

Scientific cultivation of Blue oyster mushroom

The global food and nutritional security of growing population is a great challenge, which looks for new crop as a source of food and nutrition. Mushroom cultivation fits in very well with conversion of crop residue into valuable food protein and is considered as potential source of income, alternative food production, provision of employment as well as for recycling of agricultural wastes. *Hypsizygus ulmarius* (Blue oyster mushroom) is a novel species with large fruiting body, blue coloured pinheads and high yield. This mushroom also has attractive shape and is fleshy with excellent taste. The cultivation technology of this novel species is very simple and also has very low spore content as compared to other cultivated oyster mushrooms. Due to its simple technology of cultivation, this mushroom may be proved as mushroom of the future, a cheap and perfect food in the coming years.

HYPSIZYGUS *ulmarius* commonly called as “Elm Oyster” or “Blue Oyster” is similar to oyster mushroom but differs in morphological and biological efficiency. It is a novel species with very large fruiting bodies, blue coloured pinheads becoming light white on maturity, high yielder, palatable with meaty flavour and attractive keeping quality. This mushroom variety has attractive shape and is fleshy with excellent taste. The yield, sporophore size, flavour and texture of this mushroom is far superior as compared to other commercial oyster mushrooms like *Pleurotus florida* or *Pleurotus sajor-caju* presently being grown in Himachal Pradesh.



Further, its spore content is very low hence does not cause respiratory allergy problem as the presently grown oyster species. Nutritionally, this mushroom contains 23.2% crude protein, 56.1% carbohydrates, 1.9% starch and 9.1% fibre on dry weight basis. It is highly recommended for stomach and intestinal diseases. Cultivation technology of the mushroom (*Hypsizygus ulmarius*) was standardized in the sub-tropical zone of Himachal Pradesh.

Production system

Blue oyster mushroom can be grown by small and marginal farmers because of its simplicity of growing on

Mushrooms: A total of three strains, two in Button and one in Milky mushroom were released.

DMR-button-14 and DMR-button-59 giving average yields of 23–25 kg and 22–24 kg/100 kg compost. The two strains gave 15% and 9% yield increase over control.

DMR Milky-985 has spherical pileus and long stipe, and higher average fruit body weight (47 g). The higher biological efficiency (55.7%) and 5.6% yield increase was observed in DMR Milky-985 as compared to control (52.6% BE).



Source: ICAR Annual Report (2020)

Step by step growing guide of Blue Oyster Mushroom



Step 1. Substrate preparation
(Chopping of substrate in 2-4 cm)



Step 2. Wetting and sterilization of
substrates



Step 3. Rinsing and draining of
excess water

Preparation of Spawn



Step 4. Sterilization of grain
substrates in autoclave



Step 5. UV Sterilization and
Inoculation with fungus



Step 6. Master spawn



Step 7. Commercial Spawn



Step 8. Spawning



Step 9. Colonisation



Step 10. Pinning



Step 11. Fruiting



variety of substrates viz., Soyabean, wheat, paddy, maize stalk, pigeon pea, sesamum, bajra, sugarcane bagasse, mustard straw's, paper waste, cardboard, saw dust and other agro-wastes successfully. At first the straw is chopped into small pieces (2-4 cm long) and thereafter soaked in water so that the straw attains 75-90% moisture level and then treated with the solution of formalin (0.5 %) and carbendazim (0.075 %). After 18 h, the straw is taken out and the excess water in the substrate is drained off by placing the substrates on clean wire mesh. The substrates are filled in poly-propylene bags of 18"×12" or 20"×16" or 24"×16" size that can accommodate 4, 7 and 9 kg of wetted straw, respectively.

Spawning in bags can be done by two methods i.e. multi layered or thorough spawning @ 5% of wet weight basis. After spawning, the upper edges of the bags are tied with the help of nylon string. Eight to ten holes of one mm are made in each bag for ventilation. The spawned bags are kept in mushroom house. The average temperature 20-30°C, pH 7.0-8.0 and relative humidity 75-

90% are required under the normal commercial cultivation conditions for its mycelial growth. After complete colonization of the substrate by mushroom mycelium (spawn run) the poly-propylene bags are removed.

No watering is required till the bags are opened and thereafter, when the bags are cut open at the appearance of primordial formation, very light watering in the form of mist is given regularly in order to keep them moist.

Pinhead initiation starts after 3-5 days of the bag removal. First flush of the mushroom will be obtained within 5-7 days of the pinhead appearance depending upon the type of substrates used. Mature sporophore/fruit bodies are picked up just before the edges of the pileus begin to fold or curl downwards.

The fruit bodies generally appear in clumps. Picking is done by slight twisting and pulling of the sporophore. Three to five successive flushes can be taken from the same bag at an interval of 8-10 days depending upon the type of substrates and existing climatic conditions. It takes 30-35 days from spawning to the first harvest.

On an average 700-900 g fresh mushroom can be harvested from a bag of 1 kg substrate thereby giving 70-90 per cent biological efficiency.

Conclusively, it is established that cultivation of Blue oyster mushroom (*Hypsizygus ulmarius*) is very simple. The mushroom has also very high biological efficiency as compared to other growing oyster mushrooms, which makes this fungus as mushroom of future in coming years.

For further interaction, please write to:

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MUSHROOMS

Substrate preparation and cultivation technology for mushroom: A total of four compost formula using wheat straw, paddy straw, mustard straw and sugarcane bagasse were evaluated and successful results were obtained in all the formulations with a maximum yield in wheat straw (18.30 kg/100 kg compost) followed by sugarcane bagasse (17.77 kg/100 kg compost) further followed by paddy straw (16.31 kg/100 kg compost).



Source: ICAR Annual Report (2020)