How to Grow PSILOCYBIN MUSHROOMS at Home

The FOOLPROOF Way

An all-inclusive beginner's guide to easily grow psychedelic magic mushrooms in your own home

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Intro

Psilocybin Mushrooms – A Gift From The Gods

Humans have been consuming Psilocybin mushrooms since the beginning of time. Some people, like Terence McKenna, believe that hallucinogenic mushrooms have expedited human evolution, summed up by the Stoned Ape Theory. In short, the belief is that Homo erectus evolved into Homo sapiens due to the psilocybin-induced neural growth and shift in consciousness. At a point, roughly 2 million years in the past, the brain of primitive humans significantly increased in size within a short time span. One explanation for this rapid evolution of the cerebral cortex is credited to psilocybin mushroom consumption. While this is up for debate, my empirical evidence has led me to the conclusion that Psilocybe mushrooms allow us to bridge the gap between animal and god. Hallucinogens in general allow us to experience a sense of spirituality and a sensation of intertwined oneness with the universe.

Indigenous tribes all over the world ate psilocybin mushrooms due to the profound spiritual effects. Ancient psilocybin mushroom consumption was most commonly associated with Central American Tribes, as these societies created artwork to demonstrate the importance that mushrooms had on their culture. In the ancient Aztec and Mayan language Nahuatl, the word for Psilocybin mushrooms, Teonanacatl, translates directly to, “the flesh of the gods.”

In ancient Greece, every upstanding citizen, rich or poor, was allowed to drink Eleusis’ magic potion, known as Kykeon. This mixture of psilocybin mushrooms and ergot fungus was known to be a healing experience that affirmed the connection between man and the creator.

In ancient Egyptian beliefs, the god Osirus was said to have embedded psilocybin mushrooms into the earth and these mushrooms were known as “the food of the gods.” Since psilocybin mushrooms were considered godly, only the upper class and priests were allowed to consume them.

Egyptians went as far as cultivating mushrooms on grain, which is just as relevant today.

The Egyptian belief pairs up with the concept that mushrooms are alien in nature and sent here by God. Since encapsulated spores can live in the vacuum of space, there is a theory that spores are intergalactic travelers from another planet. In this way, aliens have found a way to communicate with us and share their profound knowledge. While this may be far-fetched, it is certainly interesting.

In the modern world, with rules and regulations against psilocybin mushroom use, many have grown far from the creator, and evidence of a society that has no connection with spirituality is obvious. However, some localities are legalizing or at least decriminalizing psilocybin mushroom use, as many scientific studies are dictating the vast health and medical benefits that psilocybin offers. At present, there are numerous scientific studies that have shown the positive effects psilocybin has on treating PTSD, MDD, suicidal tendencies, anxiety, OCD, alcohol dependence, and tobacco cessation, to name a few.

A future where everyone not only has access to but are encouraged to use Psilocybin mushrooms for a complete understanding of who they really are and why they are here quite literally has the potential to bring worldwide peace to the planet. While we can only hope for such a scenario, on an individual level, psilocybin mushrooms can heal us from the inside out, as they truly are a gift from the gods.

Psilocybin Mushrooms In Nature

There are a variety of psilocybin mushrooms all around the planet including Psilocybe cubensis, Psilocybe azurescens, and Psilocybe cyanescens. These mushrooms grow on wood chips, mulched plant beds, in sandy soil, and on herbivore dung. The easiest ways to distinguish a Psilocybe mushroom is they turn blue when they are bruised, the spore print is a brown, purple color, and the pellicle (thin gelatinous layer on the mushroom cap) can be separated from the cap.

For the most part, Psilocybe cubensis are the most common mushroom that indoor growers choose. For that reason, we will only discuss Psilocybe cubensis cultivation in this book. In nature, Psilocybe cubensis mushrooms typically grow on cow manure, goat manure, and horse manure. This makes cow pastures or grassland where livestock grazes the best place to find wild Psilocybin mushrooms. For this reason, it is the opinion of the author that cows were originally considered sacred in places like India because Psilocybe mushrooms grow on cow dung. In this way, cows are a gateway to a connection with god.

When growing Psilocybe mushrooms outside, a mixture of cow or horse manure with straw is one of the best growth mediums and is known to offer the greatest yields. However, for indoor growth, the use of manure typically isn't common. Although, there are certain companies that offer sterilized manure mediums for indoor mushroom cultivation. Most mushroom growers choose grain as a growth medium so they don't have to deal with manure.

Mimicking Nature Indoors

When growing Psilocybe mushrooms indoors, the goal is to mimic nature for the most part. While the growth medium typically isn't manure, a grain medium works just fine, as it is nutrient dense. Since mushrooms grow in humid climates, humidity is going to be the most important factor when growing mushrooms indoors. The grain mixture should be at maximum saturation without dripping water. During the incubation period, aim for 100% humidity. When fruiting mushrooms from mycelium grain medium, the growing chamber should be between 75% and 90% humidity at all times.

Temperature is another concern and while the typical indoor temperature is acceptable for both growing mycelium and fruiting mushrooms, making adjustments in temperature will allow for faster growth. When growing mycelium, aim for a temperature of about 28°C to 30°C (82°F to 86°F). When fruiting mushrooms, aim for a temperature of about 22°C to 24°C (71°F to 75°F).

When growing mycelium from spores, no light is needed so this is best done in a dark, warm environment. However, when fruiting mushrooms, light is required for the mycelium to develop mushroom primordia, otherwise known as pins and grow into mushrooms. While not much light is required for this process, fruiting in a room that allows natural sunlight in or using artificial lighting is essential.

Basic Science Behind Growing Mushrooms

Psilocybin mushroom spores that are inoculated in an environment that contains nutrients and specific conditions will quickly form mycelium. Mycelium is similar to the roots of a plant, with each specific strand of mycelium known as hyphae. Hyphae expand the structure of the mycelium by reaching out for nutrients throughout the growth medium. During this phase of growth known as spawning, the mycelium expands until it encompasses the entire growth medium, rather than spending energy on fruiting mushrooms. In the case of psilocybin mushrooms, this mycelium looks like white cotton and a healthy batch has no colored contaminants.

After the mycelium has finished colonizing the growth medium, specific environmental changes based around proper temperature, light, and humidity allow the mycelium to begin developing primordia or small mushroom pins that eventually grow into adult mushrooms. These mature mushrooms will drop their spores, completing the life cycle. Mushroom growth will continue until the nutrients available in the growth medium are exhausted.

The Fungi kingdom is closely related to the Animal kingdom, as both life forms require oxygen for cellular respiration and expel carbon dioxide as a waste product. Fungi are essentially the garbage collectors of nature, as they eat decayed, dead matter and turn it back into basic building blocks that plants can use for nutrition. In this way, Psilocybe mushrooms are able to transition from death to rebirth, both on a physical and spiritual level.

The most important aspects to keep in mind when growing mushrooms are temperature, oxygen, carbon dioxide, water, the correct growth medium, and light. When all of these factors are optimized, growing mushrooms isn't complicated, assuming sterile technique is always followed.

Mushroom Farming - From Beginner To Expert

The key to being a successful mushroom farmer is to follow meticulous technique that goes overboard on sterilization. Since one small contaminant can enter a healthy fungi culture, completely take it over, and destroy it, avoiding contamination is what separates beginners from experts. However, beginners who follow the techniques discussed in this book shouldn't have to deal with contamination often and when they do, simply discard it and start fresh. With a bit of practice, some of the sterile techniques discussed in this book may seem redundant and may not be necessary, but for the sake of initial success, **Do Not Cut Corners!**

The Easiest And Cheapest Methods To Grow Psilocybin Mushrooms At Home

When I first started growing mushrooms, the only technique that was discussed was the PF Tek. While the PF Tek works great, there are better techniques that offer a far larger yield with a smaller overall investment. We will focus on the most common methods to grow psilocybin mushrooms indoors and discuss the most efficient path forward. This book is organized in a way so readers can skip directly to the growing technique they want to learn about if they choose, as every step is discussed in detail. While some steps may seem overly repetitive for readers who read from start to finish, the goal of this book is to be an all-encompassing resource for growing mushrooms indoors.

Plastic Tote Method

The plastic tote method is one of the easiest ways to start growing Psilocybin mushrooms, as it doesn't require many materials or modifications. Simply place sealed, breathable bags filled with

inoculated grain and sterilized substrate into a plastic bin and wait for the mycelium to completely encompass the grain. This technique only requires one to buy a spore syringe, a plastic bin, grow bags, grain, coconut coir, and supplies for sterilization. Even easier, sterilized grow bags that are already filled with substrate and grain can be purchased ready to go. Simply inoculate the grain with a spore syringe using sterile techniques and let it grow.

After the mycelium has grown throughout the grain bag, mix the mycelium with the sterilized coco coir and spread throughout the bottom of the plastic bin. Use a spray bottle filled with water to maintain high humidity within the plastic bin by misting the top and the sides multiple times a day. For proper air circulation, most growers leave the top of the bin slightly open. Growers using the plastic tote method need to find a happy medium between air circulation and maintaining high humidity levels within the bin.

The plastic tote method requires more manual labor than other methods, but it is extremely easy to start and offers the greatest probability of success for anyone who has no experience with mycology.

Monotub Technique

The monotub technique is more of an advanced strategy that requires some modifications and planning, but offers greater yields and requires less manual labor. For the most part, anyone who has ever used a power tool will be able to perform the modifications with ease.

The monotub technique requires modifications to the plastic tote that improve airflow and allow the cover of the bin to remain closed throughout the duration of growth. This reduces the probability of contamination, maintains proper humidity, and greatly reduces the amount of manual labor a grower has to perform. As the grain medium is being consumed by the mycelium the grower doesn’t have to do anything until it is time to start fruiting.

As soon as the mycelium has grown throughout the grain grow bag, combine it with the sterilized coco coir and spread it out through the bottom of the monotub exactly like the plastic tote method. Cover the bin completely and decide which humidity producing technique to use. On the most basic level, growers mist the bin with a spray bottle multiple times a day exactly like the plastic tote method. When pins are forming on the mycelium cake, growers have the option to case the bin with coco coir for optimal fruiting conditions.

Advanced monotub techniques can completely automate the fruiting process while maintaining ideal humidity and CO2 levels. The advanced techniques are worth the extra effort and initial investment as they maximize growth, while minimizing effort. Any beginner can create the monotub, but some people may not be ready for the extra effort it requires initially. In any case, the monotub is the most efficient way to grow Psilocybe mushrooms indoors.

PF Tek

The PF Tek is the oldest mushroom growing technique of the bunch, yet requires more material, effort, and a higher initial investment than the other techniques. Some growers consider the PF Tek to be more prone to contamination, however, this isn't true if performed properly. With the PF Tek, a grower places a mix of brown rice flour, water, and vermiculite into a wide mouth Mason jar, sterilizes it, and inoculates the substrate with a spore syringe. After the mycelium has grown throughout the contents in the Mason jar, the mycelium cakes are transferred into a fruiting container or tub. While there is nothing wrong with the PF Tek, other techniques that utilize the grow bag are far superior.

Spore Print, Spore Syringe, Spore Vial, Liquid Culture

Creating a spore print, spore syringe, spore vial, and liquid culture are necessary in order to keep growing mushrooms indefinitely without having to buy new spore syringes. These techniques will be the most

challenging aspect for new growers because it requires sterile, meticulous steps. The process for all four techniques will be described in detail so beginners avoid any common issues. Growers who store their spores and mycelium always have them ready to go whenever they want to transfer them to a growth medium.

Sterile Technique Supplies

Throughout this book, the focus will be on following sterile techniques, as this is the only way to ensure crop after crop of mushrooms with little to no contamination. Before attempting to begin the journey of mushroom cultivation, consider what supplies will be required in order to perform each step properly.

At the very basics, mushroom cultivation requires a way to sterilize the grain substrate. Ideally, an autoclave or pressure cooker are the best ways to ensure little to no contamination, as the temperature achieved in a pressure cooker kills off nearly everything. An Instant Pot, which is basically an electronic pressure cooker, also works fine, as the end result is the same.

Disinfectants like Lysol, 70% ethanol or 70% isopropyl alcohol, 3% hydrogen peroxide, and a source of fire, ideally an alcohol lamp or small torch, for disinfectant purposes are required. Use gloves, a mask, and perform all sterile techniques in a clean room. A laboratory glove box, sterile box, or the open oven technique are three ways to ensure that contamination doesn't enter sterilized spaces during the process of transferring spores or mycelium to a new growth medium.

While sterility procedures don't need to be on par with a level 4 biohazard laboratory, beginning growers who follow every step outlined in this book will find that growing mushrooms is easy. However, growers who skip steps and end up with contamination will end up pulling their hair out trying to figure out what went wrong. In many cases, growers who end up with contamination on their first crop won't even attempt the process again, as the initial result was disappointing. Avoid this problem

and follow techniques exactly for a couple of crops before customizing the growing process, if desired.

Chapter 1 – Buying Supplies For Growing Psilocybin Mushrooms

The nice thing about growing mushrooms is that it doesn't require all that many supplies and fortunately, none of these supplies are expensive. After buying a spore syringe, most other supplies can be bought locally or online. For an investment under $100, it is easy to begin growing mushrooms on a budget.

Psilocybe cubensis spore syringes can be purchased online. Spore syringes are relatively cheap, about $20 at the time of writing, and can be stored for 6 months or longer before use.

In Chapter 6, we will discuss the process of creating your own spore syringes so you never have to buy more spores after this initial purchase.

Sterilized grains and coco coir already in grow bags and ready for inoculation can be purchased online.

Grow bags, rye grain, and coco coir can also be purchased online. Rye berries, brown rice flour, and most other grains that support mushroom growth can be found at most supermarkets. Coco coir, vermiculite, and perlite can be found at any horticulture store.

Plastic bins with tops, glass jars for the PF Tek, and sterilization supplies can all be found at supermarkets or bought online.

Without further ado, let's jump into the meat and potatoes of this book and discuss growing mushrooms indoors in detail.

Chapter 2 – Growing Mushrooms From Spore To Fruit

No matter what specific technique is chosen, the process of growing mushrooms all follow the same basic principles. Let's discuss the strategies that all beginning growers should understand to successfully grow mushrooms from spore to fruit. The process of inoculating a growth medium with spores, allowing the mycelium to expand throughout the grow bag or jars, moving the mycelium to the fruiting chamber, harvesting mushrooms, creating a spore print for future grows, and preserving freshly harvested mushrooms is all straightforward. If you can follow a recipe when baking a cake, you can grow mushrooms.

Once equipped with a spore syringe, all other mushroom growing supplies are easy to acquire. Assuming enough space in a residence so one can dedicate a room to sterile technique, another space to allow the mycelium to multiply throughout the growth medium, and yet another room to fruit mushroom bodies, beginning mushroom cultivation isn't too difficult. However, the entire process of growing mushrooms can be performed in a small room like a secondary bathroom for anyone short on space.

Mushroom growers can decide whether they want to use a manure-based growth medium or a grain-based growth medium. Typically, most indoor growers opt for the grain based medium for obvious reasons. This grain-based growth medium, often rye berries or brown rice flour, is mixed with an inert substrate like coco coir or vermiculite that can retain moisture to ensure mycelium and eventually mushrooms, have ideal water saturation for proper growth.

The grain and inert substrate are mixed together when being introduced to the fruiting chamber. The key for successful colonization is proper water content. Both the grain and the inert medium are soaked in water and packed into either grow bags or Mason jars at Field Capacity. Any

water will do, but many growers choose distilled water or spring water so chemicals in municipal tap water like chlorine don't affect growth. The term Field Capacity refers to the ideal moisture content for mycelium and mushroom growth. In order to judge Field Capacity, take a handful of grain, inert substrate, or the combination of grain and inert substrate if mixed together and squeeze it, noting how many drops of water fall out. Ideally, one or two drops of water should escape when squeezing the material. Any more water than two drops indicates that the material is too wet and zero drops of water indicate that the material is too dry. Take the time to ensure the material is at Field Capacity before packing it into a spawning container, as this is crucially important.

At this point, the material that the mycelium will grow on is placed in a container, either a glass Mason jar or a mushroom grow bag, sealed, and sterilized. The process of sterilization is best done by an autoclave or pressure cooker. In a pinch, beginning growers who don't have access to a pressure cooker can sterilize their glass jars or grow bags by boiling them in water for 120 minutes on the stove. Note that boiling the jars is not a guaranteed way to ensure sterilization so this technique is not recommended.

After the freshly sterilized grow bags or glass jars cool down to room temperature, the process of inoculating the growth medium with a spore syringe can commence. It is a good practice to inoculate the growth medium within 24 hours after sterilization because the medium will dry out over time. At this point, sterile techniques become the focal point, as we don't want to introduce any foreign spores or bacteria into our growth medium.

When performing any type of activity like inoculating substrate, moving mycelium grain into a plastic bin, creating a spore print, or creating a spore syringe, it is best to do so in a small room that is as clean as possible. Most home growers choose to use an auxiliary bathroom, as bathrooms are easy to clean, small, and don't have much airflow. Before starting any procedure, spray the entire room down with Lysol, as this will kill the greater majority of bacteria and spores within the room.

Then, wipe down the immediate working area with alcohol and place all items that are required for the procedure on that surface. Only after performing these steps begin any procedure that involves potential contamination.

After the workspace is sterilized, use an alcohol pad to wipe down the grow bag and syringe. After that, remove the cap from the syringe and flame sterilize the needle. Now, wipe down the needle with an alcohol pad and inject it into the bag at the designated location, ideally a self healing port. If injecting the spore syringe into the holes in the cap of a Mason jar, similar sterile technique should be followed. After introducing the spores into the growth medium, re-cover the Mason jar with aluminum foil, or place tape over the injection port of grow bags that don't have a self healing port. After the spores have been introduced into the grow bags, mix up the growth medium inside the bag so spores are distributed thoroughly, maximizing mycelial growth.

