record Keeping……..28
f. Ways to Save Time and $.....30
g. Marketing Channels……32
h. Branding……..33
i. Certification……35

For More Information Visit:
www.CornellMushrooms.org

Steve Gabriel, Agroforestry Extension Specialist
sfg53@cornell.edu

This project is possible because of support from the USDA Specialty Crop Grant Program and New York Farm Viability Institute.

Introduction

This workbook is meant to serve as a companion to the 2012 guide **"**Best Management Practices for Log-Based Shiitake Cultivation" which is available as a free download at **www.CornellMushrooms.org**.

While that guidebook focuses on the technical aspects of successful shiitake cultivation, this publication offers growers information to support business planning and decision making around the sales and marketing aspects of log-grown shiitake production.

Assuming you have learned, or will learn, the technical aspects of production including harvesting logs, inoculation, log management, forcing, fruiting, and harvest, this guide picks up after harvesting, in the stages of storing, packaging, marketing, sales, and record keeping.

The format of this guide follows the process in the logical order in two sections:

Section 1: The Production Chain: From Harvest to Market
Section 2: Enterprise Planning (Budgeting, Cash Flow, Legal, etc)

In addition to this guide, growers are advised to consult **The Guide to Farming in New York** for more information and resources pertaining to the rules, regulations, and considerations for any farm enterprise in New York state:

http://smallfarms.cornell.edu/resources/guides/guide-to-farming-in-ny/

Why $10,000?

The target of $10,000 is promoted throughout the guide as a goal that is both reasonable and achievable for many small to mid-scale shiitake producers. It is a good benchmark for commercial production, and can qualify a grower for agricultural tax exemption. (more on this in section two)

Most current growers manage between 500 and 2000 logs at one time. For each log inoculated, costs including labor (at $12/hr) are on average **$4.74 per log**. This includes all materials and time to harvest, inoculate, and manage logs.

Each log will produce an **average of 1/4 to 1/2 pound** of mushrooms per flush (logs are soaked for 24 hours to induce fruiting) A grower can achieve **2 to 3 flushes per season**. Log lifespan is an average of **8 flushes or 3 – 4 years.**

A 1,000 log operation means a grower:

- **Cuts** 400 logs from the woodlot, about 50 hours of labor/year
- **Inoculates** 400 new logs each year, about 160 hours of labor/year
- **Soaks** about 140 logs each week, about 7 hours of labor/week
- **Harvests** between 30 – 50 lbs of mushrooms, about 7 hours of labor/week
- **Processes, packages, and delivers** mushrooms, about 2 hours of labor/week

Given the wide range of variables in production, a grower working with 1,000 logs will produce between 643 and 1,286 pounds of mushrooms each season. At an average yield of 964 lbs sold at $12/lb, gross revenue would total **$11,568**.

Base on our most recent budget scenarios, costs for this size operation are:

Materials:	$866.42
Labor (at $12/hr)	$8,280
Overhead	$250
TOTAL COSTS:	$9,396

This scenario offers the possibility of **$1,622 in profits**, including covering the costs of labor. Basic improvements to production efficiency could result in a **$3,460** profit.

Costs and profitability are highly variable, and depend on seasonal weather conditions and local markets, as well as the decisions of the farmer. Profits could greatly increase or decrease, depending on how the farmer chooses to purchase materials, spend their time, and work to optimize production efficiency. The second section of this guide helps growers refine a budget to their specific context and needs.

Why Log-Grown Shiitake?

We focus on just one species of mushroom for production, the Shiitake (*Lentinus edodes*) because it alone offers the combination of characteristics needed for reliable and profitable production. Namely, shiitake logs can be soaked and "forced" to fruit on a routine basis, meaning that a grower can get consistent yields from June – October in most parts of New York State.

Other mushroom species that produce reliably outdoors in the forest include oyster, lions mane, stropharia, and nameko. However, each of these mushrooms produces at only specific times of the year, when conditions

(temperature and moisture) are just right. Therefore, the timing of fruiting is not controllable nor reliable. A grower with established markets can certainly sell these mushrooms, but he/she won't be able to build a viable business off these alone. You can learn about how to grow these mushrooms (along with shiitake) through factsheets and videos at www.CornellMushrooms.org.

A. Safety and Sanitation

The most important detail in the post-production aspect of shiitake production is to maintain a high quality and safe product for sale. Mushrooms, in particular, are unique in that they are mostly water, and are not best cleaned by washing, since it ruins their texture and shelf life. ***For this reason, it is CRTICIAL to ensure that mushrooms are carefully handled during all phases of harvesting through selling.***

Sanitation Check List

- Be sure to wash hands thoroughly with soap and water anytime prior to handling mushrooms
- Consider wearing latex gloves when handling
- Use stainless steel or food grade plastics to hold and store mushrooms
- Harvest with scissors instead of a knife
- Routinely clean all containers and tools, and store them in a location free of potential contaminants

For fresh, uncut produce, no licenses are required to sell shiitake mushrooms fresh in New York. Produce must be sold free of debris and in clean containers.

Good Agricultural Practices (GAPS)
The GAPS program is voluntary, but useful as a template for proper and safe farming practices.

While the program is currently voluntary for many farms, the implementation of the Food Safety Modernization Act (FSMA) means that farms grossing over $250,000 must comply by 1/28/19 and farms between $25,000 and $250,000 in sales will need to comply by 1/27/20, unless a farm is "qualified exempt" which means your farm:

1. Has a three-year running average gross revenue of less than $500,000 in sales
2. Sells the majority of the food to "qualified end users". That means either direct consumers of the food, or retail locations within 275 miles of the primary address of the farm.

If you meet these, you are exempt, but still must comply with labeling and record keeping.

But it's not just about getting exempt. To prevent contamination of produce and water supplies, follow good sanitation practices, avoid introducing raw manure into fields, test irrigation and wash water for bacteria, and change wash water regularly. Test water for bacteria annually and maintain good records.

For information consult: www.gaps.cornell.edu or call 315-787-2625.

Familiarize yourself with standards for the **Mushroom GAPS Program**, though it is tailored more towards indoor cultivation: https://www.ams.usda.gov/sites/default/files/media/fresh%20mushroom%20food%20safety%20standards.pdf

A Mushroom Farm Food Safety and Security Self-Assessment document from Penn State is a helpful reference to see how your farm stacks up in terms of the GAP standards: http://extension.psu.edu/food/safety/farm/mushrooms/good-agricultural-practices-for-safe-mushroom-production-research-recommendations-and-teaching-materials/mshrmfrmfdsfty-1.pdf

Certified Naturally Grown (CNG) offers peer-review certification to farmers and beekeepers producing food for their local communities by working in harmony with nature, without relying on synthetic chemicals or GMOs. They have a published list of standards for mushroom production: www.cngfarming.org/mushroom_standards

Whether or not you choose to participate in any of the above programs, it is worthwhile to review them to inform the important standards for a safe and sanitary operation.

B. Harvesting, Cleaning, & Storing Mushrooms

Mushrooms should be harvested directly into clean stainless or food grade plastic containers, which should be washed and dried thoroughly before use. All harvesters should wash their hands with warm water and soap before heading out to harvest. An alternative option would be for everyone to wear food grade latex or vinyl gloves when harvesting.

