Unstoppable Mushrooms

A simple guide to growing magic mushrooms at home with no fancy equipment or prior know-how

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Author: Lilli M. Steingraeber

Rudigerstraat 39A
5408 AA Volkel
Netherlands

for comments and questions, please
contact: info@provithor.com

Anyone can grow mushrooms.

(in about 2 months)

You can grow mushrooms at home and on a budget.

A few basic techniques will set you up to make **as many as you want.**

And you'll never have to buy spores (or mushrooms) again.

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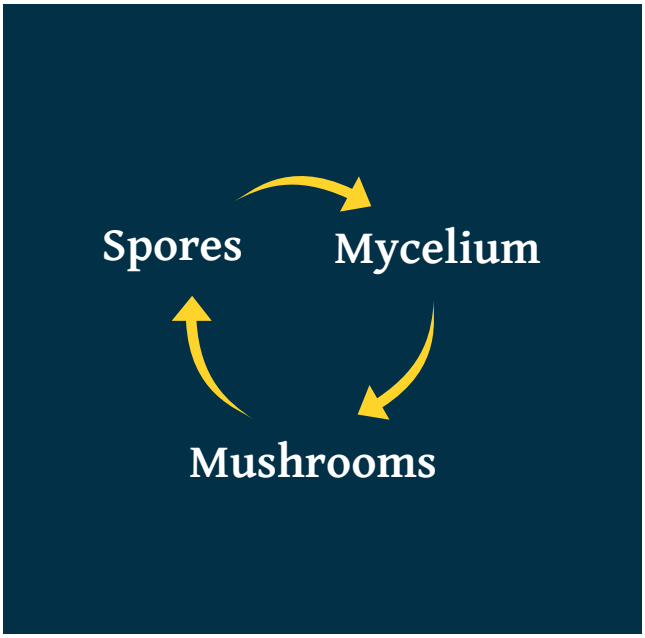
Mushroom Grow Cycle

Spores make mycelium.
Mycelium makes mushrooms.
Mushrooms make spores.

This self-sustaining cycle allows you as a grower to keep your cultivation running indefinitely.

The "shortcut"

If you want to see the growing process before investing time and effort, you can find a **Mushroom growing starter kit** on our website. (Don't forget the spores)



5 steps to Mushrooms

1) To kick off your home cultivation, you first use spores to create **Spawn**.

This is a small amount of grain, completely colonized by mycelium.

2) Once your spawn is ready, you can use it to inoculate substrate. This is called **bulking.**

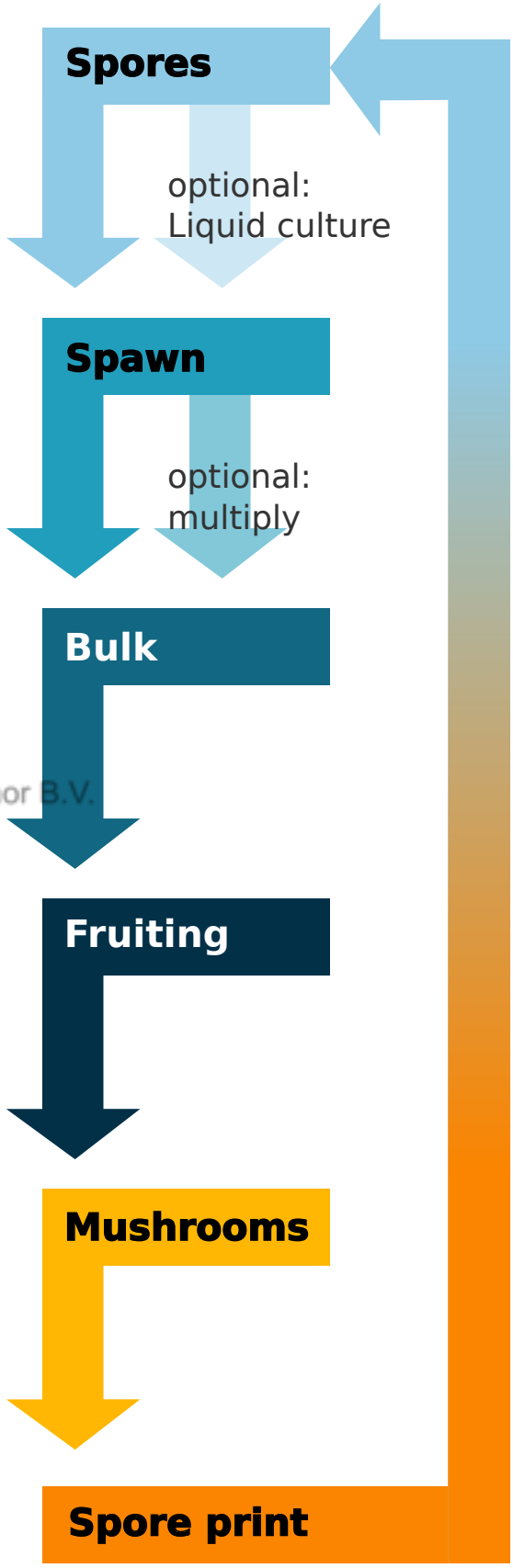
3) Once your bulked substrate is completely taken over by mycelium,it is ready for **fruiting**.

