

MUSHROOM SPAWN PRODUCTION MACHINERY

Grain boiler, mixer and bag filler for mushroom spawn production

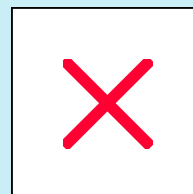
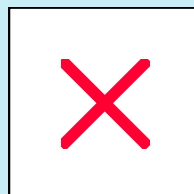
The consumption of mushroom is becoming very popular in fast foods in India. A large number of mushroom production units are coming up. These mushroom production units need spawn regularly for production of mushroom. The machineries for mushroom spawn production have been developed.



Grain cleaner is for cleaning the grains by oscillating sieves. A grain boiler is operated by 6 kW electric power. The mixer is for mixing boiled grains with chalk powder. The bag filler for spawn and inoculator for mother spawn has also been developed. These machineries

have been developed for 100 kg per day of spawn production.

The use of machineries will reduce the labour requirement by 50%, power requirement by 60 % and labour efficiency is increased. The contamination of spawn is also reduced.



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Mushroom spawn production technology

Submitted by krishnadubey on Tue, 24/01/2012 - 16:03

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Introduction

Mushroom is an interesting modification of fungal form of life. They are non-green fungal plants occurring seasonally in many parts of the world in various habitats ranging from sandy plains to tropic forests and green meadows to roadsides. There are more than 2000 edible species of which only a few have been brought under cultivation on commercial scale. Of these 80 have been grown experimentally, 20 cultivated commercially and 5 are produced on industrial scale throughout the world. The species

grown more commonly and having good export potential are, *Agaricus bisporus* (white button mushroom), *Volvariella spp.* (paddy straw mushroom), and *Pleurotus spp.* (Oyster mushroom).

The word spawn in the mushroom industry means the planting material, which consists of the vegetative body (mycelium) and its substrate. In other words spawn could be regarded as analogues to the seeds of the higher plants.

Methods of spawn preparation

There are three steps involved in spawn production

1. Raising of pure culture,
2. Preparation of master culture / mother spawn and
3. Multiplication of spawn.

Pure culture preparation

There are two ways of raising pure culture and they are tissue culture and spore culture. In tissue culture a well grown mushroom with membrane covering the gills is selected and from which a small bit of mushroom from gill portion is taken using forceps and inoculated on PDA or MEA media slants under aseptic condition (PDA – potato dextrose agar, MEA- Malt extract agar are the culture media readily available in the market). The mycelium covers the entire surface in a week's time and culture becomes ready for further multiplication.

In spore culture method, the spores are collected from well developed fruiting body by 'spore mapping technique' and then the spores are inoculated to the PDA or MEA slants as in tissue culture under aseptic condition.

Substrate preparation

1. Select good quality jowar or wheat grains free from pest and moulds.
2. Boil the grains submerged in clean water for 20 – 30 minutes. When the grains become soft, remove and spread evenly on a cotton cloth to drain out the water and cool the grains.
3. Mix 3 percent chalk powder (30g / kg of grain) for adjusting the pH and to keep the grains loose.

4. Fill 250 gms of grain in cleaned and dried glucose bottle of 500ml capacity or polypropylene bags and plug the mouth of the bottle tightly with non absorbent cotton.
5. Sterilize the bottles in autoclave by exposing to 121 c and 15lbs pressure / sq inch for 20 minutes. After cooling transfer the bottles to inoculation chamber.

Multiplication using mother spawn

1. Always use well grown mother spawn (18-20days old). Stir the spawn using sterilized forceps to get the individual grains with fungal growth.
2. Transfer few grains with mycelial growth into sterilized substrate bottle under aseptic condition and plug it with cotton.
3. Shift the inoculated bottles to spawn running room having temperature range of 25 – 30 c
4. Inspect the bottles regularly and discard contaminated one immediately.
5. Within 15 – 20 days of inoculation mycelial growth covers entire substrate and the spawn is ready for use.

Cares to be taken

- Always keep the inoculation chamber and its surroundings very clean.
- Switch on UV tube in the inoculation chamber for 30 minutes before inoculation by keeping sterilized substrate, forceps, and cultures inside the chamber.
- Inoculation is always done near the spirit the spirit lamp flame to avoid contamination.
- The working person should swab his hands and inoculation chamber using alcohol.
- Spawn should grow fast in the bottles, should be silky white in colour and should never show fluffy growth.
- All grains should be covered by the mycelial growth and fresh spawn should have mushroom odour.
- Mother spawn should not be used beyond 3-4 generations as it starts degeneration. Fresh spawn gives higher yield; therefore spawn should never be stored for more than a month.

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- All the bottles must be labeled indicating firms name, species, date of inoculation to know the age and type of spawn.

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