

GRAIN SPAWN MANUAL

SpaceJars

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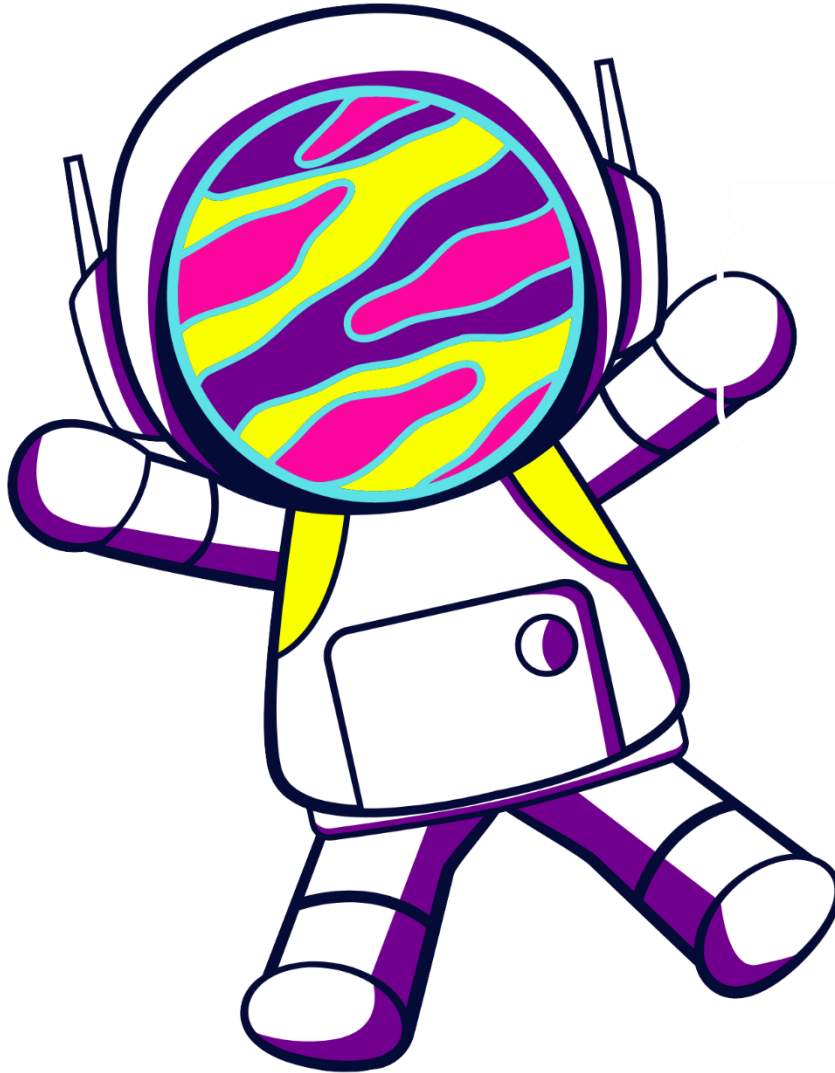
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2. What is grain spawn?

Magic mushroom spawn is grain colonized with mycelium. It is produced under **sterile conditions** to prevent contamination from other fungi, bacteria, or viruses. Because the pure mycelium grows on a sterile, nutrient-rich substrate, it is potent and is often used as a starting point for further cultivation.

With ready-to-use magic mushroom spawn, the grain is fully colonized with the correct mycelium, and subsequent steps often do not require sterile work. This makes growing magic mushrooms with ready-to-use spawn one of the **most beginner-friendly ways** to start this hobby. It is slightly more challenging than using a magic mushroom grow kit, but the results are worth it! You'll achieve **much larger yields**, gain a deeper understanding of the process, and develop the skills to grow more magic mushrooms than you'll ever need.

2.1 Why buy grain spawn?

Of course, you could make your own magic mushroom spawn. If cultivating magic mushrooms truly becomes your hobby, you'll certainly want to tackle this sooner or later. You'll need to sterilize your own grain, inoculate it, and expand it until you have a good amount of clean, fully colonized spawn. However, this process can sometimes intimidate new growers. It sounds like a lot, but it's really easier than you might think.