The proper timing of harvest is critical to achieving a quality crop that will last. While it is tempting to let the mushrooms get as large as possible, what is more important is the integrity of the shiitake to hold up to storage and transport before being consumed. The difference is considerable; an overripe shiitake (left) may only last a few days in the fridge, whereas mushrooms harvested at the proper time (right) can last a week or more.

Over ripe "Pancake" Shiitake

Perfectly ripe, with rounded edge

Harvest when the cap is unfurled, but not flat. With time and experience, you will notice that the rounded caps are more robust, and will retain their color better. All of these mushrooms are perfectly edible, and inevitably a grower will not get all of them harvested at the perfect stage. Overripe mushrooms may be perfectly fine for some outlets, or can be reserved for dehydration or other value added products. (see below)

Since the edge of the mushroom is not always obvious from above, growers often check the edge with their pinky to see if it's ready. Mushrooms that are ready for harvest should be carefully cut at the base with scissors or a knife, or pulled or twisted off. *Whatever method you choose, it's important that the bark is not damaged during harvesting as it may compromise future production.*

If a harvester comes into contact with a potential contaminant, or cuts themselves, they should immediately stop harvesting and clean their hands.

Many growers find that it's worth the time to sort mushrooms during harvest. Depending on markets, some sort by size, as some outlets prefer more uniform shiitake of a specific size. For example, many restaurants like smaller mushrooms that can be directly added to dishes without slicing, whereas others want to slice them, and prefer the mushrooms as large as possible. Learning these details are part of the task of good marketing at outreach efforts to your customers.

Cleaning

If not going directly to a market, mushrooms should be cleaned prior to storage. Due to the high moisture content (90%+), it is not feasible to wash them in water. Instead, a variety of brushes are used to clean them. You can purchase specific "mushroom brushes," but many types of paintbrushes, available locally at hardware stores, will suffice. It's worth having several types brushes that differ in the hardness of the bristles, as well as the length, to address different cleaning needs. Additionally, a damp towel can be used to pat mushrooms and clean them lightly, if necessary. It's also worth designing you laying yard to reduce dirt splash by putting fruiting racks on gravel, woodchips, or elevated off the ground.

Thrips, tiny insects that enjoy getting themselves in between the gills, are a common find on freshly harvested mushrooms. They don't tend to damage the mushrooms, but should

be immediately removed upon harvest. Gently tap the cap once, wait a second, and tap again. Compressed air can also be used after tapping to help blow them away, being careful not to damage the gills. **USING YOUR MOUTH TO BLOW ON THEM IS NOT A SANITARY PRACTICE.**

Examples of Mushroom Brushes

Storing

Once mushrooms are clean, they should be stored in food grade containers in refrigeration conditions at 36 – 38 degrees. Storage bins with **loose fitting lids** are ideal; ***never seal the lid on your storage container.*** These are widely available from restaurant supply stores. Refrigerate forest-grown mushrooms as soon as possible after harvesting. Properly harvested and cleaned mushrooms will remain fresh and marketable for several weeks.

Example of storage container

Make sure that your customer also has the appropriate refrigeration equipment, or if you are selling at a farm market or through a small retailer, that they can store your product adequately.

Mushrooms should never be stored in plastic bags on containers. Paper bags work well for small amounts.

C. Grading

Though not required, it is recommended for good marketability that mushrooms are graded. There is not an official grading system, but the scale below provides some guidelines based on grower experience:

Grade "A"
White gills
Caps curled and rigid
Remnants of universal veil (white specs)
No damage or defects

Outlets:
Retail
Restaurants, CSA
Wholesale

Grade "B"
Minor damage or defects
Caps flattened or slightly curled
Duller gill coloration

Outlets:
Retail
Restaurants, CSA
Wholesale

Grade "C"
Extensive damage or defects
Harvested well past prime

Outlets:
Dried
Value-Added
Some chefs will buy at steep discount

D. Weighing

BULK (like at a farmers market)
Bulk displays are not subject to any required grading, labeling or packaging. If selling bulk items by weight an **approved scale** must be used. The vendor is responsible for purchasing an approved device AND having it certified by a local Weights and Measures official.

Pre-Packaged
If selling food items pre-packaged, these need to be accurately marked, with (a) the net weight, standard measure, or numerical count; (b) the selling price per pound or unit of standard measure and (c) the total selling price.

Sell by volume?
One option to avoid having to purchase and maintain a certified scale is to sell by volume. For instance, at a farmers market, growers often sell by the pint, which is about 1/4lb.

E. Packing & Labeling

The type of packaging used depends largely on the outlet. Protecting the product, while making it appealing for purchase, is key. Containers should be breathable, and if at a retail outlet, should enable the product to be seen by potential customers. For wholesale outlets, like restaurants or through a weekly CSA, paper bags with a sticker label are sufficient, and keep mushrooms well. The cost of containers, and their environmental impact should also be considered when deciding what to use for packaging.

Various container options

Type of Market	Packaging
Restaurant	Large paper bag
CSA	Small Paper Bag
Retail Store	Clamshell, Coffee Bag, Cardboard
Farmers Market	Open clamshell that can be closed at sale

Possible containers for a given market

Labeling

The function of a product label is both legally required, and an important marketing tool. Be sure you comply with the law, as well as spend time designing appealing labels before spending money printing them.

For product labels in New York State, the following items are required:

Identity of Content Name of Farm Address Ingredient Declaration Net Quantity of Contents

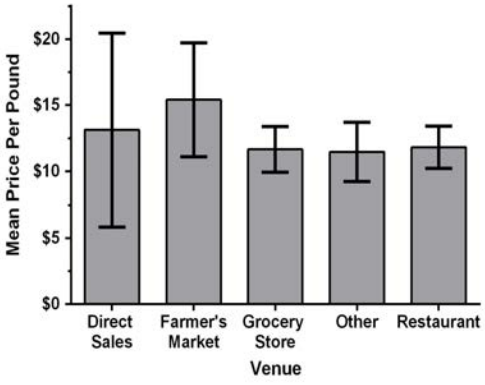
More detailed information on labeling requirements:
http://www.agriculture.ny.gov/fs/pdfs/fsi514.pdf

Your label should be part of your farm "brand" and entice purchases. More of this is discussed in part two if this guide book.

F. Pricing

The pricing one can get for their product is not fixed, but rather relative to the demand for a product, the value a customer assigns to it, and the effect of other competitors on the market. The price is also different for retail versus wholesale outlets.

Retail sales are in smaller quantities (1/4 to 1 lb), direct to the end-consumer.
Wholesale sales are in bulk (3- 5+ lbs) and usually to an entity that will then resell them to a consumer, like a grocery store or restaurant.



Data from farmers selling log-grown shiitake around the Northeast from 2010 – 2012 shows average prices of $10 – 12/lb wholesale, and $12 – 16 retail. (chart at left)

Pricing is NOT only a function of what you think someone will pay, but also about ensuring your costs and goals are being met. This distinction is often overlooked by farmers, and pricing should be determined from thorough enterprise budgeting. (see section two)

The Many Faces of Pricing
Additionally, there are many ways to articulate your price to your customer, and some will be more enticing. For example, log-grown shiitake could be sold for $16 per pound in a range of approaches:

A $4/pint container at a local farmers market (1 pint = about ¼lb)

As $8/week for ½ lb share in a Community Supported Agricultural model.

