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Mushroom wealth of Mizoram: Unlocking opportunities for livelihood

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Mizoram possesses exceptionally rich wild mushroom diversity due to its high forest cover and favourable climatic conditions. Wild mushrooms contribute significantly to traditional diets, indigenous medicinal practices, and seasonal income of local communities, with several edible mushroom such as Auricularia, Lentinus, Schizophyllum, Termitomyces, Pleurotus, *and* Volvariella *being commonly consumed. Oyster mushroom cultivation is well suited to Mizoram's climate and locally available resources. ICAR led training and scientific support for oyster mushroom cultivation has emerged as a sustainable and profitable farming option alongside their regular farming activities. Overall, mushroom cultivation offers a sustainable, low-investment livelihood option for small and marginal farmers in Mizoram.*

Keywords: Farmer livelihoods, Mushroom diversity, Oyster mushroom cultivation, Wild edible mushrooms

MUSHROOMS are macrofungi that play a vital role in the ecosystem by facilitating the decomposition and breakdown of cellulose and complex organic compounds. As saprophytes, they help recycle nutrients and maintain ecological balance. With immense biodiversity, economic importance and environmental benefits, mushrooms have become an essential resource worldwide. Mizoram, the 'Land of the Blue Mountains,' located in the north-eastern region of India is known for its vast forest cover and rich biodiversity. The state experiences a varied climate, divided into three agro-climatic zones: tropical evergreen, subtropical semi-evergreen, and montane, making it highly favourable for the growth of diverse mushroom species. Mizoram has India's third-highest total forest cover with 84.53% of its geographical area under forests, creating the perfect habitat for fungal growth.

For the people of Mizoram, mushrooms are not only a seasonal delicacy but also an important source of livelihood. The ethnic tribes of Mizoram have long used wild edible mushrooms for both food and medicinal purposes. During the rainy season, local farmers and forest dwellers collect wild mushrooms from the forests and sell them in local markets, providing a significant source of income. Their deep traditional knowledge of mushroom identification and harvesting helps sustain this practice while contributing to the local economy. Mizoram's rich mushroom diversity presents a huge potential for expanding mushroom farming and commercial production.

Mushroom diversity and cultivation

Mushrooms, the fruiting bodies of fungi, are globally diverse and ecologically significant. Out of an estimated 50,000 known species worldwide, approximately 10,000 are considered edible, with over 3,000 species from 31 genera belonging for consumption. Despite this vast diversity, only about 200 mushroom species are cultivated globally, of which around 100 have been successfully grown under controlled conditions, and approximately 60 are commercially produced for economic gain. Among these, six species, viz. Button mushroom (*Agaricus bisporus*), Paddy Straw mushroom (*Volvariella volvacea*), Oyster mushroom (*Pleurotus* spp.), Milky mushroom (*Calocybe indica*), Shiitake mushroom (*Lentinula edodes*), and Jew's Ear mushroom (*Auricularia auricula-judae*) are widely cultivated on a large scale.

In India, particularly in Mizoram, mushroom diversity is remarkably rich due to its unique ecological and climatic conditions. Most mushrooms found here belong to the phylum Basidiomycota,

Wild mushroom diversity in Mizoram

(a) *A. auricular-judae*, (b) *C. delicatus*, (c) *Coprinellus disseminates*, (d) *C. olla*, (e) *C. tricholoma*, (f) *D. spathularia*, (g) *G. lucidum*, (h) *P. indusiatus*, (i) *Pleurotus giganteus*, (j) *S. commune*, (k) *T. fuciformis* and (l) *T. microcarpus*

with some species falling under Ascomycota. Families such as Ganodermataceae, Agaricaceae, Lycophyllaceae, Schizophyllaceae, Xylariaceae, Polyporaceae, Marasmiaceae, Psathyrellaceae, and Strophariaceae are highly abundant in the region. In contrast, families like Auriculariaceae, Boletaceae, Fornitopsidaceae, Mycenaceae, Tremellaceae, and Tricholomataceae are represented with comparatively lower diversity. This rich mycological wealth offers significant potential for food, medicine, and livelihood opportunities in the region.

Major wild mushroom species found in Mizoram

Some of the commonly species found in Mizoram include *Auricularia auricular-judae, Dacryopinax spathularia, Lactifluus corrugis, Lentinus tigrinus, Phallus indusiatus, Russula subfragiliformis, Schyzophyllum commune, Termitomyces heimii, Termitomyces clypeatus,* and *Volvariella volvacea*. Additionally, species such as *Clathrus delicatus, Clavulina amethystine, Cyathus olla, Ganoderma* spp., *Gymnopilus* spp., *Lentinus polychorus, Psathyrella candolleana, Russula* spp., *T. microcarpus, Trametes* spp., and *Tremella fuciformis* further contribute to the region's rich mushroom diversity.

Some popular edible wild mushrooms found in the region include *Auricularia auricula-judae, Auricularia delicata, Favolus tenuiculus, Lentinus cladopus, Lentinus sajor-caju, Lentinus squarrosulus, Pleurotus* spp., *Schizophyllum commune, Termitomyces heimii,* etc.