Place the grow bags or Mason jars in a dark, warm environment so the mycelium can grow throughout the growth medium. The ideal temperature for this phase is 28°C to 30°C (82°F to 86°F) although room temperature is fine, yet growth is slower. This process takes about two weeks to one month for the entire jar or grow bag to be enveloped with white mycelium. Check the grow bags or Mason jars on a daily basis looking for any signs of foreign contaminants. If contamination is present, immediately remove the sample from the other healthy specimens.

From Mycelium To Mushrooms

At this point, it is time to move the mycelium covered grain into the fruiting chamber. Most growers choose to use a transparent plastic bin as a fruiting chamber, as it traps humidity inside and allows light in, which is essential for primordia development. Advanced growing techniques call for the modification of the plastic bin, but techniques like the plastic tote bin method which will be discussed in the next chapter are quite simple and perfect for beginners. Maintaining high humidity is either

accomplished by a water spray bottle, a layer of perlite saturated in water at the bottom of the chamber, or a reptile fogger. In any case, the goal is to maintain a humidity of 90% throughout the fruiting stage. As far as temperature, fruiting bodies prefer typical room temperature, 22°C to 24°C (71°F to 75°F).

Mycelium growing on grain

The process of transferring mycelium from the grow bag or Mason jars into the fruiting chamber is an event that requires sterile technique to avoid contamination. This whole process should be performed in the small room for sterile procedures discussed earlier. After putting on gloves and a mask, spray down the room with Lysol and wipe down the workbench with an alcohol pad. Then, wipe down the inside, outside, and cover of the plastic bin, wipe down the utensils used to cut open the plastic bags, and wipe down the plastic bags or Mason jars before opening them. As soon as the grow bags or Mason jars are opened, quickly cover the bottom of the bin with a mix of grain mycelium and inert material like the sterilized coco coir. This requires manually mixing together the grain and coco coir so use an alcohol pad to sterilize your gloves for a second time, immediately before this process.

If using the perlite method for maintaining high humidity, add the perlite to the bottom of the bin and mix in water. The perlite should be completely saturated with water, yet still be above the water line. Then, place the mix of mycelium grain and coco coir from the grow bags or mycelium cakes from the Mason jars on top of the perlite with enough room between them for proper mushroom growth. If using a water spray bottle for humidity, spray down the sides and spray the top cover of the bin. Then, place the cover on or leave it slightly ajar, depending on the technique used. In any case, the goal is to trap the humidity within the tub, yet allow fresh air to circulate.

Most growers who use the spray bottle technique for maintaining humidity use only water, but some use a 10 to 1 mix of water and hydrogen peroxide. Hydrogen peroxide can kill contamination before it can start so this precaution has its merits. However, avoid spraying hydrogen peroxide on the mycelium or fruiting bodies, as it is a strong oxidizer.

If the top of the plastic bin is placed slightly ajar to facilitate air exchange, low humidity may become an issue. Maintaining high humidity by spraying the sides and top of the bin with water may not be possible and if it is possible, quite cumbersome. In order to automate this process, another option is to use a reptile fogger to keep the humidity near 90% at all times. Simply place a hose from the reptile fogger into the top of the bin, while leaving the cover ajar. This will allow growers more freedom, as humidity and air exchange won’t be an issue. An improvement on this concept will be discussed in Chapter 4 with the advanced monotub technique.

If conditions are optimal, the mycelium will begin primordia formation, otherwise known as pinning, in about a week. Mushroom cultivators need to air out the bin regularly, assuming that the cover is closed, and maintain high humidity to ensure that the pins develop into adult mushrooms. Most beginning growers start their hobby by having to manually mist and air out their fruiting chamber, while professionals opt for automatic techniques that will be discussed in Chapter 4.

To Case Or Not To Case, That Is The Question

After about two weeks of mycelial growth, mushroom pins should start developing. At this point, a grower can simply continue to maintain the high humidity and proper air exchange, as the mushrooms will quickly go from a pin to a full grown mushroom within days. However, an advanced technique known as casing, where a non-nutritive layer is added on top of fully developed mycelium at the bottom of the fruiting chamber, enhances overall yields. Typically coconut coir saturated at Field Capacity is used as a casing agent, but peat moss, and vermiculite work great as well.

Casing fully developed mycelium helps to keep it from drying out over the course of many harvests, allowing more flushes and a greater yield. Additionally, the wet casing material gives developing mushrooms more water to pull from, allowing them to grow faster. Beneficial microorganisms are also found in casing material and contribute to a healthier mushroom overall.

Psilocybin Cubensis pinning

On the flipside, casing adds more overall time to the process of growing mushrooms. For the most part, new growers don’t want to

complicate the process with further, potentially unnecessary steps, and end up making a rookie mistake. Initially, beginning growers who are just starting may want to avoid casing the mycelium cake until they develop the confidence that will quickly come after harvesting a few batches of mushrooms.

Time To Harvest!

Growers who do everything right should aim for a yield of 3 ounces of dried mushrooms for every liter of spawn. As soon as mushrooms are beginning to look like they are ready for harvest, it is time to get them out of the bin and either eat them, freeze them for long-term storage or put them into the dehydration chamber for preservation. Growers know when it is time to harvest mushrooms because the veil underneath the cap starts to separate from the cap allowing spores to be expelled. A mature mushroom that is in reproductive mode or slightly before that is prime for picking.

The best way to take mushrooms out of the bin without damaging the other pins that are growing around them is to cut them at the base with an X-Acto knife or scissors. This is far superior to simply pulling the mushrooms out, as the small pins that form around the mature mushrooms will be yanked out as well.

Psilocybin Cubensis fruiting

When removing mushrooms from the bin, be as delicate as possible to avoid bruising. A bruised mushroom has lower quantities of psilocybin due to degradation and therefore, not ideal. After removing any excess substrate or perlite from the base of the mushroom, put them into a dehydration chamber immediately or freeze them so they can be stored for a long time.

Storing Mushrooms Long-Term - Dehydrating Or Freezing Mushrooms

Dehydrating Mushrooms

There are multiple ways to store mushrooms long term, but dehydrating mushrooms is most common. However, realize that dehydrated mushrooms are up to 50% less potent than their fresh counterparts. In order to preserve mushrooms, the simplest technique involves drying mushrooms on a fan that is faced upward at the ceiling. Another technique when dealing with a larger harvest involves setting up a plastic bin on its side in front of a fan and placing mushrooms into the plastic bin so the fan dehydrates them within 48 hours. This is far from ideal, although almost everyone has a couple fans sitting around. Far

better is to invest in a large food dehydrator, and dehydrate mushrooms for 24 hours at 35°C to 45°C (95°F to 113°F), as the mushrooms will be bone dry and ready for storage.

In dry climates, fan drying should be sufficient, however the use of chemical drying agents may be required in humid climates. After fan drying for 48 hours, getting mushrooms as dry as a cracker may require the use of chemical desiccants. Place semi-dehydrated mushrooms on a rack in a sealed container with silica gel, anhydrous calcium chloride like DampRid or anhydrous calcium sulphate like Drierite at the bottom. A plastic bin works fine if it has a tight sealing top. Since both of these compounds pull water out of the air, they will dry the mushrooms completely if given enough time. Do not allow mushrooms to come in contact with the drying agent. Not only do they taste terrible, reusable drying compounds come with the toxic compound cobalt chloride that indicates when they need to be dehydrated for reuse. The advantage to this technique is multifold, as it requires minimal electricity use and allows mushroom growers to upscale their production, as dehydrating won't be the bottleneck.

Dried Psilocybin Cubensis

When drying mushrooms, always keep them out of direct sunlight, as UV radiation reduces psilocybin content. Additionally, only dry out

mushrooms on inert mediums that don't have any toxic chemicals that could be transferred into the mushroom itself. For instance, avoid drying mushrooms on paper that has ink like newspaper, as the ink is toxic and will be absorbed into the mushroom as it is drying.

Freezing Mushrooms

Mushrooms can also be frozen to preserve them for future use. In fact, frozen mushrooms retain a higher alkaloid content than dried mushrooms, making them more potent. If storing mushrooms in the freezer, the ideal temperature is around -15°C (5°F). However, drying mushrooms is still the preferred method of preservation, as anything that runs on electricity has the potential to shut off. Mushrooms that have been frozen and left to defrost would need to be eaten immediately, as they cannot be refrozen at this point.

There are a number of ways to store mushrooms over the long term, but the main focus with every technique is dryness and limited oxygen exposure to keep potency high, while avoiding mold growth. The simplest way to store mushrooms is to place completely dehydrated mushrooms into a plastic container with a sealable top and add a silica gel desiccant packet that is often found in pill bottles so any excess humidity build up is quickly absorbed.

One unique way to store dried mushrooms over the long term is to put them in a bottle of honey. Since honey never goes bad, as it doesn't allow fungal, bacterial, or viral growth, this is one of the best ways to store mushrooms over the long term. When it comes time to eat these mushrooms, they are bound to be delicious.

Spore Print, Spore Syringe, and Liquid Culture

Creating a spore print from a fresh mushroom allows cultivators to create new spore syringes and start the process of growing mushrooms all over again. Further details on creating a spore print, spore syringe, and liquid culture can be found in chapter 6. After acquiring the original spore syringe, growers who create spore prints never need to buy spores again.

Turn A Secondary Bathroom Into A Mushroom Farm

Beginners who don't have much room on their hands can dedicate their secondary bathroom to growing mushrooms. Bathrooms are naturally built to handle high humidity and cleaning a bathroom is easier than other rooms. Since growers will likely already be using a bathroom for sterile procedures, they can also use it for incubation while the mycelium is growing on the substrate, for fruiting, and for dehydrating harvested mushrooms as well.

The bathroom countertop will serve as the main workstation. All ingredients can be mixed up and packed into grow bags or jars. As soon as grow bags or jars have been inoculated, place them in the bathroom cabinets and allow them to incubate as the mycelium takes over the growth medium. Most bathrooms will already be at an acceptable temperature that facilitates rapid growth, while closed cabinets will maintain a dark environment.

As soon as mycelium has grown throughout grow bags or Mason jars, set up fruiting chambers either on the floor or in the bathtub. In most cases, fruiting chambers can be stacked on top of each other, reducing floor space or tub space. Bathrooms that allow natural light to enter promote primordia formation. If this isn't the case, leave the light on for 12 hours a day. Humidification of the fruiting chamber can be done with any of the humidification techniques discussed in this book.

Dehydrating harvested mushrooms can also be done in the bathroom, ideally with a food dehumidifier. If the bathroom has high humidity levels, dehumidification is best done in another room, but every step of growing mushrooms can be performed in a secondary bathroom if need be.

Chapter 3 – Plastic Bin Tote Method

Anyone who is just getting started with growing mushrooms indoors should consider using the plastic bin tote method, as start-up costs are small, and yields are respectable, if everything is done correctly. With the plastic bin tote method, one must dedicate daily effort to maintaining high humidity levels during the fruiting stage. This shouldn't be too much of an issue for anyone who is excited about growing their first crop of mushrooms, as they will want to check on growth progress multiple times a day. In the late stages of fruiting, mushrooms can double in size over a short time and watching the fruits of labor is satisfying.

The absolute easiest way to grow mushrooms with the plastic tote bin method is to purchase pre-sterilized grain and substrate that is already in sealed, filtered, grow bags. While it is more expensive initially, professionally sterilized grain bags significantly improve the probability of success, as anything that could potentially go wrong when filling your own grow bags is eliminated. However, expenditure can be reduced when starting from scratch, as most advanced users purchase grow bags in bulk, pack in their own grain, and sterilize it themselves.

For the first option, purchasing pre-sterilized grain in grow bags from a reputable supplier expedites the whole process. Both sterilized grains and coco coir, used as a substrate in order to maintain humidity, can be purchased online.

Spore syringes are available online.

Starting From Scratch

The second option involves starting from scratch and it requires more initial start-up investment, but will quickly pay for itself after a couple crops. Anyone who wants to pack their own grow bags and sterilize the grain themselves can buy grow bags, rye grain, and coco coir online.

If taking the more work intensive option to fill grow bags with rye berries and sterilize it yourself, it isn't overly difficult or complicated.

After purchasing a pressure cooker, grow bags, heat sealer, rye berries, and coconut coir, you will be ready to start. Start by mixing together the grain and water in a bucket.

The reason why rye berries are used as the grain of choice for mushroom growth is because they are highly nutritious and can hold the most amount of water, with an equilibrium moisture content of 47%, far higher than any other grain.

Soaking rye berries before putting them in the grow bag also eradicates certain contaminants like endospores that will germinate during the soaking process. This makes them susceptible to complete elimination when it comes time to sterilize the grow bags. If these endospores were allowed to remain in spore form, they would be able to withstand sterilization, even in a pressure cooker.

After soaking the grain, aim for Field Capacity, the ideal saturation, not too dry and not too wet. The ideal moisture content should only allow one to two drops of water to leak out when the mixture of grain and water is squeezed into a fist.

The easiest way to achieve Field Capacity is to start by placing the dried rye berries in a bucket that is filled with cold water. After letting them soak for a while, pour off the water and refill it again with more fresh, cold water. Repeat this procedure a couple of times until the water is relatively clear. At this point, make sure there is at least 8 inches of water over the rye berries and allow the grain to sit in the water for 24 hours so it can soak up as much water as possible.

Upon return, the rye berries should be fully saturated. Now, pour off the excess water and fill the bucket with hot water. This water shouldn’t be boiling hot, just hot to the touch. Allow the rye berries to sit in this hot water for 30 minutes, as this will maximize the amount of moisture the grain can hold. Now, strain off the water and place the rye berries on a large tray for an hour so the external surface can be allowed to dry. At this point, the rye berries should be at Field Capacity, but small adjustments may need to be made for optimal saturation.

With the grain moisture content at Field Capacity, fill a grow bag half full of rye berries and heat seal the bag at the top. Make sure there aren't any holes throughout the entirety of the bag, as the only air that should circulate is through the 0.2 μm filter. Then, add an equal amount of coco coir and water at Field Capacity to another plastic bag and heat seal it. One can use a grow bag, but this bag doesn't need to have a filter or any holes whatsoever because it is an inert medium and no spores will be introduced into it.

After both bags are heat sealed, place them both in the pressure cooker and allow them to cook for 90 minutes at maximum temperature at 15 psi while pressure is blowing off from the steam release valve. This will ensure that everything has been fully sterilized and will be ready for the inoculate. Allow the pressure cooker to naturally neutralize to atmospheric pressure and open the top when depressurized. Anyone without a pressure cooker should most definitely buy one to ensure that their growth medium is completely sterilized. However, if unable to access a pressure cooker, boil the grow bags in a pot of water on the stove for at least 120 minutes. In most cases, this should be a sufficient way to sterilize the contents of the grow bags, but it isn't always enough, especially in high altitude locations.

Injecting The Spore Syringe Into The Sterilized Grain

After the sterilized grain in the grow bags has cooled down to room temperature, put on a surgical mask, some plastic or latex gloves, and pull apart the top of the bag so air can enter through the air filter, ensuring there is sufficient space between the front and the back of the bag. Now, wipe down the entire grow bag with an alcohol pad or a cotton ball saturated with either 70% or higher ethanol or 70% or higher isopropyl alcohol, while giving special attention to the injection port. Then, wipe down the spore syringe with alcohol and take the cap off the needle. Now, flame sterilize the needle before inserting it into the

injection port, as this ensures that any contaminants on the outside or within the needle are killed off.

The best way to flame sterilize the needle is to make an alcohol lamp, but a small torch or a lighter will do. At this point, wait for the needle to cool down, wipe down the needle with an alcohol pad, and insert the needle into the self-healing injection port. Inject 2ml to 4ml of spore solution into the bag, pull out the syringe, and cap it off. The self-healing injection port should no longer have a visible hole. If there is still a hole in the injection port, cover it with tape. Now mix up the contents of the bag so the spores are even distributed throughout the grain.

While the mycelium will grow throughout the grain spawn at room temperature, the ideal temperature for Psilocybe mycelium growth is slightly higher, around 28°C to 30°C (82°F to 86°F). While not something to worry about on your first grow, professional growers who want to streamline the process for maximum efficiency set up a dark, warm incubation room that maintains ideal temperature.

Basic mushroom grow bags have an air filter, but don’t have a self-healing injection port. If you are dealing with a basic mushroom grow bag that doesn’t have a self healing injection port, there are a few more steps to follow to avoid contamination. Most of these economical grow bags have a small piece of tape located near the top indicating the intended injection area. If there is no tape at all, place a piece of tape near the top of the bag before sterilization so the plastic doesn’t rip when the spore syringe is injected into it. After this, pull apart the top of the bag so it fills up with air and ensures there is plenty of space between the front and the back of the bag. As with the more advanced grow bag, wipe down the entire bag with alcohol, wipe down the spore syringe, take the cap off the syringe, flame sterilize the needle, wait for the needle to cool down, and wipe down the needle with an alcohol pad.

Now, inject the spore syringe into the injection area while being sure to avoid puncturing the backside of the bag. After injecting 2ml to 4 mL of spore solution into the bag, pull out the syringe and immediately cover

the injection hole with thick tape. Now, mix up the contents of the bag so the spores are evenly distributed throughout the grain medium for the fastest mycelial growth possible. Finally, take a deep breath because if everything was done correctly, you have successfully inoculated your first bag of sterilized grain spawn.

The Waiting Is The Hardest Part

After the grow bag has been inoculated with psilocybin spores, simply let it sit in the covered plastic bin along with the sterilized coco coir for about two weeks to one month until the grain bag is completely white with mycelium. Ideally, use a dark, warm room for this phase of the process to maximize growth. The process of mycelium growth starts out slowly over the first couple of days and accelerates from there until the entire grain spawn is completely engulfed by the mycelium.