As $5 per package as a local foods co-op (with .35 lbs per package)

Each of these achieves the same end result, but is tailored to interest a buyer at a given market outlet.

G. Dehydrating Mushrooms

Mushrooms that are poor quality, or that a grower is unable to sell, are perfect for any number of value-added products. Shiitake is excellent as a dried product, and is easy to dry.

Additionally, recent research from Penn State and Paul Stamets has also discovered some compelling arguments that exposure of fresh mushrooms to sunlight converts enzymes to enhance both Vitamin D2 and D3 content in mushrooms. This is a boost to the nutritional value of the mushrooms, and also potentially improves their marketability for farmers. (See article, Appendix A)

The current legality of drying and selling mushrooms is a bit confusing, but essentially:

- Mushrooms dried using **"natural" methods (sunlight)** are not subject to licensing by any agency and can be sold legally without permits.

- Mushrooms that are dried in a **food dehydrator** ARE subject to regulation and currently require a 20C license and needs to be done in a certified kitchen.

The problem with this is that the sun is not a reliable method of drying at all times of the season in New York. Growers are advised to dry in the sun, but be prepared to finish in a dehydrator in most cases. This essentially means, unless a grower can develop a reliable solar drying method, they will need the 20C/access to a certified kitchen.

If a farm doesn't have such a facility, they can often be rented from a local extension office, church, community center, fire hall, or during the off-hours of a local restaurant. The Department of Ag & Markets and your local health Department are involved in the process. We are hoping to see this change in 2017 or 2018 so that the regulations allow farmers to processing dried mushrooms and mushroom powder in home kitchens (see sidebar), but for now, the only legal method is through a certified kitchen.

For more information, and the different certifications, read our factsheet: http://www.nebeginningfarmers.org/2012/04/28/28-becoming-a-small-scale-food-processor/

Changing Regulations to Support Drying Mushrooms

Since a certified kitchen can be hard to find, or financially unfeasible for many growers, this presents a challenge to the viability of mushroom growing enterprises.

New York does offer an exemption (Section 276.3) for use of a **home kitchen** for certain "non-hazardous foods," which currently includes candy, cakes not requiring refrigeration, cookies, brownies, two-crusted fruit pies, breads and rolls, standard fruit jams and jellies, dried spices and herbs, and snack items. This exemption allows use of a home kitchen, provided proper paperwork is filed, and an annual water test for bacteria is performed.

One indicator of how hazardous a food can be is known as "water activity" – levels below .6 are considered stable. Tests we've performed indicate that dried shiitake are .2 and powder at .52, suggesting they are a very low-risk product.

The Small Farms Program, worked alongside growers and the NY Farm Bureau, developed an amendment to include "farm-grown mushrooms" as an approved home processed food. We are currently looking to fund a research project that would verify a kill process so that dehydrated mushrooms could be processed in a home kitchen.

Process for Hybrid Solar/Mechanical Dehydration:

If you are going to dry mushrooms, it is recommended that for highest value, growers combine solar dehydration with mechanical drying. Again, for personal use, or to share with friends, this can be done on-farm. For sale, currently one is required to follow the 20C processing procedure.

Steps to dry mushrooms:

1) **Prepare mushrooms:** Trim off any misshapen, irregular, or insect damaged areas of the mushroom. **De-stem mushrooms to be dried**. The stems should be dried separately or can be used as a soup stock. The dried stems can also be sold or powdered and packaged as a seasoning. The best drying occurs within 2-3 days of

picking. Not only does this provide less chance of contamination, but a freshly dried shiitake gets a bright yellow color to it. One that has been refrigerated for a week often turns dull brown. It is recommended to dry wet (rain-soaked) mushrooms immediately.

2) **Place whole mushrooms "gills up" on food-grade trays**. The mushrooms should be placed "gills up" to preserve flavor. Some growers prefer to leave the mushrooms whole, and some choose to slice them. Slicing introduces more tools, and more opportunities for contamination, so sanitation becomes more critical.

It's good to use the trays from the dehydrator you own, so that they can be transferred directly from the solar process to the dehydrator, without needing to touch or move the mushrooms another time. Another tip is to sort mushrooms based on size, as smaller mushrooms will dry sooner than larger ones.

3) **Cover trays with screening, and place in sunlight**. The screening protects the mushrooms from insects and critters. Lay them on a table in the sunlight for at least 5 hours, but ideally as long as possible. On a sunny, hot day, full dehydration may be achieved.

Some growers have conceived of solar drying structures that increase temperature and thus speedup drying time. These are ok as long as; 1) the container **protects mushrooms from insects and other contaminants**, and 2) the container uses glass or a plastic that doesn't **block UV rays** (if you want to achieve the increase in Vitamin D).

4) **Move trays to a dehydrator.** This means packing them into a container or directly into the dehydrator, and keeping them protected on the trip to the commercial kitchen. Once there, set up in the dehydrator, and set the temperature to 155 degrees F. The dry time will depend on how dry they became during the solar drying process.

5) Remove when fully dehydrated. The mushrooms are finished when they are "leather hard," or in other words, are not soft in any place, but also not overly brittle. This is learned over time, and you can verify adequate dryness by weighing the mushrooms fresh and then dry; the finished product should be 6 – 15% the weight of fresh.

FORMULA:
Weight of Fresh / Weight of Dried = .06 to .15
A general rule is that 1lb (16 oz) of fresh should dry to 2 oz of product.

6) **Package mushrooms in airtight backs or containers.** A locking plastic bag or glass jar makes good packaging; DO NOT vacuum seal if planning to sell as this requires specific process and another processing license. The mushrooms should retain their quality for at least 6 – 12 months, and should be stored out of direct sunlight.

7) **To make powder**, simply grind stems/caps in a blender or coffee grinder dedicated SOLELY to this purpose. Package in glass or plastic spice jars. (must be done in 20C facility)

H. Other Value Added Products

Growers have devised a number of creative products utilizing shiitake mushrooms. Each of these needs to be developed by the grower, based on their perceived markets, the cost of production, and available ingredients. In New York, almost all of these items will be required to be produced in a 20C kitchen, except where noted.

Additionally, many value added products must be reviewed and approved by a process authority. Cornell hosts the **Northeast Center for Food Entrepreneurship,** which can help you navigate a particular recipe you want to develop.
https://necfe.foodscience.cals.cornell.edu

Some of the more popular products farmers have created include:

Shiitake Pate – shiitake processed with onion, garlic, nuts, and cream cheese/avocado/tofu

Rolled Goat cheese – fresh goat cheve rolled in powdered shiitake seasoning

Mushroom Barley Soup – can process and serve hot or freeze for customers to take home, with local vegetables and grain

Duxelles – traditional French dish, mushrooms, shallots, red wine, spices cooked until a creamy paste is made; can be eaten fresh or frozen

Canning – this is likely prohibitive for a small producer wanting to sell commercially, but mushrooms can be canned plain or with spices in a pressure canner.

Pickling – like canning, but in a brine (salt and vinegar) which is acidic

Jerky – mushrooms mixed with other herbs spices, soy sauce, then dried

Medicinal Extracts

The world of medicinal extracts is complicated. They offer a potentially lucrative product for growers to consider.