But what if you just want to start **growing a large quantity of magic mushrooms** without turning your home into a laboratory? That's exactly where **SpaceJars Grain Spawn is perfect!**

2.2 Different types of grain spawn

For making magic mushroom spawn, rye, millet, or other grains are typically used. The **Psilocybe Cubensis strains** from SpaceJars grow their mycelium on rye.

Magic mushroom spawn is essentially a **culture of mycelium on the run**. It wants to keep growing, expanding, and spreading. As long as there is enough substrate and the conditions are favorable, the mycelium will continue to grow. Only when the grower places the mycelium in **fruiting conditions** will the first magic mushrooms begin to appear.

3. Getting Started – Beginning Your Cultivation



The magical jar filled with white, colonized rye has arrived. But **where do you start?** It all depends on what you want to do. Below are some common options:

Option 1: Beginner's Grow

Option 2: Spawn-to-Bulk (Recommended)

Option 3: Advanced – I Want to Make More Spawn

But before we begin, here are some important rules for a successful grow:

1. **Never open the jar until you're ready to start working with it** – this increases the risk of contamination.
2. **Work as cleanly as possible** – assume that every surface, the outside of the jar, the lid, the air, your fingers, your breath, literally EVERYTHING is contaminated with bacteria, viruses, microorganisms, or fungi. If these come into contact with your magic mushroom spawn, they can ruin your grow.
3. **If you notice that your substrate or spawn is contaminated, consider it a loss.** Do not try to salvage clean mycelium from it; instead, discard it.
4. **There is an abundance of information available about growing mushrooms/magic mushrooms.** There are many different techniques and variations to achieve a successful grow. Do your own research, experiment with different methods, and find out which cultivation approach works best for you.

4. The Beginner's Grow

The easiest way to start using a SpaceJars magic mushroom spawn jar is the beginner's grow. Note: this is not the most effective way to use grain spawn.



4.1 Dunking

To prepare the mycelium for producing magic mushrooms, it needs to be "**dunked**." This means it should be placed in **cold water for 12-18 hours**. You can simply fill the jar and let it soak, as shown in the photo below.



Grain retains less moisture than bulk substrate, and magic mushrooms are made up of **95% water**. Keep in mind that this means this technique will produce **fewer magic mushrooms** than the **recommended Spawn-to-Bulk method**.

It's also possible that under suboptimal conditions, a lot of side-pinning can occur. In this case, the magic mushrooms will grow **between the spawn and the glass**, making them difficult to harvest. However, if you want to grow some mushrooms with minimal effort, the beginner's grow is a fun way to get started!



Once the jar has finished soaking, you can place it in "fruiting conditions." Within **2 to 3 weeks**, the first magic mushrooms will begin to appear.

4.2 Fruiting conditions

Fruiting Conditions, **commonly referred to as FC by growers**, are the conditions under which colonized substrate begins to produce mushrooms. For most Cubensis strains, the following applies:

High Humidity

Most Cubensis strains prefer a relative humidity (RH) between 80-90%.

Ideal Temperature	A slightly lower temperature than during colonization, between 22-26°C.
Fresh Air	During fruiting, the mycelium requires low CO2 levels. You achieve this by providing fresh air exchange (FAE) to the mycelium.
Adequate Light	Cubensis strains do not fruit in the dark. Ensure they receive indirect sunlight, but never place them directly in the sun.

Providing the right fruiting conditions in your home can be tricky. Luckily, there are simple techniques to transform a plastic tub into an ideal growing space.

Both beginners and advanced growers often **use a Monotub** for this purpose. There are many different ways to grow magic mushrooms, but to easily grow a large amount with minimal risk of contamination, **we recommend** starting with a Monotub. The Monotub is a plastic container that you modify slightly to create the perfect environment for your magic mushrooms to grow. This is also known as the **Fruiting Chamber** (see **Chapter 7, Fruiting Chambers**).



The image above shows a beginner's grow in a small Shot Gun Fruiting Chamber. For more information, see **Chapter 7, Fruiting Chambers**.

4.3 Fruiting

It takes about 1 to 3 weeks after placing the jar in Fruiting Conditions for the first mushrooms to appear. During this period, small bumps **known as primordia** will first form on the mycelium. In the photo below, these primordia are circled in yellow.



