

Cultivating Chaga (*Inonotus obliquus*) is vastly different from growing standard fruiting mushrooms like Oyster or Shiitake. Because Chaga is a parasitic fungus, it does not produce a typical mushroom cap and stem. To develop the dense, black sclerotium (conk) containing its highly sought-after medicinal compounds (like betulin), it must be grown on a living birch tree. Indoor cultivation is possible, but it only produces mycelial biomass, not a wild-type conk. Below are the Standard Operating Procedures (SOPs) for both the outdoor wild-simulated method and the indoor mycelial method.

SOP 1: Outdoor Cultivation (Wild-Simulated on Birch Trees)

This is the only method that produces authentic, fully mature Chaga conks. It is a long-term investment that takes several years to yield results.

Equipment Needed:

- Living birch trees (15–25 cm in diameter)
- Chaga plug spawn (wooden dowels inoculated with Chaga mycelium)
- Cordless drill with an 8mm drill bit
- Hammer
- Grafting wax or tree sealing ointment

Best Season for Inoculation: April to October.

Procedure:

1. **Site Preparation:** Select healthy, living birch trees in an environment with minimal air pollution (away from roadsides and industrial areas, as Chaga easily absorbs heavy metals).
2. **Drilling:** Drill a hole into the trunk roughly 40 cm from the ground. The hole should be 8mm wide and 35mm deep, ensuring it is slightly deeper than the spawn plug.
3. **Spacing:** Drill subsequent holes 50–60 cm higher up the trunk, repeating as far as you can comfortably reach. Use 4 to 5 plugs per tree. Clear out any sawdust from the holes.
4. **Inoculation:** Insert one Chaga plug into each hole. Use the hammer to tap the plug until it is fully embedded and flush with the tree's surface.
5. **Sealing:** Liberally apply grafting wax or tree ointment over the insertion site. This critical step prevents competing bacteria or other fungi from infecting the open wound.
6. **Incubation and Growth (The Waiting Period):**
 - o **Years 1–3:** The mycelium colonizes the inside of the tree. You will notice darkening around the inoculation sites and minor bark cracking.
 - o **Years 3–5:** The Chaga conk begins pushing through the surface of the bark, though it may not appear exactly at the plug site.
 - o **Years 6–8:** The first harvest is ready.
 - o **Years 12–14:** A second harvest can be gathered from the same tree.

Expected Yield: Roughly 1–2 kg per plug, resulting in 5–10 kg per tree over its lifecycle.

SOP 2: Indoor Cultivation (Mycelium Biomass)

Indoor cultivation is utilized by commercial growers to harvest Chaga mycelium quickly. While it lacks the host-derived compounds of wild Chaga, it produces a viable mycelial extract.

Method A: Solid Substrate (Bag Culture)

1. **Substrate Preparation:** Prepare grow bags filled with a birch sawdust substrate. Sterilize the bags using a commercial pressure cooker or autoclave.
2. **Inoculation:** In a sterile environment (such as in front of a laminar flow hood), inoculate the substrate bags with Chaga liquid culture or grain spawn.
3. **Incubation Parameters:** Place the bags in a controlled incubation room. Maintain temperatures at 77°F (25°C) and relative humidity at 80%, with a light source providing around 100 lux.
4. **Sealed Cultivation:** *Crucial Step*—Unlike standard fruiting mushrooms that require fresh air exchange, Chaga requires elevated CO₂ levels to initiate the formation of primordia (small sclerotia). The bags must remain completely sealed throughout the process.
5. **Harvest:** Once the birch sawdust is fully colonized and small sclerotia have formed, the bags can be opened, and the mycelial biomass harvested and dried.

Method B: Liquid Culture Fermentation

1. **Preparation:** Fill bioreactors with a sterile, nutrient-rich liquid broth.
2. **Inoculation:** Introduce Chaga liquid culture to the bioreactors.
3. **Fermentation:** Allow the mycelium to ferment and multiply rapidly within the suspended liquid.
4. **Extraction:** Drain the liquid, then filter, harvest, and dry the resulting mycelial mass for extraction.