

PEARL OYSTER MUSHROOM FARMING

Srikanth Munuru

Department of Biotechnology, Andhra University,
Visakhapatnam

Pearl oyster mushroom cultivation is a good profitable earn for farmers. Establishing such mushroom cultivation can help the farmers to earn double profits by doing both the crop cultivation and mushroom cultivation simultaneously. Pearl oyster mushroom variety is easy to grow in the farmland by using the hanging method. The aim of the study is that to cultivate pearl oyster mushrooms i.e. *Pleurotus ostreatus* using the cultured spawn. The cultured spawn was taken and grow on the substrate i.e, paddy straw, by packing the substrate in form of layers and placing the spawn on the edges of the cultivation bag. These cultivated bags are hanged using ropes. The results indicated that the spawn running was completed in the bags within 10 to 14 days and pinheads appeared on the 19th – 20th days. Pinheads turned into leaf-like structure on the 23rd day and the first harvest was made at about 26 – 28 days. The second harvest is for another 4 or 5 days. In conclusion, the results were good and the mean yield was ½ kg/bag.

INTRODUCTION

Pleurotus ostreatus, belongs to Basidiomycota, Agaricomycetes, the pearl oyster mushroom or tree oyster mushroom is a common edible mushroom. It is related to the similarly cultivated king oyster mushroom. Oyster mushrooms can also be used industrially for mycoremediation purposes.

The oyster mushroom is one of the most commonly sought wild mushrooms. It can be cultivated on straw and other media. The mushroom has a broad, fan, or oyster-shaped cap spanning 5–25 cm; natural specimens range from white to gray or tan to dark-brown; the margin is inrolled when young, and is smooth and lobed or wavy. The flesh is white, firm, and varies in thickness due to stipe arrangement. The gills of the mushroom are white to cream in colour and descend on the stalk if present. If so, the stripe is off-center with a lateral attachment to wood. The oyster mushroom is one of the few known carnivorous mushrooms. Its mycelia can kill and digest nematodes, which are believed to be a way in which the mushroom obtains nitrogen. *Pleurotus ostreatus* is one of the very low-calorie mushrooms. 100 grams of fresh fungus carries just 33 calories. This fungus is loaded with natural bioactive compounds, antioxidants, minerals,

and vitamins that promote health. Oyster mushroom contains an HMG-CoA reductase enzyme inhibitor substance called statin (lovastatin or Mevinolin-2.8% dry weight). They compose β-glucan which has anti-viral and anti-allergic properties. Certain protein polysaccharides in the oyster mushroom have been found to have anti-hyperglycemic, anti-soft tissue tumor, immunomodulatory, anti-inflammatory, antihypertensive effects in the experimental animal studies.



1) Pearl Oyster (*Pleurotus ostreatus*) Pearl oysters are the most common type of oyster mushroom, particularly in North America. Pearl oyster mushrooms have a slightly sweet and woody taste, but they're more mild and tender than a shiitake mushroom

2) Blue Oyster (*Pleurotus ostreatus var. columbinus*) Unlike the vibrant golden and pink oysters, blue oysters aren't a bright blue hue as you might expect. They're grey with a slight bluish hue. They have dark caps and pale gills, and the contrast can give a nice appearance. Aside from looks, blue oysters taste identical to pearl oysters.

3) Golden Oyster (*Pleurotus citrinopileatus*) As you'd expect, golden oysters are a bright yellow color. They have a more complex and aromatic flavor than the standard pearl oyster.

4) Pink Oyster (*Peurotus salmoneo stramineus*) Pink oysters have a bright pink color and more ruffled appearance. Unfortunately, the vibrant color fades when it is cooked. These oysters tend to be more woody and tough, and also more pungent.

5) Phoenix Oyster (*Pleurotus pulmonarius*) This oyster is very similar in appearance to the pearl oyster, except its caps are usually smaller and paler in color, and it often grows a longer stem. It also prefers warmer weather and tends to grow in late summer. Otherwise, the two taste pretty much the same.

6) King Oyster (*Pleurotus eryngii*) The king oyster is the largest of all the oyster mushrooms, and they look very different than other pleurotus mushrooms. They grow individually with thick and meaty white stems and tan-colored caps.



NUTRIENT CONTENT IN PEARL OYSTER MUSHROOMS

Energy	33 Kcal	1.6%
Carbohydrates	6.09 g	4.7%
Protein	3.31 g	6%
Total Fat	0.41 g	2%
Dietary Fiber	2.3 g	6%

OTHER NUTRIENT CONSTITUENTS IN PEARL OYSTER MUSHROOMS

Folates	38 µg	9.5%
Niacin	4.956 mg	31%
Pantothenic acid	1.294 mg	26%
Pyridoxine (B-6)	0.110 mg	8%
Riboflavin	0.349 mg	27%
Thiamin	0.125 mg	10%
Vitamin-D	29 IU mg	7%
Sodium	18 mg	1%
Potassium	420 mg	9%
Calcium	3 mg	<1%
Copper	0.244 mg	27%
Iron	1.33 mg	16.5%
Magnesium	18 mg	4.5%
Manganese	0.113 mg	5%
Phosphorus	120 mg	17%
Selenium	2.6 µg	5%
Zinc	0.77 mg	7%

MATERIALS AND METHODS

Cultures

The *Pleurotus ostreatus* cultures are collected from Mushroom Agritech, Kukatpally, gajularamaram, Hyderabad, telganana.

Preparation of mushroom cultivation room

The cultivation room is properly sealed that way no air enters the room allow only one opening to enter the room. The room should be properly cleaned can also sterilize using 10% formaldehyde solution.

Hanging method (mostly preferred)

Using rops the mushroom beds are hanged one above another at proper temperature and humidity.

Substrate preparation

For the preparation of the substrate, paddy straw is used as a substrate and it is chopped (4-5cm size) these substrates were soaked in water for about 24 hours to get wet and achieved 65-70 % of moisture content. The next day, all these wet substrates were separated from water and excess water was removed properly. Then these substrates were boiled at 100°C for 1 hour. Carefully remove the sterilized substrate and dry them on a clean floor. The substrate will be ready if it contains 5% moist content in it. The substrates were thus ready to be used in mushroom cultivation.

Culture method

- Big polypropylene bags were taken in size of 18x30 inches. Tie the closed end of the bag to attain cylindrical shape.
- At first, a layer of prepared substrate was taken into big polypropylene bags then of previously prepared spawn was spreader on the outer side of substrate with cautions.
- This spawning process was repeated several times in the same manner. But last layer of spawn was covered with less amount of substrate.
- Then the bags were packed tightly with rubber band.
- Make some holes to the bag on the sides of the bag using needle. Don't make holes on the bottom of the bag, it may contaminated by other microbes.
- Bags are hanged at room temperature 28°C and 88% humidity.

CONCLUSION

The results indicated that the spawn running was completed in the bags within 10 to 14 days and pinheads appeared on the 19th – 20th days. Pinheads turned into leaf-like structure on the 35th day and the first harvest was made at about 36-45 days. The second harvest will be another 4 or 5 days. In order to find out the effective bag, observations on the mushroom formed on each side of the bags were recorded. The results were good and the mean yield was ½ kg/bag. The present results indicate that paddy straw is used to cultivate mushrooms on small scale in farms. Mushroom cultivation, apart from being a source of food production, and can be a means of livelihood and a source of economic empowerment for women in both urban and rural areas, and for smallholder farmers. This will enable the farmer to get extra income and more harvest from his agricultural waste. This system will minimize the cost of production compared with other mushroom cultivation methods.

