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Popular Article

# Production technology of Oyster Mushroom cultivation

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## Introduction

Oyster mushroom (*Pleurotus spp.*) belonging to Class Basidiomycetes and Family *Agaricaceae* is popularly known as 'Dhingri' in India. Some of the widely used species of oyster mushroom are *Pleurotus sajor-caju*, *P. flavellatus*, *P. Florida*, *P. Ostreatus*, etc.

## Special characters of oyster mushroom

1. Oyster mushroom is the most commercially grown mushroom in India. It is popularly grown in substrates like paddy straw, maize stalks, etc.
2. Oyster mushroom can grow at moderate temperature ranging from 20 to 30° C and humidity 55-70%.
3. It can also be cultivated in summer months i.e. 6 to 8 months (September/October to March/April) in a year. Its growing season is longer especially in the North east region where it can be grown for ten months or almost throughout the year.

## Different procedures to be followed in Oyster Mushroom production are:

### 1. Substrate preparation

Oyster Mushroom can be grown on various substrates viz., paddy straw, maize stalks/cob, vegetable plant residue etc. Since paddy straw is easily available and cheap, it is widely used. Paddy straw should be clean and well dried. The process like soaking and substrate sterilization process are involve during substrate preparation.

### Soaking

Collect good quality clean paddy straw and chop it into 3 – 5 cm pieces and soak in fresh water for 6 -8 hours.



**Fig.1 Collection of good quality paddy straw**



**Fig.2 Chopping of paddy straw**



**Fig.3 Soaking of the cut straw**

### Heat treatment

The aim of the heat treatment is to kill competing microorganism. Most substrate are given a heat treatment before spawning. It is an important measure to control contamination, pests and diseases.

#### (a)Pasteurization by immersion in Hot water

Fresh substrate pasteurized by immersion in hot water. This method is a form of pasteurization. The hot water will kill contaminants. Different types of straw can be treated in this way for the cultivation of oyster mushroom (*Pleurotus*). The method is very easy: only hot water, containers and the means to keep the water hot are required.



**Fig.4 Boiling of straw**



**Fig.5 Draining of excess water**

#### Manual Determination of moisture content:



**Fig.6 The boiled paddy straw is sieve dried upto 65 – 70 % moisture.**



**Fig.7 Handful of straw is taken and squeezed**



**Fig.8 Indication mark = Water should not drip but wet enough to dampen the palm.**



### (b) Chemical sterilization technique

Water 90 litres is taken in a drum of 200 litre capacity. Slowly steeped 10 kg of chopped paddy straw in the water. Mix of 125 ml formaldehyde (37 – 40 percent) and 10 g of Bavistin dissolved in 10 litres of water in another container and pour the solution slowly into the drum. Straw should be pressed and drum should be covered with polythene sheet. After 12 hrs, the straws are taken out.

Then spread the pasteurized or chemically sterilized straw on clean cement floors or on raised wire mesh frame inside the chamber where bag filling and spawning are to be done

### 2. Spawning

When the pasteurized substrate has cooled down to room temperature, it is ready for filling and spawning. At this stage, substrate moisture content should be 65 - 70%. Polythene bags (35 x 50 cm, 150 gauge) or polypropylene bags (35 x 50 cm, 80 gauge) may be used for its cultivation. 200 – 250 g of spawn can be used for its 10 -12 kg wet straw (3 bags). Spawning can be done in layer spawning or mixed spawning. Make holes in the bags to ensure better aeration and also to drain out excess water.

In case of layer spawning, fill the substrate in bag, press it to a depth of 8-10 cm and broadcast a handful of spawn above it. Similarly, 2<sup>nd</sup> and 3<sup>rd</sup> layers of substrate should be put and simultaneously after spawning, the bags should be closed. In mixed spawning, pasteurized straw is mixed with 3 - 5 % spawn and filled in bags. Press gently and closed the bags for spawning.

Spawned bags should be stacked in racks in neat and clean place i.e. spawn running room. Temperature of  $28 \pm 1^{\circ}\text{C}$  and humidity of 80 - 90 % should be maintained by spraying water twice a day. It takes 20 – 22 days when bags will be fully covered with white mycelium.



**Fig.9 Spawning**



**Fig.10 Keeping in cropping room**



**Fig.11 Complete mycelial growth**

### 3. Cropping and harvest

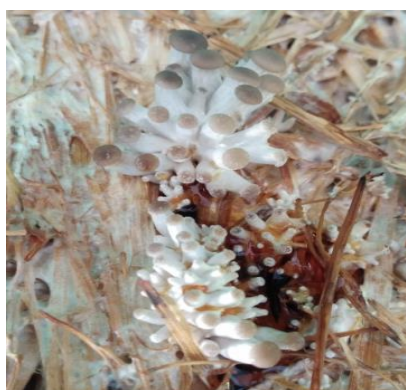
After 20–22 days, when bags are fully impregnated with white mycelium, the bags are transferred into the cropping room and polythene/polypropylene covers are removed. The open



mushroom blocks should be kept in racks about 20 cm apart. Rack should be 60 cm wide with gap of 50 – 60 cm between two shelves. An ideal temperature of oyster mushroom growth is at a temperature range of 20 – 33°C.

Relative humidity is maintained by spraying water twice a day on the walls and floor of the room. Spraying of mushroom blocks should be avoided for the first 2–3 days. A light mist spray of water is given on the blocks as soon as the small pinheads appear. Once pinheads are 2–3 cm big, little heavier watering is to be done on the blocks and further watering of blocks is to be stopped to allow them to grow. Mushrooms should be plucked before they shed spores to maintain quality. After 1<sup>st</sup> flush of harvest, 0.5 to 1 cm outer layer of the block should be scrapped. This helps to initiate 2<sup>nd</sup> flush which appears after about 10 days.

After harvest, the lower portion of the stalk must be cleaned with dry cloth. They should be packed in perforated (5–6 holes) polythene bags to keep them fresh. It loses freshness after about 6 hours, which can be sundried for 2 days and dries product marketed in polythene bags. Dried mushrooms should be soaked in water for 10 minutes before use.



**Fig.12 Pin Head formation**



**Fig.13 Oyster mushroom flushes**



**Fig.14 Mushrooms are hand plucked**

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