

Cultivation of Wood Mushrooms on Logs Using Dowel Spawn

Introduction

This leaflet CAN NOT cover everything, particularly the specific characteristics of your site. The main considerations are rainfall, temperature and exposure to sunlight and drying winds. You therefore need to interpret these notes to best meet your requirements. If you have any questions please contact me.

Type of Log

Hard wood logs are recommended. **Most growers prefer oak, beech or birch.** Maple, aspen, alder, hazel, willow, poplar and similar hardwoods can be used but apple, sycamore and ash are not recommended. Indian Oyster (*Pleurotus pulmonarius*) and Conifer Coral (*Hericium abietis*) are the only mushrooms able to grow on pines or other soft woods.

Cutting or Buying Your Logs

The logs are best cut from healthy trees during the dormant season (from leaf fall in Autumn to just before the buds swell in Spring). Cut not more than 6 weeks before you inoculate. Keep logs from drying out by shading from direct sunlight and strong winds. The longer logs are left the greater the risk of contamination by other weed fungi. **We use straight logs 10 to 15 cm diameter, up to a metre (40 inches) long.** These are easily lifted and handled etc.. Smaller diameter logs dry out too quickly. Larger diameter logs are harder to handle and take longer to colonise.

The bark should be clean, free from earth and undamaged. Scars allow other fungi to invade and the log to lose moisture. Choose logs with as few branches as possible. Branches should be cut flush with the log surface and sealed with wax during the inoculation process.

If you are buying logs possible local sources include Tree Surgeons, Council Parks Dept., farmers, forest managers and fire wood merchants. Be clear about your requirements.

For an average 50 cm long log, 10 to 15 cm diameter use 10 to 15 dowels

e.g. 3x30 dowels, 2 or 3 logs of each type of mushroom

100 dowels 6 to 8 logs, 300 dowels 18 to 24 logs.

Only use one type of spawn per log.

Care of Dowel Spawn

Store spawn in the Fridge or a cool, dark, well ventilated environment until ready for use. Do not freeze or expose spawn to strong sunlight.

Spawn should be white and fluffy when you receive it but the Chicken of the Woods is a hard to see yellow. Shiitake spawn matures to a chocolate brown. If bags are torn, damaged or have blue/green patches please contact us immediately.

Equipment

Cheese wax and wax applicator supplied.

You will need the following

Electric drill

Drill bit (to give tight hole for 9 mm dowel spawn)

Hammer (to tap dowel in)

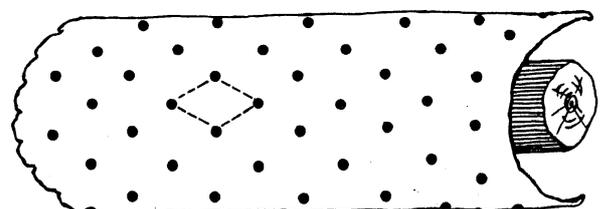
Pan & stove for melting wax.

Inoculation Process

A log only needs to be inoculated once. The mycelium grows through the log decomposing it. This will take four to six years. During this time it will produce mushrooms when temperature and moisture requirements are met. Holes are drilled into the log and the dowels are inserted into the holes. These inoculated points are then sealed with wax to stop the spawn drying out or being invaded by weed fungi. The log bark needs to be dry, handling of wet logs is hazardous and the wax will not adhere.

Drilling

Drill holes 1.5 times the length of the dowels about 15 cm (6 inches) apart down the length of the log. The second row should be drilled 5-7.5 cm (2 to 3 inches) from the first with the holes staggered to form a diamond pattern. Drill extra holes near the ends of the log and around any branch or damage sites. Mushroom mycelium grows faster along the wood grain than across hence wider spacing along the grain. Repeat the process over the entire log and then immediately



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insert the dowels. Dowels should be tapped flush with the log surface. Immediately all the holes in the log are filled they should be sealed with hot wax to stop the spawn drying out or becoming contaminated.

Waxing

All inoculation holes, damaged bark and cut branch ends should be sealed with liquid wax but not the log ends. **Wax should be really hot and sizzle on top of the spawn.**

This will only kill a thin layer on top of the spawn plus any contamination around the inoculation sight.

Don't worry the spawn will soon recover. Wax can be melted in a pot over a stove and applied with the applicator.

CARE MUST BE TAKEN. HOT WAX IS HIGHLY FLAMMABLE AND CAN CAUSE SERIOUS BURNS.

Spawn run, the waiting period.

In order to produce mushrooms the mycelium must grow through the log. It is important that logs do not dry out, become saturated with water or the surface of the log get too hot.

To achieve this keep your logs either

- 1) in a wooded or shaded area
- 2) place them in a pit covered with tarpaulin or dark plastic sheet and cover with soil
- 3) wrap in black polythene bags and bury them or place under evergreen shrubs.



Look for any significant cracking of the log ends, this indicates drying out.

Remedy by soaking in water for up to two days. Watering will only wet the bark and not penetrate the log. The length of time required for mycelium to grow through the log will vary from 6 - 18 months depending upon spawn type, environmental conditions, the size of log and the timber species used. The mycelium may first be seen as 'V' shaped markings at the ends of the log.

Best seen with shiitake as illustrated.

Once the mycelium has fully colonised the logs move them to a suitable place for fruiting. A warm, moist (but not wet) area with good shade (70% shade) and sheltered from drying wind is ideal. Lean logs with one end on a brick, rock or another log. Allow the vegetation to grow around and over the logs in the summer to provide shade and retain moisture. Do not place the logs flat on the ground. I find logs which are buried a third of their length in soil tend to get too dry on the top.

Fruiting

The time to the first flush of mushrooms varies greatly. Mushrooms respond to environmental stress. **Rainfall, movement and temperature changes can induce fruiting.**

Each species differs, they will only fruit when the environmental is right for them. The first thing you see are small white nodes emerging from the inoculation sites (pinning). The mushrooms will then be ready to pick in less than a week. During this time you can lightly cover with clear plastic or fleece to increase humidity. Protect from slugs etc.. Pick by grasping firmly at the base of the stem and twisting the mushroom from the log. Fruiting may last for up to four weeks with new mushrooms developing throughout this time. **Humidity and Log Moisture levels must be maintained.** With proper husbandry the average total crop can be up to a third of the dry weight of the log.

Shiitake can also be 'Shocked' to induce fruiting by immersing the log in cold water for two days.

Do not move shiitake logs for one month before initiating fruiting. Then shock by moving and totally immersing in fresh COLD WATER for 48 hours. After shocking, place your log back in the shade and lightly cover with clear plastic or fleece. This will increase humidity (85% optimal) and slightly increase temperature (max 26°C 78°F). Your mushrooms will be ready to pick in approx. 14-28 days. After each fruiting your log will need a two month rest back in the shady corner until you can re-shock the log again. You can shock up to four times per year from March to November on warm afternoons.



Successful cultivation of exotic mushrooms as with any crop is dependent on a wide range of factors.