Into The Fruiting Chamber

At this point, the mycelium covered grain and the coco coir are ready to be mixed together to fill out the bottom of the plastic bin. In order to do that properly, start by sterilizing the room used for sterile techniques with Lysol, wiping down the entire workplace, plastic tote, and grow bag with alcohol. Additionally, use gloves that have been sterilized with alcohol and use a mask in order to lower the probability of contamination. During and after the mycelium covered grain and coco coir is mixed together, the possibility of contamination is highest, as it is exposed to the outside environment.

While not completely necessary, painting the bottom four inches of the clear plastic tote in black paint ensures that pins don’t begin to develop in an area where they aren’t able to fully grow into adult mushrooms. This technique is often used in the monotub procedure that will be discussed in the next chapter. Again, painting the bottom of the plastic tote with black paint optimizes mushroom yields, but anyone who doesn’t want to complicate the overall process doesn’t have to follow this step.

Take the mycelium grain bag and gently mix it up within the sealed bag so each individual clump of rye is independent of each other. This increases growth surface area and makes it easier to properly mix up the grain spawn with the coco coir.

Now, wipe down the entire bag with alcohol again and wipe down a knife, X-Acto knife, or scissors with alcohol before cutting the mycelium grain bag open at the top. Take the other bag with the coco coir, wipe it down with alcohol as well, and cut this bag open at the top. The mycelium grain and the coco coir will now be mixed together in the bin.

Before mixing up the grain and the coco coir substrate, wipe down the plastic bin with alcohol, while alcohol sanitizing latex or plastic gloves immediately before touching the grain mycelium. While this may all seem excessive, just remember, you cannot be too sterile when growing mushrooms.

At this point, mix together the mycelium covered grain with the coco coir in the bottom of the plastic bin so that everything is evenly distributed. When mixing the mycelium grain with the coco coir check again for Field Capacity to ensure that the substrate has the proper moisture content for healthy mushroom growth. At this point going forward, the main focus will be on maintaining proper humidity within the plastic tote for completing mycelial development and mushroom growth.

Humidity And Airflow

There are multiple ways to keep the area within the plastic tote high in humidity, but beginners generally opt for the spray bottle technique. Simply mist the sides and the top of the plastic bin multiple times a day with a water spray bottle. There are some drawbacks to having to mist the container on a regular basis and anyone looking to optimize or even automate the humidity variable should consider the advanced monotub growing technique discussed in the next chapter. Realize that misting the container with water may not offer high enough humidity in dry climates so other humidification techniques will be required. However, in

locations that already have a relatively high humidity, the spray bottle misting technique should be sufficient.

In order for proper air exchange, many recommend keeping the top of the bin slightly ajar so it keeps most of the humidity in, but allows the mycelium to breathe. Again, in dry climates this may not be an option and the bin may have to be covered nearly 24 hours a day, while the grower fans out the bin with the cover two or three times a day to remove excess carbon dioxide and allow fresh oxygen to enter.

At night, place the cover securely over the plastic tote to build up humidity while leaving the cover slightly ajar during the day. This technique for air exchange and humidity maintenance doesn't take a whole lot of time or effort, but it is not ideal, and it also requires manual input multiple times a day. In order to successfully implement the plastic tote bin method, growers should have enough time on their hands to care for their mushrooms.

The Perlite Humidity Method

The perlite method for maintaining high humidity within the plastic tote automates humidification so growers don't have to worry about misting the container multiple times a day. The perlite method takes advantage of solar evaporation and condensation to maintain high humidity. To perform the perlite humidity method, fill the bottom of the plastic tote with perlite, being careful not to breathe in the dust, and add water to completely saturate it. Then, add the mixture of mycelium grain and coco coir to the fruiting chamber to create a central brick of mycelium rich substrate in the middle of the plastic tote. For clarification, the mycelium grain spawn and coco coir mixture is placed on the perlite and will look like a cake in the center of the bin, while 2 inches of water saturated perlite should be visible on all sides of the tote, as it will act as a water reservoir. Leaving the tote in a room that receives sunlight allows the water to evaporate from the perlite, condense on the sides and cover of the tote, while maintaining 90% humidity 24 hours a day. For air exchange, simply fan out the container two or three times a

day, while leaving the container covered at all other times. The perlite humidity method is the easiest way to maintain high humidity without having to worry about misting or using electric fogging machines.

The obvious disadvantage to keeping the cover of the plastic tote ajar is that contamination can quickly find its way inside the tote while the mycelium is still gaining a foothold. The same is true for fanning out the air with the cover of the tote. However, fully established mycelium should be relatively resistant to contamination. While the plastic tote method is fine for beginner growers, professional growers choose other techniques to optimize all growth factors. For a better way to exchange air and a more sterile growing set up, consider the monotub method.

Indoor temperature is usually ideal for fruiting mushrooms so there shouldn't have to be any adjustments temperature wise during the fruiting stage. Ideal temperature for fruiting Psilocybe mushrooms is 22°C to 24°C (71°F to 75°F).

After a couple of days, the entire bottom of the bin should be filled with mycelium, as it has completely consumed the entire growth medium. If the mycelium appears snow white and there are no off colors that would indicate other mold is growing within the bin, everything has gone well. Simply maintaining the high humidity and high oxygen levels will allow the cake to start pinning and mushrooms should quickly form.

Shotgun Fruiting Chamber Technique

One way to encourage excellent air exchange is to employ the shotgun fruiting chamber method. This simply involves drilling small holes into all sides of the fruiting chamber so it looks like it was shot by a shotgun. This method allows air to exchange freely, while humidity is still trapped in the bin, if using a high humidity method like the perlite humidity technique.

The shotgun fruiting chamber will solve humidity issues and airflow issues, allowing the fruiting chamber to be completely autonomous, as it doesn't need to be aired out or sprayed down with water for optimal

mushroom growth. However, drilling holes into the plastic tote and leaving them open is a rather crude method that can increase potential contamination. If opting for the shotgun method, consider filling the shotgun holes with polyfil so only air can enter and leave, but contaminants will be blocked out.

Harvest The Bounty

Psilocybin mushrooms fruiting in the plastic tote bin

As soon as mushrooms have matured, it is time for harvest. Use an X-Acto knife or scissors to remove mature mushrooms from the fruiting chamber. Avoid pulling mushrooms out of the growth medium, as this will pull small pins that haven't developed yet out with it. When removing mushrooms from the fruiting chamber, avoid damaging them, as bruised mushrooms have a lower potency.

Optional - Make A Spore Print

Take the best mushroom samples and create a spore print that can be used at a later date to start the entire process over again. More information on creating a spore print and spore syringe can be found in chapter 6.

Eat Or Dehydrate Mushrooms

Fresh mushrooms do not have a long shelf life and should be eaten or dehydrated quickly. Since large quantities of mushrooms are all likely to sprout at once, growers will have to preserve them. Choose a preservation method that is appropriate for your set up, freeze them, or use a dehydrator, a fan, or a fan in combination with chemical desiccants. Then, store dried mushrooms in a sealed container with a silica gel pack to keep moisture out.

With the plastic tote bin method, overall supplies are sparse and the monetary investment is small. Before starting, decide whether to purchase sterilized grow bags filled with grain and coco coir or fill your own grow bags. Apart from the grain, grow bags, a spore syringe, and a plastic tote, other supplies like a scissors, knife, gloves, mask, and alcohol for disinfectant purposes are required.

Realistically, the plastic tote bin method is a great starting point for anyone interested in growing mushrooms. There isn’t a more cost effective way to dabble within the mycology field than this basic, no frills method for growing mushrooms. While this method requires consistent input for a successful crop and has a higher probability of contamination, it has proven itself time and time again, as many people stick to this basic method because it is effective.

Every beginner needs to start somewhere and the plastic tote bin method is a great stepping stone to the monotub growth method. If you are interested in increasing automation, decreasing potential contamination, and giving mycelium ideal conditions that allow them to grow into healthy mushroom specimens, read on, as we are going to dive into the details of the monotub technique next.

Chapter 4 – Monotub Tek Method

The monotub technique for growing mushrooms is generally the option chosen by professionals, as it offers complete control over all variables if opting for the advanced options. Beginners can also start with the monotub technique, yet it requires more preparation and a higher initial monetary investment. However, the overall yields are far higher and quality is unmatched. The monotub technique is similar to the plastic tote technique, at least initially. Again, grain and coco coir will be placed in mushroom grow bags and inoculated with a spore syringe exactly like the plastic tote bin method. The difference between both techniques is based around the functionality of the plastic tote, which we will discuss in detail.

Since the initial phase of the monotub technique for growing mushrooms and plastic tote bin technique is exactly the same, this will be a refresher for anyone who already read the previous chapter.

Spore syringes can be purchased online. Pre-sterilized grains packed into grow bags and ready for inoculation are also available online. Anyone who wants to start from scratch can buy grow bags, rye grain, and coco coir online.

Inoculating the grow bag with spores is exactly the same as with the plastic tote bin method. Again, keep in mind that the overall focus is on sterile technique to avoid introducing contamination into the grain grow bag.

Many growers choose to purchase pre-sterilized grain grow bags and pre-sterilized coco coir bags that are ready to be injected with spores. Other growers choose to fill their own mushroom grow bags. If choosing the latter option, mix together rye berries and water in one bucket and mix together the coconut coir and water in another bucket. Filter off the dirty water from the rye berries and add fresh water a couple of times until it remains clear. Now, allow both of these buckets to sit for 24 hours. Be certain the bucket with the rye berries has sufficient water, at

least 8 inches above the grain, because most of this water will be absorbed. After 24 hours, strain off the water and add hot water, letting the bucket sit for 30 minutes. This process allows rye berries to become fully saturated in water and allow any endospores to begin their growth cycle before being sterilized in the next step. Now, strain off all the water and place the rye berries onto a large tray for 1 hour so the surface can dry off. Also, strain off the water from the coco coir and bring it down to optimal water saturation.

The rye berries should now be at Field Capacity, but squeeze them to make sure, noting that only one or two drops of water leaks out. Now, pack the rye berries half way full into the mushroom grow bag and heat seal it off. Also, add the damp coco coir to another grow bag and heat seal it off. With both bags sealed, sterilize them for 90 minutes at the maximum temperature in a 15 psi pressure cooker. After sterilization, wait for the grain grow bags to come back to room temperature before adding spores into the grain medium.

After the grain grow bag is sterilized and ready to be inoculated, move everything into the room designated for sterile techniques and spray it down with Lysol. Then, put on a mask and gloves. At this point, wipe down the entire workspace with an alcohol pad and wipe down the grain grow bag to prepare it for inoculation. Now, wipe down the spore syringe with alcohol, take off the cap, heat sterilize the needle with a lighter or ideally, an alcohol lamp, and wipe down the needle again with alcohol, ensuring it is cool enough to use. After re-wiping the injection port with alcohol, insert the needle into the grow bag, ensuring that the back of the grow bag is far enough away from the needle so it doesn’t puncture through it.

Now, insert the spore syringe needle into the injection port and squirt 2 mL to 4 mL of spore solution into the bag. Grow bags with a self-healing injection port will close up around the hole on their own, but economic grow bags won’t have one of these injection sites and will require tape to be placed over the injection hole. After sealing the hole with tape, manually mix up the contents of the bag so the spores have direct contact

with the greatest amount of rye grain medium. At this point, the first step is complete. Now, place the freshly inoculated grain grow bag and the sterilized bag of coco coir into the plastic tote that will serve as the monotub. As with the plastic tote method, the grain and coco coir grow bags will sit in the bin after the grain has been inoculated. During this time, between 2 weeks and 1 month, the mycelium will grow throughout the grain bag. As soon as the grain is completely covered with mycelium, it is time to mix the grain and coco coir into the bottom of the plastic bin so it can create a mycelium cake.

When the grain in the grow bag is completely covered in white mycelium, it is ready to be mixed with the coco coir and transferred into the monotub. After modifying the plastic tote that will serve as the monotub, which will be discussed next, move all equipment into the room designated for sterile techniques and prepare the room by misting it down with Lysol. With gloves and a mask on, use alcohol to sterilize the workspace. Now, wipe down or spray the entirety of the monotub with alcohol to disinfect it, wipe down the grow bags completely, wipe down the scissors or a knife that will be used to cut open the grow bags, and begin the process of transferring the mycelium into the monotub. With the grain still in the grow bag, manually mix up the contents so it is as broken up as possible to offer the highest surface area and quickest mycelial cake formation once it is introduced into the monotub. At this point, cut open the grow bags, re-sterilize the gloves with an alcohol pad and begin mixing the mycelium grain mixture with the coco coir evenly throughout the bottom of the monotub. Now, spray down the sides and inside cover of the monotub with water to ensure optimal humidity levels and snap on the cover. At this point, the fruiting chamber is completely functional. Consistent manual input from here on out will be required to maintain optimal humidity levels.

Modifying The Plastic Tote For The Monotub Method

The big differences between the plastic tote bin method and the monotub technique are all based on bin modifications. Due to increased airflow through the air filters, the cover of the monotub can remain on the bin at nearly all times, while maintaining ideal humidity. The monotub allows for proper gas exchange so the mycelium and in turn, mushrooms don't have to deal with an environment that is overly high in the waste product carbon dioxide. In order to ensure proper air transfer, the plastic bin will require air filters installed into the walls of the bin, reducing the amount of manual labor a grower has to put in while optimizing oxygen levels.

First, start by painting the bottom of the monotub in black paint so no light can get in and induce primordia formation in areas where mushrooms are not able to actually grow. When starting with a transparent plastic bin, add a layer of duct tape horizontally about 3 inches from the bottom. Then, either paint or spray black paint below the duct tape to cover the entire bottom exterior of the bin. At this point, growers can decide whether or not they want to leave the duct tape on or remove it if they are going for a more flush look. However, mushrooms really don't care how their fruiting chamber looks, they only care that it offers them the environment to thrive.

The monotub technique requires holes to be drilled into the plastic bin and polyfil or a similar filter medium to be placed in these holes. This will keep out the greater majority of contamination while allowing air to flow in and out unimpeded. We will be drilling two holes into each long side and one hole into each of the short sides of the plastic bin. For the proper shape, a circular bit will be attached to the drill, similar to what is used when drilling a hole in a door so the door handle can be installed.

Since plastic can easily crack when manipulated and force a grower to have to buy another bin and start over, patience is the key when drilling these holes. With that said, place the least amount of pressure possible on

the drill when carving out holes in the plastic bin. By allowing the drill bit to do all the work, a freshly drilled hole shouldn't result in a fatal crack. Another trick to avoid the plastic from cracking is to drill holes from the inside of the bin outward while holding a wood block on the outside of the bin. The wood block acts as a support to the plastic as the drill bit bores into the bin, greatly increasing structural integrity and lowering the possibility of cracking. As soon as all 6 holes are drilled into the bin, sand down the edges to remove any rough spots that could result in injuries. If the bin cracks slightly during the drilling process, patch it up with duct tape, as it may still be salvageable.

Now, take a large handful of polyfil and stuff the freshly drilled holes with this material. There should be enough polyfil in the holes so that there are no noticeable spaces that aren't occupied by this makeshift filter. The polyfil will appear bulky, as it occupies space inside the bin, but that is normal. Now, tape the polyfil in place with duct tape around the edges on both the inside and outside of the bin. By taping in a rectangular pattern to hold the polyfil in the holes, growers don't have to worry about their air filter falling out during the duration of the grow.

The basic monotub method doesn't require any further modifications to the plastic tote, as simply improving airflow allows us to keep the cover of the plastic bin closed and maintain relatively high humidity. In the basic monotub method, the humidity will be provided by a spray water bottle, but the monotub won't need to be misted down nearly as much as in the plastic tote method. In fact, after the mycelium-covered grain is initially placed into the monotub, the cover should remain on as much as possible as the mycelium forms mycorrhiza into the coco coir and creates the mycelium cake.

Transferring The Grain Mycelium And Coco Coir Into The Fruiting Chamber

When transferring the grain mycelium and coco coir into the fruiting chamber, sterile technique is an absolute must, as potential contamination is most likely during this stage. Since the grain mycelium hasn't

completely developed throughout the coco coir and created a strong, dense mycelium cake, it may become inoculated with other spores or bacteria. As with any other sterile technique, move all materials into the designated sterile room and spray the entire space down with Lysol. Then, put on gloves, a mask, and wipe down the work area with alcohol in order to sanitize it before opening the grow bags. At this point, take an alcohol pad to wipe down the top, inside, and outside of the monotub completely. Now, wipe down the grain grow bag and coco coir bag in preparation to open them up. At this point, wipe down the X-Acto knife or scissors with alcohol before opening both bags.

After both bags have been cut open, use an alcohol pad to wipe down the gloves again and mix the contents of both bags together in the bottom of the monotub so they are evenly distributed in the bin. When mixing together the grain spawn and the coco coir substrate, make sure that both are still at Field Capacity saturation. In some cases, the material may be a bit dry and a bit of moisture should be introduced in order to regain Field Capacity.

If the hand spray bottle humidity technique is used, spray down the sides of the monotub and top of the monotub with water. Then, place the top on the monotub and allow the mycelium to completely develop throughout the bottom of the bin. This process will take a week or two before pinning begins. During the entire process of final mycelial growth, the bin should remain closed as overall humidity within the monotub should be as high as possible. If the monotub isn’t retaining moisture, spray down the sides and top of the bin more frequently.

The monotub should be placed in an area that receives natural or artificial light so that primordia formation can occur. As soon as pins begin developing across the top of the cake, it is time to either case the material with a coco coir substrate or let the pins develop into full-grown mushrooms without being cased. The coco coir that will be used to case our mycelium cake should be at Field Capacity humidity saturation. One way to accomplish this is to add the dry layer of coco coir and spray it down with a water bottle until the entire layer is completely saturated.

