AGRI MAGAZINE
(International E-Magazine for Agricultural Articles)
Volume: 03, Issue: 04 (April, 2026)
Available online at http://www.agrimagazine.in
©Agri Magazine, ISSN: 3048-8656

A Study of Growth and Cultivation of Oyster Mushroom

*Raunak Mohan, Dr. Sandeep Gangil and Dr. Ravi Kumar Sahu
CIAE, Bhopal, Madhya Pradesh, India
*Corresponding Author's email: raunakmohan17022002@gmail.com

Mushrooms are edible fungi which is suitable for wide range of age group. It produces high quantity of quality food which has high biological value grown on many substrates. Mushroom can supply a high protein diet and lower calorific value so it is suitable for heart patients as it also contains all kinds of amino acids needed by human body. And we all know that there are many different species of mushroom and among those species, oyster mushroom is most commonly cultivated. The steps involved in cultivating oyster mushroom are substrate preparation, spawning of substrate, incubation, fruiting and harvesting. Complete process takes 25-30 days to get a good and healthy yield but due to the lack of knowledge related to causes and outbreak of diseases, oyster mushroom production has decreased therefore, the main objective behind writing of this review article is to learn more about the causal agents or factors and to reach out the appropriate control measures for the diseases of oyster mushroom.

Introduction

Mushrooms are macro-fungi characterized by visible fruiting bodies and are valued for their nutritional, medicinal, and environmental benefits. Unlike green plants, mushrooms lack chlorophyll and depend on organic matter for nutrition, functioning as saprophytes. Among the cultivated mushroom species, oyster mushroom (*Pleurotus ostreatus*), commonly known as "Dhingri" in India, has gained popularity due to its rapid growth, minimal infrastructure requirement, and ability to utilize agricultural wastes efficiently. Oyster mushroom cultivation contributes to food security, employment generation, and waste recycling. Additionally, it aligns with sustainable agriculture by converting lignocellulosic residues into protein-rich food while producing spent substrate useful as biofertilizer or animal feed.

Nutritional and Medicinal Importance

Oyster mushrooms are rich in high-quality protein, essential amino acids, vitamins (B-complex, C, and D), minerals such as potassium, phosphorus, calcium, and iron, and dietary fibre. They are low in fat and calories, making them suitable for individuals with cardiovascular diseases and hypertension. Medicinally, *Pleurotus* species exhibit antioxidant, antitumor, antimicrobial, antidiabetic, and cholesterol-lowering properties. The high potassium-to-sodium ratio and absence of cholesterol enhance their therapeutic value, while bioactive compounds contribute to improved immunity and metabolic health

Agro-Climatic Requirements

Oyster mushrooms grow optimally at temperatures ranging from **20–30°C** with **55–85% relative humidity**. Adequate aeration, diffused light during fruiting, and hygienic cultivation conditions are essential for successful production. These mushrooms can be cultivated throughout most of the year with minimal environmental control, especially in tropical and subtropical regions.

Cultivation Practices

Substrate Preparation

Oyster mushrooms are commonly cultivated on lignocellulosic agricultural wastes such as rice straw, wheat straw, sugarcane bagasse, sawdust, and maize stalks. Substrate preparation is a critical step to prevent contamination and ensure proper mycelial growth. Pasteurization using hot water or steam treatment is commonly practiced to eliminate competing microorganisms

Spawning

Spawn refers to a substrate colonized by mushroom mycelium and serves as the seed material for cultivation. Grain-based spawns (wheat, sorghum, barley, rice) are widely used. Proper moisture content (60–70%) and high-quality spawn significantly influence yield and biological efficiency.

Incubation and Fruiting

During incubation, spawned substrates are kept in dark conditions at temperatures around 25–30°C for 15–25 days until complete mycelial colonization. Fruiting requires higher humidity (70–85%) and light exposure for 8–12 hours daily. Proper environmental control during this stage ensures healthy fruiting body development.

Harvesting and Yield

Mushrooms are harvested by gently twisting the fruiting bodies before watering. Multiple flushes can be obtained from the same substrate. On average, 500–700 kg of fresh oyster mushrooms can be produced from one ton of paddy straw, making it a highly productive system.

Diseases Affecting Oyster Mushroom Cultivation

Bacterial Diseases

Common bacterial diseases include bacterial yellowing (*Pseudomonas reactans*), brown blotch (*Pseudomonas tolaasii*), soft rot (*Pantoea* spp.), and stipe necrosis (*Ewingella americana*). These diseases cause discoloration, tissue softening, foul odour, and reduced shelf life. Control measures include humidity regulation, sanitation, and use of chlorinated water sprays

.

Fungal Diseases

Major fungal diseases include dry bubble (*Lecanicillium fungicola*), green Mold (*Trichoderma* spp.), cobweb disease (*Cladobotryum mycophilum*), and brown spot (*Gliocladium roseum*). These pathogens often originate from contaminated substrates and poor environmental control. Disease management involves strict hygiene, substrate sterilization, environmental regulation, and judicious use of fungicides.

Disease Management Strategies

Effective disease management in oyster mushroom cultivation depends on:

- Use of clean and properly pasteurized substrates
- Maintenance of optimal temperature and humidity
- Proper aeration and avoidance of waterlogging
- Sanitation of growing rooms and equipment
- Early detection and removal of infected fruiting bodies

Preventive measures are more effective than chemical control, especially in organic and sustainable production systems

Conclusion

Oyster mushroom cultivation offers a sustainable and economically viable solution to food security, waste management, and rural employment. However, productivity is strongly influenced by environmental conditions and disease prevalence. A thorough understanding of cultivation practices, Agro-climatic requirements, and disease management is essential for successful production. With proper hygiene, environmental control, and timely disease prevention, oyster mushroom farming can achieve high yields and superior quality, contributing significantly to sustainable agriculture and nutrition.

References

1. Chang ST, Miles PG. Mushroom biology— a new discipline. Mycologist. 1992;6(2):64-65.
2. Randive Sonali D. Cultivation and study of growth of oyster mushroom on different agricultural waste substrate and its nutrient analysis. Advances in Applied Science Research. 2012;3(4):1938- 1949.
3. Sharma Soniya, Ram Kailash P. Yadav, Chandra P. Pokhrel. Growth and yield of oyster mushroom (Pleurotus ostreatus) on different substrates. Journal on New Biological Reports. 2013;2(1):03-08
4. Oei P. Small-scale mushroom cultivation: Oyster, shiitake and wood ear mushrooms. of Digigrafi, Wageningen, The Netherlands. ISBN Agromisa. 2005;90: 8573-038.