A Visit to China
the discoverers of log cultivation of Shiang-gu

submitted by Lou Bao of Unicorn, Inc. & Joe Krawczyk of Field & Forest Products, Inc.

In early November there was a convention at a rural location called Quinyuan, in China. I attended this convention together with other personalities of the American Shiitake industry. Among them were John Donohue of Northwest Mycological Consultants, Joe Krawczyk of Field and Forest Products, and Dr. Dan Royse of Penn State, who represented a paper on DNA and genetics. Below is a concise personal opinion which I would like to share with my good friends.

Many papers were presented on cultivation of Shiitake, recycling of spent substrate, studies on temperature, gas in bag, effects of rare elements in mushroom cultivation, DNA genetics, etc. The papers were presented in English but, unfortunately because of poor pronunciation, I could not understand most of what was presented, except those by overseas researchers. If anyone is interested in any specific subject, please contact me and I’ll send a list of subjects presented with their author and address. About 60 overseas visitors were present.

Police provided escort during our trip from the airport to Quinyuen 250 km away. At Quinyuen, we enjoyed a tremendous welcome, as this rural area had never seen foreigners before. Curious but well intentioned crowds circled foreign visitors any time they stopped on the street to window shop or to admire some Chinese curios. A convention attendee from Kenya was the most photographed as every local wanted a photo with him.

The opening ceremony can only be demonstrated by video, as words cannot describe the wonderful show put on by many of the children of Quinyuen.
“China” continued from page 1

Two hours of pure enjoyment for the audience describing Qingyuen from the days 800 years ago, when a farmer by the name of Wu Shan Kun invented cultivation of “shian gu”, the Chinese name for Shiitake, on logs, to the present day sawdust cultivation method. We were driven to the temple of Wu Shan Kun and paid homage to him.

There are several variations of a basic method of cultivation of Shiitake in this part of China. In essence, an oak species is chopped up and made into sawdust and chips by a hammer mill type of machinery. High density polyethylene bags are used for low temperature pasteurization for 24 hours. The bags are packed tight with no air space. Tubings are tied air tight at one end and loosely tied at the other. Logs of about 4 inch diameter and 2 feet long are laid criss cross horizontally in brick and mud ovens heated by wood with temperature never going over 205 degrees Fahrenheit. During about 18 hours, the logs are being heated by boiling water in the oven and then cooled. Spawn, either purchased locally from the Central Qingyuen Mushroom Research or their own production, is introduced into the bag in several places by puncturing the bag and taping it closed afterwards.

Initial incubation is done indoors at room temperature. This is done twice a year about 6 months before fruiting. In May and October, after harvesting rice, the rice straw is used to make a fruiting hut. This prevents frostinthe logsg and maintains the logs at a somewhat higher temperature. Logs are laid vertically or horizontally on twigs and covered by a layer of polyethylene plastic sheeting. Because this area is on the hills and surrounded by mountains, temperature change is gradual and predictable. Therefore, the cultivation is done almost by the calendar. When inoculation is completed the farmers slit the bags or remove the bags altogether to allow formation of Shiitake mushrooms. Unfortunately, most of the practical data on U.S./European bag cultivation do not apply to Chinese cultivation methods and vise versa. The Qingyuen mushrooms are very dry (approximately 30% water content) and I understand the shelf life of fresh mushrooms can reach 20 days. Because of the change of temperature during the fruiting time, the mushrooms harvested are the most sought after “flowery” type where the brown cap is split showing lines of inner white. Most of their production goes to Japan and South East Asia. Qingyuen prospered during the last 15 years since large scale cultivation began in the mid 70’s. Since my return, I investigated the cost of Shiitake for exporting to the U.S. From 2
Shiitake News
March, 1995

sources, prices are as follows:

<table>
<thead>
<tr>
<th>Qingyuen Mushrooms: - USD$</th>
<th>Best</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIF Los Angeles</td>
<td>3.5</td>
<td>2.3</td>
<td>1.9</td>
</tr>
<tr>
<td>CIF New York</td>
<td>4.1</td>
<td>3.1</td>
<td>2.6</td>
</tr>
<tr>
<td>CIF Paris</td>
<td>4.7</td>
<td>3.9</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td>4.5</td>
<td>3.7</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Ningbo Mushroom Factory: - CIF New York in USD$

<table>
<thead>
<tr>
<th>Cap Diameter</th>
<th>Over 5 cm</th>
<th>4-5 cm</th>
<th>2-3 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type “Thick” cap</td>
<td>11.25</td>
<td>10.85</td>
<td>7.25</td>
</tr>
<tr>
<td>Type “Thin” cap</td>
<td>10.55</td>
<td>10.00</td>
<td>7.95</td>
</tr>
</tbody>
</table>

Above prices are per kg. fresh mushrooms quoted in November, 1994, for a 20 ft. container quantities. U.S. import duties, USA inland transport, warehousing, broker clear customs fee, and other fees related to importation of fresh produce, etc. is not included.

The main purpose of organizing this convention was to introduce Qingyuen mushrooms to overseas participants and the theme was export. On the other hand, the people in China in general have no idea of the Shiitake consumption in the U.S. and they probably think the U.S. consumes as much or even more than Japan. The truth is that Japan consumes hundreds of times more than the production of U.S.

There is always the possibility of mushroom export to the U.S., by not only Mainland China, but also Taiwan and other counties. Even though the U.S. exotic mushroom industry is in its infancy, many thousands of people directly and indirectly depend on its existence. Everyone in the industry should be made more aware of potential competition of imported product, therefore U.S. farms should look to improve efficiency of production, cost reduction and improve quality.

If anyone has any questions, suggestions and/or corrections on the above information, please do not hesitate to contact Joe Krawczyk Field and Forest Products at 1-800-888-0811 OR Lou Hsu of Unicorn at 601-252-6800.

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Yes, the bags mentioned in the August issue of Shiitake News is ours,

Yes, C 68 and C 2500 are our designations for bags with two types of filters,

Yes, our bags are available all over the US and the world through distributors,

Yes, we support research to determine gas in bags, and various filter types with relations to incubation and mushroom formation.

