

SHIITAKE MUSHROOM CULTIVATION

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Most of us have a tremendous appreciation for the culinary appeal of wild mushrooms. Compared to freshly foraged wild mushrooms, most store-bought mushrooms pale. But have you ever tried freshly harvested shiitake mushrooms? Log-cultivated shiitake mushrooms are just about as good as it gets for flavor and texture, and picking them from logs in your own back yard or garage, sure beats hiking all day in the rain and fending off mosquitoes! This natural log cultivation process imitates nature closely and has low initial costs. And it's easy! But it can be physically demanding and you need a source of freshly cut hardwood logs.

Hardwood logs 36-40" long in varying diameters of 3-8" are ideal. Logs are drilled, inoculated with sawdust, plug, or thimble spawn, and the holes are sealed

using either Styrofoam caps or wax. (Hardwood logs of many tree species can successfully yield shiitake mushrooms; here in the Midwest we have best success using oak and hornbeam, in your area these may not be available but other

Here is what you will need to cultivate shiitake mushrooms on logs

For Sawdust Inoculation:

- Sawdust spawn
- 12 mm drill bit with stop or 7/16 inch drill bit with 7/16 inch stop collar
- Inoculation tool (palm, thumb, or dual)
- Cheese wax (2.5 lb for each 5.5 lb bag of sawdust spawn)
- Wax daubers (not needed if using plug wax)

For Plug Spawn Inoculation:

- Plug spawn
- 5/16 inch drill bit
- 5/16 inch stop collar for drill bit
- Cheese wax (2.5 lb for every 25 logs) OR plug wax (6 oz for every 750 count bag)
- Wax daubers

For Thimble Spawn Inoculation:

- Thimble spawn
- 12 mm drill bit with stop



Shiitake logs in leaning position.

Recommended Wood for Shiitake Cultivation

Best Tree Species

- White and red oaks (*Quercus* spp.)
- Sugar maple (*Acer saccharum*)
- Ironwood / Hop Hornbeam (*Ostrya virginiana*)
- Hornbeam / blue beech (*Carpinus caroliniana*)
- Sweetgum (*Liquidambar styraciflua*)
- American beech (*Fagus grandifolia*)

Good to Mediocre Tree Species

- Red maple (*Acer rubrum*)
- Silver maple (*Acer saccharinum*)
- Eucalyptus species
- Paper birch (*Betula papyrifera*)
- Black birch (*Betula lenta*)
- Alder species (*Alnus* spp.)
- Black gum / tupelo (*Nyssa sylvatica*)
- Cherry species (*Prunus* spp.)
- Butternut (*Juglans cinerea*)
- Hickory species (*Carya* spp.)
- Sassafras (*Sassafras albidum*)
- Basswood / linden (*Tilia* spp.)

Tree Species to Avoid

- Ash species (*Fraxinus* spp.)
- Walnut species (*Juglans* spp.)
- Elm species (*Ulmus* spp.)
- Black locust (*Robinia pseudoacacia*)
- All conifers



Using plug spawn.



Shiitake logs stacked.



Using sawdust spawn.



Drilling logs with shiitake express drill tool.

species may work satisfactorily. Also note that logs should be cut from living trees; old seasoned dead wood will already harbor other species of wood rot fungi and will not likely result in successful shiitake fruiting.) One 5.5 lb bag of sawdust spawn will inoculate 25 logs; one bag of 750 count plugs will inoculate approximately 15 logs; and one sheet of



Drilling logs with ordinary drill, note stop collar.

600 thimbles can inoculate 12 logs.

The inoculated logs can be incubated indoors (typically following fall inoculation in cold climates) or outdoors, allowing the spawn to fully colonize the logs. After incubation the logs are placed under varying environmental conditions to stimulate fruiting. Logs can be allowed to fruit naturally or they can be “force fruited,” which is a method of soaking the logs in cold water over night. During spawn run and incubation, logs can be stacked or in a leaning position.

Here are a few additional things to consider. A note on tools: plug spawn is hammered into the drilled hole, so there is no need for an inoculation tool with this method. A note on incubation times: when using sawdust or thimble,



Using a wax dauber to seal holes in inoculated logs.

these two inoculum sources cover a larger area than plug spawn, therefore “spawn run,” or the time it takes for the log to become fully colonized by mycelium, is shorter—usually taking between 6 and 9 months. With plug spawn it is expected that spawn run time will be a full 12 months.

Joe Krawczyk and Mary Ellen Kozak are owners of Field and Forest Products in Peshtigo, Wisconsin. Their company supplies fresh mushrooms for farmers' markets in northeastern Wisconsin and products for the home mushroom grower. For more information on cultivating mushrooms, or to request a catalog, visit Field and Forest Products online at www.fieldforest.net.



Using plug spawn. Note drill bit with collar stop and aluminum tags for labeling logs, if so desired.