



„PF-technique
(Level 1 – beginners)

The PF-technique aka BRF-Tek (Brown Rice Flour technique) is a method developed by hobby mushroom cultivators for growing mushrooms in the simplest way. Over the last decades many different versions of this method have developed. The following instruction is based on our experience.

Mushrooms need a convenient substrate to develop fruit bodies. The substrate has to be produced under sterile conditions to avoid contamination through mold or bacteria. Contamination destroys not only the fungi but also the substrate. The substrate is inoculated with spores. In the next phase, the so called 'spawn run', the mycelium grows on the substrate. As soon as the substrate is fully colonised with mycelium, it is ready for the fruiting phase.

Recommended materials:

Microboxes or PF-jars

Measuring cup

Vermiculite

Brown rice flour

Sporesyringe (ATTENTION: not all mushroom species are suitable for cultivation on PF-substrate - pls. read product description!)

Fruiting chamber

Pressure cooker

Container for mixing

Water

Mixing the substrate

Blend one liter (about 700 g) of rice flour with three liters of Vermiculite medium, then add one liter of water and mix again. That should result in 5 L of PF-substrate for 10 microboxes with 500 ml each.

Filling the substrate

Use your hands to fill the substrate into the boxes or glasses. Use your fingers to push the substrate into form to eliminate any hollow spaces, but don't press too much. Fill the boxes or jars up till 1,5 cm under the edge of the box remain free, and smoothen the surface of the substrate. Clean the edge of the box or jar with a wet piece of cloth and fill the rest with dry Vermiculite. The dry

Vermiculite acts as a filter to prevent intrusion of contamination from the outside into the substrate. Close the boxes/jars. If you are using microboxes, remember to make sure the lid is lying loosely on the box to ensure pressure balancing. If you are using jars pierce the lid four times, i. e. make holes of about 2-3mm/0,1 inch in diameter, these will later be used to inoculate the substrate.



Sterilising the substrate

A pressure cooker is used for the sterilising process. Overlying a 2-3 centimeter water level at the bottom of the cooker with a separating insert keeps the boxes/jars above the waterline. Assure yourself that there is no contact between the water and the boxes/jars, decant some water if necessary (mind the manufacturer information of your pressure cooker!). Now fill in the jars or boxes. If the cooker is big enough you can make two levels. Place the upper layer on a separating tray over the left spare zones of the lower layer. This ensures that the steam gets evenly distributed.

Get the lid locked and put the cooker on a hotplate and start the heating. Wait until you can see steam leaking out, then close the outlet. Start counting the sterilisation time from the moment the pressure gauge reaches its highest stage (for household pressure cookers). If you have a professional pressure steriliser at your disposal sterilise at 121°C/ 250°F/ 15 psi/ 1.05 bar.

Once the sterilisation time has passed the cooker must cool down in a clean place, preferably in front of a HEPA-filter (sterile air flow). If working without laminar flow hood, put a clean piece of cloth/paper, soaked with 70 % alcohol or a 10 % chlorine solution, over the cooker outlet during the cooling process to filter the air streaming into the pot while pressure equalisation.

After the steriliser is fully depressurised, open the lid. The jars/boxes should cool down to room temperature in front of a HEPA-filter or in a Glove Box. As soon as the substrate has cooled down below 30°C/86°F it is ready for inoculation. If you intend to continue later, close the boxes/jars tightly, store the substrates in the neatly clean refrigerator (35.6-39.2°F, 2-4°C) and use them within 4 weeks.

If you are using ready sterilised PF-substrates, start here:

Inoculation of the substrate

Perform this work step as aseptic as possible to prevent the substrate from being contaminated by bacteria or molds. Clean the worktop, wash your hands and forearms, put on face mask, hairnet and gloves and disinfect your worktop well.

Give the spore syringe a good shake to ensure that the spores are well suspended in the water. If using microboxes, you can pierce the lid with the cannula (please disinfect the spot you choose to pierce). The substrate jars will be inoculated through the four holes in the lid. If you use ready sterilised PF-substrates, please remove the tape from the holes in the lid before inoculating the substrate and leave the holes open afterwards, to ensure sufficient air exchange!

Remove the protective cover from the cannula just before inoculation. You must not touch the sterile needle. Stick the needle through the holes of your box or jar towards the wall and inoculate the substrate, spreading the liquid along the wall of the box. Use 1-4 ml of the spore-water-suspension per each box/jar (filled with 500 ml of substrate), portioned in all 4 holes.



Should the needle touch anything unsterile, you will have to sterilise it again. Therefore hold the nip of the needle into a flame (Bunsen burner or lighter) until the nip turns red and let it cool down again. (Do not overheat the needle as the stand is made of plastic which could melt!)



Mycelium growth

After all substrates have been inoculated, they should be stored in a warm (up to 30°C) and dark place. The substrate is ready for the next step as soon as the whole box/jar is grown through with white mycelium (this usually takes 2-3 weeks). Only the 1,5 cm layer of dry Vermiculite stays free of mycelium.

Fruiting

Rub off the layer of dry Vermiculite from the top of the boxes/jars and take out the mycelium. Put the mushroom mycelia into a growing chamber or similar under the convenient environmental conditions for the "primordia formation" stage. As soon as the first small mushrooms (primordia) have appeared, change the temperature and humidity to the recommended fruiting conditions. According to the species, it takes about 1 or more weeks until the primordia appear, a few days later you can harvest your first own mushrooms.