

# Mushroom Growing Guide

Some important information to know before you get started:

- All of our grow bags are shipped fresh and should be used within 4-6 weeks of arrival. To store them longer, they should be kept in the fridge. Do not freeze.
- Bags will arrive pre-sterilized and ready to use.
- Your spore syringes should be stored at room temperature. They should be stored in a dark, dry area. They can last up to 12 months or longer. Spore prints will not work with our jars or bags. You must use a spore syringe. For more information on spores and recommended spore vendors give us a call.
- You can grow different spore strains in the same kit, as long as they are a similar species that require the same growing temperatures and parameters.

## Preparing your workspace

Inoculating is the main step where contamination is possible, and thus must be done in as clean of an environment as possible. If the room you're working in is clean enough, (most are not) you can get away with inoculating in open air. The needle of the syringe can carry bacteria and spores from other molds into your cake, contaminating and ruining the cake. The open air of your home is filled with millions of microscopic mold spores and bacteria, so even one of these falling on the needle of your spore syringe can infect your grow bag. For this reason, absolute sterility of your needle is extremely important.

Wash your hands and face with anti-bacterial soap. Wear clean clothes. Anything in the area of the syringe and bags could contaminate your cakes if it is not clean. There are two methods of injecting your spores that help eliminate any possible air contaminants. We highly recommend using one of the two methods listed. 99% of the time people fail is because they "thought" the space they were using was clean and did not use a sterile spore injection method. Turn off all air conditioning or heating. The least amount of moving air in your workspace the better.

## Method 1: The Oven Door (The easiest & most used method for over 10 years and counting)

The oven door inoculation technique is one way to inject spores into your grow bags. This method is one of the oldest methods using hot rising air to keep contaminants away from you. Although the science behind it is always debated, it's our favorite!

- Turn off all household heat and AC and close all windows. Make sure the air is very still in the kitchen. Spray Lysol Disinfectant spray (Optional) around your work area and let settle and dissipate. Next, turn on the oven and pre-heat to 325 degrees. This will sterilize your oven. Once the oven has reached 325 degrees, leave it at that temperature

for 20 minutes, then lower the temperature to 250-275 degrees. After 10 minutes at this temperature, you can begin the inoculating process.

- Pull out the lowest rack and place a small piece of cardboard or something solid that you can work on. Next place the bags on the rack or next to the oven on the floor in reach.
- Sterilize the syringe with a lighter and alcohol swabs. Make sure you flame the syringe after every few jars, just for a second or two. Gently push out a tiny amount of liquid from the syringe so that any hot liquid is not being injected into the bag. You can use a cup to collect the hot liquid. Use the alcohol swabs to remove any debris stuck to the needle.
- Inject each bag reaching into the oven. Once done with the bag, set aside, outside the oven.

This method works very well in all our testing and is very simple compared to other methods. If you have a friend to help, you can use that person to hand the bags to after you inject them and label them with the strain and date. Do not let the bags get very hot sitting in the oven. (This method is tried and tested. We have been using it and recommending it for years and the success rate is over 99%.

## **Method 2: The Open Air Method**

The last method of injecting your bags that we want to mention is to sterilize a small closet with Lysol Disinfectant aerosol spray or fully clean a small bathroom. Turn off AC or furnace and place a towel or similar item to seal off any places where outside air can circulate in. The success rate varies because every space can have a different level of mold and bacteria present in the air. When using an “open-air” spore injection technique, the key to success is using an alcohol lamp or butane lighter and constantly flaming the needle and using alcohol wipes to sterilize the needle before each time it is inserted. Keep air movement to a minimum while inoculating. Work fast!

## **Inoculation**

Begin carefully inoculating your bags with the syringe. It's a good idea to have a lighter or alcohol lamp handy as well to sterilize the needle as you go. Flame the needle until there is a faint red glow, then carefully squirt a little bit of spore solution (if you can spare it) to cool down the needle before sticking it in the cake, usually 3-4 seconds. Putting a hot needle into the cake will get burnt-on rice all over the needle and also potentially kill the spores! Use the alcohol wipes included on the needle in between each bag you do.

## **Mycelial Growth Phase- Incubation Period**

The bags are now ready to be incubated at about 75-78 degrees F for several weeks. All-in-one bags make growing easy for everyone, you will need to find a warm room or some other source of heat to keep them in that temperature range. Be careful not to use any heat source that could cause fires; if they get too cold, their growth will slow considerably, and if they get too hot, they will lose water and eventually die. (They will usually die if they ever get above 105 degrees F) Mushrooms will colonize at lower temps but very slowly. Any temps less than 68 degrees, they will probably not colonize. There are some bacteria that thrive in temperatures over 82 degrees

so the rule of thumb is to strive for mid to high 70's. We find this the perfect temperature for speed of growing and lowest chance of contamination.