The primordia then grow into "**pins**," small mini mushrooms, as seen in the photo below. The photo below shows both pins and primordia in a jar of SpaceJars magic mushroom spawn.



4.3.1 First Flush

A few days later, these grow into fully developed mushrooms. This is your **first "flush."** Harvest the mushrooms **just before the veil under the cap breaks.**



In the photo above, you can see that on the right, the veil under the cap has torn, while on the left, it is still intact. This is the optimal moment to harvest the mushrooms. Be careful; you want to **minimize damage to the mycelium.** Remove all the large and small mushrooms from the substrate. Your first flush is in!

4.3.1 Second Flush

After the first flush, the mycelium can often produce a second and sometimes a third batch of mushrooms. Once all the mushrooms have been removed, you "dunk" the mycelium again. You can follow the steps from **Chapter 4.1 Dunking** to **Chapter 4.3.1 First Flush** again for your second and third flush.

As mentioned earlier, this method will not yield a massive amount of mushrooms. From a jar of just under 200 grams, you can't expect to harvest a kilogram of mushrooms. Therefore, if you want to grow a lot of mushrooms, we recommend starting directly with **Chapter 5. Spawn-to-Bulk.**

5. Spawn-to-Bulk



If you want to grow a lot of magic mushrooms using spawn, the **best approach is to start a Spawn-to-Bulk grow**. In this process, you use the magic mushroom spawn to inoculate a large volume of substrate, also known as bulk substrate. This is the substrate from which the final mushrooms will grow.

Bulk substrate can be made from many different materials: straw, coffee grounds, and even cardboard are possible. In this guide, we provide an easy, well-working, and inexpensive option that is widely used by both beginner and experienced mycologists.

You can choose how much spawn to use to inoculate the bulk substrate. Most growers recommend a ratio of grain spawn to bulk substrate **between 1:2 and 1:4**. The more spawn used in proportion, the faster the substrate will become colonized and the **lower the chance of contamination**. So if you're confident in your ability to work cleanly, you can opt for a 1:4 ratio. If you're a beginner, you'll see better results with a 1:2 ratio.

Below is the same bulk substrate recipe in different ratios. The steps and items you'll need are the same for each recipe. **NOTE: Some ingredients are measured in milliliters, others in grams.**

5.1 Bulk Substrate Recipe

Below are the recipes for a simple bulk substrate in three different ratios. Again, the more spawn used in proportion, the faster the substrate will become colonized and the lower the chance of contamination. So if you're confident in your ability to work cleanly, you can opt for a 1:4 ratio. If you're a beginner, you'll achieve better results more quickly with a 1:2 ratio.

5.1.1 Ratio 1:2

- 1 jar SpaceJars Magic Mushroom spawn
- 43g Coco Coir
- 133mL Vermiculite

- 4g Gypsum
- 249mL Water

5.1.2 Ratio 1:3

- 1 jar SpaceJars Magic Mushroom spawn
- 65g Coco Coir
- 200mL Vermiculite
- 374mL Water
- 6g Gypsum

5.1.3 Ratio 1:4

- 1 jar SpaceJars Magic Mushroom spawn
- 86g Coco Coir
- 266mL Vermiculite
- 498mL Water
- 10g Gypsum

5.1.4 Required items

You will also need the following items:

- Large clean pot
- Large clean bucket
- 70% Isopropyl Alcohol (IPA)
- Large spoon

5.2 Making the Bulk Substrate

Bring the water to a boil in the large pot and dissolve the gypsum in it. Make sure the water is **not chlorinated**. Disinfect the bucket with IPA. Place the coco coir and vermiculite in the large bucket.



Once the water is boiling, pour the hot water into the bucket. Place a lid on the bucket and allow the hot water to **pasteurize** the substrate. The mixture should cool down to around **70-80°C** due to the other ingredients. By covering the bucket with a blanket, the mixture will stay warm for **3 to 4 hours**. If you make the substrate mix in the evening, you can let it cool slowly overnight and mix it with the magic mushroom spawn in the morning.



Once the mixture has cooled down (<math><30^{\circ}\text{C}</math>), you can stir it well with a sturdy spoon or your hands. Make sure your hands or the spoon are **disinfected with IPA** before they come into contact with the bucket. The substrate should be evenly moist but not wet. This is your bulk substrate.

