

The Complete Mycologist System Instructions and Setup Manual

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This kit includes:

- 1 complete self-automated myco system**
- 1 large water incubator**
- 1 glove box**
- 48 substrate jars**
- 2 rye mushroom bags**
- 1 compost bag**
- 1 large bag of perlite**
- 1 large bag of casing soil**
- 2 round casing trays**

This kit will arrive in 3 huge boxes. The first box will contain a self-automated growing system with 24 substrate jars. This growing system should contain 2 plastic chambers with only 1 lid, 1 submersible aquarium heater, 1 humidifier, 1 air pump, 1 large bag of perlite, 1 check valve, 1 digital timer and 1 digital thermometer.

The second box will contain a large water incubator with 24 jars. The incubator is comprised of 2 plastic chambers with 1 lid, 1 submersible aquarium heater and 1 digital thermometer. There should be some other supplies in this box such as 1 rye grain mushroom bag, 1 compost bag and 1 bag of casing soil.

The third box should contain a glove box with a package of filtration material and gloves.

You may want to make sure you have some basic sterilization tools on hand such as sterile gloves, alcohol, dust masks and cotton balls.

After you have made sure you have all the parts and pieces of your kit it is a good idea to clean out the chambers with some warm, soapy water. You could also wipe it out with some household bleach/water solution (10% bleach and 90% water works great) to sterilize thoroughly. The chambers may have picked up some unwanted contaminants while in transit.

INNOCULATION

The written instructions below are great but watching our videos would be much more beneficial to you in learning about this procedure.

<http://www.youtube.com/watch?v=r1vMaE7-mps> substrate jar inoculation

http://www.youtube.com/watch?v=bAXXznp_eqQ rye grain jar inoculation

<http://www.youtube.com/watch?v=5aq44vFgldQ> mushroom bag inoculation

Substrate Jars

In order for the mycelium to grow through the jar you have to introduce a mushroom

culture to it via prepared spore syringe or culture syringe. Obviously a culture syringe would be better because there is already mycelium in it and there won't be a germination period as with spores. Oyster mushrooms work great in our jars along with Shiitake and any other grain-loving mushroom. **WARNING** Cultivating psilocybe mushroom species is illegal in the United States and is not encouraged or supported by our company or staff. Please do not ask us cultivation questions regarding psilocybe's.

Whatever you are injecting with, make sure it's sterilized using an alcohol soaked cotton ball, Bunsen burner, etc. There will be four holes in the lid of the jar. You will want to divide up 1 cc or ml (depending on syringe) per jar. That's 1/4 per hole. When you shoot inside the jar you will want to tilt the jar at an angle so that you can shoot in the middle where the substrate layer is. If you look closely at the jar you can see three distinct layers. You also want to press the tip of the needle against the glass so that it drips down a little. It is a little tedious but very effective. Some suggest placing tape over the holes in the lid after inoculation. We suggest leaving them open for the substrate to breathe. Repeat this process making sure to wipe the needle with alcohol before and after each inoculation. It is vitally important that you do this step correctly. If you are interested in making sure you have a 100% sterile working environment then execute all of this work inside your Glove Box.

Please follow this link to see full instructions on the setup and usage of the Glove Box
<http://mushbox.com/glove-box.html>

Rye Grain Grow Bags

Our rye grain grow bags have a self-healing inoculation port that make this procedure very easy. Just sterilize the tip of your needle and insert into the port. Squirt in about 3-4 cc's or ml's of solution into the bag.

Compost Bags

You can use a spore syringe but its recommended to use a Liquid Culture, minimum 30cc maximum 120cc, if you do use a spore syringe the growth might take longer and the spores will have a harder chance to get started but it is possible. You can also simply drop a chunk of colonized substrate or rye grain into the bag to start growth.