Another way to do that is to place the coco coir into water and remove it, ensuring proper humidity, and place it over the mycelium cake. At this point, spray water on the sides and the top of the plastic bin to ensure proper humidity and snap the cover back on.

The advantage to casing is that overall yield will be higher, as more flushes are possible. Casing retains moisture and allows the mycelium cake to remain at an optimal humidity continent. The drawback of casing is that adding extra material on top of the mycelium cake requires more growth time overall, as the mycelium has to grow up into the coco coir before sprouting mushrooms. For this reason, some people avoid the casing step. However, most professional growers opt to case their product so it is best to try it both ways and determine which is best for you.

During the next couple of weeks, the most exciting part of the overall process will begin, pins will form and develop into full-grown mushrooms that will be ready for harvest. This is when the monotub technique excels over the plastic bin method, as it allows plenty of air transfer that is required for healthy mushrooms. If humidity is near 90% as the pins develop into full-grown mushrooms, it won't be long until harvest time.

Mushrooms will be ready to harvest when the veil beneath the cap just begins to separate from the cap. This is an indication that spores are ready to be released from the mushroom gills and start the whole process over again. Harvesting mushrooms all comes down to being as gentle as possible in order to avoid bruising mushrooms, as this reduces overall potency. Use an X-Acto knife to cut out mushrooms on a daily basis that are mature and ready for preservation. Avoid pulling out mushrooms from the fruiting chamber, as this will remove small pins that have developed with them, decreasing overall yields.

The number of flushes with the monotub technique is dependent on a few factors, mainly, humidity, air exchange, and whether or not it was cased. In any case, expect to harvest multiple flushes from the fruiting

chamber. At some point, the harvest bounty decreases significantly and a fruiting chamber should be emptied, sanitized, and restocked with fresh material.

As soon as mushrooms are removed from the fruiting chamber with an X-Acto knife or a scissors either eat them or preserve them. Typical preservation involves dehydrating mushrooms until they are completely dry. Then, store dried mushrooms in a sealed container that contains a silica gel packet in order to keep humidity near zero.

Advanced Monotub Techniques

The basic monotub technique is fairly efficient and far better than the plastic tote method, however, there are certain advanced techniques that automate the entire process and maintain ideal levels of humidity and airflow. These techniques will require electricity and may potentially complicate the overall process, yet professional growers seeking a high-quality product and top-notch yields will almost always opt for the advanced techniques.

In order to improve airflow, a computer fan can be placed into the side of the monotub bin. To add a fan, get out the drill and circular drill bit to carve out a hole in the plastic bin large enough to fit a computer fan. Again, when drilling out a hole for the fan, use as little pressure as possible while drilling from the inside and holding a wood block on the outside to avoid cracking the plastic bin. Place the fan in the hole and use duct tape to ensure it is securely in position. The fan should be placed so that it is blowing air out of the bin instead of into it in order to avoid contamination. Ideally, place polyfil or a 0.5 micron filter over the outside of the fan so little to no contamination enters when the fan is not running. With the fan sucking air out of the tank and pulling in air through the polyfil air filters, oxygen and carbon dioxide levels should be ideal for mushroom growth. The fan can be connected directly to a timer to optimize growth, yet reduce runtime. Simply experiment with different timing options so airflow is optimized, while humidity isn’t reduced significantly.

With the fan air exchange technique, humidity may be an issue. Since maintaining humidity is the number one most important aspect of fruiting mushrooms this factor should be optimized. In order to optimize humidity levels and automate the entire system, use a reptile fogger that constantly provides a perfect amount of mist for mushroom growth. Then, connect the reptile fogger to a humidity sensor and an electric timer so humidity levels remain between 75% and 90% at all times. This is accomplished by setting up the humidity sensor to switch the fogger on when humidity levels drop to 75% and shut off the fogger when humidity levels reach 90%. With this automation, growers no longer need to worry about keeping an eye on the humidity and misting their tank with a water spray bottle multiple times a day.

There are two ways to set up the hose of the reptile fogger into the fruiting chamber. The first is to simply place the hose of the reptile fogger in between the cover and the bin, allowing the cover to sit ajar. The second is to drill a small hole into the side of the monotub just big enough to allow the reptile fogger hose to enter. The second technique is better in order to retain optimal humidity levels without having to run the fogger as often.

Another potential addition to the monotub technique involves installing a small LED light that will encourage pin formation. The LED light can be connected to a timer that remains on for 12 hours a day and turns off 12 hours a day, as a way to mimic the natural environment. However, this is only necessary if growing in a dark place like a closet that has no natural light coming into it.

Optimizing the monotub technique to include the advanced options gives growers precise control over all the factors that lead to an optimal mushroom crop. Additionally, an optimized monotub requires zero manual input once everything is set up and running. This is ideal for advanced growers or anyone else who doesn’t want to be married to the consistent work involved in growing mushrooms. Growers who have scaled up their operation and are growing large quantities of mushrooms opt for the advanced monotub technique, as they don’t have to be

babysitting their fruiting chambers constantly. Growers simply have to keep an eye on pin formation and mushroom growth so they harvest mature mushrooms at an ideal time.

My advice is to start with the Monotub Tek method even if you are a beginning grower. I believe the only way to do something is to do it right from the very beginning and it isn't much of a hassle to create the monotub. While setting up the reptile fogger may be unnecessary initially, beginning growers who start with the basic monotub technique will likely be satisfied with the end results.

Chapter 5 – PF Tek Method

The PF Tek method is one of the oldest ways to grow mushrooms on grain. Before grow bags were common, injecting spores into a grain medium packed into Mason jars was the most common way to grow mushrooms indoors. While it has its drawbacks in terms of overall yield and material costs, it works fine for a small time grower who wants to experiment with growing mushrooms for personal use.

Materials For The PF Tek Method

As with the other techniques, the first step involves buying Psilocybe cubensis spores. Spore syringes can be purchased online.

All equipment required to perform the PF Tek can be purchased online, at a big box store, or the grocery store and gardening shops. From an investment standpoint, Mason jars are going to be the most expensive material required to perform the PF Tek. However, Mason jars can and should be reused over and over again so the cost will even out over the long-term. Start by picking up a 12-pack of pint size, wide mouth Mason jars, as this will be enough to fill a plastic bin fruiting chamber. Additionally, purchase a long, rectangular, transparent, plastic bin that can be used as a fruiting chamber.

The growth medium typically used in the PF Tek is brown rice flour, as it provides all the nutrition the mycelium needs. The brown rice flour will be mixed with vermiculite, an inert substance that retains water and ensures that the mushroom cakes are at an optimal water saturation. Basically, brown rice flour substitutes for rye berries and vermiculite substitutes for coco coir used with the grow bag technique.

In order to humidify the fruiting chamber, the perlite humidity technique is the best non-electric option. Humidity provided by misting the container with a spray bottle can be used, but it requires more work and may not maintain an optimal humidity content. Perlite and vermiculite can be purchased at a garden shop or a big box store.

Additionally, items like a pressure cooker, 70% alcohol, gloves, a mask, a source of fire, aluminum foil, and Lysol are required to ensure sterility.

Preparing The Mason Jars

Once all the materials have been acquired, the first step involves poking small holes into the top cover of the Mason jars that will be used for spore syringe inoculation and air exchange. The most common way to punch holes into the metal top of the Mason jar is to take a typical 3-inch nail and pound four, equidistant holes near the edges of the metal cap. The holes should be just big enough for the spore syringe needle to enter. After all the Mason jar covers are prepared and ready to go, it is time to mix up the growth medium.

Preparing the Growth Medium

The growth medium is one part water, one part brown rice flour and two parts vermiculite. After the dry materials are mixed together in a bowl, add the water to achieve Field Capacity. Field Capacity refers to the optimal moisture content for mycelial and mushroom growth. Field Capacity can be determined by squeezing the brown rice flour, vermiculite, and water mixture into a fist and noticing how many drops of water are expelled. Ideally, one or two drops of water should leak out. If more water leaks out, add more dry material to the mix and if less water leaks out, add more water to the mix. After proper Field Capacity has been achieved, the growth medium should be packed into the Mason jars.

At this point, add the mixture of the brown rice flour, vermiculite, and water to the pint size, wide mouth Mason jars so it is filled to just below the thread lines where the cap is screwed on. The reason wide mouth Mason jars are required is because the mushroom cake has to slip out of the Mason jar after the mycelium has completely covered the growth medium. Don’t pack the growth medium in too tight, but add a little bit

of pressure so the growth medium is compact enough for ideal mycelium growth.

After the jars are filled with growth medium, use a damp cloth or paper towel to clean the top rim so it is completely clean. There should be no growth medium on the inside rim of the jar. Now, add in dry vermiculite to the remaining space available in the Mason jar. This acts as a cover over the growth medium so contamination can't easily fall into it and start growing. At this point, I personally place a sheet of aluminum foil over the mouth of the jar and then I screw the cap on. Then, I add another layer of aluminum foil over the cover and place a rubber band around it to hold it on. Now, it is time for sterilization.

The reasons for aluminum foil are multifold. First, the initial sheet of aluminum foil that goes under the cap keeps the glue-like sealant from the Mason jar cover from sealing onto the glass jar while in the pressure cooker. This makes it easier to open and use the jars over again. Second, the aluminum foil doesn't allow water to enter the holes in the lid of the Mason jar when it is in the pressure cooker. Third, this layer of aluminum foil reduces potential contamination after the Mason jar is sterilized. The next layer of aluminum foil over the cap will be removed immediately before the spore syringe is inserted into the holes in the top of the Mason jar and immediately recovered again to reduce potential contamination falling down into the jars while the mycelium is growing.

Sterilizing The Mason Jars

After the Mason jars are packed and ready to go, it is time to sterilize the growth medium. The best way to ensure sterilization is to place the Mason jars into the pressure cooker and allow the pressure cooker to operate at maximum pressure for 90 minutes. In other words, steam should be blowing off the release valve for 90 minutes before the heat source is turned off. While I believe a pressure cooker is mandatory in order to ensure complete sterilization, other growers have claimed 100% success by simply boiling the Mason jars in water on the stove for 2 hour and 30 minutes. If first time growers don't have access to a pressure

cooker, cooking the jars on the stove may suffice. However, cutting corners often results in dismal results so don't overlook sterile techniques.

Inoculating The Mason Jars

After the Mason jars and growth medium have cooled down to room temperature, they can be inoculated with the spore syringe. During this process, sterile techniques should be employed to reduce potential contamination. First, place all materials into the sterile box or at the very least, a room designed for sterile techniques and spray the entire room down with Lysol. Second, put on some plastic or latex gloves, put on a face mask, and wipe down the entire work area with alcohol sanitizer. Now, wipe down the Mason jars with an alcohol pad, wipe down the syringe with an alcohol pad, and remove the cap from the needle. Use an alcohol lamp or other fire source like a lighter or torch to flame sterilize the needle, wait for the needle to come back to room temperature, and wipe the needle down again with an alcohol pad.

Remove the rubber band and aluminum foil from the first Mason jar and inject the spore syringe into all four holes in the top of the Mason jar, while adding 0.25 ml to 0.5 mL of spore solution into each hole. This is enough to inoculate 10 to 20 Mason jars with a 20 mL syringe. When injecting the spore solution, make sure the needle is completely inserted so the spores enter into the growth medium, not into the vermiculite on top. When injecting the spore solution into the growth medium, inject near the glass of the Mason jar so mycelium can be observed once it starts growing. After adding the spore solution into the first jar, immediately re-cover it with the aluminum foil and put the rubber band back on so contamination isn't an issue while the mycelium is developing.

From Spores To Mycelium

Now place all the inoculated Mason jars into a warm, dark area for the next two weeks to four weeks while the mycelium grows throughout the

growth medium. Ideal temperature for fastest mycelial growth is 28°C to 30°C (82°F to 86°F). However, room temperature is acceptable. Check the incubated jars every so often to ensure that the fluffy, white mycelium is growing throughout the jar and ensure there is no contamination. If there are off colors that indicate contamination is present, remove them from the other jars and discard it.

After the growth medium in the jars is completely white with mycelium, it is time to move the mycelium cakes over to the fruiting chamber. The fruiting chamber is similar to the plastic tote bin method and the monotub method. In its most basic form, the fruiting chamber should be a transparent, plastic bin with a cover. In my experience, the perlite humidity technique is the best option available to keep humidity levels high throughout the fruiting process. Other options include misting the sides and the top of the plastic bin with water multiple times a day and the reptile fogger method of humidity that we will discuss later in the advanced PK Tek.

Perlite Humidity Method

Preparing the fruiting chamber first involves wiping down the plastic tote with alcohol inside and out, and then adding perlite to the bottom of the container. A layer of about 1 inch of perlite is sufficient. When adding perlite to the bin, wear a mask and ideally perform this process outdoors, as it generates a lot of dust that can irritate lung tissue. Now, add water to the perlite until it is completely saturated. When adding water, do not let the water rise higher than the perlite, as the cakes will sit directly on the perlite and we don’t want them sitting in the water.

Transferring Mycelium Cakes Into The Fruiting Chamber

It is finally time to remove the mycelium cakes from the Mason jars and place them on the perlite floor in the fruiting chamber. Most plastic bins can hold between 9 and 12 mycelium cakes with ample room for mushroom growth. When moving cakes into the fruiting chamber, wear

gloves that have been alcohol sanitized in order to avoid any potential contamination. While fully developed mycelium cakes are fairly resistant to contamination, it is still important to practice sterile techniques. Note that the mycelium cakes may not slide out of the Mason jar easily so shake and tap them a bit until they do.

Fruiting Chamber Humidity

As soon as all the mycelium cakes are placed on the perlite in the fruiting chamber, cover the bin. For optimal humidity, leave the fruiting chamber in a room that receives a bit of sunlight so the sunlight causes evaporation and condensation on the sides and top of the bin. In northern climates, a southward facing room receives the most amount of sunlight. If spraying the bin down with a water bottle, perform this task several times a day. With both humidity generating techniques, air out the fruiting chamber with the cover two or three times a day to ensure that fresh oxygen is present in sufficient quantities.

After the cakes have been introduced into the fruiting chamber, maintaining humidity and air exchange are the most important aspects that a grower has to focus on. After about a week in the fruiting chamber, the mycelium cakes should begin primordia formation. As pins begin to develop, continue caring for the mycelium cakes and they should sprout into full grown mushrooms relatively quickly.

Harvesting Mushrooms

As soon as mushrooms are ready to be harvested, remove them quickly from the fruiting chamber so resources aren’t wasted on them and overall flushes are higher. Growers know when a mushroom is mature because the veil beneath the cap begins to separate, allowing spores to fall out. Take either a scissors or X-Acto knife and cut out mushrooms at their base, being careful to avoid any pinning mushrooms that could be damaged. Sometimes, perlite from the bin ends up on the base of the mushrooms and should be brushed off and removed. Continue fanning out the fruiting chamber and maintaining high humidity until mycelium

cakes are no longer offering significant yields. At this point, clear out the bin for the next batch. If cared for properly, the PF Tek mycelium cakes should offer multiple flushes and a respectable yield overall.

Make A Spore Print

Take one of the best mushroom specimens and create a spore print so you don't have to buy another spore syringe. A spore print can then be transferred into a freshly sterilized syringe to start the process of growing mushrooms over again. More information on spore prints and spore syringes can be found in chapter 6.

Storing Harvested Mushrooms

After mushrooms have been harvested, immediately eat them or store them. The most common way to store mushrooms is to dehydrate them until they are bone dry and then store them in a sealed container with a silica gel packet. Ideally, use a food dehydrator to remove the water from the mushrooms in the quickest time possible, about 48 hours. If a dehydrator isn't available or mushroom yields are far more than a dehydrator can sustain, use a fan to dehydrate mushrooms by placing them in a plastic bin and blowing a fan into it. While this may not completely dehydrate mushrooms, it will take out most of the moisture. At this point, pulling out the remaining moisture is best accomplished by chemical desiccants. Using either silica gel or other drying agents, place mushrooms into a sealed container and allow them to dry completely.

Another option for mushroom preservation is to place fresh mushrooms directly into the freezer. While this technique of preservation offers the highest potency, it also requires electricity to ensure mushrooms are properly preserved.

Reusing Mason Jars And Fruiting Chambers

After removing the fresh mycelium cakes from the Mason jars, it is time to clean the Mason jars and caps. First, remove all debris from the Mason jars and caps by using soap and water. After the jars appear to be

clean, move the glass jars and caps over to a solution of water and bleach. Let the jars and caps sit in the bleach solution for a couple of hours, rinse them off with water, dry them completely, and either fill them with new material or save them for future use. The cleaning process should be relatively quick to avoid rust accumulation on the Mason jar caps. While no one gets excited to clean up, it is important to perform this procedure quickly and diligently so the Mason jars and the covers can be used many times.

Advanced PF Tek

The advanced PF Tek method all boils down to improving the fruiting chamber for optimal growing conditions. For the most part, the only differences between the advanced monotub technique and the advanced PF technique is the growth medium and cake formation.

Optimize Airflow

Before placing the mycelium cakes into the fruiting chamber, modify the fruiting chamber so optimal air exchange and humidity levels can be achieved. First, start by drilling out holes in the sides of the plastic bin with a drill bit designed to drill holes for a door handle. In order to avoid cracking the plastic bin, drill from the inside out while holding a wooden block on the outside to offer support. During this process, put as little pressure as possible onto the plastic bin, while allowing the drill bit to burrow into the plastic with ease. Place two holes on each of the long sides of the plastic bin and place one hole on the short sides of the plastic bin.

Now, add in a porous filter that will allow air to circulate, while keeping contaminants out. The most common option is polyfil. Take a large handful of polyfil and stuff it in the holes that were drilled into the plastic bin. Make sure there are no gaps that would allow contaminants to sneak past the filter. Now, tape the polyfil into place with duct tape so that it doesn’t fall out of the hole. This improvement allows air to

exchange freely without having to remove the top of the bin and fan it out multiple times a day.