5.3 Inoculating

The next step is **inoculating** your bulk substrate: you will mix your grain spawn with the bulk substrate you made. This will then need to be **fully colonized**. As with every step, there are many different ways to do this. The photos below show how bulk substrate is inoculated using the **ShoeBox Tek**.

In the ShoeBox Tek, you choose a plastic container that you can fill with your bulk substrate about 60-90%. Make sure to use a clean plastic container that has been disinfected with IPA. Once this container is fully colonized, you can place it in a **fruiting chamber** (see **Chapter 7, Fruiting Chambers**).



Approximately 75% of the bulk substrate is mixed with grain spawn.



The bulk substrate is evenly and flatly spread throughout the plastic container.



The last 25% of the bulk substrate is spread as a **casing** on top of the mix. Put the lid back on the container and place it in the dark at a temperature of **27-28°C** (check specific temperatures per species in their product description). Colonization typically works between 19 – 30°C; outside

this range, the mycelium will not grow properly. A temperature of 27-28°C is ideal. During growth, mycelium produces CO₂. Therefore, make sure the bulk substrate is **not in an airtight container**, so the gas can escape gradually. The container will have a **high CO₂ level**, but this is normal during the mycelium growth phase. Once the plastic container is fully colonized and white with mycelium, it can be placed in fruiting conditions.

5.4 Fruiting Conditions

Fruiting Conditions, known as FC among growers, are the conditions under which colonized substrate begins to produce mushrooms. For most Cubensis species, the following applies:

High Humidity	Most species prefer between 80 – 95% RH (Relative Humidity).
Ideal Temperature	A slightly lower temperature than during colonization; between 22-26°C.
Fresh Air	During fruiting, the mycelium requires low CO ₂ levels. You achieve this by providing fresh air (FAE, Fresh Air Exchange) to the mycelium.
Adequate Light	Cubensis species do not fruit in the dark. Ensure indirect sunlight, but never place them directly in the sun.

Providing the right **fruiting conditions** in your home can be difficult. Fortunately, there are simple techniques to transform a plastic container into the ideal growing space. Both beginners and experienced growers often use a **Monotub** for this. There are many different ways to grow mushrooms, but to easily grow a lot of mushrooms with minimal risk of contamination, we recommend starting with a Monotub (see **Chapter 7, Fruiting Chambers**). The Monotub is a plastic container that you modify slightly to create the perfect environment for your mushrooms to grow. This is also referred to as the **Fruiting Chamber**.

5.5 Fruiting



When the fruiting conditions are correct, the mycelium in the bulk substrate will begin to produce mushrooms. As explained earlier in **Chapter 4.3 Fruiting**, primordia first form, then pins, and finally the mushrooms. After the bulk substrate is placed in fruiting conditions, it usually takes about 12-18 days for the first mushrooms to appear. Below are images showing how this looks on bulk substrate.



The above photo is a close-up of primordia on bulk substrate. The image below shows bulk substrate in a monotub with many pins.



If your bulk substrate looks like the above photo, you can expect a large batch of mushrooms within a few days.

5.5.1 First Flush



You've done everything right, and your bulk substrate is overflowing with mushrooms. In other words, it's time to harvest! As described in **Chapter 4.3 Fruiting**, you want to harvest the mushrooms gently, causing as little damage as possible to the substrate. Remove all the mushrooms, both large and small. You're not done yet, the second and third flushes can still give you a substantial batch of mushrooms!

5.5.2 Second Flush

In general, a Monotub is a "**set & forget**" type. This means that, aside from harvesting, you don't really need to do anything else. Once you've harvested the first flush, you can mist the Monotub with plenty of water, put the lid back on, and wait. Usually, this is enough to get a second flush **within 5 to 8 days**. When misting, be sure to check if the bulk substrate is still absorbing the water. If it is, the mycelium is hydrating. Don't mist so much water that puddles form or that water stays at the bottom of the Monotub, as this increases the risk of contamination.

If your substrate is very dry and misting isn't enough, you can dunk it. Place the bulk substrate underwater for **12 to 24 hours**, let the water drain, and the second flush should appear within **5 to 8 days**. If you have a healthy substrate, proper fruiting conditions, and no contamination, you can get more than 3 flushes from your bulk substrate.

