

Agroforestry Forest Farming

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Of all the techniques of agroforestry, forest farming is probably the one most useful to landowners in Kentucky. Most have some forestland, and many of those owners don't really "do" anything with that land, keeping it for wildlife habitat, recreation, or a possible timber sale if there is a sudden need for cash.

Historically, most of our forestlands were poorly managed. Forests were high-graded, meaning that loggers took the biggest and best quality trees out and left the rest behind. Anyone who has worked with agronomic crops or livestock can envision what the result was from that activity. But forests can be improved, just like gardens. It is a long-term project, but with some professional help from a consultant forester or from the Kentucky Division of Forestry, forest landowners can implement something called timber stand improvement (TSI). Forest farming can be a part of that decision, if the landowner considers the options before starting the TSI operation. It is quite likely that in a TSI operation, the owner would want to remove some small diameter trees of less economically valuable species.

A variety of non-timber forest products (NTFPs) or "crops" can be produced in a forested area. These may include, but are not limited to, bee products (honey, bee pollen, beeswax, propolis, royal jelly), crafts materials (limited only by the imagination), native fruits and nuts (persimmons, pawpaws, walnuts, hazelnuts, berries), fenceposts, firewood, maple syrup (from any species of maple tree), medicinal plants (ginseng, goldenseal and many others [see *Medicinal Plants* FOR-117]), and mushrooms—both native and exotic.

As part of its efforts to help producers with forest farming, the University of Kentucky Department of Forestry has developed a program for the production of shiitake (pronounced she-tak-ee) mushrooms. Eight



Dark chocolate brown shiitake mushrooms with split caps.

publications in a production manual and a 15-minute video on "Producing and Marketing Shiitake Mushrooms on Natural Logs," are available by contacting the Forestry Extension office at forestry.extension@uky.edu.

Shiitake mushrooms are native to Japan and have been produced there for about 100 years. These same mushrooms have been produced in the United States for about 40 years now, and the market for them has steadily increased. Shiitake are flavorful mushrooms, that taste a bit like garlic. They are easy to produce and have a good shelf life (about two weeks under refrigeration) for market. They will grow on virtually any species of hardwood that is not rot-resistant (this fungus is a wood-consuming one). The "softer" hardwoods (e.g., red maple and maybe sweetgum) will



Teepee method of stacking of logs.

produce mushrooms more rapidly than the “harder” hardwoods (e.g., oaks, hickories, sugar maple) and also will “exhaust” more rapidly.

Once inoculated with the active ingredient, called “spawn,” the logs take 6 to 18 months to incubate sufficiently to produce mushrooms. However, that initial inoculation will allow those logs to continue producing for three to five years, depending on whether they are fruiting at will or are under a controlled production program.



Shiitake mushrooms packaged for shipping.

The optimal time to start a shiitake production program is in late winter/early spring—usually February and March—when the sap of the trees is rising for eventual bud break and when it contains a high level of carbohydrate for the fungus to feed on.

Spawn can be obtained (along with any other specialized equipment) from several suppliers and is available in sawdust or dowel form. Suppliers can advise the prospective producer on the quantity of spawn and other materials needed for the number of logs the producer wants to inoculate. Management is primarily making sure that the logs are not losing too much moisture and that they are kept under shade (and off the ground) while incubating.

Although shiitake are much more mainstream in the marketplace now than they were 10 years ago, it is still necessary for new producers to locate and develop their own markets. Farmers’ markets or locally owned grocery stores and restaurants are good places to start. The Kentucky Shiitake Growers Association, like other growers associations, provides an opportunity for growers to share their successes and to learn from their failures.

Although this crop is still in the beginning stages, producing this tasty gourmet mushroom could grow into a sizable cottage industry in Kentucky, mainly as a source of supplemental income for its producers but possibly as a full-scale business.

Additional Information

Shiitake Production Workbook <http://www.ca.uky.edu/forestry/extension/publications.nontimber.php>.

Growing & Marketing Shiitake Mushrooms on Natural Logs video. University of Kentucky, Department of Agricultural Communications.

Kentucky Foods Video. University of Kentucky, Department of Agricultural Communications.

Agroforestry in Kentucky

Alley Cropping (FOR-111)

Riparian Buffer Strips (FOR-112)

Silvopasture (FOR-113)

Windbreaks (FOR-114)

Forest Farming (FOR-115)

<http://dept.ca.uky.edu/agc/pub-dept.asp?dept=Forestry>