This will happen one way or another, but you can control the environment to optimize output.

4) The first growth stage of a mushroom is called **pin** or **primordia**.

Pins take a while to first appear, but once they do, mushrooms will mature within just a few days.

5) Once your mushrooms open their hats, you can take a **spore print**.
Once you learned that, you're unstoppable in your mushrooming.



What you need

There are two major phases for which you need equipment, **spawn** and **bulk**. You can start creating your spawn even if you don't yet have all the equipment for bulking yet, because it will take a few weeks for your mycelium to cultivate all the spawn.

(Note that even **bulking is technically optional**. It is possible to grow mushrooms from spawn directly, it's just not very efficient. But if you want, you can even skip bulking completely and wait for your spawn to fruit naturally.)

For spawn:

From home

1 pressure cooker
2+ mason jars with lids
1 bag of brown rice
paper towels
water & soap
tape

Online:

mushroom spores in sterile water
sterile syringes (1 for each jar)
alcohol pads

browse shop

optional*

airport filters + syringe port
nutrient solution (homemade)
or: nutrient solution vials

DIY*

still air box

For bulking:

From home

2+ lunchboxes with lids (1 per jar)
1 teaspoon
paper towels

(more brown rice for multiplying)

growshop / gardening center:

coconut coir

optional*

Vermiculite / Perlite
whole, shelled oats
grow bag with HEPA filter

DIY*

monotub

* Later versions of this growguide will contain information on more than one method to grow. The current version only lists these items so the interested reader can look them up online and improve their growing independently.

Time - How long you need

Spores

Inoculate nutrient solution (page 06) — **1-2 weeks**

Liquid culture

Inoculate grain spawn (page 08) — **1-2 weeks**

Alternative: Inoculate grain spawn directly — **2-4 weeks**

You can skip inoculating nutrient solution and instead inoculate the grain spawn directly.
This results in a **higher risk** of contamination that you need to mitigate by using **more spores** than you would need for the liquid culture.

Fully grown spawn

Inoculate substrate (page 11) — **2-4 weeks**

Option: Multiply spawn — **2-4 weeks**

You can use your spawn to inoculate more sterilized grain spawn.
This is a faster way of inoculation than using spores or liquid culture and useful if you want to grow large quantities, but cannot be done with a syringe. Look up how to build a **still air box** if you want to go that way.

Fully grown substrate

Initiate fruiting (page 12) — **1-4 weeks**

Mature mushrooms

How long exactly each step takes depends to a great deal on environmental factors like temperature.

The more you grow, the better you'll get.

Total time: 6-10 weeks

Spores, spawn and liquid cultures

In nature, the mycelium has to fight lots of other spores and microorganisms for its food. In cultivation, we eliminate all the competition in and around the grain **spawn** and can further optimize with **liquid cultures**..

Spores

- Each mushroom produces billions of spores.

- In theory, all you need is two spores that sprout mycelium and fuse with each other. BUT:

- Spores of all sorts of molds are **everywhere**, all the time.

So you need to work as clean as possible! You can use nutrient solution to give your mycelium an advantage over other spores.

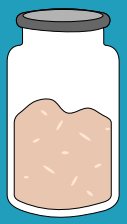
Spawn

- Usually grains, totally colonized by mycelium.

This is what you use to inoculate your substrate.

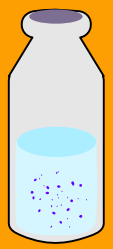
- Needs to be made under fully **sterile conditions**

(This can be done at home with a few tricks.)



