

## OYSTER MUSHROOM CULTIVATION

---

### Chapter Contents

- ☒ Importance & History
- ☒ Classification of Mushrooms

### Introduction to Cultivation Technology

This mushroom is also known as Oyster mushroom. Word "Pleurotus" comes from the Greek word "Pleuro" which means formed laterally or in sideways position, referring to the lateral position of the stem relative to the cap. The species epithet "ostreatus" refers to its oyster shell like appearance and colour.

### Natural Habitat:

It is a wood decomposing, saprophytic or parasitic fungus which grows abundantly on standing and fallen forest plants like alder, cottonwood, maple etc; Found abundantly in river valleys and the fruit bodies appear in the falls, early winter and spring.

### Nutritional Value:

- It contains 91% water and 9% dry weight; 30.4 % crude protein and 109 mg niacin/100 g dry weight. The spores of oyster mushrooms may be allergic causing breathing problem to some and sometimes difficult to digest for some people. It contains more protein than found in button mushroom.

### Cultivation:

- Oyster mushroom (*Pleurotus spp.*) is commonly called Dhingri in India. It has oyster like shape because of which it is popularly known as oyster mushroom. Its cultivation can be done on number of agricultural wastes and organic waste materials. The important substrates include straw of different cereals, sugarcane bagasse, cotton waste, jute, groundnut pod shells, small wood pieces, saw dust,

maize cobs, banana pseudostems, etc. depending upon the widespread availability of these materials

- Commonly cultivated species of *Pleurotus* includes *P. sajor-caju* (Fr.) Singer, *P. ostreatus*, *P. florida*, *P. cornucopiae*, *P. eryngii*, *P. flabellatus*, *P. opuntiae*, *P. platypus*, *P. cystidiosus* and *P. columbinus*. Different species are grown under different agroclimatic conditions.

#### a. Substrate preparation:

- It is commonly cultivated on wheat or rice straw, due to their easy availability in large quantities. The straw of 4-6cm size is taken and dipped in cold water for 10-12 hours. Straw can be sterilized by various methods as given below:

**Hot water treatment:** The soaked straw is dipped in hot water at 80°C for 2 hours. Hot water treatment makes hard substrate soft so that growth of the mycelium takes place very easily. This method is not suitable for large scale commercial cultivation.



- Steam pasteurization:** In this method pre-wetted straw is pasteurized by passing steam through the straw for 2-3 hours. This method is used for commercial cultivation.
- Chemical sterilization technique:** In this method 7.5g bavistin and 125 ml formalin are dissolved in 100 litre water and slowly poured on the heap of wheat straw. Soaked straw is covered with a polythene sheet. After about 18 hours the straw is taken out and excess water drained off.

#### b. Spawning:

- The process of spawn making is the same as in *Agaricus*. The normal rate of spawning in pasteurized substrate is 1.5-2.0 % of the wet substrate, however it is slightly higher (2.0- 2.5%) in unpasteurized material. The spawning is usually done in layers or even in thorough spawning care should be taken that the spawn gets uniformly mixed with the substrate, while in layer method the spawn is mixed after each layer of 3-4 cm thickness of straw.

- Polythene bags (50X75cm) have been found to be the best and cheap container for *Pleurotus* cultivation. Before filling the substrate in polythene bags, holes of about 1cm diameter should be made at 10-15 cm distance all over the surface for diffusion of gases and heat generated inside. After filling the substrate in the bags, the mouth of the bag should be tied with thread and kept at 22-26°C temperature on shelves in a mushroom house for spawn run. R.H. of mushroom house should be maintained between 80-85%.



Fig. 7.3 Mixing spawn of oyster mushroom in the sterilized substrate containing straw, wood chips and bran

Fig. 7.4 Spawning and filling the substrate in polythene bags

### C. Cropping and management:

Within 15-18 days of filling and spawning, white cottony growth of the mycelium spreads in these bags which can be noticed easily. These bags are cut open and kept in mushroom house on racks, 25-30cm apart from one another or these may also be hanged on nylon ropes keeping some distance between them. Water is sprayed over them in the morning and evening hours to maintain 80-85 % RH in mushroom house and also temperature between 22-26°C. Pinning starts in next 4-5 days and fruit bodies become fully grown within a week of pinning.



Fig. 7.5 Straw bags showing completion of spawn run within 12-14 days of spawning

## Cultivation Technology (Contd..)

### d. Harvesting:

The cropping stage lasts for 30-45 days at 20 – 25°C , 85 – 92 % humidity and less than 600 ppm CO<sub>2</sub> . Approximately 4-6 air changes per hour and light 200 Lux / hour to 12 hour per day are most stimulatory. Regular misting is recommended to prevent cracking of caps and resting primordia. The mature mushrooms are harvested individually before incurved margin expands to plane by slightly twisting and lifting the fruit bodies with the help of two fingers and a thumb . The lower root portion is removed with the help of a knife.



Fig. 7.6 Fruit bodies of *Pleurotussajor-caju* grown on wheat straw as substratum

### d. Yield:

- The average yield comes around 100-125 kg mushrooms / 100 kg dry straw or substratum.

### e. Marketing and preservation:

- The Oyster mushrooms are packed in perforated polythene bags in different packings after proper cleaning. These are either sold fresh in the market or stored in a refrigerator / deep freeze for 4-6 days. Canning can also be done for long term storage but it is not recommended as these can easily be dried in the sun or in a mechanical dehydrator and kept for a longer period when packed in air tight packing. For cooking the dried mushrooms , these have to be dipped in lukewarm water for 15- 20 minutes. Pickle making is also an easy and economic method of their preservation.