Now, drill another hole into the bin just big enough for a computer fan to fit. Place a computer fan into the hole and duct tape it in so it is securely set in place. With the computer fan blowing from the inside out, it will suck in air through the polyfil air filters, pulling in oxygen, while expelling carbon dioxide. Setting this computer fan on a timer ensures proper air circulation, while maintaining high humidity levels.

The best way to ensure consistent, high humidity is to use a reptile fogger. While this requires electricity, it also maintains proper humidity throughout the duration of fruiting. Drill a small hole into the short side of the bin and place the tube that runs from the fogger into the bin. Or directly place the tube from the fogger into the top of the bin and place the cover ajar over it. Add a sensor and timer so the reptile fogger turns on when humidity level drops to 75% and turns off when humidity levels go up to 90%. This fine mist produced by a reptile fogger is perfect for mushroom growth.

With these modifications to the fruiting chamber, overall yields will increase and manual labor will decrease considerably. With this automated set up, air exchange will be optimized and humidity levels will be perfect throughout the entire growing process. For the most part, growers don't even need to check on their fruiting chambers because all conditions are automatically optimized. Growers who grow large quantities of mushrooms generally automate everything so they only have to perform the initial set up and harvesting.

My Initial PF Tek Growing Set Up

When I first started growing mushrooms, I used the PF Tek along with the perlite humidity fruting chamber method. For air exchange, I fanned out the fruiting chamber with the cover two or three times a day. The nice thing about this fruiting technique is that it was easy to upscale and grow as many mushrooms as desired. Since fruiting chambers don't take up a whole lot of space, they can be stacked on each other and fill a small

bedroom. However, the amount of work it takes to fan out the bins three times a day along with filling and sterilizing hundreds of Mason jar a day was a bit too much.

For mushroom preservation, another bedroom was set up for dehydrating copious amounts of mushrooms that were being harvested every day. I simply set up 10 fans blowing into large plastic totes. This room also had a dehumidifier to lower the overall ambient humidity. After 48 hours, mushrooms were as dry as a cracker and ready for long-term storage.

Now, I have switched to the completely automated monotub technique, as grow bags are far more efficient and easier to deal with and maintaining high humidity along with proper air exchange doesn't require a manual process. It took a while but I finally figured out the meaning of work smarter, not harder.

Chapter 6 – Making A Spore Print, Spore Syringe, Vial, and Liquid Culture

Any grower who wants to grow crop after crop of mushrooms is either going to have to buy a new spore syringe for every crop or better, make their own spore print, spore syringe, spore vial, and liquid culture so they can inoculate crops indefinitely. Making a spore print is a fairly straightforward technique that requires sterility. In order to properly make a spore print, we are going to need a laboratory glove box or sterile box. If neither are available, the open oven technique is also a distant option. The sterile technique chosen will depend on budget, supplies, and motivation. Additionally, we will need to make an alcohol lamp in order to flame sterilize the instruments we will use. We can re-use the original syringe that the spores were shipped in by sterilizing it in the pressure cooker or fill a new sterile syringe.

Creating A Sterile Environment

In order of most ornate to least, we will discuss the laboratory glove box, the sterile box, and the open oven technique. The laboratory glove box is the best option available, yet not available to most home growers. A sterile box is the option that most growers choose, as it isn't hard to make on a budget and offers a sterile space with limited potential contamination. The open oven technique capitalizes on the principle that hot air rises in order to push any contaminants far away from the spore prints, spore syringe, and liquid culture. While not optimal, sterile techniques performed with the open oven technique can be done in a pinch and doesn't require any extra supplies.

Negative Air Chamber - Laboratory Glove Box

Growers who have access to a laboratory glove box should use it for all sterile procedures, as this is the most sterile option available. Equipped with a HEPA filter and vacuum suction that pulls in inert gas like

nitrogen without oxygen, nothing beats this professional option. However, most home growers will not have access to a laboratory glove box so the sterile box option is the next best substitute.

Sterile Box

A sterile box requires a plastic bin with a cover and a pair of heavy duty rubber gloves. In order to make the sterile box, drill out two holes in one of the long sides of the plastic bin big enough to fit your hands. The holes should be a comfortable distance apart so that both hands can be inserted into the sterile box comfortably. The best way to drill holes into the plastic bin is to use a circular drill bit, drilling from the inside out, while holding a wooden block on the other side so the plastic doesn't crack. As with the monotub technique, allow the drill bit to do all the work and avoid putting too much pressure on the plastic bin.

After the holes are drilled out, sand down any rough edges and tape the open end of a pair of heavy duty rubber gloves into the holes. Using duct tape to seal off the holes where the rubber gloves are inserted ensures that there are no small holes where contamination can enter. The fingers of the rubber gloves should be facing into the bin so we can easily work on items inside the bin without taking off the cover or physically touching anything with our hands.

In order to sterilize the sterile box, put on some plastic or latex gloves and wipe down the sterile box with an alcohol pad. Also, wipe down the cover of the plastic box and the rubber gloves with an alcohol pad. Then, spray down the inside of the box with Lysol. At this point, put the items required for a sterile procedure into the plastic bin and immediately snap on the cover. Then, put your hands into the rubber gloves, take an alcohol pad, and wipe down the materials that were introduced into the sterile box. At this point, anything within the plastic bin can be considered sterile and ready for procedures.

Open Oven Sterile Technique

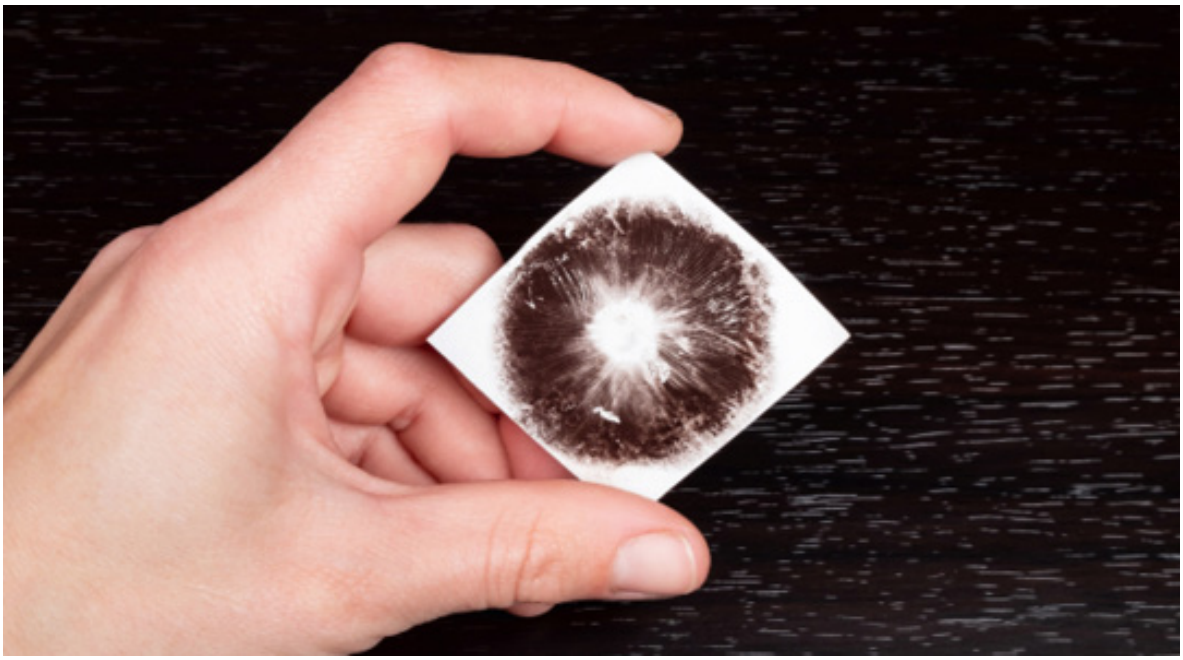
While many consider it to be dubious, the open oven sterile technique is actually quite effective, as the hot air coming out of the oven is sterilized and pushes all contaminants away from whatever is being worked on due to the principle that hot air rises. With the open oven technique, simply turn on the oven and let it heat up for a couple of minutes. Then, put on some gloves, sterilize them with an alcohol pad, sterilize all equipment with an alcohol pad, and open up the oven door. Now, place all equipment on the open oven door and perform the sterile techniques quickly before the heat becomes unbearable. While it will be a hot working environment and items can't be allowed to sit on the oven door for very long, growers who are on a budget can consider the open oven sterile technique if they don't have access to a sterile box.

Making An Alcohol Lamp

Since flame sterilization will be required for the following procedures, making an alcohol lamp is the most convenient option. In order to make an alcohol lamp, simply take a wide mouth Mason jar and poke a hole in the center of the cap or use an old, small paint can, while poking a hole in the center of the lid. Now place a wick into the hole in the cap, making sure that it goes all the way to the bottom of the Mason jar or paint can. A cotton pad or large cotton ball can be stretched out to form the wick. With only a small amount of the wick coming out of the top of the lid like a candle, fill the Mason jar or paint can with high proof alcohol. 70% ethanol or 70% isopropyl alcohol will work fine. The wick will become completely saturated in alcohol and continue providing fuel to the flame. Now place the cap on the Mason jar or the lid on the paint can and use a lighter or a match to start the wick on fire. The alcohol lamp is fairly efficient and provides a constant fire source so one doesn't have to fiddle around with a lighter when working in the sterile box. Both ethanol and isopropyl alcohol produce very little carbon byproducts so the overall result is a clean burning set up.

Creating A Spore Print

Creating a spore print requires a piece of aluminum foil, an X-Acto knife, a source of fire like an alcohol lamp, a plastic pipette or eyedropper with some water, a mature mushroom, and an enclosed area like a sterile box.



Psilocybin Cubensis Spore Print

Take a mature mushroom where the veil has separated from the cap and the gills are visible. Move this mushroom and other mushrooms that are ideal for a spore print into the sterile box, along with an X-Acto knife, eye dropper or pipette with water, an alcohol lamp, and a couple sheets of aluminum foil. The aluminum foil sheets should be big enough so the spore print can be folded over multiple times in order to keep it from being contaminated.

After the lid has been snapped onto the sterile box, flame sterilize the aluminum foil sheets. Now, grab a mushroom and use a sterilized X-Acto knife to cut off the stem as near to the cap as possible. Now, place the mushroom cap with the gills facing down on the sheet of aluminum foil. Perform the same action with the other mushrooms that are being used for a spore print on separate sheets of aluminum foil. Take the pipette or eyedropper and place two drops of water on the cap of every mushroom,

as this will induce it to drop the greatest amount of spores. The idea behind this is to mimic the rain. Simulating rain encourages spore release, as mushrooms innately understand high humidity allows them the greatest possibility of reproduction. At this point, extinguish the alcohol lamp by covering it with a glass, choking off its oxygen supply. Now, walk away, leaving everything the way it is within the covered, sterile box for 48 hours, as the spores fall onto the aluminum foil.

After 48 hours have elapsed, remove the mushroom caps from the aluminum foil. The aluminum foil should have a dark, brownish, purple spore print in a ring pattern. Now, fold up the aluminum foil so the spores are completely contained and no contamination can enter. At this point, a spore syringe can be created or the spore prints can be stored away for future use. If making a spore syringe immediately, have all the equipment, like the sterilized syringe, shot glass, and sterilized water already in the bin, as the cover of the sterile bin never has to be removed.

Making A Spore Syringe

With the spore prints ready to go, we can transfer them over to a syringe without much effort. Since contamination at this point would render the next crop to be completely contaminated, take every measure to be as sterile as possible here. In order to make a spore syringe, we will need a shot glass filled with distilled, sterilized water, a sterilized syringe, aluminum foil, an X-Acto knife, and an alcohol lamp. In order to sterilize the syringe and shot glass, add distilled water to the shot glass and cover both items with aluminum foil. Then, place them in the pressure cooker at maximum pressure for 30 minutes. Now, place all the materials necessary to create the spore syringe into the bin and snap the cover on.

After following sterility steps, remove the aluminum foil from the shot glass and syringe and open up the spore print. Take a flame sterilized X-Acto knife to scrape off the spores from the aluminum foil directly into the shot glass filled with distilled water. As soon as most of the spores have been scraped into the shot glass, remove the cap of the syringe,

flame sterilize the needle, and pull in the mixture of water and spores into the syringe. Then, push the water and spore mixture back out again into the shot glass. Repeat this process multiple times to mix the spores up well. Once everything appears to be mixed up adequately, pull the spore solution into the syringe and cap it off. Now, the spore syringe is ready to inoculate a new growth medium.

Making A Spore Vial

Growers who want to store their spores for the longest period of time often make a spore vial instead of a spore syringe. The reason is because a spore vial is larger, airtight, and has a much longer shelf life than a spore syringe. In most cases, spore vials lasts around two years while spore syringes only last six months. The best place to store a spore vial is in the refrigerator, as spores will last the longest at this temperature. Additionally, spore vials are made out of glass and do not hold static electricity like a plastic spore syringe does. This buildup of static electricity causes the spores to stick to the edges of the syringe and can be problematic upon use if they were stored a long time.

The procedure for making a spore vial is similar to making a spore syringe. In order to mix up the spores well, use the syringe to plunge the spore water solution back-and-forth exactly like the spore syringe technique. Then, inject the spore solution into the spore vial and cap it off.

Making A Liquid Culture

Making a liquid culture improves efficiency and decreases the amount of time it takes to grow a new batch of mushrooms. This is because a liquid culture is a mycelium solution instead of a spore solution. Taking a liquid culture of mycelium and injecting it into a grain grow bag reduces the time required for growth, as the step from spore to mycelium is eliminated.

A liquid culture is simply mycelium grown on a sugar and water solution in a Mason jar. In order to make a liquid culture, start by mixing

a solution of distilled water and light corn syrup. Karo brand light corn syrup is the most common and is a cheap replacement for an agar solution. The ideal ratio of 4% light corn syrup in water is perfect for mycelial growth. In other words, add a ratio of 4 ml of light corn syrup into 100 ml of water. It is easiest to dissolve the corn syrup in hot water so heat the water beforehand.

After mixing the light corn syrup in water, pour it into a Mason jar. Additionally, drop a magnetic stir bar or less ideally, a marble, into the Mason jar. At this point, use a hammer and nail to puncture a small hole in the lid of the Mason jar near the center and place breathable tape over it. Any kind of medical tape will work, as it allows for air exchange. Now, cap off the Mason jar and sterilize it, ideally in a pressure cooker for 30 minutes at max pressure. Some mushroom growers who want to save time or don't have a pressure cooker may opt to sterilize their liquid culture medium in a microwave. However, a pressure cooker is always the best option.

Liquid Culture

As soon as the liquid culture medium has dropped back to room temperature, it may be injected with the spore solution. Since we are dealing with potential contamination, the inoculation process should be performed in the sterile box. Place the liquid culture medium, the spore

syringe, and breathable tape into the sterile box, perform sterility procedures, and snap the cover on it.

At this point, take the cap off the spore syringe, flame sterilize the needle, wipe it down with an alcohol pad, and inject it into the hole that is covered with tape on the lid of the Mason jar. After squirting about 5 mL of spore solution into the liquid culture medium, pull out the syringe and immediately place breathable tape over the injection site. Now, remove the liquid culture from the sterile box and place it on a magnetic stirrer. This will spin the magnetic stir bar around at the bottom of the jar and quickly allow the liquid culture medium to grow mycelium quickly.

If a grower doesn't have access to an electric stirrer, a marble can substitute as a magnetic stir bar. With the marble method, the liquid culture will have to be manually mixed up from time to time, allowing the marble to agitate the mixture. After a short time period, the liquid culture will be full of white, fluffy mycelium and ready to inoculate mushroom grow bags or Mason jars filled with grain medium.

Chapter 7 – Psilocybe Mushroom Advanced Growing Techniques

For beginning growers, the easiest way to grow psilocybin mushrooms is from a spore syringe, or a mycelial liquid culture, however, neither is the fastest way to propagate new mushrooms. Advanced growers and Mycologists clone mushrooms, as it greatly increases the colonization time, results in a higher yield, and even increases psilocybin potency. Although the technique is advanced, it isn't overly difficult and anyone who has the right materials can clone a mushroom with ease.

Cloning Mushrooms

In order to clone mushrooms, one will need petri dishes and agar, which is a sugary, gelatinous material used in a laboratory setting to grow nearly anything. Simply create the agar medium, place it into the petri dishes, and put the petri dishes in the pressure cooker to sterilize them. After the agar medium is sterilized and ready for inoculation, place them in a laboratory glove box or the sterile box, sterilize everything, and slice a thin portion of the mushroom with an X-Acto knife. With sterilized tweezers, place this thin slice of mushroom tissue on the agar solution and put the cap back on the petri dish.

At this point, the mycelium will grow throughout the agar medium and can be used to inoculate mushroom grow bags. However, advanced growers who want the absolute strongest mycelial structure will select the best looking hyphae within the petri dish, cut them out, and transfer them to other petri dishes with agar solution. After these petri dishes have filled with mycelial hyphae, the colonized agar can be used to inoculate mushroom grow bags.

Substituting Large Mason Jars For Mushroom Grow Bags

A substitute for mushroom grow bags include the quart size or half gallon size Mason jars. The idea is the same as the grow bags, simply fill the Mason jars 80% full with rye berries at Field Capacity, sterilize them, inoculate them, and allow the mycelium to grow throughout the container. This allows growers to reuse Mason jars and avoid having to purchase mushroom grow bags for every crop they produce. The customized caps on these Mason jars come with a self healing injectable port and a small 0.2 micron filter.

Substituting large Mason jars for mushroom grow bags removes the problems that plastic grow bags present. Glass jars don't rip, are easy to clean, and can be re-used nearly indefinitely. Growers who use large Mason jars don't have to worry about sealing up grow bags or buying a continuous supply of them.