Nutrient solution

This is a sterile, highly nutritious solution of water and starch. You can use it to **kickstart** your **mycelium growth** and reduce the time it will take for your spawn to become fully colonized.



If it's your first time growing, it's a good idea to get some nutrient solution with your spores!

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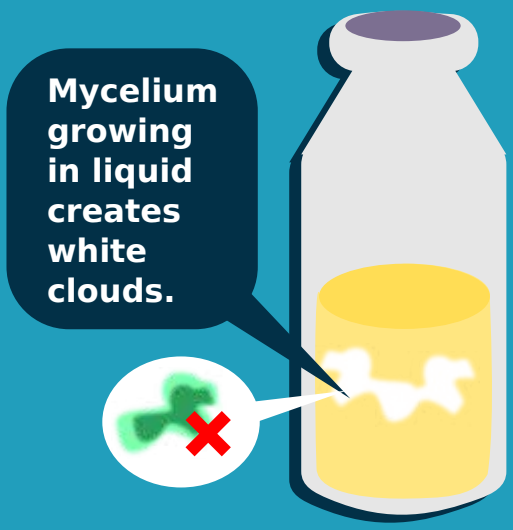
Liquid culture - How to use and make it



A liquid culture is created when spores grow mycelium in sterily nutrient solution.
This comes with a few benefits:

- Mycelium grows fast in liquid
- Easy to detect contamination
- Allows you to **create more grain spawn** with the same amount of spores

If you see colored spots swimming in your culture, this is contamination. Discard it and start over!

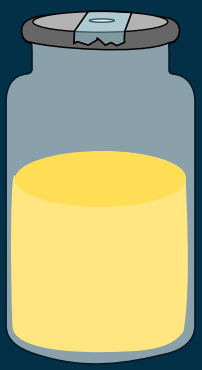
Inoculating the nutrient solution

- Sterilize the syringe port with alcohol
- Inoculate nutrient liquid
- Let it sit for a few days
- Once white clouds become visible. shake the vial every day.
- Store in the fridge after about a week.

You can use liquid cultures to inoculate spawn and it will grow much faster than if you inoculate with spores.

check page 8 for tips on inoculating cleanly!

How to make your own nutrient solution



Put in a mason jar;

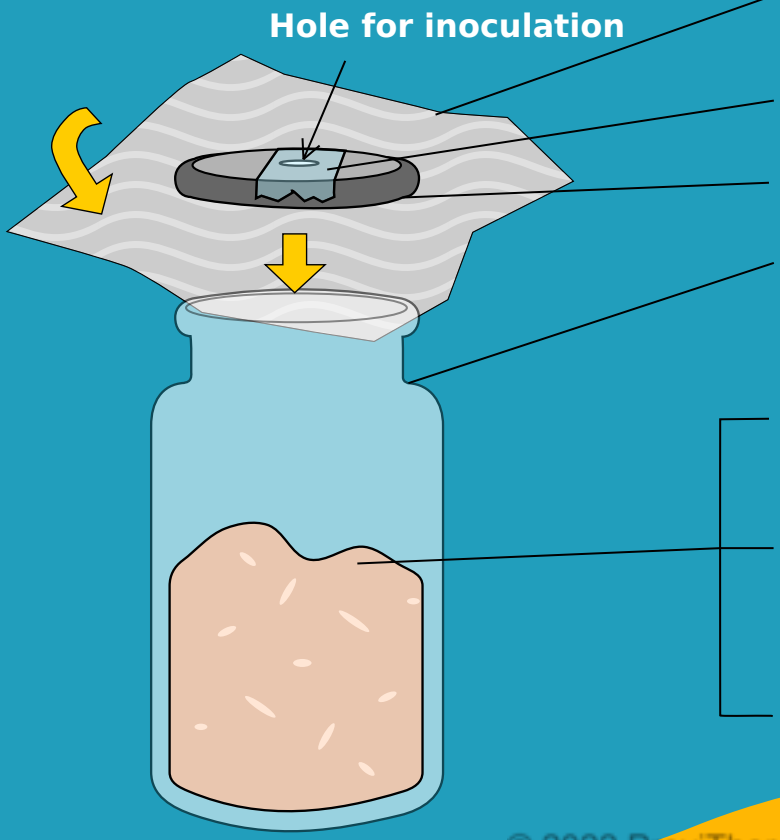
100ml drinking water
+ 5ml organic maple syrup

(or 0.2g of malt extract)

Sterilize before use!