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Shiitake Mushroom Packaging
Reprinted from Chapter 4 of the Shiitake Mushroom Marketing Guide

Product packaging plays a very important part in marketing a food product. Many marketing experts consider packaging the fifth P in the product mix of product, price, place, promotion. Packaging can be defined as the activities of designing and producing the container or wrapper for a product. It is a means by which you communicate your positioning statement (see Market Assessment) and product information to the consumer to buy.

For these reasons, packaging has often been called the “silent salesperson.” It plays an extra important marketing role in those markets which do not allow for much personal selling. Think about the role of packaging after you have dropped off your prepackaged mushrooms at the grocery store and they have been placed on display. No person is usually there to sell them just the package itself.

Keep your budget, marketing objectives and target market in mind when designing your packaging. Many subtle factors go into the design of good packaging. In this section, we will look at packaging criteria for mushrooms sold to both retail and wholesale markets. This section includes information about:

- Boxes
- Plastics
- Wraps
- Pulp products
- Labels
- Grading standards
- Making packaging decisions
- Retail and wholesale sales applications

BOXES

Uses
Boxes are used when you are selling to a wholesaler, individual restaurant, at a farmers’ market or when you are selling in bulk to a retail outlet that will repackage them on the premises.

Construction
Boxes can be custom designed in any shape or size desired, according to a set of specifications. They can be glued or self-locking. Glued boxes are made on assembly machines where large volumes of boxes are assembled rapidly. These machines require a large investment in capital.

- Self-locking boxes are assembled by hand.

Boxes must be designed to maximize structural support for the product. A 200-pound test weight is standard within the industry, however, a 175-pound test weight, if additionally reinforced, is satisfactory for the weight of mushrooms and will hold up well in handling and storage.

Color Options
Boxes come in two colors: kraft (brown) or white. Additional colors may be created through the printing process. This process adds considerable cost to the carton. White boxes are more expensive and are often used with food products. The benefits of the white color are cosmetic only but may highlight your mushrooms to their best advantage.

Special Treatments
Boxes can be coated with moisture-resistant adhesives that will help keep the mushrooms dry and add to their shelf life. Only a light coating is required. Mushroom boxes do not need waxing.

Venting
Mushroom boxes must be vented so that air can circulate around the mushroom. Mushrooms give off a lot of heat and venting helps to minimize spoilage. Suppliers can help you design the vents to maximize the shelf life of your mushrooms. Make sure that the vent design does not interfere with the structural design or strength of the box.

Size Requirements
Three sizes of packaging are used for mushrooms in the wholesale markets. These are roughly as follows:

- 3# Box 450-475 Cubic inches
- 5# Box 750-775 Cubic inches
- 7# Box 1000-1100 Cubic inches

All three sizes fit into walk-in coolers and will stack on pallets and distributors’ shelves. Box sizes are not influenced by grade or size of mushrooms.

Wholesalers will often repack a 5 or 7 pound box into small-
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(814) 364-1810 Phone • (814) 364-1759 FAX

Forest Resource Center
Page 5
Lanesboro, Minnesota
er 3 pound boxes, because restaurants request them in smaller quantities with more frequent deliveries.

**Stock Sizes**

A wide variety of solid wall boxes is available in stock through most suppliers. Some suppliers also sell overruns and misprinted boxes when they are available. Prices run approximately 50% of custom costs. Die cut boxes can not be ordered from stock or surplus, as they are a custom order only. When considering the use of a solid wall box, be sure to test a sample to measure the effect on your mushrooms and the potential loss of shelf life. Misprints or inappropriate boxes may not make a favorable impression on your customers.

**Custom Design Costs**

Prices for custom boxes are determined by the amount of material used in the box, quantities ordered, set-up charges for die cut development and printing costs.

**Die Cutting Development**

Die cutting costs run approximately one dollar ($1) per square inch. Die cuts are designed to provide the best venting for the product stored in the box and, at the same time, take into consideration labeling and structural requirement. The average cost for die cut development is $500. It will vary depending on the complexity of your box design.

**Printing Costs**

Printing costs run about fifty cents ($.50) per square inch. Printing for boxes is handled, much like any other printed material. Camera-ready art can be designed by most suppliers or be provided by you. However, the art designed by outside sources must take into consideration the die cut and printing specifications required for production. One half inch margins on all print materials are required for production purposes. The average cost for print (straight print only) layout is $300. Graphic and logo design is extra.

**Average Prices**

The average price for a custom designed box is $.50 to $.75 cents each. Price breaks are usually given for every 5,000 ordered. CAUTION: Price quotes may or may not include die or printing set up charges. Check all three major components of the custom quote: materials, die and printing. Printing and die set up charges are a one-time fee.

**Shipping Parameters**

All boxes are shipped flat. Two to three weeks lead time is required from point of production to delivery. Shipping costs are not usually included in the price quotation. Ask your supplier about shipping costs before making a purchasing decision. Determine the physical size of the order to make sure you have storage space available.

**Selecting a Supplier**

The best source of finding any good supplier is to ask someone who has used one. Find out how they liked working with them and examine the quality of their work. If you do not know of anyone, go to the Yellow Pages and look under "Boxes."

- When selecting a supplier, interview a number of them if possible.
- Ask if they have experience in producing boxes designed for food storage, and mushroom specifically.
- Get price quotations.
- Find out if they produce in the quantity you need. Some suppliers only take very large volume orders and others handle primarily smaller jobs.
- Look at sample boxes
- If you are having them do the art work, ask for samples of their work and, if possible, meet the designer.

Take a good look at the level of service and enthusiasm you get from them during the preliminary discussions. This is usually a good indication of how they will treat you once the order is placed.

**PLASTICS**

**Uses**

Plastic containers are used when selling to retail grocery stores and when mushrooms are sold in prepackaged quantities.