Coupled with selling the product must be the knowledge and understanding of research versus lore. And, sellers need to be sure to avoid making any claims for health benefits, instead highlighting products as only "dietary supplements."

Natural medicinal products are largely unregulated, which on one hand is good for the producer, as they can more freely offer their product (provided they don't make claims). On the other hand, it makes for a complex and confusing marketplace, where the contents of one product differ widely from another.

All this being said, those interested in pursuing more knowledge, and willing to develop consistent recipes, can offer a valuable and beneficial product to their market outlets.

The vast majority of scientific literature, along with the customs of traditional Chinese medicine, has focused around **hot water extracts** of the **fruiting bodies (mushrooms)** of a particular species. This is not to say that there are not some medicinal benefits to eating fresh mushrooms (beyond nutrition, which we know about) and the mycelium, but that in essence there has been little exploration into these forms as medicine.

See the article in Appendix B for more information on medicinal mushrooms.

Process for double extraction of shiitake:

Alcohol Extract

Fill a quart jar about 3/4 full with dried mushrooms of choice. Fill the jar entirely to the top with high proof (151 or greater) alcohol.

Keep mushrooms in the alcohol extract for at least one month, though more will be infused the longer you let it go (up to three months). Try to shake the jar daily.

When ready to move on, strain the mushrooms and set the alcohol extract aside.

Hot Water Extract

Add the strained mushrooms from above to a pot and add two quarts of water, make sure the mushrooms are covered with water.

Bring the mixture to a boil, then gently simmer (NEVER BOIL) for a minimum of two hours, but the longer the better! Be sure to monitor water level and keep it at least above the level of the mushrooms.

Once done, allow to cool, and strain the mushrooms, taking care to press the maximum amount of water from the mushrooms. Then, mushrooms go in the compost.

Take a clean half gallon jar, and fill first with the alcohol mixture (up to 12oz). Then add an equal amount of the water mixture (up to 12oz). At a 50:50 ratio, with 151 proof alcohol, this results in a mixture around 37.75% alcohol, though it can be diluted further. Under 25% is not considered shelf stable, and over 40% could degrade medicinal compounds in the mix.

Store the tincture in a cool place, not in direct sunlight. Lasts about 1 year. For ease of use, distribute into dropper bottles. Take 1 – 2 dropperfuls daily.

To figure alcohol ratios for different proofs, first determine what volume of the proof alcohol equals 100%. For example, In 16oz of 75.5% alcohol, 12.08 oz would be 100% alcohol (16*.755). Then, dividing12.08 with the full content of water extract with provide the exact alcohol content.

Section 2: Enterprise Planning

This section offers a number of resources to support farmers in planning their enterprise. These aspects are often left to the last minute, but the more one can get ahead in their planning and enterprise design, the more the farm can benefit. The topics covered in this section include:

a. Risk Management & Insurance
b. Taxes & Agricultural Assessment for Land
c. Business Planning
d. Budgeting & Cash Flow
e. Record Keeping
f. Ways to Save Time and $
g. Marketing & Channel Assessment
h. Branding
i. Certification

A. Risk Management & Insurance

For farmers, risk management is a process of identifying risks inherent to farming and also selling crops, so that procedures and measures can be put into place to minimize risks or the consequences of things not going as planned. By identifying risks and taking precautionary action, negative outcomes can be minimized.

Insurance is one way to manage risk. Sometimes policies are required, for instance if a farmer wants to sell to a particular institution, or at a farmers market.

Risk Management and Insurance are not to replace diligence; farmers should always take the precautions necessary to ensure their products are safe for consumption.

This booklet will discuss the issues specific to mushroom production; we invite you to consult factsheets #5 and #6 in the Guide to Farming in New York to look more in depth at larger concerns for the entire farm business

(See: http://smallfarms.cornell.edu/resources/guides/guide-to-farming-in-ny/)

Primary Risks for Mushroom Cultivation

There are two main risks for mushroom growers to consider; mis-identification of mushroom species, and the safety of their crop. We have covered safety and sanitation in section one of this guide, so will focus on the issue of proper identification and fears about mushroom poisoning here.

Identification

One of the major concerns of consumers and regulators in America is a fear of consuming poisonous mushrooms. When compared to many other cultures, the US is generally more afraid of mushrooms and the potential ill effects of consuming them.

Part of the job of the mushroom farmer then, must be to assure and educate their base about the relative safety of eating mushrooms, and instill confidence they are able to properly identify mushrooms safe for consumption.

In the woods of North America, one could potentially come across around 10,000 different species of fungi, of which, less than 5% are poisonous. Further, a very small

percentage would look anything like the mushrooms under cultivation, nor would they grow in the same context. Even still, it is critical to take extra precautions to properly identify mushrooms intended for sale.

For shiitake in particular, identification is pretty easy, and there are few dangerous look a-likes. Further, since growers are inoculating freshly cut logs, the shiitake fungus is getting a jump start on any competition, and is almost guaranteed to be what fruits out of the log.

It is recommended shiitake growers take the following steps:

1) Take a class to learn proper ID techniques
2) Familiarize yourself with basic characteristic of mushrooms you are growing
3) Learn potential dangerous look a-likes

Proper ID Procedure

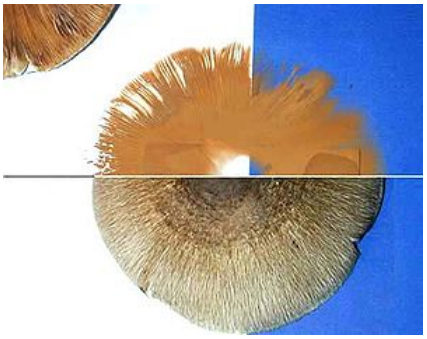
The basic strategy for proper identification is:

1. Pay careful attention to not just "what" you find, but "where"
Many beginners just excitedly grab mushrooms and don't use their observation skills to capture all the clues needed to properly ID a mushroom. Consider the following when you find a mushroom:

Was the mushroom growing on the ground, or in wood?
What tree species was it growing on or around?
What forest type was it found in?
Was it growing by itself or in clusters?
What is the color of the cap? Gills? Stem?
Does the mushroom have a ring (aka annulus)?

Before harvesting a mushroom, take a picture of it where it is. Note the ecosystem characteristics and habitat it is growing in. Identify the species of trees the mushroom is on or around.

2. Take a Spore Print



Back at home, select one of the caps and place it facedown on a piece of aluminum foil, allowing it to sit undisturbed for 24 hours. The mushroom will drop its spores onto the foil, like a fingerprint for the mushroom. The resulting "spore print" becomes one of the more helpful ways to ID.

Keep the other mushrooms in the paper bag and store in the fridge, until you are ready to identify.

3. Confirm Identity with Keys & Experts

With your good documentation onsite, as well as your specimens and spore print, you are ready to attempt to identify a mushroom.