Full instructions here:

<http://mushbox.com/compost-bags.html>

SETTING UP THE INCUBATOR

Place one of the incubator chambers on a flat surface in a place that will be fairly dark and fill about 1/4 of the chamber with water. Add 1 cap full of bleach to the water to prevent algae growth. Place the submersible aquarium heater in the water and turn the thermostat to around 85 degrees. **NOTE:** this heater is submersible. It can be completely underwater with the cord running out of the side. Do not drill any holes! Plug the heater into a wall socket and then place the second chamber inside of the chamber with water in it and close the lid. It will take an hour or so for the incubator to reach the proper temperature and depending on where you have placed the incubator and the ambient temperature around it, you may want to toggle the thermostat until you reach the desired incubation temperature of around 85 degrees. (Do not exceed 86 degrees inside the incubator) Use the digital thermometer provided to monitor the temperature inside the incubator.

Once the incubator is set up you can add as many substrate jars as you like inside. It will

hold the entire 48 as well as your rye bag.

INCUBATION

Depending on what strain you are growing the temperature inside your incubator will vary. Very little light is required for the incubation process and no humidity settings are required at this point. Please be mindful of letting the jars get too hot, they will dry out.

During the incubation process your spores will begin to germinate and eventually turn into mycelium, which is the vegetative part of a fungus, consisting of a mass of branching, threadlike hyphae. The mycelium will spread through the jar/rye bag over the course of a few days or a few weeks depending on what species you are working with.



An interesting fact about the compost bags is that they do NOT need to be put in an incubator, they can produce their own heat so it's important to just leave them in a dark place with the temperature set between 75 - 80 degrees. Any more heat and you can stunt growth, leading to possible contamination; too little heat will also cause slower growth.

You will want to wait until the substrate inside the jar/rye bag has completely covered with the white mycelium or "colonized" before moving to the next step.

Troubleshooting -

If your jars have stopped growing for days at a time then you have what we like to call a stalled jar. To remedy this - try turning the jar upside down inside your incubator to change the center of gravity and/or expose the jars to some indirect sunlight for 6 hours a day.

If your jar looks 100% except for a tiny bit on the underside of the glass or at the very top then proceed anyway. The brown uncolonized space you see is loose vermiculite used in the recipe and is not intended to colonize.

If you see pinheads forming inside of your jar while they are still incubating then it is definitely time to move to the next step. The pinning inside the jar just means that the

mycelium network has grown to its full capacity and is ready to reproduce itself.

The incubation process is lengthy and can get a little arduous. Some jars may colonize before others. Use this to your advantage by fruiting these jars first while waiting on the others to finish incubating. No one says you have to grow all of the jars together. The most successful grow operations are always the ones that have a steady cycle of colonized jars ready for the grow chamber.

DUNKING AND FRUITING

The following set of instructions is for fruiting substrate jars after they have fully colonized. Please watch this video to get a more realized version of how to execute this important step.

<http://www.youtube.com/watch?v=MRG0Tz0AsLU> dunking and fruiting cakes

This is what a fully colonized cake should look like.



Dunking is best done under refrigeration, if possible. One can even dunk cakes that already have small pins safely. Just don't overdo it, by 48 hours underwater they will be dead. As for what kind of water to use, natural spring water is best but you can even use it straight from your faucet if need be. Temperature during the dunking should be cold, or as cool as possible and still above freezing. Time spent dunking should be not less than 6 hours for minimal benefits. 12 hours is about right for dunking in between flushes and at birth but 24 hours is the maximum for full rehydration of nearly spent cakes. There are at least 2 options for how to dunk. One method is to dunk each cake individually by

placing it back in its original jar, filling with water, then screw on the lid to keep the cake submerged. This method works well for small batches and has the advantage of keeping each cake isolated so no contaminants are spread from cake to cake.

For larger batches, you can simply place several cakes in a large pan or bucket, cover with water and weigh the lid down with a brick or other heavy object.

There are many methods used to fruit cakes and we will give you some of them here. The first is using the lids of the substrate jars you received with your kit. Remove the lids from your jars and clean them well with soapy water and some alcohol. Fill the lids with vermiculite, coco coir, etc, but not perlite! Add water to the vermiculite and let the water drip through the holes in the lid until no more comes out. You just want the vermiculite to be nice and wet. Place the cake right on top as shown in the image above. Now these cakes are ready for the grow chamber.