See next page for instructions on how to prepare and sterilize your mason jar.

The spawn jar



Aluminum foil to cover the whole lid so the opening is covered.

Tape

Poke a hole in the lid, tape it

Mason jar
1/2 - 3/4 filled with one of these options:

brown rice
cook for 10 minutes, then rinse with cold water, OR:

Rye berries
soak in water for 24h, then rinse twice to remove starchy film

Nutrient solution

Sterilize in a pressure cooker

1) Heat up on the highest setting, until the pot is under **full pressure** and emits steam from the valve.

2) Lower the heat a little, to the point where it still emits steam. (About a 7 out of 9 on your stove).

3) Sterilize for at least 45 minutes under pressure.

*(Creating 100% sterility at home is nearly impossible, but 45 minutes will kill about 99.5% of dormant germs and mold spores.)

Don't close the jar airtight. You want the pressure on the inside to be the same as outside

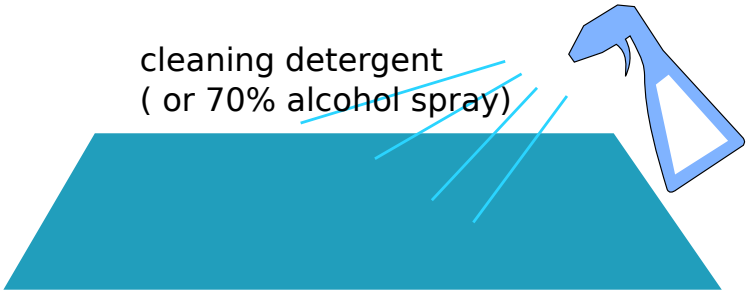
Inoculating the spawn glass

Preparation

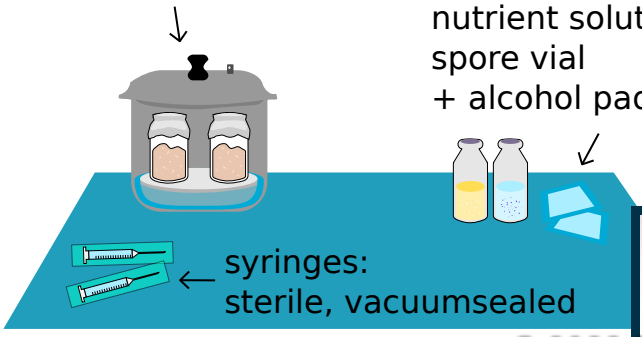
your work station

- clean and empty
- still air (no open windows)
- Minimize germs

(The cleaner the room, the more likely you will succeed)



sterilized spawn glasses:
cooled down and unopened!



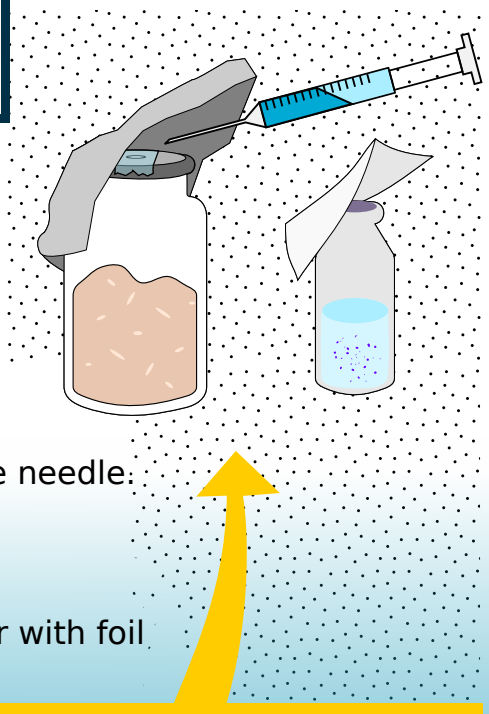
You need:

- the pot
- sterile syringes & needles (1 per spawn glass)
- **Spore vial** (shop)
- alcohol pads

Steps to follow:

- Thoroughly wash your hands
- Shake the vial **really** well
- Place alcohol pads on the syringe port (lid)
- Let it sit for 1 minute
- Remove the spawn glasses from the pot

The following steps have to be done quickly:



- Unwrap the syringe and don't put it down!
- Remove the alcohol pad from the vial and poke in the needle.
- Take up **2ml-10ml*** of fluid
- Take out syringe, needle pointing downward
- Lift up the aluminum foil from the lid (don't remove!)
- Poke in the needle and empty the syringe, then cover with foil

Ratio
spores to nutrient solution: 2ml
spores to grain spawn: 10 ml
nutrient solution to spawn: 10ml

Germs and mold spores are *everywhere*. In still air, they fall down from above like dust. Protect the entry point with aluminum foil. This needs a bit of practice, but it works really well against contamination.