As with any identification, it is not one characteristic, but at least three to five, that will help hone in on the species. Often, the most important aspects that lead to correct ID are:

Whether the mushroom was growing on wood or from the ground
If it was found singly or in clusters
The tree species/forest type found in
Color of spore print
Gills "free" or "attached" to stem
Gills end at stem, or are decurrent, meaning they run down the stem.
To properly identify, use a key, which basically asks a series of questions and leads you though ID in the process. Getting comfortable with keys also gets you versed in the language and characteristics that will help make identification easier in the future as you discover more mushrooms. ***DO NOT Google images or use picture-based guides. This can lead to a lot of wrong identification!***

Finally, as a beginner, try to confirm your mushroom with an experienced mushroom expert so you can be sure. Mushroom foraging is not an activity to do alone. Find others who have been learning the language and learn from them.

ID information for Shiitake

Cap: light to dark brown, often with white specs

Gills: white to very light brown

Stem: white to very light brown, tough

Spore print: WHITE

Growing habitat: Shiitake will ONLY be found growing from hardwood logs that have been inoculated. There have been no occurrences of other species with a similar form emerging from an inoculated log, though many different types of surface fungus do develop as the log ages (orange, black, white, etc)

Possible lookalikes (pictures courtesy of Wikimedia commons)

Galerina marginata; These mushrooms go grow from wild logs in the forest. (again, you will only find shiitake on cultivated logs) The fruit bodies of this fungus have brown to yellow-brown cap, with gills are brownish and give a rusty spore print. This is a poisonous mushroom.

To reliably distinguish a Galerina from a shiitake, make a spore print. Cut off the stem and place the cap, gills down, on white paper. Cover it with a bowl to keep it moist. Galerina always gives a brown spore print after some hours to overnight; a shiitake spore print is always white. Gill color is not a reliable substitute for a spore print because young Galerina gills can look pale –they'll darken with age.

Additionally, Galerina usually has a ring (annulus) around the stem, however, it may degrade as the mushroom ages, and that is why a spore print is a more reliable indicator. The ring is the remnant of a membrane that covers the gills of young Galerinas —it runs between the edge of the cap and the stem. As a young mushroom opens, the membrane tears at the cap edge and becomes the ring. In the young Galerina at the back of this photo you can see the pale membrane that is breaking to become the ring. Shiitakes never have a ring, no matter what age.

Other possible look-alikes (both edible):


Armillaria mellea

Kuehneromyces mutabilis

There are many species commonly referred to as “little brown mushrooms” that grow from logs or on the ground. Exercise extreme caution during your first harvests. ***WHEN IN DOUBT, THROW IT OUT!***

Insurance

Around 2012, new outdoor mushroom growers came across a startling discovery: insurance companies would deny or drop product liability coverage upon learning the farm was planning on mushroom cultivation, mostly over fears of the liability incurred with wrongful identification of a mushroom species or with the sanitary conditions associated with cultivation.

In 2015, Steve Gabriel, Agroforestry Specialist for Cornell Small Farms, began conversations with Lindsay Wickham, who is area field supervisor for New York Farm Bureau. Wickham and Gabriel then approached Michael Reisinger, with Nationwide Insurance, to discuss the issue.

In conversations it became apparent that the major hurdle was simply that insurance carriers were unfamiliar with the crop, and once informed of the process could see that forest mushroom cultivation is no more risky than any other vegetable or fruit crop.

Therefore, today growers can get product liability insurance from Nationwide, and several other carriers have since said they were willing to insure outdoor operations. Be sure to check with your local provider before getting started in sales.

B. Taxes & Agricultural Assessment for Land

One of the potential benefits of growing shiitake mushrooms is that after reaching the $10,000 gross sales threshold a farmer can get a reduced tax rate on parts of their land utilized for mushroom cultivation. This $10,000 minimum can be achieved by mushrooms alone, or done in combination with any other number of crops.

Additionally, if you are not already farming, once you begin selling products and filing a **Schedule F** income tax return, you are able to claim associated costs as a write-off on your taxes.

Farm operations are also exempt from paying sales tax on items used in the farming operation. None of the exemptions are automatic. You must either present an exemption certificate to the vendor when purchasing products or you can claim a refund if you have evidence to show you paid the sales tax.

LEARN MORE:
http://smallfarms.cornell.edu/2017/05/01/21-ag-value-assessment-for-farmland/

Agricultural Assessment

Agricultural assessment allows eligible farmland located in or outside agricultural districts to be taxed at its agricultural value rather than market value. It can make a difference in the amount you pay in property taxes. You will be paying taxes based on the agricultural value of land determined each year by the state, not by local market conditions. In most cases the state's values per acre are lower than your property's assessed value unless you happen to be in a county where assessed values are low.

How does the exemption work?

The exemption you receive is the difference between the local assessed value and the state's agricultural values. The state publishes agricultural values annually for 10 soil groups and for woodlands.

To qualify for agricultural assessment:

- Must have 7 acres or more of land in production **for sale** of crops, livestock or livestock products
- The same farmer must farm the land for at least 2 years

- Farming enterprises must generate $10,000 in sales (average for the preceding 2 years)
- A combination of enterprises generating $10,000 in sales will qualify.
- Up to $2,000 in wood product sales (timber, logs, posts, firewood) can qualify towards the $10,000 minimum. The only forest products that can be used entirely toward the $10,000 mark are mushrooms and maple syrup
- Start-up farms are eligible, if they generate $10,000 in sales in the first year of operation
- Farms less than 7 acres qualify if they generate $50,000 in sales
- If at least 7 acres of land owned by a rural landowner is **rented to a farmer** (who meets the income requirements), it is eligible for agricultural assessment provided the landowner has a 5 year written lease with the farmer. The renting farmer must generate at least $10,000 in sales from their entire operation, of which only a part might be the rented land.

Application Process

1. Go to the county Soil and Water District Conservation office (SWCD) – complete a soils group worksheet. All land qualifying for agricultural assessment is grouped by soil type. SWCD will do this for you – there may be a fee and you will need your tax parcel numbers.
2. Take the completed soils worksheet to your town/county assessor and obtain copies of the Agricultural Assessment Application (form RP-305). Complete one form for each parcel. The assessor will keep the soils worksheet on file. Make copies of the soils worksheet and application for your records.
3. **Agricultural assessment applications must be filed every year prior to the taxable status date (March 1)**. Agricultural assessment is **not automatic** – you must apply every year by the taxable status date. If you fail to apply, you will not receive the exemption. If no changes have been made in land used for farming, then after the initial application, you will file a short form RP-305-r.
4. If you buy or sell land, make sure you complete a new soils worksheet and file a new Agricultural Assessment form to reflect the changes.

Rented Land– land rented to a farmer for agricultural production is eligible for ag assessment if there are at least 7 acres used in the two preceding years and the land is subject to a rental agreement (written lease) for a term of at least 5 years. A copy of the lease or form RF-305-c must be filed with the assessor. Only the land actually used by the farmer will be eligible for agricultural assessment. Woodland is not eligible unless it involves sugarbush rental or is used for harvesting mushroom logs. Landowners must complete the application process described above to qualify – complete the soils worksheet, go the assessment office and complete form RP-305, and file every year before the taxable status date to receive the exemption.

Renting land to a qualifying farmer is a way for rural landowners, who do not farm, or small farmers who do not use all their land, to receive an agricultural exemption on land that is rented.