**Foam Products**

Foam trays (also called meat trays) are available in white, green, light blue, rose and yellow. An 8” x 5” x 1” container could hold approximately four ounces of product (without stems). This size tray is usually a stock item. The trays cost approximately $.02 each. Foam trays are not recommended for mushrooms because moisture may collect at the bottom of the tray. They are film wrapped and do not have any drainage holes, so the mushroom will not get the venting it needs to maintain a good shelf life.
**Molded Products**

Molded plastic containers come in a variety of standard sizes or may be custom ordered at an additional cost. Bottoms and lids are sold separately. They may be used together or the bottom may be film-wrapped. Molded plastics come with or without airholes. Pricing on molded plastic containers is approximately: Pint size lids - $.02 each, bottoms - $.03 each; Quart size lids - $.05 each, bottoms - $.05 each.

Prices will vary greatly in different geographic locations so get price quotations from your local supplier before making a final decision. Shipping costs are charged separately. Have the supplier estimate the shipping cost for you. Also find out the size of the order to ensure that you have storage space available.

**WRAPS**

**Standard Sizes**

Standard produce wraps come in 5,000 foot rolls. Depending on the size of the container, a standard roll would wrap approximately 4,000 packages of mushrooms. (Get specific quantities from your supplier.) Non-perforated wraps can be inserted into a cutter bar system, incorporating a hot wire that will cut the wrap at the desired length and a hot plate to seal wrap at the bottom of container.

All FDA-approved food wraps have a certain amount of absorbency. Certain wraps tend to darken mushrooms, so be careful to specify that the wrap is for mushrooms when ordering. You may want to test-wrap samples before placing a final order.

Price estimated for wraps (non-perforated) are approximately:
- 12” width - $25 per roll
- 15” width - $31 per roll
- Cutting bar system - $175 plus freight (allow 2 to 3 weeks for shipping)

Pricing will vary greatly depending on your geographic location. Get price quotations from your local suppliers. Shipping costs are separate.

**Pulp Products**

Pulp-based boxes are slightly less expensive than plastic containers. However, pulp boxes tend to absorb moisture and set up a climate for bacterial growth which may shorten the shelf life of the mushroom. They may be used for short-term storage where the mushroom can be transferred to another container -- for example at a farmers’ market.

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**Definition**

Labeling is part of packaging and consists of printed information describing the product and appears on or with the package.

**Uses**

Labels can have many uses. They can be used to:
- Identify the product or brand, such as “cocktail mushrooms.”
- Describe the product such as “log grown,” “black mushroom,” or describe how to use the mushroom.
- Grade the mushrooms, see Grading Standards later in this section
- Promote your product by means of an attractive graphic design.

A good label may include any or all of the above information. However, keep in mind that it must be visually pleasing and easy to read, and should communicate your selected positioning message.

**Production Considerations**

Producing a label is a sophisticated process that includes many individual decisions, each influencing the final cost. It is a good idea to work closely with your designer and/or printer to evaluate your specific need. Following is some of the general information you will need in making a decision.

Labels usually come in standard shapes, such as round or square, or can be custom designed at an additional expense. Square or rectangular labels can have pointed or rounded edges.

Labels require graphic design, typesetting and often keylining. These services can be provided by a graphic designer or are usually available through label suppliers at an additional charge.

Labels can be in a single color or in multiple colors -- two, three, or four. Each new color increases the printing cost. There is also an additional charge for specialty inks. If you are using a colored border you must allow for 1/16” to 1/8” of bleed for printing. Get specific requirements from your printer.

Pressure-sensitive labels must “set” on the package at room temperature for about an hour before being refrigerated. When getting price quotations, remember to specify that your labels will be refrigerated. It will influence the kind of adhesive that will be used.

Label costs can vary greatly depending on the size,
number of colors used, complexity of design and volume ordered. Weigh your pricing decision against the value added to the package.

"Minnesota Grown" Labels
"Minnesota Grown" labels are available through the:

Minnesota Department of Agriculture
Minnesota Trade Office/Agricultural Trade
90 West Plato Boulevard
St. Paul, Minnesota 55107

A guidebook is available that includes instructions for using the Minnesota grown certification mark, sample uses, a registration form and camera-ready copies of the logo. Their certification mark is registered with the Secretary of State and U.S. Patents and Trademarks to identify food products which are produced, processed, or manufactured in Minnesota. To participate in the program, you need only complete the form located in the guidebook and return it to the Minnesota Department of Agriculture.

Residents of other states should check with their state departments of agriculture for similar campaigns promoting locally grown produce.

Legal Requirements
Labels must be accurate. They should not mislead customers or fail to include pertinent information. There are federal and state labeling regulations. Make sure your labels contain all the necessary information before printing.

In Minnesota, labeling requirements for fresh mushrooms assume that no preservatives are added. Minnesota state requirements for labels are:
- Name of the product (Shiitake Mushroom)
- Grower or Association Information, including name, address, zip code and telephone number for whomever is responsible for the product. This information can be placed on the box during printing or by using a rubber stamp, screening or pressure-sensitive stickers.
- Net Weight Declaration - Regulations cover the specific size (height) of printed type in which you must declare your product’s net weight.
- If the front/top of the package measures 5 square inches or less, your declaration must be no smaller that 1/16” in height.
- If it is 5-25 square inches, your declaration must be no smaller that 1/8” in height.
- If it is 25-100 square inches, your declaration must be no smaller that 3/16” in height.
- If it is over 100 square inches, your declaration must be no smaller than 1/4” in height.
- If more than one size container is used, use 3/16” or 1/4” type size to be safe.
- Optional comments may include instructions for refrigeration between 34-38 degrees Fahrenheit, arrows designating up, or a logo.

Generally, Minnesota growers may sell any fruits or vegetables that they grow without a license. If you buy mushrooms from another grower or a wholesaler to resell, a Retail Food Handler’s License is required. These are available from the Minnesota Department of Agriculture: (612) 296-6470. Growers in other states should check with their state’s comparable department for licensing information.