Growth phase

This refers to the time the mycelium needs to fully colonize all the grain in the glass.

Leave the glass alone in a well ventilated spot. Make sure the lid allows for air exchange and is not completely closed.

Avoid direct sunlight, choose dim light or darkness and stable temperature (21-28°C).
(You want the whole glass colonized. This will take about 1 week if you used nutrient solution.)

Snow white mold

Detect contamination!

watch for these symptoms:

Mold

Blue, green, black, orange - any color is bad. If your spawn has caught mold, get rid of it and start again.

No growth

No white fluff visible after 7 days of waiting.

pungent, sour smell

Troubleshooting

- Take a picture!

- Send it to info@provithor.com

- Trace back your steps, find the mistake.

- Start over.

Contact us!

From spawn to bulk

Spawn +

Substrate

100% covered in
white mycelium

pure coco coir & water
(optional:+ vermiculite)

1 part spawn : 2 parts substrate

When preparing the substrate, you want its weight to be two times the weight of your spawn. This **includes** water!

For us the ratio of coir to water was 1:1, but that depends on the brand of coir you use.

Example:

use 100g spawn

+ 100g coco coir

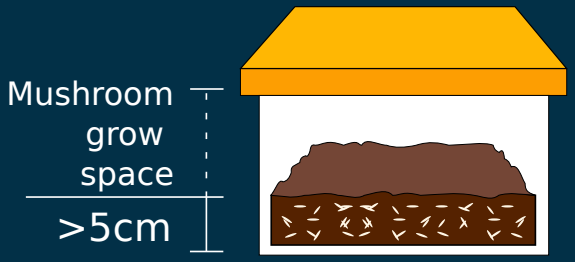
+ 100ml water

Sterilize

Same as before, 45 minutes under pressure, then let it cool off.

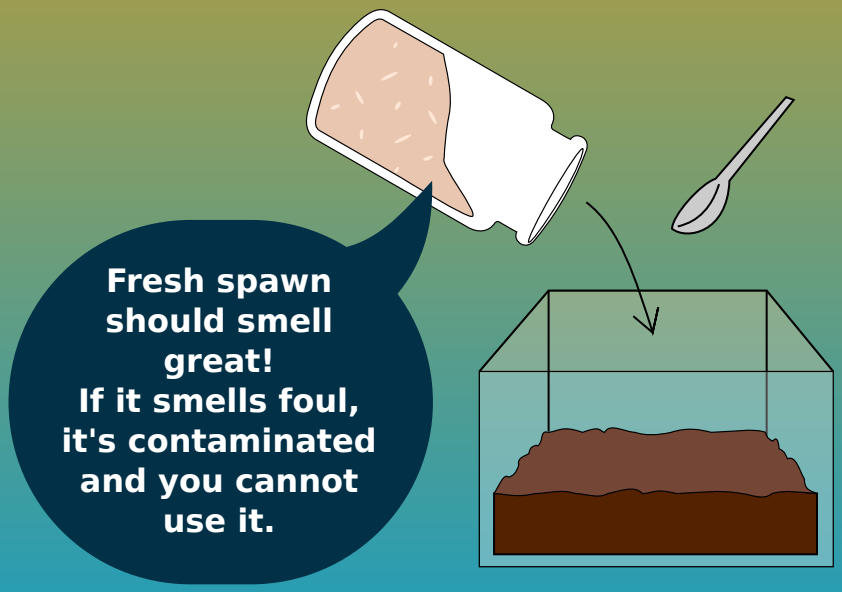
Choosing a growbox

A tall lunchbox tall will do.
If you have a heat resistant box, use this to sterilize the coir.



Mixing spawn and substrate

1) Sterilize substrate and let it cool off.
2) Fill it into your **clean** growbox.
3) Use a **clean** spoon to add the spawn.



Mix

As you spoon the spawn into the substrate, you will notice the mycelium is quite hardy.

Once all the spawn is in the growbox, use your clean, bare hands to break the lumps up into individual rice grains.