6. Advanced, I want to make more Grain Spawn



Mycelium can expand **exponentially**. This means that with 1 part mushroom spawn, you can inoculate 10 parts sterilized grain. This is one of the reasons why you can grow **so many mushrooms with spawn**. For example, if you start with one jar of 380 mL, you can inoculate 3.8 liters of spawn. This 3.8 liters can then inoculate 38 liters, which in turn can inoculate 380 liters of spawn. In just three steps and a few weeks, you can go from 380 milliliters to **380 liters of mushroom spawn**. How does this work?

In this guide, we will teach you how to make spawn based on rye; a simplified version of the SpaceJars mushroom spawn. To start, here is a list of **essential supplies**:

- Pressure cooker
- Clean glass jars
- Rye grains
- Gypsum
- Polyester pillow filling
- Aluminum foil
- Nitrile gloves
- 70% Isopropyl Alcohol

6.1 Wash and Soak



In this recipe, we assume that you want to use one jar of 380mL SpaceJars grain spawn to create **10 jars of 380mL spawn**. For 10 jars of 380mL, you will need approximately 4-5 jars of dry rye grains. Weigh the dry grains, as you will need this amount later.

Next, you need to wash the grains. Place the grains in a large pot or clean bucket, add water, and wash the grains. Discard the water and refill the pot with water. Do this several times until the **grains are clean**. Now, fill the pot or bucket one more time with water and let the grains soak for 12 to 24 hours. This will ensure that spores or bacteria in dormancy come to life, making them **easier to kill** during the sterilization process.

6.2 Cooking the Grains



The main task of cooking the grain is to **hydrate the kernels**. Bring a pot of water with the grains to a boil. Add **2% of the dry weight of the rye grains** in gypsum to the pot. This will help the grains stick less together later and provide **extra nutrition** for the mycelium.



Let the rye grains **simmer gently for 10-15 minutes**. Stir regularly but carefully; the kernels must remain intact, but if they lie at the bottom of the pot, there's a high chance they will **burst open**. If you cook the rye for too long, the individual grains will also burst open, which later **increases the risk of contamination**.

6.3 Drain and Dry



Once the cooking time is over, drain the grain. Spread the steaming hot grains on a flat surface so they can **dry and steam off**. The goal is to get individual loose rye grains that are perfectly hydrated inside but have a **dry outside**. Stir and mix the grains regularly and let them steam and dry **for 2 - 4 hours**.

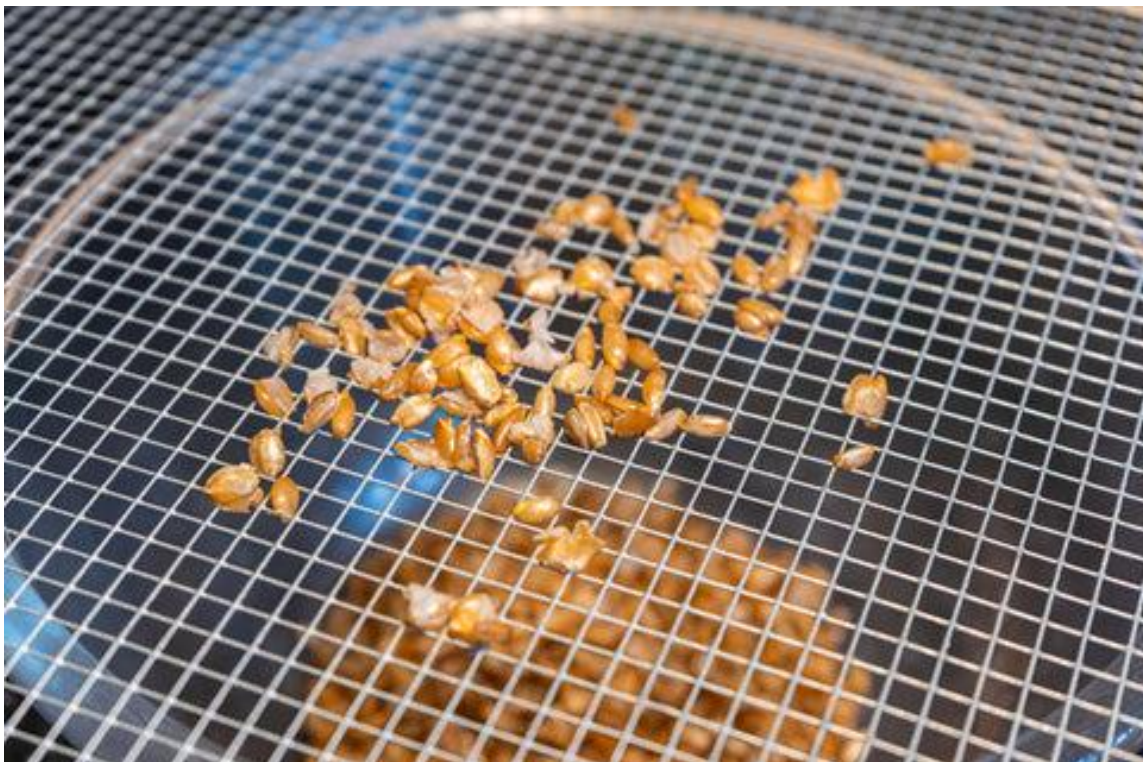
In the image below, rye is shown in the three stages; On the left are the dry rye grains, in the middle is after soaking, and on the right is after cooking.