Where to get more information

- Start with your County Assessment Department
- Visit with your Town Assessor
- NYS Department of Taxation and Finance website: http://www.tax.ny.gov/pit/property/default.htm

C. Business Planning

Before diving deeper into aspects of business planning for your shiitake enterprise, it's worth taking a few minutes to brainstorm and answer the following questions:

WHY: Your objective.

WHY do you want to take on this venture?

WHY are you passionate or excited about this?

WHAT: Your product or service.

WHAT will your business DO?

WHAT will you sell?

WHAT makes it special or interesting?

WHO: Your market.

WHO are your customers?

WHO wants what you are selling?

WHERE: Your location.

WHERE will you operate/sell?

WHERE are your customers?

WHEN: Your timeline.

WHEN will you have this up and running?

WHEN do you have to do things to make that happen?

HOW: Your finances.

HOW will you cover the costs of start-up?

HOW MUCH will it cost to make your product and to run your business?

HOW MUCH will you need to sell to cover your expenses?

HOW MUCH will you be able to pay yourself?

If the answers to these questions are "I don't know," then you should answer them before committing to production.

For some loans and assistance, you may need to write a full business plan. Resources to help can be found at:

http://smallfarms.cornell.edu/2017/05/01/12-business-plans/

D. Budgeting & Cash Flow

A budget serves to compare your income with your costs, to summarize and project the overall track your business will take. For log-grown shiitake in particular, budgeting needs to be done over several years because the operation will usually phase into production with a number of logs.

Let's first examine an example of a 1,000 log operation that is up and running (usually by year 2 or 3). The following images are taken from an excel spreadsheet that is available free for download, where you can customize the figures to your situation. The production and expense figures are based on actual data collected from 2010 – 2012 from farmers producing log-grown shiitake.

Production Figures	
Number of New Logs inoculated	400
Number of logs in production	1,000
TOTAL logs	1,400
Number of logs soaked per week (7 week rotation)	143
Assumed low end production/week (1/4# per log)	36
Assumed high end production/week (1/2# per log)	71
Weeks you will soak	18
Total pounds for season - LOW	643
Total pounds for season - HIGH	1,286
Average	964

First, here are the projections for **production.** This is based on the number of logs in production, how many soakings occur, and the range of yields, which average ¼ - ½ pound of shiitake mushrooms per log, each time it is soaked.

This offers a yield that has a large range, so the further calculations are based on an average of producing 964 lbs.

Sales	
Pounds of Shiitakes sold Retail	464.0
Avg. price per pound retail ($12 - 16/lb)	$12.0
Pounds of Shiitakes sold Wholesale	400.0
Avg. price per ounce wholesale ($10 - 12/lb)	$11.00
Lb of Shiitakes sold Dried	100
Oz of Shiitakes sold Dried	50
Avg. price per ounce wholesale ($6-8/oz)	$6.00
Pounds of Shiitakes sold Value-Added	0
Avg. price per ounce Value-Added ($10 -16)	$12.00
Inoculated Logs Sold	50.00
Price per log	$15.00

Cash Receipts	
Retail product sales	$5,568
Wholesale product sales	$4,400
Dried Product sales	$300
Value Added Sales	$0
Inoculated Logs	$750.00
TOTAL ENTERPRISE RECEIPTS	**$11,018**

Sales can be divided up in a number of ways, depending on the goals of the farmer and local market demand.

Here, sales are pretty evenly divided between fresh sales both retail and wholesale, vs dried and value added sales.

Many growers also make income from selling pre-inoculated logs to customers interested in growing their own shiitake.

Next, we look at **expenses**, the most highly variable element in the budget, largely a result of the decisions a farmer makes. And, while sales can be adjusted to improve the amount coming in, the largest area of improvement for shiitake is in reducing expenses:

Direct Expenses	
Materials	
Mushroom Spawn	$300.00
Wax	$124.00
Angle Grinder & bits	$120.00
Inoculation Tools	$64.00
Fuel	$50.00
Chainsaw Maintenance	$72.42
Other Non-Durable	$71.00
Other Durable	$65.00
TOTAL	**$866.42**
Labor ($12/hr)	
Log selection & Harvest	$576.00
Inoculation	$1,968.00
Laying yard maintainance	$3,192.00
Harvesting	$1,560.00
Processing, Packaging	$360.00
Marketing and sales	$1,200.00
Other labor	$336.00
TOTAL LABOR HOURS	**766.00**
TOTAL LABOR COST	**$9,192.00**

For example, the labor cost of inoculation is not often paid “in full” by most growers; many trade logs in exchange for volunteer help in the process. In addition, these labor figures were from beginning growers.

Over time, the rate of inoculation can improve greatly, as can the time spend in marketing and sales. We estimate that both of those categories could be cut by 50% with only modest improvements to the business, resulting in additional profit of almost $2,000.

We encourage growers to play with these variables on the excel spreadsheet, and also track their expenses, so that the budget can be updated with real numbers after a season, which will lead to better projections moving forward.

Phasing Into Production

Perhaps even more important to understand is that mushroom farming has a bit of a different timeframe than some other crops. Typically, a grower will phase in production, starting with a goal of the total number of logs he or she plans to maintain. Then, working backward, the grower will add new logs each year, from years one through three. After year three, the same number of new logs will need to continue to be inoculated, since those three year old logs will be headed out of their productive life cycle:

DATE:	2017	2018	2019	2020
FARM:				
Production Figures				
Number of New Logs inoculated	400	400	400	400
Number of logs in production	0	400	800	1,000
TOTAL logs	400	800	1,000	1,000
Number of logs soaked per week (7 week rotation)	0	57	114	143
Assumed low end production/week (1/4# per log)	0	14	29	36
Assumed high end production/week (1/2# per log)	0	29	57	71
Weeks you will soak	0	18	18	18
Total pounds for season - LOW	0	257	514	643
Total pounds for season - HIGH	0	514	1,029	1,286
Average	0	386	771	964

The building of a productive system in this way carries other benefits. For one, labor starts out less intense, and grows as the number of logs does, along with grower experience and confidence. Sales also start out at a lower volume, giving the farmer time to develop markets. For these reasons, we encourage this phased entry over starting out trying to do 1,000 logs in the first season.

As with any farm business, this results in growers not getting paid (i.e. the enterprise isn't profitable) for the first year. Still, achieving profitability in the third year is possible, and that is a relatively quick turn around, especially when compared to many other crops.

Totals				
TOTAL INCOME	**$750**	**$4,282**	**$8,502**	**$11,018**
TOTAL EXPENSES	**$3,832**	**$5,286**	**$5,144**	**$5,662**
NET PROFIT OR LOSS	**$3,082**	**$1,004**	**$3,358**	**$5,356**
without paying labor	**$58.00**	**$3,556.00**	**$7,726.00**	**$10,132.00**

Cash Flow

Tracking cash flow is important to understand when you will have more or less money available for your enterprise. Often in farming, enterprises have high upfront costs and little money coming in until later in the season. Shiitake is no exception.

