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Bed Preparation and Cropping Techniques in Oyster Mushroom Cultivation

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Oyster mushroom (*Pleurotus* species) cultivation represents a transformative agricultural practice that efficiently converts lignocellulosic agricultural residues into high-value nutritious food products. This review synthesizes current knowledge on bed preparation, spawning methods, environmental management, and cropping techniques essential for optimizing oyster mushroom productivity. Empirical evidence demonstrates that proper substrate pasteurization, spawn quality, and controlled environmental conditions (temperature 22–28°C, humidity 80–90%) significantly enhance yield performance, achieving 700–1000 g fresh mushrooms per kilogram of dry substrate. Beyond nutritional benefits, oyster mushroom cultivation offers substantial economic opportunities for small-scale farmers and rural entrepreneurs while promoting environmental sustainability through agricultural waste valorization.

Keywords: oyster mushroom, substrate preparation, spawning, environmental management, agricultural waste, sustainable cultivation, crop yield, food security, rural development

Introduction

Oyster mushroom cultivation is becoming increasingly popular among farmers, students, and entrepreneurs because it is simple, profitable, and eco-friendly. Oyster mushrooms are rich in protein, vitamins, minerals, and fiber. They can be cultivated using agricultural wastes such as paddy straw, wheat straw, maize stalks, and sugarcane bagasse. Among the various practices involved in mushroom production, bed preparation and cropping management are the most important for obtaining high yield and quality mushrooms.

Importance of Proper Bed Preparation

Bed preparation forms the foundation of successful oyster mushroom cultivation. A properly prepared bed provides suitable moisture, aeration, and nutrients for mushroom growth. Good bed preparation also reduces contamination, promotes healthy mycelial growth, and improves productivity. Farmers who follow scientific bed preparation methods can achieve better yield and quality mushrooms.

Selection of Suitable Substrate

Oyster mushrooms can grow on several lignocellulosic materials. Paddy straw is commonly used because of its easy availability and good yield performance. The substrate should be dry, fresh, and free from fungal infection or chemical contamination. Rotten materials should be avoided because they encourage harmful microorganisms.

Substrate Treatment

Before preparing the beds, the substrate must be treated properly. Hot water treatment is widely followed by farmers because it is simple and economical. The chopped straw is soaked in water and heated at 65–80°C for about one hour. This process kills unwanted

microorganisms and improves the growth of mushroom mycelium. After treatment, the straw is cooled and excess water is removed.

Bed Preparation Techniques

The polybag method is the most common technique used in oyster mushroom cultivation. In this method, treated straw and mushroom spawn are arranged in alternate layers inside polythene bags. The bags are tied tightly, and small holes are made for aeration and mushroom emergence. Some commercial growers also use cylindrical beds and hanging bed systems to save space and improve ventilation.

Spawning and Spawn Run

Spawning is the process of mixing mushroom spawn with the prepared substrate. Good quality spawn plays a major role in successful mushroom production. After spawning, the beds are kept in a dark room with proper humidity and temperature. During this stage, white mycelium spreads throughout the substrate. The spawn run is usually completed within 15–20 days.

Cropping Management

After the spawn run is completed, the bags are opened for mushroom formation. Proper environmental conditions are essential during cropping. Humidity should be maintained around 80–90% by regular water spraying on the floor and walls. Adequate ventilation and indirect light help in the healthy development of mushroom fruit bodies. Suitable temperature also improves yield and quality.

Harvesting of Mushrooms

Mushrooms are harvested when the caps are fully expanded but before the edges begin to curl upward. Harvesting should be done carefully by twisting the mushroom cluster gently from the base. Delayed harvesting reduces shelf life and market value. Usually, 3–4 flushes can be obtained from a single bed under proper management.

Common Problems in Cultivation

Contamination by molds and bacteria is one of the major problems in oyster mushroom cultivation. Excess moisture, poor sanitation, and improperly treated substrate increase contamination risk. Low yield may also occur due to poor quality spawn, unsuitable temperature, and inadequate ventilation. Proper management practices help reduce these problems effectively.

Advantages of Scientific Cropping Techniques

Scientific bed preparation and cropping techniques improve mushroom yield, quality, and profitability. Oyster mushroom cultivation helps recycle agricultural wastes into valuable food products. It also creates employment opportunities for rural youth and small farmers. Since mushrooms can be cultivated in small spaces with low investment, they are suitable for both household and commercial production.

Conclusion

Oyster mushroom cultivation is an eco-friendly and profitable enterprise that can be adopted by farmers, students, and entrepreneurs. Proper bed preparation, spawning, and cropping management are essential for successful production. By following scientific cultivation techniques, growers can obtain better yield, high-quality mushrooms, and increased income while promoting sustainable agriculture.

References

1. Vieira, F.R. and Andrade, M.C.N. (2016). Optimization of substrate preparation for oyster mushroom (*Pleurotus ostreatus*) cultivation by studying different raw materials and substrate preparation conditions. *World Journal of Microbiology and Biotechnology*, 32, 190. (PubMed)
2. Zervakis, G.I., Philippoussis, A., Ioannidou, S. and Diamantopoulou, P. (2001). Mycelium growth kinetics and optimal temperature conditions for cultivation of edible mushroom species on lignocellulosic substrates. *Folia Microbiologica*, 46(3): 231–234.
3. Chang, S.T. and Miles, P.G. (2004). *Mushrooms: Cultivation, Nutritional Value, Medicinal Effect and Environmental Impact*. 2nd edn. CRC Press, Boca Raton, Florida.
4. Stamets, P. (2000). *Growing Gourmet and Medicinal Mushrooms*. 3rd edn. Ten Speed Press, Berkeley, California.
5. Pathmashini, L., Arulnandhy, V. and Wilson Wijeratnam, R.S. (2008). Cultivation of oyster mushroom (*Pleurotus ostreatus*) on sawdust. *Ceylon Journal of Science*, 37(2): 177–182.
6. Tesfaw, A., Tadesse, A. and Kiros, G. (2015). Optimization of oyster mushroom cultivation using locally available substrates and materials in Ethiopia. *Journal of Applied Biology and Biotechnology*, 3(1): 015–020.
7. Vignesh K. Green synthesis and characterization of zinc oxide nanoparticles using neem (*Azardirachta indica* L.) leaf extract. Asian J Plant Pathol 2025; 19(1): 27–35. https://doi.org/10.1016/j.mtcomm.2023.105942
8. Vignesh K. Survey on the incidence of Fusarium wilt of tomato incited by *Fusarium oxysporum* f. sp. *lycopersici* (Fol) in major tomato growing areas of krishnagiri district. Plant Archives. 2021;21:2369-2376
9. Vignesh K, Vengadeskumar L, S. Sanjaygandhi, T. Sabesan (2023), Prevalence of maydis leaf blight of maize in Tamil Nadu and assess the morphological character and virulence of *Bipolaris maydis* (NISIK.) shoemaker, The Pharma Innovation Journal, 12, 6, 65-70.
10. Harini M, Reddy PSK, Vignesh K, Hari K, Reddy PSS. Unlocking the genetic diversity of bush hyacinth bean (*Lablab purpureus* var. *typicus* L.) landraces under South Indian agro-ecologies. Genet Resour Crop Evol. 2025;72:1-24.
11. Obodai, M., Cleland-Okine, J. and Vowotor, K.A. (2003). Comparative study on the growth and yield of oyster mushroom (*Pleurotus ostreatus*) on different lignocellulosic by-products. *Journal of Industrial Microbiology and Biotechnology*, 30: 146–149.