6.4 Filtering



It sometimes depends a bit on how well it turned out, but you may sometimes have more or fewer burst grain kernels. None of them are ideal, but having **fewer than 5% burst kernels** should not cause any problems. If you have too many burst kernels, it's **better to remove** them. If you have a lot of cooked grain, this works well with a sieve with **6mm mesh**.



6.5 Sterilizing



Once the grain feels dry on the outside and the burst kernels have been removed, **it's time to sterilize**. Fill the jam jars about **50-75% with hydrated rye**. The remaining space will be needed later to shake the kernels and break them up again. The lids of the jars need a small adjustment. Drill a **6-7mm** hole in each lid, as shown in the photos below.



Fill this hole tightly with some **polyester cushion filling**. This ensures that CO₂ (which is released as the mycelium grows) can escape from the jars, without contaminants being able to enter the jars.



Once this is done, close the jars. To prevent water from filling the jars in the pressure cooker, place **aluminum foil** over the lid. You are now ready to sterilize. Make sure the jars **do not sit directly on the bottom** of the pressure cooker. Fill the pan with water at least to the minimum level of the pressure cooker, but ensure that no water can flow into the jars. Sterilize the jars for **90 minutes at 115°C**. Then, let the jars cool down slowly in the pressure cooker. This takes quite a while, so it's easiest to do the sterilizing in the evening, so they can cool overnight.

The next morning, the jars should be filled with dry but well-hydrated grains of rye. If you shake the jar, the grains should easily come apart from each other. The jars are now sterile inside, and **you should not open them anymore**.

If the jars are sitting on the bottom of the pan or are heated too strongly from the bottom, the grains may burst, as seen in the photo below. If **more than 5%** of the grains are cracked open, it is not advisable to inoculate the jar.



6.5 Inoculating

Now comes the hardest step in making spawn; **inoculating**. We will add mycelium from the SpaceJars mushroom spawn jar to the sterilized rye jars. This requires some preparation. As mentioned earlier, assume that everything that has not been specifically sterilized is contaminated. Therefore, work in a clean room, on a clean table. Wear a mask, wear nitrile gloves, and clean all surfaces that you will touch or work with **70% Isopropyl Alcohol (IPA)**. Spirits also work, but less effectively. Alcohol with an **ABV higher than 70%** evaporates too quickly to disinfect surfaces properly.

Once you are further along in this hobby, you would do this step in front of a **Laminar Flow Hood**. This blows sterile air, so no contamination can enter your grain spawn from the air. You can also use a **Still Air Box**. It's possible to do this step without those tools as well, as long as

you work carefully and cleanly. Clean the table with IPA. Wash your hands, put on nitrile gloves, and clean them as well with IPA. Use alcohol wipes to clean the outside of the sterilized jars and the mushroom spawn jar.

Now grab the spawn jar and start shaking it vigorously. Always first check if there are any cracks in the glass and **work carefully**. If done correctly, the “clump” of mycelium should start to break apart so it becomes loose grains again, as shown in the photo below.