GRADING STANDARDS

The Forest Resource Center has proposed a grading standards for fresh Shiitake mushrooms. The mushrooms would be graded by the diameter of the cap and the quality of the mushroom. The grades are as follows:
- Large - cap diameter greater than 2 1/2 inches
- Medium - cap diameter 1 1/2 to 2 1/2 inches
- Small - cap diameter less than 1 1/2 inches
- Grade A - Premium, caps no more than 75% open
- Grade B - Standard, caps greater than 75% open
- Grade C - Mushroom pieces

MAKING PACKAGING DECISIONS

The basis for making a packaging decision can include many different considerations. Each decision is unique, based on your individual needs and perceptions, yet they must be consistent with your product position, pricing, distribution and marketing strategy. Keep in mind that there is no “right answer.” Experiment to find what is right for you.

To make packaging decisions, you need to:
- Investigate what is standard or required in your selected market segment.
- Evaluate the pros and cons of your competitors’ packaging.
- Develop a packaging concept by defining what the package should be or do for the product. For example, it may need to protect the mushrooms, describe how they taste or offer recipe suggestions.
- Decide on the requirements for your label, such as color, text, size, shape and how it will be attached (adhesive, string, etc.)
- Evaluate your cost. You must evaluate your packaging costs based on your budget as well as on customers' perceptions of value added by your packaging idea. In other words, will they buy more?
- Test out your packaging and label design ideas with your potential customers and see how they like them.

**RETAIL AND WHOLESALE APPLICATIONS**

After extensive research of both the retail and wholesale produce markets in Minneapolis and Rochester, Minnesota, we found the following information.

**Wholesale**
- Preferred a three pound box with die cut air holes so that mushrooms do not absorb heat or dry out.
- Purchased mushrooms sight unseen so they were not sensitive to package design. Boxes were mostly of kraft construction, some having white interiors.
- Boxes were usually 200 pound test weight.
- Light grade moisture-resistant adhesive was used to treat the interior of the box.
- Restaurants stored the mushrooms in their coolers in the same boxes and were not influenced by graphics or packaging.

**Retail**
Most mushrooms were packaged in a plastic container (mostly molded plastic with drain holes) with a clear film overwrap so that the customer could determine the freshness and quality of the product.
- A 12 inch wrap would cover most containers.
- When stems are removed, packaging can be shallower.
- Pressure-sensitive labels were placed on top of the container, not covering airholes.
- Labels were colorful and often included the word “fresh”.
- Individual packages were shipped to the supplier in a master carton. Using a three pound wholesale box may be adequate for this purpose until your revenue or volume warrants the design of a master carton.

**FRC Boxes**
The Forest Resource Center has developed a standard 3 pound box for both wholesale and retail markets using the above criteria. We have designed this box so that individual growers may customize them with their own names, addresses, etc., through the use of a rubber stamp, screening or a pressure sensitive label.

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**Attention Shiitake Growers**

**The Forest Resource Center is now taking orders for 3 lb Shiitake boxes**

The Forest Resource Center is in the process of re-ordering our 3 lb. Shiitake boxes. If you are interested in placing an order for these boxes please contact us BY April 15th with your order count.

Call our office at 507-467-2437 for more information.

(See page 12 for “Packaging” Worksheet)
With a Lambert Log, You’ll Get the Breaks You Deserve.
Great Shiitake logs are made by great people. And Lambert Spawn has the industry’s finest team of Shiitake mycologists and specialists. That’s why our logs give you a consistently high yield in a short period of time. Not to mention the highest quality shiitake mushrooms you’ll find anywhere.

Lambert logs are the most popular in the country because they give growers the results they can’t get on their own. Lambert logs are formulated from a blend of supplemented sawdust inoculated with the finest Shiitake strain available for indoor cultivation. Our strict attention to quality control in areas like moisture, light, aeration and humidity assure you of logs with the most consistent yields. Break after break.

How does Lambert do it? With top people, first and foremost. We have four full time mycologists on staff who are involved in a wide range of Shiitake projects. We insist on testing. Lots of it. How else can you be sure you’re getting mushrooms that are consistently superior in shape, size and color. Once you try our logs, you’ll see why they’re unequaled for quality and consistency.

Lambert Spawn offers growers a total support program with technical advice, a 24-hour hotline and on-time delivery. All designed to give you the highest yields and the highest quality mushroom. Call Ralph McIntyre at (610) 384-5031 to put our logs to the test. Because you deserve all the breaks you can get.

Great spawn is made by great people.
**Packaging Worksheet**

<table>
<thead>
<tr>
<th>What is your positioning statement?</th>
<th>Are there custom design costs?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What kind of packaging does your target customer need?</td>
<td>What for?</td>
</tr>
<tr>
<td><strong>Type:</strong></td>
<td>How much?</td>
</tr>
<tr>
<td><strong>Size:</strong></td>
<td>What kind of labels will you use?</td>
</tr>
<tr>
<td><strong>Construction:</strong></td>
<td>What information will you include on your labels?</td>
</tr>
<tr>
<td><strong>Color:</strong></td>
<td>How will you design your packaging to fit your positioning statement?</td>
</tr>
<tr>
<td><strong>Special Treatment:</strong></td>
<td>What are your sources for purchasing packaging?</td>
</tr>
<tr>
<td><strong>Price:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Notes:</strong></td>
<td></td>
</tr>
</tbody>
</table>
FRC Shiitake Class a Success
By Erik Ronneberg

A group of over 50 forestry enthusiasts gathered at the Forest Resource Center over the weekend of February 5-6 to learn about Christmas trees, Woody Agriculture, Maple Syrup, and Shiitake Mushrooms. Besides listening to presentations, looking at slides, and talking to each other, participants enjoyed two favorite FRC Shiitake dishes; Wild Rice Baron with Shiitake and turkey, and Chicken Breast with Shiitake Marsala Sauce.

