



# Shiitake Mushrooms

*Lentinus edodes*

## Cultivation Guide

### Log Production

- **Use only hardwood logs;** white or chestnut oak are the most productive and least bothered by invasive foreign fungi. Other species that can be used, but can be less productive: red oak, sweet gum, maple, cherry, sassafras, poplar, hophornbeam, sycamore and hickory.
  - **Logs are cut from healthy, live, dormant trees** during late winter or early spring when the sap is down. Logs are cut in 3-4 foot lengths in diameters from 3-6 inches for easy handling. Smaller diameter logs produce more quickly than larger ones, but for a shorter time.
  - **Harvest logs carefully** to avoid soil contact and damage to the bark. Torn bark can allow other organisms to enter the log and compete with the shiitake for nutrients.
  - **Shiitake Spawn** comes in two main forms: wooden plugs or sawdust. Many strains of shiitake are available and are classified as cool season (fruit at 41—68 degrees F); warm season; (fruiting at 50—86 degrees F) or wide-range (fruiting at 50-80 degrees F).
  - **Inoculate logs with shiitake spawn** by drilling holes approximately <1” deep, every 6”; space rows 2” apart, in a spiral pattern down the length of the log. Pack holes with the spawn and seal with wax or foam plugs to retain moisture and keep out competing organisms. If using wax to seal holes, use food grade waxes only.
  - **After inoculation**, spawn develops a mat of white strands (mycelia) that grow throughout the log to collect the nutrients necessary for fruiting. Protect logs from dehydration by the sun and wind. Spray or mist the logs to maintain the humidity necessary to keep the mycelium alive and growing. Logs should never dry out, but should not be so wet as to produce mold. Allow bark to dry out between waterings. Good air circulation will help to prevent molding.
  - **Rule of Thumb**—if your garden needs water; than so do your logs. Mist or use a lawn sprinkler to wet logs for at least 30 minutes. Logs can be covered with burlap, landscape fabric, or other porous material to help retain moisture
  - **Monitoring moisture by weight**—weigh one average log immediately after inoculation. Record weight on tag that is attached to log. Weigh log every few weeks. To determine weight loss use the following formula: (original log weight minus current log weight divided by original log weight x 100 = % moisture lost.  
**Example:** New Log = 8# Log after 4 weeks = 6#  
 $8 - 6 = 2$  divided by  $8 = .25$  or 25%
- If % moisture loss is greater than 10% mist or water logs more often.**
- To establish a new base weight (from existing logs) Soak log for 48 hours. Remove from water and allow to drain for 24 hours. Weigh the log. This weight is your new base weight.
  - **Store logs in a shaded area.** When the mycelium has fully colonized the logs a white mat of mycelium will appear on the end of the logs. Tiny “pinheads” at the surface of the log may also be seen. These pinheads grow into mushrooms in the next couple of days.
  - **Stack logs like a lean to or log cabin** to help retain moisture and protect logs from “knitting together”, where the mycelium from one log will knit together with another log.
  - **Logs begin to fruit 6 to 18 months after inoculation**, depending on the variety, temperature and humidity, and can continue to produce mushrooms from spring through fall for about three to five years, depending on log diameter.





- Natural fruiting will occur after heavy rain but can be irregular and random. **To stimulate fruiting**, growers **soak logs in water tanks for 2-4 days**. Logs are “shocked” by physical impact upon removing logs from soak tanks by popping one end onto a clean hard surface; a flat rock works well; Do not allow end to come in contact with soil.
- **After soaking, logs are placed in production ricks** in shaded area. Vertical placement is best to avoid bark to mushroom contact. Cover production area with clear plastic to keep rain off mushrooms. Do not allow log to come in contact with soil.

### Harvesting

- **Watch logs carefully after soaking** for signs that fruiting is beginning. Time can vary depending on temperature; Warmer = faster. Cooler = slower.
- **Harvest mushrooms when caps are about two-thirds open**; the best grades of shiitakes have caps that still have a slight curl at the edge. After the mushroom cap starts to flatten, it’s no longer at its prime harvest time.
- **Pests such as slugs and flies**, can reduce fruiting and quality. Monitor, quickly identify, and control these pests or lose some of the crop. “Sluggo” is an organic pesticide that will help slug infestations.
- **To harvest**, cut the stem flush with the bark with a sharp knife. Harvest often if you want to earn the best price for your mushrooms. **ON AVERAGE 1 Shiitake log will produce 1 pound of mushrooms per fruiting.**
- **QUALITY CONTROL**—Inspect every mushroom harvested for bark, slugs and beetles. The Ambrosia Beetle is commonly found living inside the cap of the shiitake. Remove by tapping stem first on a table.

### Post Harvest Production

**Allow mushrooms to rest** after production for 4-5 weeks before soaking again. This will give mycelium time to re-colonize.

- If logs do not produce, allow them to rest for 3-4 weeks before soaking again.

### Equipment and Resources Needed

**To grow wild-simulated shiitake mushrooms, you’ll need:**

- A shady forest location
- Chainsaw and safety gear if you’re going to cut your own logs
- Dependable, potable water source, sprinklers, hoses, or watering troughs
- Mushroom spawn
- Polyfoam plugs, or food grade wax (portable burner to melt wax)
- A drill; one with a power cord is optimal over cordless
- Drill bits, preferably bits with a one inch stop on them
- Sharp knife for harvest
- Packing boxes, brown paper bags
- Refrigerators to store your crop until it’s all ready to go



### Sources of Spawn and More Information:

- Fungi Perfecti—[www.fungi.com](http://www.fungi.com)
- Fungi Fanatics— email—[fungifanatics@yahoo.com](mailto:fungifanatics@yahoo.com)
- Northwest Mycological Consultants [www.nwmycol.com](http://www.nwmycol.com)
- Hardscrabble Enterprises, Inc.
- [hardscrabble@mountain.net](mailto:hardscrabble@mountain.net)
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- Information Service [www.attra.org](http://www.attra.org)

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