

The Natural Farmer

Skip Keane's Forested Acres - Spring 2002 Special Supplement on AgroForestry

by Jack Kittredge

There is an area of some 50,000 forested acres in southern New England which, while within 25 minutes of a major city, is so wild that bobcats, flying squirrels and trout abound there. On their common border Connecticut and Rhode Island established state parks and forests years ago, when there were few houses in the area.

In one of them lives Skip Keane, surrounded by Rhode Island's 19,000 acre Arcadia State Forest — in which people have gotten lost for days and through which passes the Wood River, a class A stream with the best trout fishing in the state.

Keane grew up in Attleboro and graduated from Northeastern University. Fascinated with learning and trying things out, he has a master's degree in archeology and is getting another in elementary education. He teaches some college classes as well as subs at an elementary school, has promoted concerts, and owned both a grocery store and a restaurant. Skip was an archeologist on the Blackstone River project and knows both his local geology and Native American history.

The 8-acre place Keane bought in 1993 is on Skunk Hill Road, so he calls it Stinky Acres. In exchange for the privilege of being surrounded by miles of wilderness to explore with cross country skis and canoe, Skip is not allowed to cut trees on



photo by Jack Kittredge

Keane stores the fresh shiitakes in plastic bags into which vents have been cut. This will enable the mushrooms to breathe and stay of high quality in his refrigerator for several days.

his own land. In the Wood River watershed, owners are limited to felling no more than 5% of their timber. As a result, Stinky Acres has specialized in raising products which do well in arboreal settings.

"I like an edible landscape," he says. "Every year I spend maybe \$500 and bring in some trees and bushes that are native to this area, or grow well here, and produce fruit or berries. I have wine grapes, rare plums, Asian pears, medlar, hardy kiwi, apricots, paw paws, elderberries, quince, persimmons, loganberries, filberts, hazelnuts, black walnut. The whole idea is to have a place where you can stroll around and eat what you find. Every year I have failures, things that don't take. But that's what you have to do.

"Part of the reason I got into growing mushrooms," he continues, "was because I wanted something which could fit here. There are rivers, ponds, and miles of forest. I wanted something, which could add a little income and could be done in a forest setting."

Keane's mushroom business started out as an adventure. He and his friend Mike Veracka, who was also interested in edible landscapes, heard about the healthy properties of shiitake mushrooms and decided to try some logs together. Skip enjoyed raising them so much he decided to go into business and now sells them to Bread and Circus, a local food coop, some restaurants and a circle of friends.

"I wanted to sell my mushrooms as organic," Keane relates, "so I checked into getting certified. When I first inquired about it the state sent me the application and I saw they wanted a soil test. I said, fine, I can do that. There are no chemicals used on this property. But I'm growing on logs. They didn't understand how mushrooms are produced!"

So Skip ended up writing the regulations for organic mushroom production for the state of Rhode Island. Now he certifies that his logs are clean by getting a statement from the state about the management of the forest, and the logger about where he got the logs. He also has to certify that the place he gets plugs and spore doesn't use anything prohibited.

"It's not a hard process," Keane coaxes. "Anybody can do it. I have friends who raise them in the city. If you love mushrooms I'd recommend getting 10 logs and putting them out under some pines. If you put them in an oak area, other mushrooms that attack oaks can contaminate your logs. But if they're under pine, it's safer. Mushrooms like shade and a little wind. Ventilation is the most important thing.

"You can use any hardwood for shiitake, — oak, maple, beech. Red oak is the best, from my experience. What has to happen is that the sap has to be at the right level. The logs have to be cut and used within 3 weeks — cut, drilled, plugged, and sealed within 3 weeks. You can inoculate anytime after the leaves turn brown in the fall until several weeks before leaf buds appear in the spring. But the best time to do it is late September or, even better, in February. Usually I do it in February."