Mix the spawn grains into the coco coir, spreading it as evenly as possible.
The mycelium is going to colonize the substrate and the better it is spread, the faster this process will go.

Hold the sterilizer!

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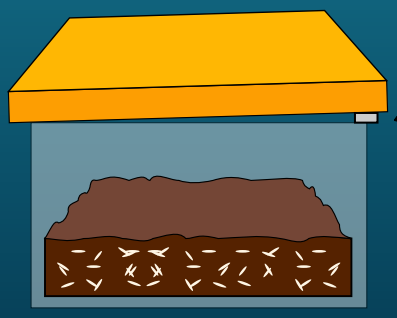
Remember that your mycelium will also be affected by alcohol/sterilizer. At this stage you want to favour leaving the mycelium intact over killing off contamination.
We don't recommend the use of gloves as they are often covered in antiseptic powder or disinfectant. Wash your hands and you'll be fine.

Growth phase

The duration of the growth phase varies. For small amounts, 10 to 15 days is a good amount of time to let the mycelium colonize the whole box.



You can prop up the lid with a piece of folded paper to keep **ventilation** going.

You only need a tiny slit for air exchange at the growing stage.

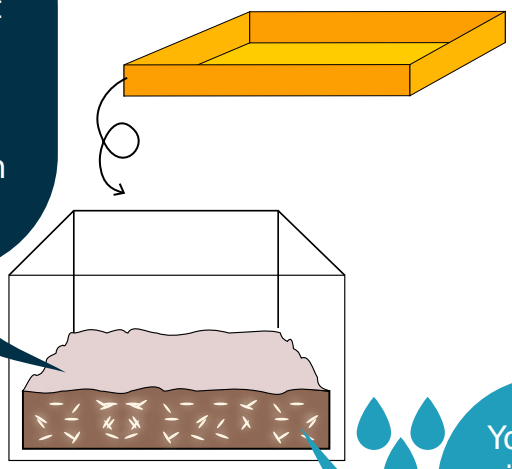
The grow phases in pictures

After mixing the spawn into the substrate, the mycelium needs a few days to recover. It will immediately start to colonize the susbtrate.
Keep the lid on your growbox and allow for air exchange through a small slit only.

Once all of the contents of the box are fully colonized, the mycelium is ready to go into fruiting. The surface of the substrate should be completely covered with white mycelium. If the mycelium gets enough oxygen, fruiting will happen automatically.

Let it breathe, keep it moist...

You can flip the lid and place it on the box reversed to give the mycelium even more **oxygen**.



If the mycelium gets enough air, it automatically goes into fruiting.

Keep the environment clean and in a stable temperature.
Don't lose patience too soon, fruiting can take a few days.

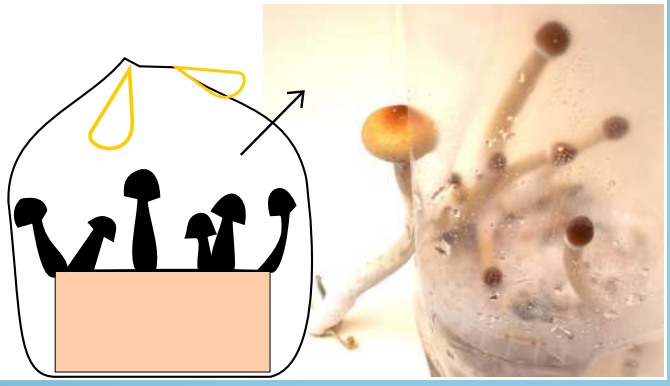
You can mist the mycelium with water to keep it moist. This may also trigger growth as **in nature, mushrooms grow after the rain**.

Primordias (Baby mushrooms)

The first stage of mushrooms growing is called **primordias**.
You will notice tiny white specks on your mycelium that will gradually grow in size and show darker hats as time progresses.

Mushrooms can grow to be quite tall. You may have to allow for up to 20cm of growth space.

You can keep this space clean and moist by placing the growbox inside a CLEAN, unused plastic bag (white or translucent).
Use **reusable grow bags** for optimal results.



The perfect mushroom

Mushrooms are at their best when the hat is still closed.
When they open their hat, they drop spores, are potentially less potent.

