

## OUTDOOR MUSHROOM CULTIVATION ON WOOD

### Shiitake – *Lentinula edodes*

---

Fungi use decomposing organic matter, such as dead trees, as growing substrate. The dowels are colonized with the vegetative part of the mushroom, the mycelium. Once inserted (inoculated) into logs or stumps, the mycelium will gradually colonize the wood. The spiral grooves of the dowel protect the mycelium from damage during inoculation. The mycelium will colonize the wood until it finally produces mushrooms that we can eat, which represent the fruiting bodies.

**Storage of colonized dowels:** Keep refrigerated until use. Do not open the plastic bag until use to preserve sterility. Leave at room temperature for one day before use. Once the bag is opened, dowels should be inserted into the logs as soon as possible.

#### CULTURE CONDITIONS

**Wood:** Most suitable for log culture are broad-leaf hardwoods with thick outer barks such as oak, sugar maple, ironwood, beech, hickory, birch, and others. Logs should be cut in late winter to spring before leafing occurs. Practical sizes of logs range from 4 to 6 inches in diameter (10 - 15 cm) and about 3 to 4 feet (0.9 -1.2 m) in length. Logs are best kept off the ground until use to avoid colonization by other fungi. Use only healthy wood with intact bark. Inoculation of logs with dowels should occur as early as possible, ideally after 1 day to 3 weeks after felling. If logs cannot be used right away, such as trees felled during winter, store them in a way to minimize moisture loss.

**Colonization:** Colonization will take about 8 to 18 months depending on the kind of wood, size of log, spacing of dowels and weather conditions. Colonization of stumps might take longer.

**Fructification:** Once the logs are fully colonized, fruiting bodies will occur. Depending on the outdoor conditions, logs and stumps can produce mushrooms from spring to mid-autumn (temperature range 12 - 25° C) for several years.

## INOCULATION OF LOGS

Inoculations in winter or spring are ideal. Soak the logs for one to two days until they are completely wet. Alternatively, you can leave the logs sitting in the rain. Leave the bark on the logs since the bark is important to maintain a favourable microclimate inside the logs.

Drill holes about 2 inches (5 cm) deep. Space holes evenly about 4-6 inches (10-15 cm) apart, corresponding to about 30 to 50 dowels per log depending on its size. Gently insert a dowel into each hole. Seal the holes with wax, for example bees, cheese or paraffin wax to protect the dowel from damage by insects and drying out. It is best to keep the logs off the ground for the first few weeks. Choose a shaded place outside to stack the logs, e.g. under a tree or awning. For the mycelium to grow, the logs have to be kept moist. In the absence of rain or dew, water logs several times per week depending on weather conditions (outside frost period). The moisture content should not fall below 30 %.

With shiitake it is possible to induce fruiting. For this, the logs should be soaked in the coldest water available for a period of 12-24 hours. The logs are ready for fruiting when the mycelium is visible at both ends of the logs. Once out of the water, the logs should be left leaning upright against a wall or fence. Protect logs from direct sunlight during the growth phase. After the harvest ("flush"), logs have to rest for 6 to 8 weeks before inducing another flush.

Harvest mushrooms before caps start to lift. **BE CAREFUL to only harvest the mushrooms you expected.**

Enjoy your mushrooms!