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Cultivation of Oyster Mushroom: to ensure the nutritional and livelihood security in Eastern Uttar Pradesh

Arvind Yadav[1], Vivek Singh[1], Vinay Kumar[2] and Adima Bhardwaj[3]

Introduction:

Eastern Uttar Pradesh comprises 27 districts under seven division viz., Ayodhya, Basti, Devipatan, Gorakhpur, Azamgarh, Varanasi and Vindhyachal Dham, covering three agro-climatic zone viz., Eastern Plain Zone, North-Eastern plain zone and Vindhya zone. Agriculture is the main stay of the majority of the population in the state. Rice, wheat, millets, pulses and oil seeds are the major crops grown in Eastern Uttar Pradesh. There is availability huge quantity of agricultural waste (crop residue) in the region. Mostly they are disposed by means of incineration which causes pollution. Hence, there is always a high demand of discovering an agricultural waste management method which is cost effective and contribute less in environment pollution. Mushroom cultivation on agricultural wastes solves these requirements.

Mushroom cultivation is the best model for bioconversion agricultural waste in to valuable food (wealth). It cloud be utilized for generation of additional income of farmers. Promoting entrepreneurship is identified as one of the principal strategies for solving the problem of underemployment in this region. Therefore, it is necessary to promote suitable rural technologies which can enable the local communities to enhance their efficiency and earnings. In this context mushroom cultivation is a promising enterprise having market potential with income and employment generation at a comparatively higher scale. Mushroom is a palatable food accepted by people as daily diet and alternative to meat & fish. Also, it is a vegetarian diet but gives nutrition of non-vegetarian such as some essential amino acids, vitamins and minerals. Now a day's people are consuming mushroom in different ways like curry, snacks, soup, salad, mixed with rice, & pickle etc. The

Arvind Yadav[1], Vivek Singh[1], Vinay Kumar[2] and Adima Bhardwaj[3]
[1]Department of Plant Pathology
[2]Department of Genetics and Plant Breeding
[3]Department of Agronomy
Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya-224229 (U.P.) India.
RLBCAU, Jhansi -284001(U.P.) India.

demand of mushroom increases in hotels, restaurants and on several occasions like marriage party and on festivals. The industrial demand of mushroom also increased as mushroom used for preparation medicine, baby food and food for diabetic patients etc. The production technology of various mushrooms developed by ICAR- Directorate of Mushroom Research Solan Himanchal Pradesh. Among them Oyster mushroom (*Pleurotus* spp) known as *Dhingri*, recently gaining the popularity among the farmers because of easy to cultivate and low-cost production technology and cultivate throughout the year. The Mushroom and Spawn production Unit of ANDUAT, Kumarganj, Ayodhya play an important role in developing and dissemination of production technology of various mushrooms and supply of quality spawn to mushroom growers of Eastern Uttar Pradesh.

Oyster mushroom (*Pleurotus spp*.) has a great flavour and texture, so it is popular for commercial cultivation in many countries. It can be grown indoors, in any well-ventilated area. A thatched shed with false roofing is an ideal room for successfully cultivating this mushroom because the required temperature of 20-25 ^{0}C and relative humidity of 80-85% can be easily met.

Substrate preparation: The majority of cellulosic farm waste is used to grow oyster mushrooms. These include paddy straw, Wheat straw, corncobs, bagasse, banana leaves, various types of leaf litter, waste paper, cotton waste, and so on. Paddy straw has been found to be the best substrate in terms of bio efficiency. Paddy straw is chopped into 2-3" pieces for easy handling and operation. **Sterilization of the substrate:** There are three methods for sterilizing the chopped straw. Depending on the available facilities, any

method can be used.1 Hot water treatment/ Boiling method, 2 Steaming method, 3 Chemical method.

Among them the most commonly used sterilization method is Chemical method.

1. **Chemical Method**
   - **(i)** Soaked the 10 kg wheat straw in 100 liters of water which containing 10-gram carbendazim and 125 millilitres of formalin for 12-15 hrs.
   - **(ii)** After soaking, remove the straw and drain the excess water using wire baskets.
   - **(iii)** Spread the straw in thin layer on cemented floor or plastic sheet.
   - **(iv)** Shade dries the straw up to 60–65% moisture capacity.

Precautions

1. Before using the plastic sheet, disinfect it with 2% formalin solution.
2. Chemical treatment doses should not exceed the recommended level.
3. To determine the straw's 60% moisture content, take a handful of straw and squeeze it tight. The water should not drip, and the palm should feel the wetness of the straw.

Bed Preparation: The cultivation of oyster mushrooms is typically done under transparent polythene covers.

Procedure

Drying (up 60-70% moisture)

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Spawning mix spawn @2% wet substrate (w/w) or 5% of dry substrate (w/w)

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Fill spawned straw in poly bags and tied the mouth

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Make the holes in spawned bag (2-3 mm size) at 5 cm distance

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Incubate the bag in mushroom house for 15-16 days

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After white growth in straw appears then cut open poly bags& put the straw bundle in racks or hang 30 cm apart

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Pinning starts in next 5-6 days

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Fruiting body appears in next 4-6 days

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Harvesting

Precautions

1. Keep the spawn running room dark to increase spawn speed.
2. Place Rat-baiting on a regular basis to kill rats that are attracted to the spawn.
3. Sprinkle water on the sand layer on a regular basis to keep the conditions consistent.
4. Never spray insecticides on the mushroom beds.

Conclusion: Using crop residues like paddy straw or wheat straw for oyster mushroom cultivation is sustainable and productive. The process involves substrate preparation, sterilization, and layering, followed by controlled temperature and humidity management. This ensures healthy growth, multiple harvests, and eco-friendly farming while reducing agricultural waste. It's an efficient way to produce nutritious mushrooms and support the environment.