

BEGINNER'S GUIDE ON MUSHROOM CULTIVATION

Determine Your Needs

First thing you want to do is determine what is the preferred growing methods and what type of mushroom you are looking to grow. If you have no idea, then the All-in-One-Bag is recommended. It is user-friendly and contamination resistant. Then, review the supply list and process of inoculation, colonization, and fruiting.

Supplies & Preparation

Some of the supplies you're going to need are gloves, masks, 70% isopropyl alcohol, spray bottle for isopropyl alcohol, lighter, and syringes. It is highly recommended to use a still air box, however, it is not mandatory.

Sterilization is extremely important. Contamination can easily ruin your run. Here are a couple of best practices when prepping your area. 1.) Always put on a mask and gloves 2.) Sanitize work area, your hands, and equipment (syringe, all-in-one bag, grain bag) with the isopropyl spray bottle.

Inoculation

Once preparations are done, then you're ready for inoculation. First, heat up the tip of the needle red hot with a lighter and let it cool for 30 seconds. Inject the needle into the self-healing injection port (grey square). Squirt 5-10cc of spores towards the bottom and side of the grain bag. Some liquid may be visible through the bag after injection. If the liquid is not visible, then it may have been injected towards the center which may result in not seeing mycelium colonize as quickly. Re-sterilize the needle every time if you are planning on injecting any other bags.

Colonization

Colonization occurs after inoculation. This is when the mycelium will start to take over the grain that was inoculated with spores. This period usually lasts between 3 to 6 weeks depending on strain and environmental conditions. Ideal conditions for this phase are in a dark place and temperature between 72 F – 80 F.

Pro Tip: Once grain is 1/3 - 2/3 of the way colonized you can break up the grain inside the bag and mix it with any grain that hasn't been colonized. From there, let it re-colonize for about 1-2 weeks.

Fruiting

Fruiting happens after your all-in-one bags are fully colonized or when your grain mix with fruiting substrate has been recolonized. Fruiting temperature conditions of 70 F – 80 F is similar to the colonization phase. Introduce your colony to a 12/12 light cycle of a low watt light. T5 is a perfect light and preferably set it at 6000-7000k, but not necessary. Oxygen is also introduced during this phase. Light and oxygen or FAE (Fresh Air Exchange) are the triggering factors in fruiting.

All-In-One-Bag Method: For the all-in-one bags, you can either fruit directly in the bags or just cut the top of the bag off. When you are ready to harvest, the preferred method is cutting the whole entire "cake" (your colonized block) out of its bag and putting it into a clear tub. Fan it for 30 seconds every day and make sure to keep the sides of the tub moist.

Mono-tub/Dub-tub Method: Take the colonized grain and break it up inside the bag so it's as many loose pieces of grain as possible. Cut it open and mix it with the fruiting substrate homogeneously. Gently pat down flat to create an even surface and let it recolonize. In about 1-2 weeks, a big white mat of fuzz will form. Introduce it to fruiting conditions (12/12 light and oxygen). Visible pins will form in 1-2 weeks. Time will vary depending on environmental conditions and strain.

MYCOLOGY BEGINNER'S GLOSSARY

Agar - An extract from a seaweed used to solidify media and is made available in powder form for mushroom cultivation.

AutoClave - A big pressure cooker that when operating at higher pressure over 15 PSI it achieves sterilization temperatures above 250°F.

CoCo Coir - Dried fiber from the outer husk of a coconut.

Colonization - The period of the mushroom cultivation starting at Inoculation during which the Mycelium grows through the Substrate until it is totally permeated and overgrown.

Contamination - Undesired foreign organisms in a growing medium. Often due to insufficient sterilization.

Culture - Mushroom Mycelium growing on a culture medium.

Flow Hood - A fan powered HEPA filtered device that produces a laminar flow of contaminated free air. The air moves across the workspace allowing for open sterile work area.

Fruiting - The mycelium will form mushrooms in its reproductive stage. This is called fruiting as the mushrooms are actually the fruiting bodies of the mycelium.

Gypsum - Calcium sulfate. A powder used in spawning and prevents the clumping of the grain kernels. Also, acts as a pH-buffer.

Incubation - The period after inoculation during which the mycelium grows vegetatively.

Inoculation - Introduction of spores or spawn into substrate.

Mycelium - The portion of the mushroom that grows underground. The "roots" of a mushroom.

Pasturization - A method of processing substrate that reduce competing pathogens. Does not completely eliminate all competing bacteria nor fungal spores.

Pinning - A term to describe a very young mushroom when the cap has the size of a pin.

Spore - They are the "seeds" of the mushroom. Microscopic and produced by the millions by each mushroom.

Still Air Box - A clear container with armholes with restricted airflow that reduces airborne contaminants. Using this will improve the success rate of mycology projects.

Sterilization - The process of completely destroying all microbes that are present by heat (autoclave, pressure cooker), uv light or chemicals. Spawn substrate must be sterilized prior to inoculation.

Substrate - Whatever you're using to grow the mushrooms on. Each varieties of mushroom likes to consume different things such as rice, rye grains, straws, composts, woodchips, and birdseeds.

Trichoderma - A type of green mold.

Vermiculite - A highly absorbent material made from puffed mica. It gives the mycelium room to breathe and grow by maintaining a light fluffy casing layer.