Most commercial shiitakes, says Skip, are produced in sawdust, not natural logs. It is hung in net bags, inoculated with spore, and the mushrooms pop out — although they're

typically smaller than those grown on logs. But they can be produced in greenhouses where every aspect of the environment is controlled, and can be produced by the billions.



photo by Jack Kittredge

This oak log shows the pock-marks of drill holes into which the spawn-innoculated plugs were driven, and the resulting beautiful shiitake mushrooms.

he says. "But if something else got in there, a wild strain, you'd lose all your work. So I buy the dowels. I've just focused on shiitakes because I like them, and they keep very well. There are lots of different shiitake varieties, however. Some do better with cold weather, some with hot. I use an all-weather variety that does best from 50 to 75 degrees F. Below or above that they shut down — they won't grow."

The plugs are a little less than an inch long, with the spore already in them. They run about \$40 per thousand. Skip get his logs delivered after he already has his plugs, and he'll drill 50 logs and plug them on a weekend. He just drills a hole and bangs the plug in with a hammer. He gets a cheesewax or beeswax (which also has to be certified) and paints it over the plugs. This is the Japanese method, which they've been doing for thousands of years.

Keane, however, prefers the natural system, and buys oak logs. Once a year the state auctions off sites in the forest they want cleared, in order to go in and plant corn or wheat as forage for the wildlife. Usually he'll order oak logs from a friend who bids on those sites.

Log thickness is only relevant to how easily they handle - bigger logs will last a long time, but they're harder to handle. Six inches is a good diameter for an oak log, and it doesn't matter if you use a trunk or a limb. Last year Skip had a lot of bad winter weather and there were many downed limbs which he went around and grabbed.

Keane buys his spawn in the form of inoculated dowels from the "Mushroompeople", PO Box 220, Summertown, TN 38483-0220, www.thefarm.org/mushroom/, 800-692-6329. They have many different strains of shiitake, as well as other mushrooms, and offer a starter kit for about \$20.

"You could take the spore from a mushroom, get a petri dish, sterile instruments, and inoculate your own logs,

The holes are 6 to 8 inches apart, every 2 to 3 inches all the way around the log. Some people paint the end of the log with latex or oil paint to keep them from rotting, but that's not allowed in organic management. Keane has logs that are 6 or 7 years old, and doesn't think you need to seal the ends.

"The hard part is drilling," he stresses. "Two years ago I did 30,000 holes! You might put between 70 and 150 in a typical log. It's a lot of work and you don't really make much of money on it. I make a little, and it helps. For me, it's more having fresh mushrooms, giving them to friends. The cost of the dowels and wax, plus the cost of the logs and the work to drill them is all it really takes. The logs will produce for four to five years."

Once you drill your logs you stack them horizontally in cribs, advises Skip. You leave them that way for six months. Then you take them down and lay them so one end is on the ground, wicking up the moisture, and the other end is up on something — another log or piece of metal a few inches above the ground. You leave them like that, on an angle. Maybe in the fall the first year you get a few mushrooms, maybe not. But the next year, in April, you take each log and slam it hard on one end. That's the Japanese method. They believe by slamming it you help stimulate the growth of the mushroom. Then you flip the log over so that the end that was up is now touching the ground. You do that to all the logs. Some people soak them in a big barrel of water before they bang them, but he just flips them.

"You get three fruitings a year," explains Keane. "You get one in April/May/June. After the Spring fruiting they shut down for three or four weeks. In July/August they come up again. Then they shut down again. The last fruiting is September/October/November, until it gets cold. When you're talking about a mushroom, actually you're talking about a strand that runs the whole length of the log. It doesn't pop out where you drill, it pops out of cracks all around the log.

"A little finger peeks out, then boom! They start popping out and in a couple of days or less they're full size. I like to let them go until they're 5 to 8 inches in diameter, and fleshy. If it gets too big, or you harvest when they're moist because of the rain, they turn to mush. That's the only bad thing about mushrooms — the moisture content. You need air circulation — that's important. I'm on a little ridge here, and there's always a little circulation here. You also have to know when you're going to pick them. Otherwise nothing bothers them. Once in a while you'll have a few snails or slugs. Squirrels don't eat them."

All mushrooms with caps, he continues, have their spores under the cap. If the cap is enclosed, the spores aren't released yet. When the cap opens fully it releases them. When the cap is exposed and you can see the veins running through it, they've been released. Skip says that in the summertime, in the June fruiting, you can go out at night and there's a magical fog around the logs. What is happening is the mushrooms are spreading their spores into the air.