Remove the lid from one of the sterilized jars and the mushroom spawn jar. Many contaminations “rain” **down from the air**. You can't see this, but it happens. Therefore, make sure the lids are off for as short a time as possible. Open both jars, shake 1/10th of the mushroom spawn into the jar with sterile rye, and quickly close them again. You can then clean the outside of the jars again with an alcohol wipe.

Do this for all your rye jars until the mushroom spawn is evenly distributed among all the jars. Shake the jars once to ensure that the grain spawn is well spread throughout the rye.

6.5 Colonization

Place the jars in a clean, dark location at **27 - 28 degrees Celsius**. If everything has gone well, the mycelium will begin to grow. You will see small white patches, which will then form threads that begin to grow through the rye.



Once about **30% of the jar has colonized**, give it a good shake. This will spread the small pieces of mycelium that have started to grow throughout the jar. This helps to distribute the mycelium through the rye, which will speed up the colonization of the substrate. Regularly check the jars for contamination. **DO NOT OPEN THEM**, but look through the glass to see if you notice unusual colors, green mold, or wet spots where the white mycelium isn't growing. Discard contaminated jars. If all goes well, the jars should be fully colonized **within 1 to 3 weeks**. However, if the temperature is not ideal, it could take up to 5 weeks.

6.6 Magic Mushroom Spawn



Once the jars are fully colonized and free of contamination, you have succeeded; you have successfully made your own mushroom spawn. You can now use this mushroom spawn to create even more spawn or bulk substrate for a mushroom grow. If the jars are contamination-free, they will last for about **3 months** in the fridge.

7. Fruiting Chambers

Fruiting Chamber is the general term for the environment in which colonized bulk substrate is placed to promote fruiting. In other words, it's when it's time for mushrooms to be produced.

Fungi need different conditions during colonization than during fruiting. In the table below, the differences are shown for most Cubensis species.

	Colonization	Fruiting
Temperature	27-28 °C	22-26 °C
Relative Humidity	80-95% RH	80-95% RH
CO ₂ -Level	High (No fresh air is needed, but CO ₂ must be able to escape)	Low Mycelium must be exposed to fresh air (FAE)
Light	Dark	Daylight (no direct sunlight, but natural day-night rhythm with light)

To provide your substrate with the right conditions for fruiting, many hobby growers create a fruiting chamber. This is easy to do and can be very inexpensive. We will discuss some commonly used designs.

7.1 The Monotub

The Monotub is a plastic container that is modified to create the perfect microclimate for growing a large batch of mushrooms. Often, the colonization of the bulk substrate is done in the Monotub, or containers with colonized substrate are placed inside the Monotub. **Two levels of holes** are made in the Monotub. See the image below.