Adding A Fruiting Substrate

For ultimate yields, advanced growers mix a fruiting substrate with the grain mycelium medium. This fruiting substrate is optimized for growing mushrooms by providing adequate nutrition and can increase the number of flushes significantly. Growers using this technique receive 5 or 6 flushes. The most common fruiting substrate is a mixture of vermiculite, coco coir, calcium carbonate, worm castings, and peat moss. This fruiting medium is sold under the name MYCO-PRO and can be purchased from SporesLab.

Making A Fruiting Medium From Scratch

Anyone who wants to create their own fruiting substrate can start by mixing together coconut coir and vermiculite in a one to one ratio. For roughly every gallon (4 liters) of dry material, add 10 g of calcium carbonate, 50 g of peat moss, and 30 g of worm castings. Add 0.33 gallons (1.25 L) of water to this mix. At this point, everything comes

down to achieving proper Field Capacity so adjust the water content as needed.

Now, sterilize the fruiting medium by placing everything into plastic bags or grow bags, heat sealing them, and pressure cooking them at 15 psi for 90 minutes.

Incubation Chamber

The incubation chamber that will also serve as the fruiting chamber. This method is a bit different than the typical plastic tote or monotub technique. In this case, we will use a black, non-transparent plastic bin that does not allow a light to enter. Additionally, we will use either black plastic to cover the mycelium when it is colonizing or a black cover so light cannot enter the incubation chamber.

As soon as it comes time for fruiting, we will switch to a transparent plastic cover that will allow light to enter and induce fruiting. This fruiting cover will include polyfil filters so air is able to circulate throughout the fruiting chamber and maintain high humidity levels within.

Mixing Colonized Grain Spawn With The Fruiting Medium

Combining the colonized grain spawn and the fruiting medium should take place in the sterile room while following all sterile procedures. If using a transparent cover on the incubation chamber, place a large sheet of black plastic in the bottom of the bin so it is big enough to envelope the mycelium medium, maintaining high humidity and keeping light out. If using a black cover that does not allow light in, this step is unnecessary.

Prepare a mixture of 25% colonized grain spawn and 75% fruiting medium. Mix them together evenly and place them in the incubation chamber. The process of mycelium growth throughout the medium should take between 7 and 10 days for complete colonization. As soon as

the mycelium is ready to fruit, change the cover to the transparent plastic with polyfil filters. Now, maintain the humidity levels by misting the top and sides of the fruiting chamber with a water spray bottle on a daily basis.

Chapter 8 – Troubleshooting Common Problems

There are a number of common problems that mushroom growers often experience, however, most of these issues are easily remedied. Here we will look at the most common problems and what to do about them.

Grow Bag Ruptures During Sterilization

Oftentimes, the pressure that builds up inside of the grow bag in the pressure cooker causes the grow bag to split. If this is an issue, simply cut a small hole in the top of the grow bag before placing it into the pressure cooker so air doesn't build up and cause it to rupture. Immediately after removing the grow bag from the pressure cooker, heat seal the opening so no contaminants can enter.

Mold And Bacterial Contamination In Grow Bags Or Grow Jars

Mold and bacterial contamination in the grow bags or Mason jars is a common problem that nearly all growers will experience at some point in time. In most cases, something went wrong during the sterilization process or during the inoculation process for this problem to occur. Before anything else, throw away the contaminated grow bag or grow jar and remove it from the healthy specimens. If an entire batch is contaminated, simply start again while employing meticulous sterile technique throughout the entire process.

When sterilizing the grow bags or Mason jars, aim for 90 minutes within a pressure cooker for maximum sterilization. Then, practice sterile techniques when inoculating the grow bags or Mason jars with spores or mycelium by performing the procedure in the sterile box. If for some reason there is still mold contamination, the likely source is the spore syringe. If spore syringes are contaminated, purchase new ones from a reputable supplier.

If using cheap grow bags without self healing injection port, consider investing in grow bags that have this feature.

If for some reason none of the troubleshooting points are able to address the contamination problem, purchase pre-sterilize grow bags that are already filled with sterilized grain. Then, inoculate this bag with a fresh spore syringe. If there is still contamination, the process of inoculating the grow bag is where the trouble lies. In this case, start the process over again with a fresh pre-sterilized grow bag. Move all the materials into the sterile box, and be meticulous about wiping down everything with alcohol and flame sterilizing the needle before injecting it into the self healing injectable port on the grow bags.

Spore Solution Is Contaminated

If the spore solution is contaminated the best option is to simply buy a new spore syringe. If this is not an option, there is a way to separate the contamination from the spores. The way to do this is to squirt spore solution onto a number of different petri dishes with sterilized agar solution. Then, let the mycelium and contaminants grow on the agar solution. At this point, remove the healthy mycelium from the contaminants on the petri dish and transfer it to a new petri dish filled with agar solution. Continue performing this process until only healthy white mycelium remain in the culture. Then, take this mycelium and transfer it into a liquid culture or directly into a mushroom grow bag or Mason jar filled with grain. This should propagate a healthy batch of mycelium that will in turn produce healthy mushrooms which can produce a fresh spore print. Finally, transfer the spores into a spore syringe and you should be left with a healthy spore culture.

Contamination And What To Do About It

Contamination issues will always be a constant battle for anyone growing mushrooms and while some contamination problems can be remedied, others are simply a complete loss. While most contamination doesn’t present harm to humans, there are some, specifically black mold,

that should be immediately discarded without attempting to clean up the problem.

Black mold, also known as aspergillus, produces deadly aflatoxins. Fortunately, it is easy to identify black mold, as it stands out from the white mycelium and other contaminants with ease. Growers who encounter black mold growing on their mycelium cultures should discard them without opening up the grow bag or Mason jars.

Wet spot, caused by bacillus, is one of the most common contaminants that growers will witness. Bacillus forms a slimy gray film that smells bad and makes the grain medium that the mycelium grows on look wet. Generally, the reason why bacillus is able to inoculate a culture is because the endospores that were in the grain weren't completely sterilized. The solution to avoid bacillus is to allow the grains to soak before packing them in the grow bags, allowing these endospores to spawn and then kill them off during the sterilization step.

A bacterial contamination can form on mushroom caps, as a result of the fruiting chamber being too wet without enough air circulation. The solution is to lower the humidity, improve airflow, and spray a 150 ppm chlorine solution onto the mushroom caps. This will kill off the bacteria, allowing the mushrooms to grow normally. When harvesting these mushrooms, it is best to rinse them off with water to remove any traces of bleach before preserving them.

Cobweb mold is another common contaminant that looks like a combination of an interwoven spider web and dirty polyfil. Cobweb mold grows rapidly and is a darker color than the mycelium, but has some similar qualities that a beginner may not notice. The solution to this problem is to lower the humidity levels and increase air circulation. However, since cobweb mold grows rapidly throughout the entire medium, anything contaminated by it is likely a loss.

Green mold, otherwise known as Trichoderma harzianum, is an obvious contaminant, as the green color stands out from mycelium and grain mixture. The key to preventing green mold is meticulous sterile

techniques from start to finish. Anything infected by green mold should be discarded.

Red bread mold, called neurospora, is a strong contaminant that is difficult to eliminate once it is present. Oftentimes, grow spaces that are contaminated with red bread mold require a complete cleansing of the entire workspace and growers may need to start over from scratch with fresh cultures. If caught soon enough, only cultures that are infected with red bread mold can be eliminated in hopes that this fungus didn't spread.

Fungus gnats and mites are also a concern, as they are attracted to mushroom crops that they can feed on. In most cases, a clean enough environment will keep both gnats and mites away.

For the most part, preparing the grain by soaking it beforehand, sterilizing grow bags or Mason jars with a pressure cooker for enough time, practicing sterile procedures while inoculating grow bags or Mason jars, maintaining ideal humidity levels within the fruiting chamber, and maintaining proper airflow within the fruiting chamber should prevent most contamination issues.

No Mycelium Growth Within The Substrate

If there is no mycelium growth within the substrate two weeks after inoculation, there may be a problem with the spores, the water content, or the incubation temperature. Assuming the spores are viable, some beginning growers squirt as little spore solution into the growth medium as possible in order to inoculate more grow bags. In this case, it is possible that not enough spore solution was injected to begin mycelial growth. If the spore solution was injected before the growth medium was allowed to drop to room temperature it could have been killed off by the heat.

If the water content is too high or too low, it will inhibit mycelial growth. However, for no mycelium growth to develop would require almost zero water or a solution that is drowning in water. If the water

concentration is not near Field Capacity, mycelium growth would be hampered, yet there would still be noticeable growth within the substrate.

If the incubation temperature is either below 20°C or above 28°C, the mycelium won't grow. If none of these factors were present, it is best to start over again with a fresh spore syringe from a reputable supplier.

Moldy Fruiting Cakes

If fruiting cakes turn moldy before the first couple of flushes they were likely contaminated before they entered into the fruiting chamber. In most cases, fruiting cakes should give 2 solid flushes, and in some cases, up to 5 flushes before turning moldy. Since cakes that are fully covered in mycelium are quite resistant to mold, they shouldn't be getting moldy before the first couple of flushes. Ideally, inspect the cakes closely for mold contamination before putting them into the fruiting chamber initially. If they are already moldy, even a small amount, don't add them into the fruiting chamber with the other healthy cakes, but instead, just throw them away.

Another reason why fruiting cakes may be getting moldy before the first couple of flushes is because the fruiting chamber wasn't cleaned out properly beforehand. Between every batch, the fruiting chamber should be completely cleaned and sterilized before adding a new batch into it.

If fruiting cakes were left in the Mason jars too long and not put into the fruiting chamber in time they may end up developing mold. In some cases, don't wait for the entire growth medium to be covered by mycelium before putting the fruiting cakes into the fruiting chamber. If a cake is at least 90% covered in mycelium, it can be moved into the fruiting chamber. This will allow the cake to begin fruiting immediately and avoid any potential contamination growth while in the last stages of mycelial growth.

A final reason why fruiting cakes are growing mold quickly is because the spray bottle used for humidity has contaminated mold within it. Ideally, use distilled water instead of tap water. Additionally, add a small

amount of hydrogen peroxide to the spray bottle in order to kill mold contamination that could accumulate within the water bottle. A mixture of 10 parts water to 1 part hydrogen peroxide is ideal. However, take even more precautions to avoid spraying H2O2 water on the mycelium cakes directly.

Mushroom Pins Forming On Sides And Bottom Of The Fruiting Chamber

If mushroom pins are forming on the sides and bottom of the bin, they won't be able to form into fully developed mushrooms, as there is nowhere for them to grow. The reason mushroom pins are forming in these areas is because the light is able to get to it and induce it to pin. The solution to avoiding mushrooms that pin in these areas is to spray black paint on the bottom and the sides near the bottom of the transparent fruiting chamber with black paint. This technique is discussed in the advanced plastic tote method and monotub technique.

No Pins Forming In The Fruiting Chamber

If mycelium has been added to the fruiting chamber, but no pins are developing within two weeks, something is wrong. Either, the humidity is not correct, the temperature is not correct, or there is not enough light. If the humidity is not high enough, pins won't develop. If the temperature is out of range for fruiting, pins won't develop so be certain to maintain a temperature of about 75°. If there is no light source, pins won't develop, as they require light to induce primordia formation.

Growers who struggle with pin formation often perform a cold shock before placing the mycelium into the fruiting chamber. This allows for greater pinning and a faster overall mushroom growth. Simply place the mycelium that is ready to grow into the fruiting chamber in the fridge for 12 hours before placing it into the fruiting chamber. The cold shock forces pin formation, as the mycelium understands that it needs to produce mushrooms and spores, before the cold kills it off.

Another technique to induce greater pining involves leaving carbon dioxide build up during the first 24 hours after placing the mycelium into the fruiting chamber. Then, air out the bin and cover it for another 24 hours, while allowing carbon dioxide to build up. Continue performing this until plenty of pins develop and then fan out the bin three or four times a day for ideal air exchange. At the end of the day, light exposure, high carbon dioxide levels, and cold temperatures force the mycelium into pinning quickly.

Pins Not Growing Into Adult Mushrooms

If primordia pins start forming, but don't develop into mature mushrooms there is a problem with either the humidity, light, pH balance, temperature, or air flow. Additionally, pins that are touched often stop growing so avoid touching any primordia formations.

If pins aren't developing into full grown mushrooms, the humidity level is likely too low. If misting a container to maintain high humidity isn't doing the job, consider moving onto a more advanced humidification technique like the perlite technique or reptile fogger technique.

Fruiting mushrooms require at least two hours of light a day to develop into full grown mushrooms. If a fruiting chamber isn't exposed to natural light or artificial light, consider adding an LED light to each fruiting container and leave it on for 12 hours a day.

Anyone who uses the proper growth medium like rye berries shouldn't have a problem with incorrect pH, but acidic soil could cause mushrooms to pin and then abort. While not much can be done about this batch, during the process of creating the next batch, test the pH of the growth medium before adding it to the grow bags. If it is too acidic, add gypsum for a more alkaline medium.

Air flow is often an issue with amateur fruiting containers. At a minimum, open up the fruiting container and air it out with the cover at least twice per day or drill holes into the tub and fill them with polyfill so

air exchange can take place. If this isn't enough, add a computer fan on a timer to the growing chamber for proper air exchange.

Mycelium Growth Medium Is Too Dry To Fruit

If the mycelium growth medium is too dry to fruit, bring it back up to Field Capacity before placing it in the fruiting chamber. During both the plastic tote method and the monotub method, growers are advised to check for Field Capacity when mixing the mycelium grain with the coco coir. If the mycelium cakes from the PF Tek method are too dry, place them in a bucket of water and hold a cover over it so the cakes are completely submerged underneath the water. After 6 hours, take them out of the water and place them in the fruiting chamber.

Mycelium Is Growing On Mushrooms Stems

If mycelium is growing on mushroom stems, a concept known as fuzzy feet, improper air exchange is to blame. If only airing out the fruiting chamber once or twice a day, aim for three or four times a day, while retaining high humidity. Ideally, opt for a technique like the monotub method in order to increase air exchange and eliminate this problem.

Mushroom Caps Opening Prematurely

If immature mushrooms are prematurely opening their mushroom caps and the mushrooms are small in general, overall moisture is too low or lighting isn't sufficient. In order to prevent the small dwarfs, ensure the humidity content is correct and make sure more than two hours of light are available each day. If using artificial light, leave it on for 12 hours a day and use a bulb that operates in the 6500 K spectrum, as it mimics daylight.

Yellowing Or Bluing Substrate

If the substrate is turning yellow or blue and looks bruised overall, the overall humidity content is too low, often due to too much air exchange without the proper humidity maintenance. Avoid misting the substrate directly, but increase overall humidity production. It may mean misting

the fruiting chamber multiple times a day or opting for an automated humidity producing method like the perlite humidity technique or the reptile fogger.

Tall Skinny Mushrooms Without Much Weight

If producing tall, skinny mushrooms without much mass, high carbon dioxide levels are to blame. Since carbon dioxide is heavier than air, it sits on the surface of the mycelium substrate. Therefore, mushrooms grow as tall as possible to escape the suffocating conditions on the surface in search of oxygen. Simply fan out the fruiting chamber more often or opt for an automated air exchange set up like the monotub method.

Thin Hollow Mushroom Stems

If mushrooms are developing thin, hollow stems, the overall temperature is too high within the fruiting chamber. While a lower temperature encourages slower growth, this allows mushrooms to develop strong, girthy stems that are indicative of a healthy specimen.

Cracked Mushroom Caps

Cracked mushroom caps indicate that humidity levels are too low. If this is the case, either mist the fruiting chamber more often or look for another humidification method like the perlite humidity technique or the reptile fogger.

Chapter 9 – Ways To Consume, Dosage, Microdosing, Medicinal Benefits

Now we get to the tasty part, consuming the fruit of our harvest. Without a doubt, the best way to consume mushrooms is in their raw state, fresh after they were picked. This ensures that the maximum psilocybin alkaloid continent is present. However, fresh mushrooms don't last long even if they are placed in the fridge. Most often, consumers eat dehydrated mushrooms, however, just eating them dry and washing them down with water isn't all that appealing. Although the toss and wash technique is not terrible by any means, there are better ways to prepare dried mushrooms for consumption. Mushrooms that were frozen can be eaten frozen or allowed to come back to room temperature and then eaten. However, thawed mushrooms without any structure to them have a similar appeal to consuming slimy asparagus.

Mushroom Tea

The most common, and in my opinion, most desirable way to eat dried mushrooms is to make tea out of them. Simply crumbling up the dried mushrooms and dropping them into hot water rehydrates the mushrooms and results in a nice brown tea. If the tea is still off putting, add a bit of honey or mix in green or black tea in order to mask the flavor of the mushrooms. Ideally, do not strain off the tea, but instead drink the entire contents for maximum effect. However, anyone who has issues with nausea when eating mushrooms should strain off the mushrooms, as the chitin, found in the cell walls, is responsible for this issue. Making tea out of mushrooms and consuming it on an empty stomach is the best option because this results in the greatest amount of digestive absorption.

Mushroom Smoothie

Another option is to make a mushroom smoothie. This can be done with fresh, dried, or frozen mushrooms and doesn't require much preparation. Simply make your favorite smoothie and blend in mushrooms as well. If a smoothie has a strong enough flavor, it will mask the taste of the mushrooms.

Mushroom Powder Capsules

Anyone who really hates the taste of mushrooms may want to grind up their dried mushrooms and put them in a gelatin capsule. Gelatin capsules are cheap, easy to acquire, and can be filled without much trouble even without an encapsulating machine. Ideally, opt for the 00 capsules, as they hold the greatest amount of material without being difficult to swallow. As a general rule, each capsule can hold about 750 mg.