Or you could simply place the cakes on a small square of tin foil on top of the perlite inside the fruiting chamber. Fruiting temperatures will vary but are usually going to be 75-79 degrees and the chamber should be kept as close to 100% humidity as possible. You will know when it is 100% b/c moisture will be constantly dripping down the walls of your chamber.

SETTING UP THE SELF AUTO

Put the submersible heater down in the bottom of the largest chamber that you received that doesn't have any holes in it. Position the heater in the middle of the chamber, fill about 1/4 with water and a cap full of household bleach and set to desired temperature. (just like the incubator) NOTE: this heater is submersible. It can be completely underwater with the cord running out of the side. Do not drill any holes!

Now you will want to place the second chamber with the hole in it inside the chamber with the water. Your humidifier and air pump has already been assembled for you so all you need to do is follow the instructions for the humidifier, get it filled with water and attach the output hose to the green check valve that comes out of the whole in the top chamber. Simply attach the hose to the rod if it is not already attached for you. You can position however you like inside the chamber.

Add all of the perlite to the self-auto and enough water to where the perlite absorbs all of the water but there is very little standing water below the surface of the perlite. The perlite should be wet but firm enough to allow cakes to be set on the surface.

Your temp gauge can read inside and outside temperature as well as humidity. Place the gauge inside the chamber to monitor the temperature AND humidity. When the thermometer is set to "outside" using the wire monitor it can only read the temperature and not humidity.

Your timer is digital and very easy to use. Simply follow the instructions on the back. We recommend that you use these techniques when using the self-auto with the timer.

Cake method = 2 inch wetted layer of perlite at the bottom of the self-auto run for 20 minutes every 2 hours.

Casing techniques = No perlite. Timer set at 15-30 minute intervals every 3 hours

CASING

You not only are able to grow mushrooms using the cake method with this kit but also the casing method. The term "casing" as it is used in the mushroom cultivation is the method by which substrate (either cakes or colonized grain) is crumbled into suitable pieces if necessary, and covered with a non-nutritive layer such as casing soil. Casing is a simple process: You layer and level the substrate to an appropriate container and cover with your casing layer. We recommend watching our great video on casing here:

<http://www.youtube.com/watch?v=mqgXiMnoT-Y> Casing

By now your rye grain bag is fully colonized with healthy, white mycelium and ready to be used in this casing technique.

1. Prepare the casing soil – Place all of the casing soil into a microwave safe container and slowly mix enough water into the casing mix until it reaches field capacity*.

**Field Capacity - If you take a handful of this mixture in your hand and squeeze it into a ball it will hold its shape but no water will drip out. We want the mixture moist but not saturated.*

Cover and microwave for 5 minutes. Remove and stir vigorously then microwave again for 5 minutes. You may have to add some more water to get it back to field capacity. Stir again and let mixture cool. You have just sterilized your soil. Save any soil you do not use for later patch ups.

2. Prepare substrate - Once all of the grain in the bag is colonized and ready to be cased break it up with your hands from the outside into marble sized pieces.

3. Assemble casings - This is really easy. Wipe out your casing tray with alcohol soaked cotton ball. Spread a 1 ½ Inch layer of your colonized rye grain on the bottom of the tray. Make sure to fill in all the gaps with colonized rye grain into one smooth layer.

4. Add casing soil – Spread a ½ layer of sterilized casing soil over the top of the rye grain making sure not to pack down the casing soil. It should be airy and fluffy resting on the top of the rye grain.

5. Incubate - Cover your casing trays with a sheet of aluminum foil with several small holes poked in it and then into your water incubator at around 86 degrees for three days for best results.

When three days are up, place trays in your self-auto with no perlite. Set your timer to run 15-30 minute intervals every 3 hours and your heater to 79 degrees. This will provide the perfect environment, temp, and air exchange for your mushrooms to grow.

6. Repair - You will need to patch up spots of mycelium that begin to form over the casing layer with more sterilized casing soil to even up your pin set and make an all around better flush. Repeat this process until you see pinheads forming all

over the surface of the casing instead of isolated spots.

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