## **Mycelial Growth Phase**

The first signs of mycelial growth should appear within 5-9 days. If none appear within two weeks, something went wrong. (Perhaps the heat killed the spores, or the spores simply did not make it into the cake.) Most types of mushroom mycelium will be a brilliant white fuzz, often growing in ropy strands. This ropy type of growth is called rhizomorphic growth, and is a sign that the mycelium will probably fruit very well. Any other color is usually mold and a sign of contamination. A contaminated cake will not recover and, except in very rare instances, will never produce mushrooms.

Please note that certain strains of mushrooms can have a bluish tint to them and is normal.

## **Pinning, Fruiting, and Harvesting**

For the first week to 10 days, the cakes will generally not do anything. Then, very small bumps, called "pins," "pinheads," or primordia" will begin to grow out of the surface of the cake. These are the beginnings of mushrooms. Many will never grow any larger. However, some will grow until they are full-grown mushrooms. A mushroom is ready to be picked when the edge of the cap tears away from the "stem" (the stem of a mushroom is called the stipe). Often, there will be a thin veil between the cap and stipe. If this is present, you can wait until the veil tears before picking the mushroom.

For harvesting, take necessary steps to keep the cake sterile by using gloves or thoroughly washed and sanitized hands, this will help prevent contamination and aid in your bag being able to grow several flushes. To pick a mushroom, grasp it near the base where it is joined to the cake, and gently twist it until it comes off. Immediately begin the process of preserving it, either by refrigerating it or by drying it. Mushrooms will begin to rot immediately. Each cake will produce about 1-3 waves or "flushes" of mushrooms, normally with 2-5 days of dormancy between flushes. After about a month or so of fruiting, most cakes will be spent. If the cake is overly dry and there are no moisture droplets in the top of the bag, you can mist the inside top of the bag with distilled water after each harvest or as needed before placing the top of the bag back over the cake.

## **Aborts**

Some of the pinheads will begin to grow, then suddenly stop before they become full-grown mushrooms. These are known as aborts (aborted mushrooms). Aborts are just as good for eating as full-grown mushrooms, but they must be picked before they begin to rot. A mushroom that has mold growing on it or which has black goo in the center of the stem is rotten and is not safe to eat. It is often difficult for beginners to identify an aborted mushroom before it begins to decompose. Early warning signs include a halt in growth of the mushroom, and a greenish tinge around the dark colored tip of the primordia that will eventually become the cap of the

mushroom. Always completely remove aborts from the cake, even if they are too rotten to eat, because they can get moldy and cause the cake to get infected.

## **Preservation Methods**

### **Refrigeration**

If you will be consuming your mushrooms fairly soon after picking them, you can keep them in your refrigerator, in a paper bag. Don't use a plastic bag to store fresh mushrooms, this will cause them to mold. Fresh mushrooms are reportedly stronger than dried ones, but can be more difficult to measure or dose. Also, a fresh mushroom can have a varied taste depending on which strain was used and under what conditions it was grown.

### **Drying**

The best way to preserve mushrooms is to dry them as soon as possible after picking. It is very important when drying that the mushrooms never be exposed to heat, or heat-sensitive chemicals that will break down if exposed to heat. The best method of drying is to put the mushrooms in an enclosed container, like a covered bowl, that also contains some desiccant. We offer a drying kit that includes the needed materials for this method. Most varieties of mushrooms will emit a strong "mushroom" aroma during the drying process. If this is a problem we recommend using a drying kit to keep the smell inside the container.

### **Slow Drying Methods**

Another way to dry mushrooms is with the use of moving air. Simply place them in front of a fan (not a heater), and the moving air will dry them in about a week. An even easier way to air-dry mushrooms is with a food dehydrator. If the dehydrator doesn't have a switch for turning off the heat, you will need to take it apart and disconnect the heating element, making sure to take any necessary safety precautions. Air-drying will not always remove all of the water from the mushrooms. The drying process can be accelerated substantially by slicing the mushrooms lengthwise into halves or quarters, thus increasing the surface area of each mushroom. The best overall method for drying mushrooms is to first dry them using moving air, then, if necessary, put them into the drying kit to remove the last little bit of moisture that remains in the mushrooms. You want your mushrooms to be bone dry and brittle. If they feel flexible, they are probably not totally dry. Store the dried mushrooms in a sealed container with small desiccant packs, away from heat and light.