These lunches were burned off by a field trip to Badgersett Research Farm and a hike down to the Shiitake building and back up to the parking lot. The classes were taught by Carl Vogt, Joe Deden (FRC Director), Erik Ronneberg, Phil Rutter, and Wayne and Doreen Bergo. All Participants went away with their own inoculated log and strict instructions on how to monitor and maintain moisture content.

Besides learning the basics of Shiitake cultivation and how to inoculate logs, participants were given a chance to see the end product - the type of operation they are aiming for.

Badgersett Research Farm shows the type of results that are possible given commitment to a goal and years of hard work. What used to be a typical small farm has been transformed into a top research center that developed improved varieties of hazels and chestnuts. A recently added greenhouse that produces seedlings has been added to extensive Christmas tree plantings, a gourmet apple orchard, and rows of genetically superior hazels and chestnuts. In addition the farm has produced Brandon and Perry Rutter, two very promising young men!

One participant mentioned how the Forest Resource Center use to be 10 years ago. From a small old building the Center has grown to include the Shiitake operation, the John Schroeder Renewable Resources Building, the Treetops Confidence Course, and a modern home on the bluff. Greater and greater numbers of people are benefiting from the Resource Center and the planned addition of a dormitory will tremendously expand the impact.

What does any of this have to do with growing Shiitakes? Nothing and everything. Nothing, in that your operation is different than the FRC. Everything, in that if your level of commitment and dedication is the same, you will see similar results.

A good example of this spirit of commitment was shown by Doreen Bergo. Doreen broke her leg in December of 1993 and was out of action for over six months. The Shiitake Project was under pressure by the FRC Board of Directors to increase production and turn a profit. The coldest winter in a while was just around the corner. While things didn’t look good, Doreen kept things going by keeping in touch over the phone, and limping around helping out whenever she could. Her example inspired FRC staff to pitch in and keep things going while her leg healed. Her husband Wayne helped out by working part time until Doreen was back to full health.

Today the Shiitake Project is going better than ever. Production has increased to over 150 pounds per week at times, so that it is now possible to market to a distributor in the Twin Cities. The building is functioning better, more resources are being devoted to the Shiitake Project, and the future looks bright. A recent innovation is to inoculate logs indoors during the winter, to spread the work out and build up log numbers at a faster rate. Logs stored indoors for their whole life cycle seem to be just as productive as logs that spend half of their life outside.

While many Shiitake operations need technical help - better inoculation techniques, marketing help, increased production and a better understanding of how Shiitakes grow - many Shiitake operations also need the far more important ingredients of commitment and dedication.

How can we strengthen our commitment and dedication? One way is to invest the time and energy - just do something in order to be involved. This is especially important during the beginning stages. Many people get interested in Shiitakes but never get started because they don’t want to do it wrong. It is better to do it wrong rather than never do anything. Everyone does it wrong in the beginning. It took the FRC two years to grow the first mushroom.

When your operation is small, continue to read and think about the future. Read books by Paul Stamets and...
other mushroom fanatics. Make Shiitakes a big part of your life even though your operation isn’t a big part of your life. Then transfer the time spent in theory and reading into the reality of your operation as it expands. Be sure to attend conferences and classes. Get to know the big successful growers in your area, and associate with them. Pretend to be a success before you are a success!

As your operation begins to take up more time and energy, it is important to renew yourself by taking time off. Take enough time off so that you start to miss it. Then you’ll appreciate getting back to it. One growing business is much like another, so keep in touch with other entrepreneurs in your area.

Growing Shiitakes will take experience. Keep reading the basic articles on how to grow them. As you learn from experience, you’ll get more from the articles. A positive feedback loop will develop.

While getting support from other Shiitake enthusiasts is important, it is also important to shelter yourself from criticism from others. A beginning Shiitake grower only needs a few comments like “You’re wasting you time”, “It will never work”, “What a crazy idea!” to get discouraged and give up. All too often when something goes wrong or we get impatient with the perceived slowness of our progress (when actually we’re progressing as fast as we can) we turn to others for support. Since very few others know anything about Shiitakes, it is unlikely we’ll get the understanding we need. It is far better to call the FRC or another grower from far away to get the support than it is to turn to somebody who is closer but doesn’t understand.

Make sure to define your Shiitake growing in a way that is acceptable to others. Call it a hobby - people do such crazy things themselves as hobbies they won’t criticize growing Shiitakes. Call it managing your woods. When people ask why you do it talk about the aspects they’ll understand, the exercise you get moving logs, the appreciation of nature you get when you’re in the woods. Buy Shiitakes and serve them to your friends. Even if you never grow a mushroom, they’ll become supporters.

While I won’t say that I’d do it myself, I know of someone who started marketing a specialty product before he produced any himself. This put him under pressure to produce it himself, and it also gave him a chance to learn marketing. Now when he does have a supply himself he’ll have no problem selling it. By getting involved with the process and spending the time, he became more committed.

The worst thing to do when growing Shiitakes is to focus on making money. Making money is simple - when your expenses are less than your sales you make money. The money will take care of itself when you’re successful growing Shiitakes. Focus on the process of learning and the joy of making progress.

Getting fellow growers involved to honestly take a look at your operation and offer suggestions will be a great help. You will learn a great deal, and you’ll also feel accountable to them to follow their advice. If you don’t make the changes, you’re not only letting yourself down, you’re letting them down. You’re also insulting them by not taking their advice. Bringing the power of peer pressure to bear will help your operation improve in a hurry.

While it is certainly a good idea to learn the technical process of growing Shiitakes, don’t forget to also pay attention to the “intangibles” of commitment and dedication. If you do both, your operation will be a success.

If you neglect either, it won’t be. We all can do a better job of being conscious of what it takes to be committed and then using this knowledge to strengthen our commitment. Sometimes we tend to focus on the technical things too much. The reason a beginner isn’t growing Shiitakes is as much because of the lack of commitment as it is in not knowing how. A proper balance is the key. Oh yes, don’t forget the rest of your life! Developing a passion for Shiitake doesn’t mean neglecting anything else.

