

Mushroom Production and Its By-Product

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Introduction

- Mushroom is a fungi producing a fleshy fruiting body, especially one consisting of a stalk with an umbrella cap.
- It has divided in to two part: First is the cap like structure is known as Pileus attached with second part which are thread like structure called as Mycelia.
- Mycelia absorb nutrient from soil, it do not require sun light for their growth

Nutritional value of mushroom

- Protein content usually around 20-30% by dry weight
- Vitamin D essential for the absorption of calcium
- Fiber helps to digestive system and also reduce the cholesterol
- Potassium regulates blood pressure and proper function of cells
- Selenium is an antioxidant that helps preventing cell damage and reducing the risk of cancer and other diseases. Mushroom contains more selenium than any other form of produce.
- Copper aids in helping the body absorb oxygen and create red blood cells.
- Other important vitamins & minerals such as phosphorus, zinc and magnesium.
- Low level of fat, calories and sodium.

Importance of Mushroom

- Mushrooms are being used as food science time immemorial. These have been considered as the delicacies from the nutrition point of view mushroom are placed between meat and vegetables.
- Mushrooms are low in caloric value and hence are recommended for heart and diabetic patients.
- Medicinal Value, Anti HIV, Anti-HBV viruses
- Reducing sugars

- Controlling diabetes & blood pressure
- They are rich in protein as compare to cereals, fruits and vegetables.

Edible mushroom

- *Agaricus bisporus* (Button mushroom)
- *Pleurotusostreatus* (Oyster mushroom)
- *Calocybe indica* (Milky mushroom)
- *Volvariellavovavcea* (Paddy straw mushroom)
- *Lentinus edodes* (Shiitake mushroom)

***Agaricus bisporus*: (Button mushroom)**

- Also known as white cultivated mushroom. *Agaricus bisporus* is grown on composed cereal straw and animal manures.
- *Agaricus bisporus* is the most extensively cultivated mushroom in the world, accounting for 38% of the world production of cultivated mushrooms.
- Another name is white mushroom, common mushroom, cultivated mushroom, **button mushroom**, table mushroom and champignon mushroom

***Pleurotusostreatus*(Oyster mushroom):**

- Generally referred to as ‘Oyster mushroom’ or ‘Dhingri’ in India.
- The fruit bodies of this mushroom are distinctly shell, fan or spatula shaped with different shades of white, cream, grey, yellow, pink or light brown depending upon the species.
- Yet this edible fungus can be beneficial to the body and break down toxic chemicals.
- Oyster mushroom can also be used industrial for mycoremediation purpose.
- It has the bitter sweet aroma of benzaldehyde.

***Volvariellavovavcea* (Paddy straw mushroom)**

- The chinese or paddy straw mushroom.
- Commonly grown in tropical and sub tropical regions of Asia. e.g. China, India.
- This mushroom can be grown on a variety of agricultural waste.
- *Volvariella* mushrooms account for 16% of total production of cultivated mushrooms in the world.

- It is fast growing fungus with a slender fleshy strip.
- Dark grey cap

Requirements

- Spawn
- Paddy straw/saw dust
- Polythene bag
- Polythene sheet
- Potassium permanganate/sprit/dettol

Spawn Preparation

- Select good quality wheat or jowar grains free from pest and moulds.
- 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.
- Mix 3% chalk powder (30g/kg of grain) for adjusting the pH and to keep the grains loose.
- Fill 250 g of grain in clean and dried glucose bottle of 500 ml capacity or propylene bags and plug the mouth of the bottle tightly with non-absorbent cotton.
- Sterilize the bottles in autoclave to 121 °C and 15 lbs pressure/sq inch for 20 minutes. After cooling, transfer the bottles to inoculation chamber.
- Transfer few grains with mycelial growth into sterilized substrate bottle under aseptic condition and plug it with cotton.
- Sift the inoculated bottle to spawn running room having temperature range of 25-30 °C.

Cultivation

Step 1:

- Preparing the straw you will need sterilized straw.
- Sterilized straw will ensure all other fungi spores are killed.
- To sterilized straw, boil it in water for half an hour.
- squeeze water out of the straw.

- The straw has to be 60% moist i.e. when you squeeze the straw, no water should be wrung out. The straw ready to use.

Step 2:

- Preparing the bag start packing the straw in to the plastic bag of approximate dimensions 12*24 inches.
- Fill in to two inches of straw.
- Crumble one chunk of the spore on the top of the straw along with the edges.
- Spore grows out from the sides of the bag, so it is important to distribute the spores along with the edges.
- Spores in the middle will not germinate.

Step 3:

- Layering pack in four inches of straw. Repeat the process three or more times.
- After the last layer of spore, pack in to two inches of straw.

Step 4:

- Closing, twist the open end and tie the bag tightly

Step 5:

- Making 12-20 holes using a sharp stick all over the bag for air circulation.
- The mushroom will grow out through these holes

Step 6:

- Mushroom bag is now ready
- Set in a cool and dark place to promote mycelium growth.
- You can also get the cool dark effect by hanging a wet jute sack around the grow bag.
- Make sure that the sack is at least one foot away from the plastic bag.
- Spray the sack every 4-5 days to keep the moist.
- Mushroom will start sprouting in 18 days.

Value added product of mushroom

1. Dry mushroom

- Mushroom pickle
- Mushroom preserve (murabba)

- Mushroom candy
- Mushroom chips
- Mushroom biscuit
- Mushroom soup powder
- Mushroom nuggets
- Mushroom papd
- Mushroom katch-up

2. **Recipes**

- Mushroom tomato soup
- Mushroom pakoda
- Mushroom kofta