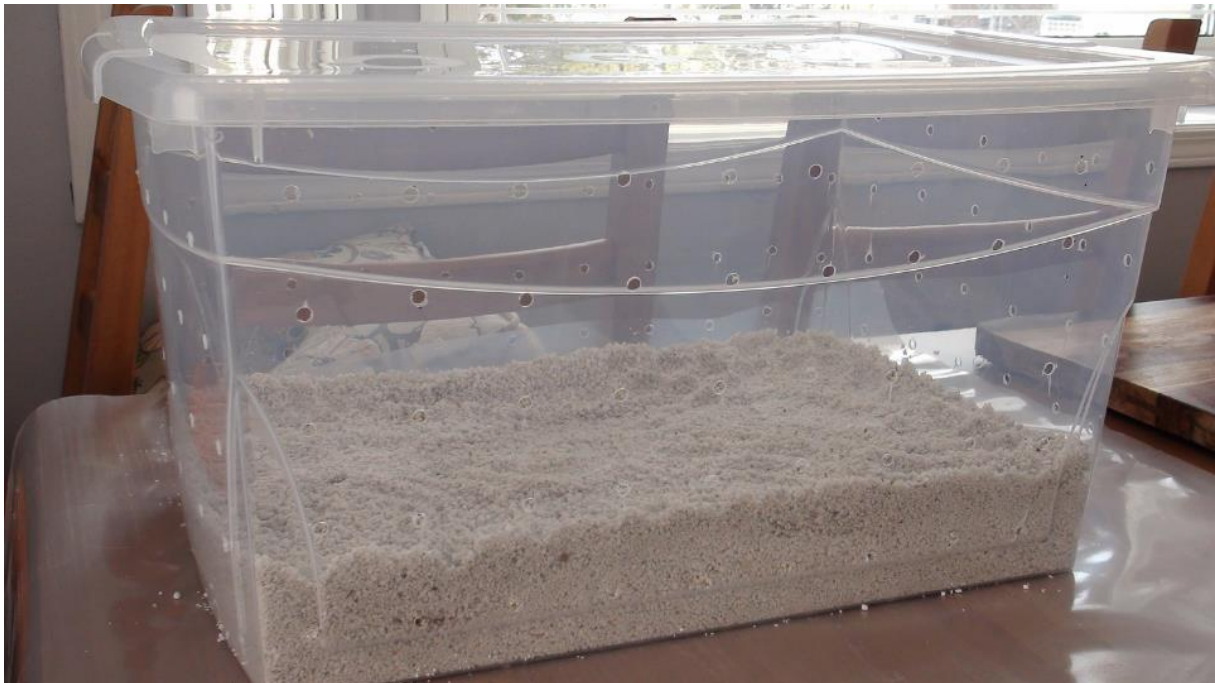


The first series of holes is placed just above the height of the substrate. The second series of holes is a few centimeters higher. The holes are covered with **Micropore Tape**.

The way the Monotub works is quite ingenious. **CO2 is heavier than air**. As the mycelium and mushrooms grow, CO2 is produced. This causes the bottom of the tub to slowly fill with CO2. Once the CO2 level at the bottom of the Monotub reaches the lower series of holes, it flows out of the tub slowly through the Micropore Tape. Since the CO2 exits the Monotub via the lower holes through **natural diffusion**, fresh air is drawn in through the upper holes. This way, the mycelium gets enough **FAE (Fresh Air Exchange)** to promote mushroom growth. Place the tub at the **correct temperature** in a natural day/night cycle (not in direct sunlight), and the mushrooms will have the right conditions to grow. Many videos online show how to make the Monotub yourself cheaply.

7.2 The Shotgun Fruiting Chamber (SGFC Tek)

The **Shotgun Fruiting Chamber** looks similar to the Monotub but is quite different. In a similar type of plastic container, you drill **small holes (6-8 mm)** all over the tub, including the lid and the bottom. Then, you fill the bottom of the plastic container with about **5 centimeters of moist Perlite**. This ensures the proper humidity inside the chamber. See the image below.



The holes **are not covered** with Micropore tape this time. The name "SGFC Tek" comes from the holes that perforate the container; it looks as though it has been shot at with a shotgun. To grow mushrooms, fully colonized cakes or blocks of mycelium are placed on aluminum foil inside the chamber. See the image below.



As with all Fruiting Chambers, make sure to maintain a **day/night cycle**, avoid direct sunlight, and place the chamber in the **right temperature**. A location at room temperature, often on top of a cupboard, works best, as heat rises, making this typically the warmest spot in a room.

To optimize the Fruiting Conditions in your Fruiting Chamber, you should remove the lid **at least twice a day** to allow more fresh air to enter. To maintain the proper humidity level, you will need **to mist with a spray bottle**. A **hygrometer** that measures both temperature and relative humidity is an inexpensive solution to help you maintain the correct conditions.

7.3 The Martha-tent

The best and most extensive hobby Fruiting Chamber is the **Martha tent**. In this setup, you create the ideal conditions by connecting specific equipment to a plastic tent. All aspects of the Fruiting Conditions are controlled artificially within the tent. This includes an **air intake fan, lights, a humidifier, a heating mat, and temperature and humidity meters**. You leave nothing to chance and manually ensure that the Fruiting Conditions are perfect. It might be a bit tricky to get everything set up and working correctly, but once you have the Fruiting Conditions constantly under control, the Martha tent is the **best way** to grow your mushrooms.



The above photo is from an amateur grower on the subreddit [r/MushroomGrowers](#). As seen, the Martha tent has multiple levels where containers can be placed for fruiting. If mushroom growing becomes a true hobby for you, the **Martha tent is the way to go**. There are many videos and information sources online on how to best set up your own tent.