A cash flow example and blank worksheet are included in your workbook. If the above numbers for a 1,000 log operation are plugged in, this is what it looks like:

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
TOTAL INCOME	$100.00	$100.00	$400.00	$350.00	$150.00	$2,050.00	$2,050.00	$2,050.00	$2,050.00	$2,050.00	$100.00	$100.00	$11,550.00
TOTAL EXPENSES	$593.00	$1,167.00	$1,265.00	$1,203.00	$386.00	$659.00	$669.00	$680.00	$669.00	$669.00	$155.42	$35.00	$8,150.42
DIFFERENCE	$493.00	$1,067.00	$865.00	$853.00	$236.00	$1,391.00	$1,381.00	$1,370.00	$1,381.00	$1,381.00	$55.42	$65.00	$3,399.58

As is often common with cash flow on farms, there is a clear deficit in the beginning of the season, when costs are high and sales are low. Seeing this helps make for better planning ahead of time. While a grower can project these numbers and patterns to a reasonable degree, cash flow is most useful when accurate receipts and time records are kept, so the numbers become a true reflection of the reality.

E. Record Keeping

Your budgeting and cash flow documents will only be as good as the data you collect from one year to the next. Establishing a system that makes it easy to jot things down is crucial. Some farmers carry pocket notebooks, while others might take a note in their phone. A binder that lives with the scale means an easy means to record weights.

At a minimum collect the following:

- Date and number of new logs inoculated
- Each Spring record a count of the number of active logs in the yard
- Date of soaking/number of logs soaked
- Date of harvest/number of pounds harvested
- Lbs dried to Oz
- Sales (via invoicing)
- Material purchases (itemize “mushrooms” under Supplies in accounting)

With just the above items, you will be able to track your progress and determine where the money is coming and going. The real challenge is tracking hours. If writing them all down seems overly cumbersome, consider using a timer or stopwatch and getting average hours per week by just collecting a “snapshot” of data for one or two weeks of the season.

It’s worth at least estimating and noting time spent on the following tasks. Note the average time spent annually based on our 1,000 log scenario, as well as the typical time of year this is accomplished:

Jan - May
Log Selection & Harvest (48 hours)
Inoculation (164 hours)
Marketing & Sales (50 hours)
TOTAL = 272 hours

June - October
Laying Yard Maintenance (112 hours)
Harvesting (80 hours)
Processing & Packaging (40 hours)
Marketing & Sales (50 hours)
Other (28 hours)
TOTAL = 310

Tracking your hours gives you some time to reflect and compare your expenditure to the sample of farms above. Note that these hours spent are extrapolated from data based on a much smaller number of logs (100), and at a beginner level experience. There are several labor areas that could be significantly improved as growers optimize their systems. (see below)

ABSOLUTE NECESSITY #1: Tracking Expenses
A farm that doesn't track its expenses is not only unable to accurately report these to the IRS for tax purposes each year (a benefit to the farm), but also means that the farmer is running their enterprise on **emotions** rather than **data**. How can someone know if they are profitable if they don't take the time to assess their enterprise, at least once a year.

At a bare minimum, farmers should save all receipts from farm-related purchases in a shoebox, and add them all up at the end of the year. Writing "mushrooms" or "feed" or "fuel" on the receipt at the time of purchase will help jog the memory. Ideally, this reconciliation occurs monthly or quarterly, so progress can be tracked, and problems avoided.

It helps to categorize expenses according to the IRS categories on a schedule F, to make the taxes easier at the end of the year:

Admin
Car & Truck
Custom Hire
Feed
Fertilizer & Lime
Fuel
Insurance
Labor Hired
Rent or Lease – Equipment
Repairs and Maintenance

Seeds & Plants (Mushroom spawn goes here)
Supplies
Vet & Medical

For mushroom growing, the bulk of expenses will fall under "Supplies," and it's helpful to at least sub-categorize supplies for mushrooms versus other farm enterprises versus overall infrastructure. Set yourself up to at least be able to do this accounting work at the end of the season.

ABSOLUTE NECESSITY #2: Invoicing Sales
Another essential piece of selling mushrooms is a system for tracking sales; sometimes known as invoicing. The basic system needs to be where you write (or type) the quantity sold, the price, and to whom, where one copy is given to the customer and the second you keep. The simplest way to do this is to create a half sheet invoice that can be torn in two; this way you duplicate the invoice, tear it in half, give one, and keep one for your records.

Receipt books with a carbon copy are perfectly fine for this. Many computer accounting programs can be set up to generate invoices and save one for you, automatically. Or, see Appendix C for a simple printable template you can copy and use.

F. Ways to Save Time and $$

While we want to encourage tracking of time and expense, we know that life happens, and it can prove difficult to keep up. So, in addition to encouraging these actions as a way to improve your viability, we also want to share what we learned from the 2010 – 2012 SARE project as far as the most important considerations for a grower to save time and money. Asking yourself these questions will go a long way to improving your bottom line.

1. Should I acquire logs myself, or purchase them?
Depending on your access to trees, as well as your skill with a chainsaw and equipment to move logs, it may be really difficult to efficiently get the logs needed for inoculation. At prices of $2 – 3 per three-foot log, you may be better off purchasing them, so long as you can find a logger who can provide them (we can help link you).

For instance, at $2 a log 400 logs would cost $800
If you paid yourself for the time ($12/hr), that would mean spending 66 hours.

This is reasonable if you are skilled in chainsaw work, much less if you HAVE a chainsaw. But if you don't, it may be much cheaper to source the logs from another.

2. How efficient is my inoculation setup?
The more your inoculation set up is like an assembly line, the more logs you will inoculate in a given time. The area should be set up with three distinct areas for drilling, inserting spawn, and waxing. The bottleneck in the line is in the inoculation, so give it extra space. Design the layout to minimize lifting of logs.

Likewise, one or two people is not as efficient as 4 or 5. (it's also not as fun). The difference between 2 and 4 people is not double the efficiency; it can be exponential. That said, it depends on WHO is doing the work; some people are more efficient than others. It's worth identifying those who are both fast and diligent, and recruiting them help. Many farms give volunteers logs in trade for labor; this can be beneficial if the help is focused.

3. Do I really need that shiny tool?
Across many farm enterprises, one common affliction hurts farm profitability. We sometimes call it "shiny equipment disorder" – this problem is where a new farm crop breeds the desire to buy lots of cool toys or new things, when we could really get by with less. The good news with shiitake systems is that there is minimal material cost upfront; but that doesn't mean you can't find a good excuse to spend more!

4. How efficient is my laying yard set up?
Since moving logs around is the name of the game in shiitake, you want to get really good at it. There are many ways to set up your yard, and some can be incredibly inefficient, while others less so.

For instance:

- Soaking in natural bodies of water is great, unless it means carrying logs long distances or down steep banks

- A tank can be emptied and moved TO the logs, rather than moving the logs TO the tank

- Whenever possible, arrange so stacks of logs be lowered into a tank, then pulled out and placed for fruiting without taking a step
- What is my slug control process? Can I improve conditions to reduce the pest pressure on my fruiting logs?

5. What are my most efficient market outlets?
The next section of this guide elaborates on this, but the choices of where we sell and why are an important consideration that can save, or drain, your time. See more below!

G. Strategic Marketing/Channel Assessment

If you look at the budgeting numbers above, you might be surprised as how many hours beginning growers are projected to spend on sales and marketing, which accounts for 10% of the total time spent. This section offers some ideas about how to approach marketing and channel assessment for your products.