You have to be careful timing the harvest, he stresses, because mushrooms spoil quickly. You might look at them and think they're almost ready, you'll wait just one more day. But they can be gone the next day - maybe it rained and they got too much moisture. If you don't harvest them, when they get to a certain size they'll just turn brown and melt.

You can harvest in the morning, or at night. You clear a log and if it's in the fruiting period they may keep popping out for a few weeks, necessitating picking every day. In a good fruiting, two or three mushrooms will easily amount to a pound. Then fruiting stops, even if the weather is perfect. After a rest, they'll start fruiting again. If one batch of logs is ready, other batches will be too. Some years are good, some are bad, Keane says philosophically. He has had years when he picked 3,000 pounds, and years when he got 400. He starts new batches of logs about every 3 years.

Shiitake are very sensitive to moisture, so to keep them fresh Skip cuts vents in plastic bags to let them breathe. He keeps the bags open and put them in the refrigerator crisper, where they'll last 2 or 3 weeks. If you close up the bag, however, the moisture in the mushroom can't escape and it will just melt. Mushrooms don't freeze well, he says, but they do dry well. He uses a dehydrator, then to eat them he just puts them in water to reconstitute for a half an hour. He squeezes them to get the excess moisture out, using the water in the sauce.

Keane doesn't recommend eating shiitakes raw because he thinks they're much better if you fry them up in a little butter and garlic. Sautéed, they have a consistency like lobster. He likes them that way, or fried a little more and added to spaghetti sauce, eggs, or sandwiches. Before cooking them he usually washes them, pats them dry, and cuts the stem off.



photo by Jack Kittredge

Here Skip kneels by some of his ginseng plants. He seeded this area several years ago and is pleased with the result. Despite planting these himself, he needs a license from the state before he can harvest and sell the roots.

"Shiitakes are the healthiest mushroom in the world," Skip asserts. "According to a report I read, they contain all 8 essential amino acids in better proportion than soybeans. They have vitamins A, C, D, and Niacin. As little as five grams of shiitake taken daily reduces serum cholesterol and blood pressure. Shiitake produce interferon and interleukin compounds which strengthen the immune system, and a fat absorbing compound that aids in weight reduction. The Japanese eat them 3 or 4 times a day just for health reasons.

"Look at that!" he says, holding up a fresh cut sample. "How can you beat that for a mushroom? You've never seen a shiitake like that in your lifetime! Fresh! They're like steak! I'm not bragging, but they're perfect!"

Keane sells his mushrooms for about \$7 a pound, fresh. On a good day they will yield a hundred pounds. He puts them on plastic trays and takes them into a store like Bread and Circus in Providence, where they are bagged and resold for \$14 or \$15 a pound. They sell out quickly, he says.

"If I can't sell them for some reason," he adds, "I'll use them myself, give them to friends, or dry them. But usually I don't have any trouble selling them. The first year it was hard because it was new. People wanted me to prove they wouldn't get sick eating them. But I gave out a few samples. The next day I got calls, people wanted more."

He finds he can't compete with commercial growers on price, however, and market his mushrooms in a mass market chain like Stop and Shop. The things that he has going for him are the freshness of his product and that it is organic.

In addition to his edible landscaping efforts and his shiitakes, Skip uses his forest setting to grow ginseng. He feels he has almost a perfect spot for it, about 70% shade. Although there are a lot of deer in the forest, he says he has never had a problem with them — perhaps because it is a management area and hunting is allowed.

"Ginseng grows well in my woodland," he claims. "You have to dig in the ground, turn it over, and then plant your seeds. Then just leave it. You have to wait between 5 and 7 years for a sizeable root. It's an endangered species, however, and I'm not allowed to sell ginseng unless I have a federal permit. Next year I'll apply for one."

Keane has three plots of ginseng, some Siberian and some American. He buys the seeds, 5000 for \$100, and finds about half of them germinate. Ginseng is harvested in the fall, after the seeds are set and the plant has lost its leaves. Once it has put as much energy as possible back into the root system, then you can harvest the root and save the seeds for replanting.