FRC Shiitake Project Tours Available

If you would like to attend our Shiitake class next year please contact the Forest Resource Center with your name and address and we’ll add you to our database for notification of class dates.

Meanwhile, for anyone interested in a more in depth look at Shiitake mushroom growing the Forest Resource Center offers TOURS of our indoor Shiitake Mushroom Project. These tours include a half hour video on growing Shiitake mushrooms and are offered by appointment only. The fee is $15.00 per person or $25.00 per couple. Group tours can also be arranged. Please call the Forest Resource Center for your tour reservation at 507-467-2437.
NEWLY REVISED!
GROWING
SHIITAKE MUSHROOMS
IN A CONTINENTAL CLIMATE

by M.E. Kozak and J. Krawczyk

Softcover, 116 pgs.

New Information for Southern Growers

Our updated book (now in its 4th printing) details cultivation of Shiitake on natural logs in both northern and southern climates. It includes illustrations and photographs of cultivation methods taken from farms around the U.S. "Recommendations and suggestions made in the book are based on practical experience, not theoretical notions... an excellent book... Readers will not be disappointed".

Stephen Bratkovich
Wood Utilization Specialist, U.S. Forest Service

"The Shiitake Way" by Jennifer Snyder is a wonderful cookbook filled with recipes for vegetarian cooking with Shiitake mushrooms. See sample recipes on the following page compliments of Jennifer. To order send $9.95 to Book Publishing Co., P.O. Box 99, Summertown, TN 38483

"Shiitake ~ The Healing Mushroom" by Kenneth Jones takes the reader on a lively tour of the healing properties of one of the world's most delicious foods. To order contact: Healing Arts Press, One Park St., Rochester, VT 05767
The recipes below are some of the most satisfying recipes created. I get more requests for the first recipe, Shiitake Nut and Cheese Loaf, than any other shiitake recipe. It's great for holidays or any special occasion.

- Jennifer Snyder, author of "The Shiitake Way"

**Shiitake Nut and Cheese Loaf**

- 1 tablespoon olive oil
- 1 onion, diced
- 1/2 pound fresh shiitake, chopped
- 4 garlic cloves, pressed
- 1 red bell pepper, chopped (optional)
- 2 teaspoons thyme
- 1 teaspoon marjoram
- 1/2 teaspoon sage
- Salt and freshly ground black pepper to taste
- 1/2 cups cooked brown rice
- 1/2 cup cashews or sunflower seeds, chopped
- 4 eggs

Preheat oven to 350°F. Heat oil in a large iron skillet, over medium heat, cook onion until translucent. Add mushrooms, garlic, peppers, dried herbs, salt and pepper. Cook on medium heat until all the juice evaporates from the mushrooms 20-25 minutes. Remove mushroom mixture to a large bowl and add rice, nuts, eggs, cottage cheese, and cheese. Butter two bread pans. Add the mixture to the pans. Bake 1 hour until firm. Remove from oven and let cool on rack for 10 minutes. Remove the loaf from pans. Garnish with fresh parsley.

Makes 2 loaves.

**Shiitake Sauce**

- 1 tablespoon canola oil
- 2 tablespoons flour
- 3 cups shiitake stock
- 2 tablespoons tomato paste or reconstituted dried tomatoes
- Salt and freshly ground black pepper to taste
- 4 tablespoons non-fat sour cream

In a saucepan over low heat, heat the oil, add the flour and stir for a few minutes. Heat the Shiitake Stock and add it to the flour mixture off the heat. Stir in the tomato paste. Salt and pepper to taste. Add sour cream (optional) if desired. Cook for 15-20 minutes.

Makes 3 cups.

**Fungal Fantasies From "Hope's Mushroom Cookbook" By Hope Miller**

See page 5 for an interesting article on Hope Er-Orion Miller. To order Hope’s Mushroom Cookbook, write to Hope Miller, 200 Pine Dr., Blacksburg, VA 24060

**Hot Mushroom Dip Especial**

- 1 lb. fresh Shiitake (or any other species)
- 6 tablespoons butter or margarine
- 1 tablespoon lemon juice
- 1/2 cup dry shiitake or button
- 1 lb. onion
- 1 lb. canton sour cream (may use low-fat)
- 2 teaspoons chicken bouillon granules
- 2 tablespoons soft butter or margarine
- 2 tablespoons flour

Chop mushrooms quite fine and saute in pan with butter and lemon juice; let simmer 5 to 10 minutes. Add onions, sour cream, bouillon granules, salt and pepper; simmer 5 to 10 minutes more. Make a paste of remaining butter and flour; add hot mixture and stir until thickened. Serve hot, in fondue pot or chafing dish, with chips, crackers or fresh vegetables.

**Hope's Dilly Lemon Shiitake Soup**

Note: This may be made for as many as 25 or as few as 2 depending upon the amount of mushrooms available. Quantities can vary according to the number of people to be served and to taste.

Sauté sliced shiitake in a small amount of margarine. Add minced shallots, salt, and pepper and cook until shallots are translucent. Add chicken broth, lemon juice to taste; simmer. Garnish with fresh dill which has been minced. Simmer at least 10 minutes more.

**Shiitake and Couscous**

- 2 teaspoons olive oil
- 1 teaspoon dried basil
- 1 cup reconstituted shiitake, sliced
- 1/2 teaspoon dried oregano
- with stems removed
- 3/4 cup low-sodium chicken broth
- 1/2 cup red onion, sliced
- 1 tablespoon grated Parmesan cheese

Shiitake News Advertising Guidelines/Deadlines

Classified (Line) Advertising

New Shiitake News subscribers are entitled to a one-time, Free, 25-word Classified Ad. (Business/Commercial/organizational subscribers are not eligible for the free ad). Ads running more than 25 words will be charged at a rate of 25 cents/word over the 25 word minimum.

All other non-commercial Shiitake News subscribers: 25 cents/word classified ad rate.

Non-subscribers/business/organizations: 50 cents/word classified ad rate.

Display Advertising

(The Shiitake News staff can design a display ad for you. Please call for current rates and deadlines).