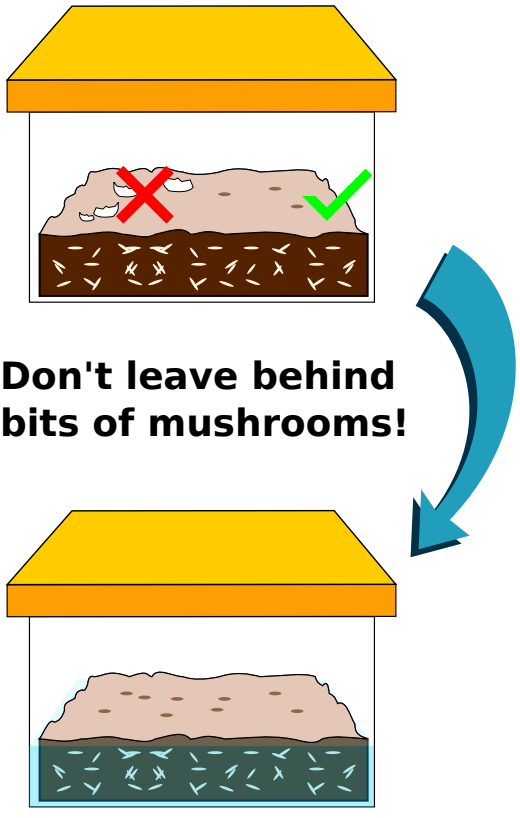
You want mushrooms:
- closed
- free of substrate
- completely dried

Blue stains are a great sign of high potency!

Fruit dryer

The fastest and safest way to dry mushrooms is a fruit dehydrator. **Do not to heat the mushrooms up too much!**

(35-50°C)



Don't leave behind bits of mushrooms!

While picking, try to damage the mycelium as little as possible! Always pick the whole mushrooms, don't leave behind remnants. They are likely to rot and attract contaminants.

Growbox reset

After harvesting your mushrooms, you will need to water your growbox. Simply fill it up with clean water, place the lid on top and store it in the fridge for about 12h.

This is called a **cold reset.**

Spore inoculation

In this last step you will learn how to use the spores of the mushrooms that you just grew.
You can use these spores immediately to create MORE mushrooms - this is **unstoppable mushrooming**.

Step 1: Preparing the spawn glass
Prepare a spawn glass as before (page 5) with one alteration: Poke a few more holes into the lid and only cover the lid with foil, not with tape!

Step 2: Sterilization
Sterilize your spawn glass, same as before. Make sure the aluminum foil covers the lid at all time.

Step 3: Cool down, prepare workspace
Take out the glass and let it cool down to about body temperature. Meanwhile, clean up your workspace and place the growkit with mature mushrooms and the glass on it. Wash your hands.

Step 4: Decapitate a shroom
With a sterilized blade (use a flame to sterilize, then an alcoholpad to wipe it), cut off a mature mushroom's hat as far up as possible.

Step 5: Place on the jar, under the foil
Using sterilized pincers, grab the hat and gently but quickly place it beneath the foil on the lid, gills downwards. Immediately cover with the foil.

Step 6: Wait
Within 1-2 days, the mushroom should drop its spores onto the spawn, where they can grow. Remove the hat, or it may attract contaminants.

spore print on rice

Note:
Instead of directly inoculating the spawn, you can also use nutrient solution.

Spore prints - for later use

In this last step you will learn how to use the spores of the mushrooms that you just grew.
You can preserve these spores and use them at any point to create MORE mushrooms - this is **unstoppable mushrooming**.

Step 1: Preparing the spore glass
Prepare a glass by putting a clean piece of white printer paper at the bottom. Cover the glass with aluminum foil.

Step 2: Sterilization
Preheat an oven to 200°C and place the glass inside. Leave it for at least 20 minutes.

Step 3: Cool down, prepare workspace
Take out the glass and let it cool down until you can touch it with your bare hands. Meanwhile, clean up your workspace and place the growkit in it. Wash your hands.

Step 4: Decapitate a shroom
With a sterilized blade (use a flame to sterilize, then an alcoholpad to wipe it), cut off a mushroom's hat as far up as possible.

Step 5: Place in the jar
Using sterilized pincers, grab the hat and gently but quickly place it in the glass, gills downwards. Immediately cover with the foil.

Step 6: Wait
Within a few days, the mushroom should drop its spores onto the paper (**Spore print**)

Step 7: Preserve
Using sterilized tools, pick up the hat and immediately fold up the paper. Place it inside a clean plastic bag.