Chocolate And Mushrooms

Eating psilocybin mushrooms with chocolate has a long history, as many indigenous cultures within Central and South America consumed both together. Chocolate overpowers the taste of mushrooms and there are many recipes that make it taste like mushrooms aren't even included. Since eating chocolate alone naturally makes people feel good, combining it with Psilocybin mushrooms greatly enhances the probability of an enjoyable experience.

The chemicals caffeine, theobromine, anandamide, and phenylethylamine (PEA) are all responsible for giving cacao its magic. Anandamide is a cannabinoid and often referred to as the neurotransmitter of bliss. Phenylethylamine is a chemical that the brain produces when one is in love. Found in cacao, PEA produces empathetic and compassionate feelings. Interestingly enough, PEA is the base for the hallucinogen mescaline (3,4,5-trimethoxyphenethylamine). Combining cacao with psilocybin mushrooms is a match made in heaven.

Cacao Paste Mushroom Tea

The most authentic cacao mushroom recipe is extremely basic. After the mushroom tea is brewed, add 30 to 50 ground up cacao beans per person. These ground up beans will form a paste which is the base ingredient for making chocolate. Anyone who hasn't eaten pure cacao beans probably won't be ready for how bitter it is. If the mushroom and cacao paste combination is too bitter, add honey or similar to sweeten it up.

Psilocybin Mushroom Chocolate Balls

Take 150 g of high-quality chocolate that is at least 85% cacao, add it to a double boiler, put it on the stove, and melt the chocolate down. After the chocolate is completely melted, add in 100 g of coconut oil and a pinch of salt. Stir the mixture until it is evenly distributed and take it off the stove. As the chocolate is cooling, add in dried Psilocybin mushroom powder and mix it up. Now, form chocolate balls, place them on wax paper and put them in the fridge for a couple of hours. Chocolate balls that are stored in the fridge last for a while and are a delicious way to start a trip.

People who are looking for an exquisite culinary experience often add mushrooms to pizza or mix them in with brownies. While not exactly gourmet, mixing mushrooms with typical food may be appropriate for anyone who can't stand the taste of mushrooms alone.

Lemon Tek Consumption Method

When psilocybin mushrooms are allowed to sit in lemon juice, the psilocybin quickly converts into psilocin, the compound that is responsible for the psychedelic effects. While the process for converting psilocybin to psilocin is typically triggered by stomach acid, converting to psilocin beforehand with the Lemon Tek method greatly enhances the initial experience. People who follow the Lemon Tek method often end up on a full-blown trip within 20 minutes. Many users report that the

overall experience is more powerful, however, the duration of the trip is shorter, as all the psilocin reaches the brain at once.

Another advantage to the Lemon Tek consumption method is that the citric acid breaks down the chitin cell walls of the mushrooms. This reduces nausea and makes the initial part of the consumption experience more desirable.

Many report that consuming psychedelic mushrooms with the Lemon Tek method feels more like a DMT trip, as the overall experience is extremely intense. For this reason, some people advise against starting off novice psychonauts with the Lemon Tek method, as they will have no idea what will happen on the roller coaster ride ahead.

Lemon Tek Psilocybin Mushroom Recipe

Take two or three lemons and squeeze them into a glass. Then, grind up dried Psilocybe mushrooms into a powder. While one can use a scissors or pistol and mortar, a coffee grinder is the quickest option. Now, add the psilocybin mushroom powder to lemon juice. Let the process of converting psilocybin into psilocin last about 25 minutes, while stirring the solution every 5 minutes. After 25 minutes, one can drink the solution as it is, or filter out the mushroom powder with a paper filter or cheesecloth first. Filtering out the material is only recommended for people who often become nauseous when consuming mushrooms although this shouldn't be an issue as most of the chitin is broken down by the acid in the lemon juice. If pure lemon juice is too strong, add water to the mix. If desired, add honey and ice cubes to make a lemonade psilocin drink.

The Lemon Tek Combined With Chocolate

Although I haven't tried it myself, a combination of the Lemon Tek method with cacao or chocolate could have the greatest and most desirable psychedelic effects. One idea is to consume the lemon juice from the typical Lemon Tek method and chase it down with a chocolate

bar. At some point in the future, I will have to try this, as it is already making me salivate.

Avoid Mixing Psilocybin With Other Drugs

As a general rule, avoid consuming psilocybin mushrooms with other drugs that could lead to undesirable side effects. Mixing psilocybin mushrooms with alcohol, prescription drugs, and anti-depression drugs like lithium carbonate can potentially lead to a bad trip. However, mixing psilocybin mushrooms with cannabis is fairly common, as the two complement each other. For a pure psilocybin experience, avoid combining with other drugs, especially when first starting out.

Mood And Setting For A Good Trip

The mood and setting are paramount to experiencing a good trip. Anyone who hasn't consumed mushrooms before, and even those who have, are logically going to be a bit nervous before consumption. However, if the mood and environment is relaxing and comfortable, the probability of a positive experience is likely. Avoid consuming psilocybin mushrooms if the overall mood is not right. Anyone dealing with acute anxiety, severe depression, or just aren't having a good day should save their mushrooms for another day. This is especially important for first time users, as a good first trip enables the healing process to commence. While there still may be parts of the trip that are hellish, one must know hell to know heaven.

In my experience, consuming psilocybin mushrooms in a natural environment with close friends, either in the woods, the desert, or the jungle, greatly enhances the overall trip, as the connection with nature sets the mood. So get relaxed, take some deep breaths, and be prepared to lose any sense of control you thought you possessed during the roller coaster ride ahead.

The Church of Ambrosia recommends fasting for 24 hours before consuming a high dose of psilocybin. I completely agree with fasting before a hallucinogenic experience, as the effect will be far stronger and

the body won't be wasting resources on digesting food. They also recommend having a sitter who can care for anyone under the influence of psilocybin. In their protocol, they recommend starting out with a 2 g trip and working up from there. Some of their experienced followers even work up to a dose of over 50 g of dried mushrooms!

After consuming psilocybin mushrooms, the effects become apparent within 15 to 60 minutes. In my personal experience, the initial stage of a psilocybin trip begins with waves of body euphoria and a visualization that everything, even inert objects appear to be breathing. From here, a trip moves into a roller coaster ride that is unique to each individual user. This part of the trip lasts for about two hours before a gradual decline over the next 3 to 6 hours. After getting past the strongest part of the trip, the come down is usually a relaxing introspective experience with complete contentment of understanding.

Psilocybin LD50

The LD50 for a drug is defined as the lethal dose where 50% of the subjects die. In rats, the LD50 of psilocybin is 280 mg/kg of body weight. Assuming the LD50 for humans is similar, a 60 kg human would have to consume 1,680 mg of dried mushrooms to reach this level. This is 336 times stronger than a 5 g dose. In other words, psilocybin is safe at any realistic dose.

Safe Tripping

We've all heard the stories about the person high on mushrooms, LSD, or any other hallucinogen who believed they could fly and jumped off a building assured they would soar through the air. These are the stories that give hallucinogens a bad name. However, there are certain protocols to follow in order to ensure a safe trip that ends with contentment instead of catastrophe. While no one has physically overdosed on psilocybin, they have made poor choices that resulted in their death. Here we will look at how to have a safe trip and get the most out of the experience.

As stated before, the setting and mood sets the precedent for a psychedelic experience. When consuming psilocybin mushrooms in your happy place, anxiety and other concerns won't be an issue that could lead to a downward spiral of negative thoughts and emotions. In most cases, people consume psilocybin mushrooms with close friends who have similar interests and a common goal. This is the ideal way to enjoy the experience, as everyone will blast off into outer space together. However, a tripsitter should be present in order to monitor everyone and ensure safety.

In my experience, there will always be one or two people who aren't ready to consume psychedelics, but would rather watch as everyone else experiences the journey. These friends are an absolute blessing, as they can help people who are on a bad trip or contemplating doing something that is harmful. I myself have sat on the sidelines and been the tripsitter, watching as everyone else is hypnotized by the experience. In many cases, watching other people trip is just as eye-opening as actively tripping. Watching as friends battle with demons inside them, experience otherworldly bliss, and come out on the other side a changed person is an adventure within itself.

How To Be A Good Tripsitter

Being a good tripsitter is all about being there physically for anyone who encounters difficulty on their journey. Tripsitters should observe silence and avoid communicating with anyone who is experiencing a trip if they are not called upon. Tripsitters are simply there as a safety net. If someone wants to discuss their trip, listen to them. If someone needs to be assured everything is alright, tell them everything is alright. If someone needs water, bring them water, although water should already be close by, as there is nothing more grounding than a sip of water during a psychedelic experience.

At the end of a trip, the introspective phase puts all the pieces of the puzzle back together again. While not everyone will want to discuss their

trip, a tripsitter who is there for people who want to talk about what they experienced will be appreciated.

Dosage

Calculating the proper mushroom dosage all depends on the experience one wishes to have. When dealing with dried mushrooms, a dosage of around 2.5 g is considered normal. A dose between 3 g and 5 g is typical for a profound experience and a heroic dose is defined as a dose that is over 5 g. On the other end of the scale, a low dose is between 0.25 g and 1 g. Microdosing, a dose between 0.1g and 0.25 g, has become popular lately, as many swear that a tiny dose on a daily basis improves mood and concentration.

If consuming fresh mushrooms, simply multiply the dry dosage by a factor of 10, as water weight contributes to 90% of a mushroom's weight. In other words, a dose of 25 g of fresh mushrooms is a typical dose, while any dose over 50 g can be considered more than adventurous.

There are a multitude of factors that go into calculating the perfect dose, including desired experience, the alkaloid content of the mushroom, the weight of the consumer, and tolerance level. In addition to selling spores, Zamnesia offers a mushroom dosage calculator at https://www.zamnesia.com/magic-mushroom-dosage-calculator that can guide beginners in the right direction.

As a general rule of thumb, novices who are consuming psilocybin mushrooms for the first time should lean to a more conservative dose, as no one can say for sure how anyone will react. However, experienced psychonauts tend to push the limits of reality into oblivion by consuming heroic doses of mushrooms.

Microdose

A microdose is often not even noticeable on a conscious level, but there are some subtle changes in the perception of reality. For instance, people who consume a microdose often experience a slight change in their thought patterns, notice that their concentration improves, and have

greater creativity overall. Additionally, a microdose can reduce depression, anxiety, and other emotional issues. With a microdose, there may be a sense of spiritual awareness, more energy, and a connection with the present. Women who consume a microdose during menstruation often report that it reduces menstrual pain.

Low Dose

A low dose of psilocybin mushrooms is somewhere between 2.5 and 10 times higher than a microdose. A low dose of psilocybin has been shown to boost creativity, increase energy, increase productivity, and even improve overall brain health. There will be more information later in this chapter on how psilocybin can contribute to a healthy brain.

Normal Dose

A normal dose of about 2.5 g of dried mushrooms can cause profound psychedelic effects that completely warp the perception of reality. The overall trip goes in waves from euphoric sensations, sensations of gratitude, laughter, enhancement of all five senses, and at times, complete confusion. Visual hallucinogenic effects will likely be present in the form of geometric patterns.

Heroic Dose

To follow in the footsteps of Terence McKenna, I myself have taken heroic doses of psilocybin mushrooms on a few different occasions. The most I ever consumed was 7 g of dried mushrooms. I will quickly iterate this profound experience, as I remember it like yesterday.

A couple of friends and I drove out into the middle of the California desert and each ate 7 g of dried mushrooms. Before I knew it, I was immersed in a new world of spinning geometric patterns that I understood to be a universal alphabet. These were the same patterns that I would eventually learn are depicted by different resonance frequencies on the Chladni Plate. In the next phase of my trip, complete insanity took hold and my heart was racing. I forgot my name, my past, and personal construct of who I thought I was. This caused significant panic, as I believed I would be insane indefinitely. With this belief, I completely surrendered to the moment and all anxiety immediately disappeared.

Then, a woman appeared in the sky and spoke to me. I understood her to be god although she did not claim to be. She explained to me that we are all gods and choose to be in this world for entertainment value. In short, we are gods with amnesia. During this moment I understood infinity, forever being and forever reincarnating because simply existing as an all-knowing, infinite being with nothing to do is boring.

Eventually, after what was a literal eternity, the effects subsided and I experienced complete calmness. I had no more questions. I finally realized who I am and why I am here. This trip lives with me and will always make up who I am. Psilocybin mushroom trips have allowed me to turn my life around from negative to an enjoyable, positive experience. With the realization that we create our own reality, the only way forward is to make decisions based on what our heart tells us. While it may sound corny, making your own reality with conscious choices and positive thoughts is the secret to enjoying this existence.

A Detailed Look At Microdosing

Microdosing both LSD and psilocybin has become popular throughout Silicon Valley over the last couple years, as a way to increase productivity and maintain concentration. The microdosing trend has grown throughout many different industries and professionals from authors to computer programmers swear by the benefits microdosing offers. A microdose is generally defined as a dose between 0.1 g and 0.25 g of dried psilocybe mushrooms. However, a dose between 0.05 g and 0.5 g is within the range of the definition of a microdose. In most cases, beginners start with a dose of 0.1 g and go up or down from there, depending on how they feel.

Determining the proper microdose all comes down to the individual user, as the effects of psilocybin can be vastly different between people. The goal with the proper microdose is an effect that increases productivity, improves concentration, and enhances perception. However, going overboard will have the opposite effect, as people who are experiencing a full-blown trip won’t be getting much work done. The

perfect microdose all comes down to trial and error in order to find the optimal dose for you.

How Does A Microdose Feel?

A microdose has many similarities to a regular dose of psilocybin, as both last a similar duration. Additionally, the initial phase of psilocybin's effects are similar no matter how big the dose is. Oftentimes, people who are just experimenting with microdosing are surprised to find that the initial body buzz and overall sensations are on par with a strong dose of psilocybin. Some users even report nausea, butterflies in the stomach, and a feeling of anxiety during the first phase of a microdose. If this is the case, take some deep breaths and realize that these sensations will quickly pass.

After the initial phase, a microdose mellows out and should only be present in the background. In other words, people who are under the influence of a microdose shouldn't be consciously aware of it, while reaping the benefits of being in the moment, focusing on the task at hand.

When And Why To Take A Microdose?

The best time to take a microdose is immediately in the morning, as users who take a microdose in the afternoon often find that they are unable to sleep at night. While mixing psilocybin with coffee or any other substance that contains caffeine can greatly increase the initial wave of a microdose, many people enjoy the sensation of both drugs at the same time. However, others cannot deal with the anxiety and nervousness that may come with using both drugs synergistically. Whether or not to mix a psilocybin microdose with caffeine all comes down to the individual user.

In my experience, waking up, taking a 0.1 g microdose of psilocybin with 5 cups of water, 3 cups of coffee, 50 g of 85% chocolate, and 500 mg of magnesium citrate is ideal. Then, I exercise for a couple of hours and burn off that initial adrenaline surge. After that, I eat breakfast and

get to work. By the time I start working, I am completely relaxed, feel excellent, and am completely focused on the project in front of me.

People who benefit from taking a microdose of psilocybin include artists, musicians, writers, programmers, and some athletes. The optimal microdose should lead to a flow state, where everything comes together with ease and thoughts are free-flowing. Microdosing psilocybin has been shown to increase creativity and problem-solving abilities that greatly enhance work productivity.

How Often Can I Microdose Psilocybin?

While there are no long-term studies on microdosing psilocybin, it is best to consume in moderation, as with anything else. James Fadiman advises users to only consume a microdose once every three days for several weeks and then take a few months off. Paul Stamets recommends taking a microdose with lion's mane and niacin four days in a row and then taking three days off. The reason niacin and lion's mane are recommended in conjunction with psilocybin is because they all work synergistically. Microdosing psilocybin is a tool to increase productivity and connect with your inner motivation, but avoid going overboard. In any case, it is not recommended to microdose every day.

Microdosing Psilocybin Improves Cognition

There are a number of studies that show microdosing psilocybin improves convergent and divergent thinking. This simply means that psilocybin improves creativity. Since careers like computer programming, writing, music, and art all require creativity, an improvement in convergent and divergent thinking allows one to enter the flow state with ease.

Psilocybin As A Replacement For Adderall

Microdosing psilocybin has been used as a replacement for Adderall and for good reason. Since there are some similar effects, as both

increase concentration and focus, microdosing psilocybin might allow some people to stop taking Adderall, while being just as efficient.

Adderall is simply a legalized amphetamine that binds to norepinephrine and dopamine receptors within the brain. Additionally, Adderall targets epinephrine receptors located on the adrenal glands. This causes an improvement in mood, alertness, and concentration. However, as a stimulant, Adderall is addictive and causes dependence. Long term use of Adderall causes damage to the brain and internal organs. Anyone who can stop taking Adderall by switching it out for a microdose of psilocybin may be able to avoid the downward spiral of addiction.

Psilocybin As A Replacement For Alcohol

Additionally, microdosing psilocybin has been shown to be an excellent social lubricant and is a great supplement for alcohol in a social setting. Many people who are under the influence of a microdose of psilocybin are often more open and don't have the typical fears that come along with social situations, making it a great anti-anxiety drug.

Since alcohol abuse causes a wide range of problems for not only the individual, but society as well, utilizing a microdose of psilocybin to lower inhibitions and enjoy social gatherings makes it an excellent replacement for alcohol.

Microdosing Psilocybin Offers Depression Relief

Studies have shown that microdosing psilocybin reduces depression symptoms in many individuals. Ideally, psilocybin can be used as a treatment for depression so sufferers don't have to resort to pharmaceutical medication that simply treats the symptoms of disease, not the cause.

Microdosing psilocybin is one way to counteract postpartum depression. An estimated 80% of women have some form of depression

after childbirth. While this is considered normal, 15% of mothers experience long-term depression, anxiety, and mood swings. Postpartum depression is believed to result due to the sudden change in estrogen and progesterone levels after childbirth. A few women have resorted to microdosing psilocybin and rave about how it allowed them to get back to a normal life.