General: The FRC encourages Camera Ready display ads. Deadlines for display ads are: Feb. 5 for march issue; July 5 for August issue; and October 5 for November issue. Display Advertising Rates are: $20/column inch.

Shiitake News uses a 3-column format. To design your Display Ad, follow these column-width guidelines:

1 column: 2 3/8 inches.
2 columns: 4 7/8 inches.
3 columns: 7 1/2 inches.

FRC Advertising Policy

The Forest Resource Center reserves the right to edit or refuse any advertisement. The FRC is exercising all precautions to avoid publishing any fraudulent or misleading advertising, and will not knowingly publish such ads. If you have a problem with a Shiitake News ad, please contact the FRC.

The FRC accepts pre-paid classified and display ads, only. Personal checks, money-orders or VISA/MASTERCARD payments are welcome.

Shiitake News is published three times each year (March, August, and November) by the Forest Resource Center, a private, non-profit, educational corporation, dedicated to promoting the responsible use and renewal of our natural resources. The FRC is a forestry and environmental education learning center, located at Rt. 2, Box 156A, Lanesboro, MN 55949, U.S.A.

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Subscription Information:

Initial subscription: $25 for U.S. subscribers. (Initial subscription includes the past three issues of Shiitake News, and samples of Shiitake marketing materials that the FRC has developed and sells at cost, to Shiitake growers). Annual renewal: $15.


Shiitake News Article Submissions and Deadlines

The Forest Resource Center welcomes article submissions to Shiitake News.

Deadlines for articles are: Feb 1 for March issue; July 1, for August issue, and October 1, for November issue. Black and white photos, or good color photos with a lot of contrast are welcome. The Forest Resource Center will not return photos, unless instructed to do so.

Postmaster: Send address changes to: Shiitake News, Forest Resource Center, Rt 2, Box 156A, Lanesboro, MN 55949
-Shiitake Growers Associations-

Alabama Shiitake Growers Association
Hosea Hall, Cooperative Extension Service, Alabama A & M University, 819 Cook Ave., Normal Alabama 35762 205/532-1697

Alternative Agricultural Cooperative Association: Don Reid, P.O. Box 1266, Sedalia, MO., 65302 816/827/0884.

Appalachian Mushroom Growers Association: Maryellen Lombardi, Rt 1, Box 30 BYY, Haywood, VA 22722

ARKANSAS: Those persons who are interested in forming a growers association should contact: Tom Kimmons, Rt #, Box 15, Shirley, AR., 72153.

Carolina Exotic Mushroom Association: Ellie Litts, Rt. 2, Box 284, Hodges, SC., 29653.

Florida Mushroom Growers Association: Charlie Tarjan, 3426 S.W. 75th Street, Gainesville, FL., 32607.


Minnesota Cultivated Mushroom Association: Wally Mattson, 2718 Shiloh Road, Duluth, MN 55804.

Northwest Shiitake Association: Ken Pingel, P.O. Box 207, Salem OR., 97308.

SHII-GAW (Shiitake Growers Association of Wisconsin): John Cook, P.O. Box 99, Birchwood, WI 54817. 715/354-8171.

Midwest Specialty Mushroom Growers Association (MN., IA., IL., and MO): Joe Krawczyk, N3299 Kozuzek Road, Peshtigo, WI., 54175. 715/582-4997.

CANADA

Canadian Mushroom Growers Association, 310-1101 Prince of Wales Drive, Ottawa, Ontario, K2C 3W7, CANADA.

-Spain/Equipment Suppliers-

Allied Mushroom Products, P.O. Box 490, Tomitownt, AR, 72770. 501/361-5938.

Far West Fungi, P. O. Box 1333, Goleta, CA., 93116.

Field and Forest Products, Inc., N3296 Kozuzek Road, Peshtigo, WI., 54175. 715/582-4997.

Fungit Perfecti, P.O. Box 7634, Olympia, WA., 98507. 206/426-9292.

Hardcore Enterprises, Rt. 6, Box 42, Cherry Grove, WV, 26804. 304/358-2921.


Mushroom People, Box 220, Summertown, TN, 38483. 612/964-2200.

Myctek, 7421 Pudding Creek Drive S.E., Salem, OR., 97301 503/370-7674.


Sohn's Oak Forest Mushrooms, P.O. Box 20, Westfield, WI., 53964. 608/296-2456.

J.B. Swayne Spawn, Co., P.O. Box 618, Kennett Square, PA., 19348. 215/444-0888.

Won Shan Mushroom Farm, Rt. 1, Box 510, Catlett, VA., 22210. 703/788-1127.

CANADA

Western Biologicals LTD., Box 283, Aldergrove, British Columbia, VOX 1AO, CANADA. 604/856-3339.

-Shiitake Demonstrations/Research Projects-

Arkansas

Bob Colvin, S.W. Research and Extension Center, Rt. 3, Box 258, Hope, AR., 71801. 501/777-9702.

Florida


Illinois

Dr. James Veselenek, Medical Technology Program, Sangamon State University, Springfield, IL 62794-9243. 217/786-6346.


Kentucky

Dr. Deborah B. Hill, Department of Forestry, 205 Thomas Poe Cooper Building, University of Kentucky, Lexington, KY 40546-0073. 606/257-7610.

Minnesota

The Shiitake Mushroom Demonstration Project, Doreen Bergo, Project Mgr., Forest Resource Center, Rt 2, Box 156A, Lanesboro, MN 507/467-2437. Tours available by appointment.

North Carolina


Ohio

Steve Bratkovich, Ohio Cooperation Extension Serv, Box 958, 17 Standpipe Road, Jackson, OH 45640. 614/286-2177. The Cantor's Case 4H Camp, near Jackson, OH. Site of the 1985-86 Ohio Shiitake Research Project. The project is continuing as an educational demonstration.

South Carolina

Ninety Six Rc&D, Box 84, Greenwood, SC 29648. 803/229-2174.

Wiscosin

Dr. Al Ellingboe, Dept of Plant Pathology and Genetics, University of Wisconsin, Madison, WI.