Definitions:

Wholesale: Selling a product to a buyer that is not the ultimate end user

Examples: Distributors/Grocery/Restaurants/Institutions/Auctions

Retail or Direct: Selling directly to the end user

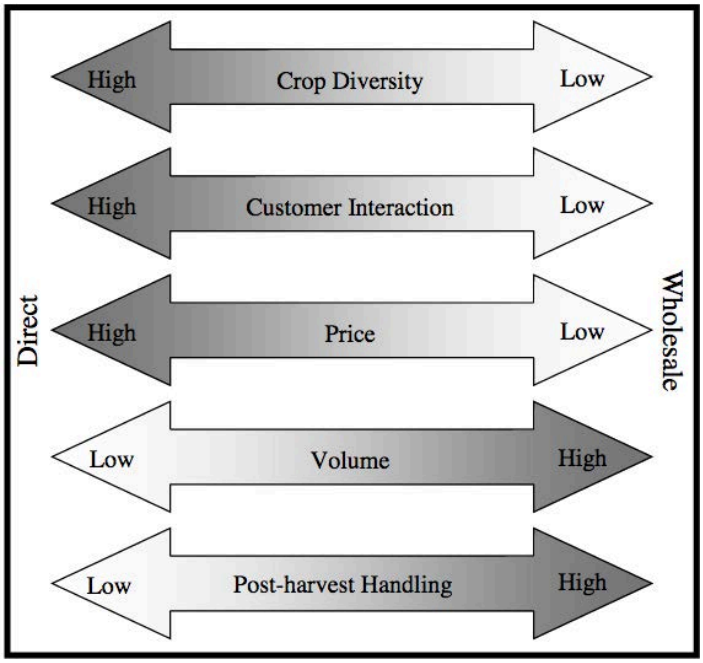
Examples: Farmers Markets/Farm Stands/CSA

Channel assessment: evaluating which outlets make the most sense for your farm

To read more, consult an excellent resource:

Guide to Marketing Channel Selection
http://ccetompkins.org/resources/guide-to-marketing-channels

From the guide:



"In marketing channel selection, farmers are faced with a dilemma: they can move large volumes of product through wholesalers at relatively lower prices or seek higher prices in direct market channels and run the risk of unsold product."

Some general trends are shown in the graphic.

5 Keys to Market Channel Decision Making:

1. Value your time
2. Take time to keep records, even if only for "snapshot" periods
3. Evaluate performance of a channel: Price, Profit, Associated Costs, Sales Volume, Labor Requirements, Risk, Lifestyle Preferences
4. Rank and Compare Channels
5. Combine Channels to Maximize Sales

Considerations Specific to Log-Grown Shiitake Mushrooms

- Growers are competing with button mushroom markets and large indoor shiitake producers, who sell mushrooms for $3-4/lb. This may limit ability to compete in certain wholesale outlets and often leaves growers seeking specialty markets and more direct marketing

- That said, restaurants valuing locally produced, and gourmet quality foods are frequently willing to pay $10 – 12 for forest grown mushrooms

- Since shiitake dries so well, one can take a higher risk selling as much as possible fresh, then dehydrating the leftovers, which will last 6 – 12 months

- One of the most important aspects of marketing an unusual food like specialty mushrooms is your reputation very one of your customers has to trust you and your product. For this reason, buyers to buy from an individual or business they know.

- Shiitake growers may benefit greatly from mixing market channels to diversify outlets and cash flow. For instance, a CSA often means sign ups in late winter and early spring, which brings in cash before the mushrooms are growing. Then, during the season, restaurant wholesale markets bring in cash without a lot of time (vs farmers market). Any excess production can be dried and sold retail during the fall and winter.

H. Branding

The concept of branding is only recently being applied to farmers and is an important tool to your strategy for effective marketing and sales. An effective brand establishes your farm as a unique identity to help share story of who you are, what your farm story is, and what sets you apart from others. A good brand is conveyed through all materials you put out, including your website, labels, printed materials, and even your personal presence.

While a brand is important, what is more critical is being authentic. Don't force yourself to do something you don't enjoy or feel drawn to just because you think you might sell

more mushrooms. Your brand should communicate:

1) Your farm's values
2) Your farm's personality
3) What you do best as a farmer
4) The needs you are fulfilling for your customers

A great resource for more ideas: http://www.standoutinyourfield.org/

Selling Points for Log-Grown Shiitake

- Forest cultivated mushrooms have more fiber than white mushrooms, very few calories (4 - 10 per ounce), little or no fat, no sodium, and no simple sugars, like sucrose.

- Specialty mushrooms have a wide range of flavors, from mild to robust that allow buyers to create more sophisticated cuisines in their homes.

- Forest-cultivated mushrooms are thought to have a wide variety of medicinal properties: cholesterol treatment, anti-infection, immune boosting, hypertension treatment

- Specialty mushrooms can be cooked in a variety of ways, including grilling, sautéing, stir-frying, or baking. They can be added to enhance to any vegetable, egg, or meat dish.

- Mushrooms make up an important texture component in meatless meals.

- Mushrooms are a good value with reasonable pricing.

- Mushrooms are a source of B-complex vitamins like riboflavin and niacin, and the mineral selenium.

- Forest-grown mushrooms are cholesterol free

- Forest-grown mushrooms have a much lower energy footprint than mushrooms grown indoors

Key Words:
- Log grown
- Forest grown
- from Sustainably harvested logs
- Using natural conditions of the forest
- Low energy inputs
- Nutritious, medicinal
- Natural
- Sustainable

I. Certification

The choice to certify your production system comes down to two items: does it improve your market standing, and do the standards help you grow better?

We recommend this article on the differences between the programs: http://smallfarms.cornell.edu/2015/04/06/certification-programs

ORGANIC: While some consumers tend to use the word organic in a general way to describe food produced on a farm that they think is sustainable or ecological, the term organic is a very specific label that can only be used by certified operations. Following the organic standards means that the farmer is held accountable by a third party, that is, a certifier that is accredited by the USDA. There are many checks and balances, including tedious compliance and enforcement policies. Several states offer programs to help reimburse farmers for a portion the cost of certification, for those interested in participating in the program. NOFA-NY is an organization specific to this process in New York. https://www.nofany.org/

NEW YORK GROWN AND CERTIFIED: A new program from the state which combines basic GAP certification and Agricultural Environmental Management plans. https://certified.ny.gov/

PEER-CERTIFIED: Another relatively popular label is Certified Naturally Grown (CNG), that requires an application, the signing of a contract, and an inspection performed by a volunteer, usually another CNG farmer. While their standards are based upon organic standards, they have more flexibility to alter requirements. CNG has specific mushroom standards developed. While this program may seem less rigorous than the USDA Certified Organic Certification process, it may be a good option for farms that do a lot of direct sales and have a chance to be transparent to their customers in person.

PLEDGE: A good alternative to certification, whether you don't want to pay for it, or have an aversion to such labels or government or institutions in general, is to take a pledge. In an effort to further assist consumers in identifying where they want to spend their food dollars, this pledge was developed to outline the agroecological management and fair labor practices used by farmers; they sign it annually and can display it for their customers. Pledged farmers who are not certified organic cannot use the term "organic" to define their production, but the transparent principles defined by the Farmer's Pledge are well-aligned with the management practices required by the National Organic Program..