Microdosing Psilocybin Increases Neuroplasticity

Psilocybin has been shown to improve neuroplasticity, allowing new neuron growth through BDNF activation. More specifically, psilocybin mimics serotonin at the 5-HT2a receptor which triggers both BDNF and Glutamate production. BDNF is responsible for neuroplasticity. This profound effect completely changes the way that people should look at psilocybin, as it regenerates the brain instead of breaking it down like many harmful drugs.

Potential Side Effects Of Microdosing

Again, there aren't any long-term studies on microdosing, but both psilocybin and fen-phen, a drug taken off the market because it was associated with heart valve problems, have an affinity for the 2B receptor. By association, heavy, long-term psilocybin use could potentially result in heart valve issues.

Microdosing psilocybin infrequently, as recommended by experts within the field, shouldn't have long term side effects. Since even large amounts of psilocybin are safe for consumption and humanity has been consuming psilocybin mushrooms since the beginning of time, microdosing psilocybin is as safe as it gets.

Medical Studies On Psilocybin Mushrooms

With a growing interest in psilocybin, there are many new studies on the medical benefits that mushrooms can offer. With research on PTSD, depression, suicidal tendencies, anxiety, OCD, alcohol dependence,

tobacco cessation, and health overall, scientists are finally giving psilocybin the attention it deserves. Anyone who has been under the influence of a life-changing dose of psilocybin realizes how it can completely change their overall perspective and life path. Many people, including myself, have completely changed in a psilocybin induced metamorphosis and are able to live a life of freedom, as the internal mental chains that kept us bound have been broken. Since life is all about perspective, understanding what is and what isn't important is the key to happiness. Psilocybin can be and often is the key that unlocks that doorway.

Psilocybin allows the brain to hyper-connect to other areas of the brain that typically don't communicate with each other. This is why some users report being able to taste colors and see sounds. During the short duration of a psilocybin induced experience, the brain is able to network and function on another level through these long range, temporary, neural connections. With modern technology, we are able to see this effect in real time from fMRI clinical studies.

During these fMRI scans, it was noted that the brains of people under the influence of psilocybin reorganized and were able to share information through a novel network of connections. The long range connections created during the psilocybin trip disappeared and brain function regressed to baseline at the end of the experience. Based on personal experience, this is why the information gathered during a psilocybin trip allows us to think about the world in a new way and remap life decisions going forward.

Depression And Psilocybin

Anyone who has suffered from depression realizes it is like being stuck in a jail cell inside your head. Escaping this jail cell all comes down to a different perspective of thinking, but a new look on life is often difficult with willpower alone. Psilocybin mushrooms have been shown to reduce depression in a long-term study on both people who consume psilocybin and other psychedelics compared with those who don't. The group that

used psychedelics had far lower rates of depression and suicidal tendencies.

In another study, adults who have never consumed hallucinogens were given either psilocybin or methylphenidate for two or three sessions. After 2 months and 14 months had passed since the sessions, patients in both groups were asked to rate their attitude, mood, and behavior. The group that was given psilocybin were collectively far happier with their life than the group given methylphenidate. In fact, many in the group that received psilocybin rated it as the most meaningful experience of their lives. During the 14 month follow-up, none of the patients who received psilocybin showed adverse effects, indicating the safety and effectiveness psilocybin has in reducing depression.

An estimated 17 million people in the US suffer from Major Depression Disorder (MDD) and depression is the world's leading cause of disability with 300 million people affected worldwide. This prompted the FDA to allow the Usona Institute in Madison, WI to use psilocybin to treat MDD in clinical trials. The study began in October 2019 and will be completed in May of 2022.

One way that psilocybin decreases depression is through the increase of dendritic arbor complexity, dendritic spine growth, and by stimulating synapse formation. In short, psilocybin and other hallucinogens regenerate the brain. Interestingly, atrophy of cortical neurons is associated with anxiety disorders. Psilocybin is able to counteract the atrophy of cortical neurons that produce anxiety by promoting neuroplasticity through BDNF production, as discussed earlier.

Psilocybin And Anxiety

In a study on cancer patients with anxiety symptoms, psilocybin was shown to decrease anxiety in terminal patients. Subjects were either given psilocybin or niacin. Overall mood was rated 2 weeks after the treatment and anxiety decreased significantly in the group that received psilocybin, measured by the State-Trait Anxiety Inventory, giving credence to psilocybin being used as an anti-anxiety treatment.

OCD And Psilocybin

In a 2014 case, a patient who had limited reactions to typical medical treatment for OCD consumed psilocybin mushrooms, noting that his OCD was greatly reduced the next day. The patient determined that if he ate 2 g of psilocybin mushrooms he would not have OCD symptoms for the following 3 weeks. In response, an OCD study involving 9 patients confirmed that psilocybin use reduced OCD symptoms.

Alcohol Dependence And Psilocybin

In a study of 10 patients who were diagnosed with alcohol dependence, psilocybin consumption corresponded with a 27.2% decrease in drinking. My personal experience with psilocybin led to a similar conclusion. Before consuming mushrooms, I was binge drinking on a daily basis for years. After my first experience with psilocybin mushrooms I was able to face the real reason why I was drinking and cut back significantly. Fortunately, I am able to enjoy alcohol without going overboard.

Tobacco Cessation And Psilocybin

In a 15-week course for smoking cessation, psilocybin was administered at week 5, week 7, and week 13. After the first psilocybin administration during week 5, subjects were encouraged to completely quit smoking cigarettes. At this point, 80% of the participants stopped smoking cigarettes and were still abstinent 6 months after the course. This incredible rate of tobacco cessation is unparalleled.

My experience was similar and I quit smoking cigarettes after consuming psilocybin mushrooms. Looking back, I have no idea why I was smoking a pack of cigarettes a day, as they are absolutely the most detrimental thing anyone can consciously do to their body. Needless to say, my health improved significantly from that day forward.

PTSD And Psilocybin

Since depression and post traumatic stress disorder (PTSD) share a common structural neural circuitry, psilocybin's ability to promote

neuroplasticity has a similar positive effect on PTSD, as it does with depression. With the ability to counteract the loss of dendritic spines, retraction of neurites, and the elimination of synapses, psilocybin promotes healthy brain growth. In this way, psilocybin is not a Band-Aid to the problem, but a solution at the structural level, counteracting diseases that result from the atrophy of neural structures.

More Studies On Psilocybin Needed

Larger studies on psilocybin in relation to various diseases and overall health are necessary to form concrete, undeniable conclusions. To date, most of the medical data on psilocybin are from small studies without many subjects. Realistically, we cannot expect many large scale studies on psilocybin anytime in the near future because there is no financial incentive to prove how useful psilocybin is as a treatment method. However, treatment value is clear to many people who have consumed psilocybin mushrooms as radical, positive changes have taken place in their life.

Psilocybin Mushrooms Legal Status And Regulations

The worldwide illegalization of many drugs including psychedelic mushrooms started in 1971 by the United Nations. This spawned the drug war that resulted in catastrophe, as families were broken up and prison systems were filled with non-violent drug offenders. Unfortunately, natural substances like marijuana and psilocybin mushrooms were prime targets of the drug war. Humans who believe they have control over what other people put in their body are overstepping their bounds. Locking someone up for wishing to enhance their spirituality is an absolute sin, yet this is the way of the world. Fortunately, drug policies are slowly changing.

Worldwide, the only places psilocybin mushrooms are completely legal as of 2020 are Brazil and Portugal. Other countries like Canada, Mexico, Spain, Italy, India and a few other small countries are partially legal or

decriminalized. Other than that, nearly all other countries have declared psilocybin mushrooms to be illegal.

In the United States, Oregon is leading the charge for complete legalization, as psilocybin mushrooms just became legal for medical use and is decriminalized. In New Mexico, it is legal to grow psilocybin mushrooms. There are other decriminalized cities within the United States in Washington, California, Colorado, Illinois, and Michigan, however these states still consider psilocybin mushrooms to be illegal. In Oakland, California, the city passed a law to end the investigation and prosecution of individuals who possess psychedelic mushrooms and peyote. Washington D.C. also decriminalized psilocybin mushrooms in 2020. In Santa Cruz, Denver, and Chicago the cities have instructed officers to place cases regarding psilocybin mushrooms to be their lowest priority.

Currently, over 100 cities throughout the United States are pushing for drug reforms so at least the ball is rolling in the right direction. Voters are finally waking up and realizing that the War on Drugs was an absolute sham.

Overall human consciousness has been shifting quickly in favor of natural treatments for a wide range of illnesses and many are resorting to psilocybin mushrooms for an answer. Hopefully, all 50 states quickly make psilocybin mushroom use completely legal, as the amount of therapeutic benefits the population can enjoy is infinite. If the United States legalizes mushrooms on the federal level, other countries worldwide will follow suit.

Conclusion

What if mushroom spores travelled light years through space, enabling us to turn from animals into demigods? What can we do with our newfound understanding and connection with the creator? At the end of the day, the Stoned Ape Theory makes just as much sense as any other concept for how we came to be incredibly intelligent animals that are able to contemplate our very existence. Did psilocybin mushrooms allow our frontal cortex greatly expanded in size within a short time evolutionarily speaking? While there is no way to prove this theory currently, at some point in time humans connected with our spiritual side and understood we weren't just simple animals, we had a soul. However, modern science has provided some evidence for the Stoned Ape Theory as we know that psilocybin promotes BDNF creation, literally allowing our brains to grow.

The unfortunate reality is that modern humans became so separated from our roots due to unscrupulous actors who quest for power and control. This was accentualized in the late 20th century when psilocybin mushrooms were made illegal nearly everywhere. However, many people realize the truth and are speaking up, forcing regulators to change their tune. It is time to give psilocybin mushrooms a chance to enter back into our hearts and minds, healing us from the cruel reality so many deal with on a global scale. As we move forward, my hope is that we will be able to collectively connect with our spirituality by consuming psilocybin mushrooms, as did ancient civilizations, without worrying about legal status or peer ridicule.

Nothing on God's green earth should be off-limits for any human being. Since Psilocybe cubensis mushrooms and other psilocybe mushrooms are available on all continents except Antarctica, they are there for a reason and that reason is to allow us to find our individual truth. Luckily, we don't have to have an advanced degree in mycology to hunt down these mushrooms in our backyard. Instead, we can grow crop

after crop of psilocybe mushrooms within a controlled, indoor environment. With only some basic understanding of the overall process and a spore syringe, anyone can grow mushrooms in the comfort of their home.

The goal when growing mushrooms indoors is to mimic the natural environment and allow mycelium to flourish in optimal conditions and fruit in a suitable growing chamber. If done properly, the process of going from spore to mushroom can repeat indefinitely, if a grower chooses. At the end of the day, growing mushrooms doesn't require a huge amount of money or many supplies. Growing mushrooms only requires a bit of knowledge, motivation, and persistence.

Growers who are just starting out should keep everything simple and purchase pre-sterilized bags of grain and coco coir so all they have to do is inoculate the grain medium with a spore syringe and wait for mycelium to grow throughout the grow bag. After that, simply transfer the fully grown mycelium grain into the fruiting chamber with the coco coir, maintain the environment by optimizing humidity and facilitating air circulation, and wait for mushrooms to fruit. As mushrooms mature, simply harvest with them an X-Acto knife, and either eat them fresh, make a spore print, or preserve it for a later date by freezing or dehydrating them.

Beginning growers who want to pack their own grow bags with grain should be aware of a couple important pointers to ensure their crop gets off on the right foot. First, soak the rye berries in water for at least 24 hours in order to ensure optimal humidity content and eliminate potential endospores. Then, seal off grow bags and sterilize them in the pressure cooker for at least 90 minutes. After the grow bags fall back to room temperature, inoculate them with the spore syringe. In the end, packing grow bags instead of buying pre-sterilized grow bags is far less expensive, assuming everything was done properly and any errors don't cause an issue later on in the grow process.

When growing mushrooms for the first time, take the path of least resistance, and use mushroom grow bags in conjunction with the plastic tote method. This allows for respectable yields, with the least amount of modifications and effort. The plastic bin used for the plastic tote method gives the mycelium culture on the bottom of the bin environmental conditions conducive to mushroom growth. In order to maintain high humidity levels, growers have to mist the sides and top of the bin multiple times a day. Since no holes are drilled into the bin, as with other advanced techniques, growers often keep the cover of the plastic bin slightly ajar so air can circulate freely.

While beginning growers may want to move on directly to the monotub growing method, the plastic bin method reduces potential pitfalls. Although, motivated beginners can jump right to the monotub technique with some extra work initially. After growing a few crops with the plastic tote method, growers may want to optimize their set up by moving onto the advanced monotub technique.

The monotub technique is extremely efficient and allows for optimal yields, as mushrooms growing within a perfect environment are going to grow the fastest, be the healthiest specimens possible, and yield the largest crops. The basic monotub technique requires growers to black out the bottom of the plastic tote fruiting chamber with black paint so pins don’t develop in areas where they can’t grow. Next, drill out holes in all sides of the plastic bin and add polyfil filters. Polyfil allows for sufficient air circulation, while keeping contaminants out. On the most basic level, humidity production in the monotub technique is exactly the same as the plastic tote bin technique. Growers must spray the sides and top of the bin multiple times a day with a spray bottle of water in order to keep humidity levels high.

The advanced monotub technique all comes down to optimizing the plastic tote fruiting chamber for efficient air exchange, high humidity, and lighting. Air exchange is facilitated by installing a computer fan into the side of the bin so mushrooms have access to high oxygen content and low carbon dioxide levels. The advanced monotub technique also

optimizes humidity by employing an electric reptile fogger and sensors that maintain the humidity level between 75% and 90% at all times. Finally, growers who have their fruiting chambers in a dark environment will want to add an LED lighting strip to the inside cover of the bin for 12 hours a day so pins quickly develop.

Most of the original mushroom growers started with the PF Tek, as mushroom grow bags were introduced later. Growers who want to experiment with the PF Tek will need to spend a bit more on supplies, but will have durable Mason jars to reload over and over again so this may be a better option if access to mushroom grow bags is limited. Overall, the PF Tek has lower yields and requires more steps to set up, but the mycelium cakes that come out of the Mason jars are perfect for the perlite humidity technique within the plastic fruiting chamber. If desired, growers can also use a water spray bottle or reptile fogger to humidify the fruiting chamber. As far as air circulation, simply use the cover of the plastic bin to air out the fruiting chamber a couple times a day or cut holes in the bin and add polyfil as in the monotub technique to optimize growing conditions without using electricity.

While one crop of psilocybin mushrooms is great, an infinite number of crops are better. After the first flush is harvested, take the best mushroom samples and make a spore print that can be saved for later use or immediately placed into a sterilized syringe. With an infinite number of spores available, there is no reason to have to buy another spore syringe. Simply creating your own spore syringes, spore vials, or creating a mycelium liquid culture that can be used to inoculate grow bags allows the process to go full circle. In the end, the bottleneck on the number of mushrooms anyone can grow is limited only by space.

Growers who want to step up their operation may find that space becomes an issue if they have more mushrooms than they can preserve at any given point. Since fresh mushrooms don’t last long and quickly lose their potency, they must be frozen or dried. Before growing large quantities of mushrooms, be prepared for a large-scale preservation process. The easiest way to dry a large number of mushrooms is to place

mushrooms in plastic bins and trays with as many fans pointed at them as needed. This will take most of the moisture out of the mushrooms within 48 hours. Then, put the mushrooms in plastic bins with chemical desiccants that are able to pull out the remaining moisture and snap on the cover. This final drying step will leave growers with bone dry mushrooms that are ready for long-term storage in a covered container with a silica gel pack.

After following the basic principles for growing mushrooms, advanced growers may want to experiment with techniques that increase yield, while decreasing the time it takes to grow mushrooms. Professional Mycologists clone mushroom tissue by placing it in a petri dish with an agar solution and transfer the mycelium that shoots out from the mushroom into a grow bag filled with sterilized grain. This process results in a greater yield, faster growth time, and the highest potency, as a specific mushroom clone should be the optimal genetic specimen.

All growers deal with contamination at one point or another so when this happens, don’t panic, but simply remove the contaminated specimen from the healthy samples and troubleshoot what went wrong along the process. In most cases contamination is a result of insufficient grain soaking before packing it in the grow bags, non-optimal humidity content within the grain, a lack of sterilization during one step in the process, or non-optimal conditions within the fruiting chamber. Remedying whatever went wrong will often improve the overall health of the mushrooms as a whole and increase yield so take any contamination problems as constructive criticism.

The best part of growing mushrooms is enjoying the harvest. Whether microdosing mushrooms for a way to get into the flow state, consuming psilocybin mushrooms for medical conditions, or taking a heroic dose of mushrooms to witness another world completely, growing your own mushrooms is the best way to accomplish all three. Since the process of having to buy mushrooms from someone else can get complicated and expensive, growing mushrooms clandestinely in the comfort of your

home gives you full control to consume and preserve mushrooms as you please.

At the end of the day, it is your body and your choice. Personally, I think it is amazing that something like psilocybin mushrooms exist in this world just waiting for us patiently. At the end of the day, psilocybe mushrooms are here and have something to teach us. With worldwide availability, the key to another world is within the grasp of everyone on this planet. However, the powers that be don't want people to understand their true potential, as free people can't be controlled. People who take the key and open up the doors of perception can experience a new way of thinking, allowing them to reimagine the concept of existence at its very core.

Armed with the information contained in this book, you now have everything you need to start growing psilocybe mushrooms in the comfort of your home. Realize that many have taken this path before you and we all await you on the other side. Take things slowly and meticulously, while being present in the moment so you enjoy the process, the journey, and the destination. May your adventure be fruitful, awakening, and may love fill your soul.

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