Dr. Janice Timmer, Dr. Anita Penherr and Dr. Marty Orndrus, Dept of Food Science, University of Wi-Stout, Menomonie, WI 54751.
“Alternative Methods of Shiitake Inoculation,” by Bob Harris. Various methods for inoculating logs are discussed including sawkerf cuts and new methods with nutrients added for faster colonization. 7 pages. $3.00 ppd., from Mushroompeople.

“From Harvest to Hearth,” by Mary Ellen Kozak and Joe Krawczyk. Produced for and sold by SHI-GAW at $12, ppd. (This is a Shiitake Mushroom Growers Standards) Guide.

“Growing Shiitake Commercially,” by Bob harris. About large scale cultivation of Shiitake using traditional oak logs. Written in response to an increasing demand for more info: The result of many years of work, including materials from recent visits to commercial farms and research facilities in Japan. Some of the most modern and cost-effective methods are presented with photos and drawings. 72 pages, $13.50, ppd., from Mushroompeople.

“Growing Shiitake Mushrooms in a Continental Climate,” by Mary Ellen Kozak and Joe Krawczyk. Available through Field and Forest Products, Inc., at $13.95, prepaid.

“The Biology and Cultivation of Edible Mushrooms,” by S.T. Chang and W.A. Hayed, Ed. An advanced treatise on the cultivation of edible mushrooms. The authors review modern research and concepts for cultivating a variety of edible species such as Shiitake, Agaricus, Oyster, Enoki, etc. An excellent reference to modern studies in the subject. Includes discussions of breeding, genetics, medicinal aspects and economics. Hardcover, 820 pages. $108.50, ppd., from Mushroompeople.

“Shiitake Cultivation in Japan,” by Bob Harris. This 21-minute video takes you on a tour of commercial Shiitake growing facilities in Japan. Discusses various techniques which have been developed to maximize production and quality. VHS or VETTA, $40, ppd., from Mushroompeople.


“Shiitake Mushrooms: Cooking American with an Oriental Favorite.” This is a 15-minute video, designed to introduce Shiitake to restaurant owners and chefs. It provides a brief overview of Shiitake production methods, and a more extensive discussion of how the mushrooms are graded. It concludes with a master chef preparing an institutional-size recipe that features Shiitake. The video was produced at the U. of Wisconsin-Stout by Dr. Janice Timmer and Dr. Anita Pershern. It is available from SHI-GAW for a nominal duplication and handling fee.

“Shiitake, The Healing Mushroom,” by Kenneth Jones. Takes the reader on a lively tour of the healing properties of one of the world’s most delicious foods. To order contact: Healing Arts Press, One Park St., Rochester, VT 05767.

“Shiitake News,” a Shiitake mushroom research and general information newsletter, published 3 times each year by the Forest Resource Center, Rt. 2, Box 156A, Lanesboro, MN, 55949. Subscriptions for U.S. addresses are: $25 initial subscription (includes the last 3 issues of “SN” 2 recipe cards. Annual renewal is $15. For non-U.S. addressed: $30 initial subscription and $20 annual renewal (U.S. Funds only). Back-issues of “SN” are available.


“The Shiitake Way,” by Jennifer Snyder. Jennifer puts together new and old ideas for using Shiitake with an emphasis on nutrition. Even if you’ve been collecting Shiitake recipes for years you will find many interesting and delicious recipes here. Send $9.95 to: Book Publishing Co., P.O. Box 99, Summertown, TN 38483.

“Year-round Shiitake Cultivation in the North,” by Mary Ellen Kozak and Joe Krawczyk. Produced for and sold by SHI-GAW at $10 each, postpaid. (A planning guide for those growers interested in converting existing buildings or building new indoor Shiitake cultivation facilities).

-Other Shiitake Resources-

“Results of the Illinois Shiitake Mushroom Research Project,” by Kenneth F. Konsis and Susan J. Biggs. This research paper, just released by the Vermillion County Conservation District, Westville, IL, highlights the results of a 5-year Shiitake research project using 20 different Shiitake strains on 1,000 white and black oak logs. To obtain a copy of the report, contact: Ken Konsis or Susan Biggs, R.R. 1, Box 495A, Westville, IL, 61883. Or call 217/662-2142.

“Shiitake Mushroom Production in Ohio on Small Diameter Oak Logs,” by Steve Bratkovich. This paper summarizes research results of the Ohio Shiitake Project from 1985-88. A copy of the research paper is available by writing Mr. Bratkovich at: Ohio Cooperative Extension Service, P.O. Box 958, Jackson, OH, 43030.

“Shiitake: Cultivated Mushroom,” by Jerry Rafats, NAL Reference Librarian, Beltsville, MD.

“Mushrooms: A Small-Scale Agricultural Alternative,” written by the USDA’s Office for Small Scale Agriculture.

These two publications, above, are bibliographies containing references on a multitude of Shiitake mushroom aspects - from medicinal properties to marketing.

This Shiitake Resources List - by no means complete - was prepared by the Forest Resource Center solely for the convenience of “Shiitake News” subscribers and Shiitake mushroom enthusiasts across the Country.

This Resource List does not represent any product or services endorsement by the Forest Resource Center.

If we have missed you, please contact the FRC and we will add you to the list.

Shiitake Products Available at the Forest Resource Center

Shiitake Mushroom Soup Mix with wild rice and vegetables. Packaged in 4 oz bags. Easy to prepare, uses pre-cooked wild rice. Cooks in 15 minutes. $5.00

Fresh Shiitake Mushrooms available in 1 lb bags. $6.00

Freeze Dried Shiitake Mushrooms available in 4 oz. bags, great for last minute cooking ideas or anytime. $4.00

These make great gifts - call or stop by for your order! 507-467-2437

Those who are interested in exchanged Shiitake strains contact:

Thomas Ziegler
Unterwittbach Str. 9
97892 Unterwittbach, Germany EUROPE
Fax: 49 9342/85270

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