However, Mizoram is also home to several poisonous mushrooms, including *Chlorophyllum molybdites, Clarkeinda trachodes, Leucocoprinus birnbaumii,* and *Candolleomyces candolleana,* which pose risks if consumed unknowingly. Proper identification and knowledge are crucial to distinguishing edible species.

Cultural and economic importance of wild mushrooms

Mushrooms play an important role in Mizo cuisine and traditional medicine. Many wild mushrooms are used in local dishes for their unique taste and nutritional value. They are often cooked in curry, soup, boiled, fried, porridge and bai (a local dish prepared by boiling mushroom with or without other vegetables mixed with baking soda or ash filtrate and fermented pig lard, stirred until it gets cooked). Besides their culinary use, some mushroom species are also used in traditional medicine for their health benefits, such as boosting immunity and treating certain ailments. Moreover, mushrooms provide

Table 1. List of common wild edible mushrooms in Mizoram

Botanical name	Common name	Habitat
Auricularia auricula-judae	Jelly ear	Tree
Auricularia delicata	Wood ear mushroom	Wood, decayed wood
Dacryopinax spathularia	Fan-shaped jelly fungus	Rotten woods, decaying logs or trees
Favolus tenuiculus	Tropical white polypore mushroom	Wood
Lactifluus corrugis	Corrugated-cap Milky	Soil
Lentinus cladopus	Fish scale mushroom	Wood
Lentinus sajor-caju	White-rot Fungus	Grows on dead stumps of trees
Lentinus squarrosulus	-	Dead and decaying wooden
Lentinus tigrinus	Tiger sawgill	Wood
Pleurotus citrinopileatus	Golden oyster	Timber and fallen logs
Schizophyllum commune	Split gill	Tree
Termitomyces clypeatus	Termite mushroom	Termite mounds
Termitomyces heimii	Tatmor	Termite mounds
Termitomyces microcarpus	Termitophilic fungi	Termite mounts
Volvariella taylorii	Taylor's straw mushroom	Near woody debris
Volvariella volvacea	Paddy straw mushroom	Soil

Note: Correct identification of wild edible mushrooms is essential, as several edible species have morphologically similar toxic counterparts. Consumption should be based only on expert taxonomic confirmation and local ethnomycological knowledge.

Common wild edible mushrooms of Mizoram

(a) *A. auricula-judae*, (b) *F. tenuiculus*, (c) *L. cladopus*, (d) *L. sajor-caju*, (e) *L. corrugis*, (f) *Pleurotus* spp., (g) *S. commune* and (h) *T. heimii*

economic opportunities for local communities through collection and sale in local markets. Many villagers depend on mushroom trade for their livelihood, especially during the rainy season when wild mushrooms are abundant.

While wild mushrooms are naturally abundant in the forests of Mizoram, the cultivation of oyster mushrooms has emerged as an important agricultural practice. The climatic conditions of Mizoram, with its moderate temperature, high humidity, and ample rainfall, provide an ideal environment for oyster mushroom cultivation. Due to its fast growth, simple cultivation techniques, and increasing market demand, oyster mushroom farming is becoming increasingly popular among the people of Mizoram.

Oyster mushroom cultivation in Mizoram

Oyster mushroom belonging to the family Pleurotaceae is one of the most commonly cultivated edible fungi in Mizoram. Traditionally, the Mizo farmers collected these mushrooms from the wild from forests, and nearby fields, for their consumption and sale in local markets. However, with the introduction of scientific cultivation techniques, oyster mushroom farming has become more popular and widespread. Cultivation on straw has emerged as the most convenient, productive, and less time-consuming method, making it suitable even for small-scale farmers. The favourable climatic conditions of Mizoram with moderate temperature, high humidity, and easy availability of straw provide excellent opportunities for oyster mushroom cultivation, both for household consumption and commercial production. Promoting oyster mushroom farming not only enhances food security but also serves as an important means of generating sustainable income and improving the economic stability of farmers. Different species of oyster mushrooms require different temperature ranges for optimum growth, such as *Pleurotus ostreatus* (15–18°C), *P. sajor-caju* (22–30°C), *P. djamor* (24–32°C), *P. eous* (22–28°C), and *P. citrinopileatus* (24–28°C), allowing farmers to choose suitable varieties depending on the local conditions.

Success story: Turning training into a flourishing livelihood

Mushroom cultivation has emerged as a promising livelihood option for farmers in Mizoram after skill development and scientific intervention by the ICAR Research Complex for NEH Region, Kolasib. Several farmers from the region underwent hands-on training on oyster mushroom cultivation, focusing on low-cost production techniques, pest management, and post-harvest handling. Motivated by the potential of mushroom farming, they started small-scale cultivation using locally available resources like paddy straw.

At present, these farmers are able to harvest around 1.5–2 kg of fresh oyster mushrooms from each cultivation bed (4–5 kg each bed weight). With the prevailing market price of ₹ 220–250/kg, they are earning a monthly income of ₹ 10,000–12,000. This has provided a substantial boost to their household economy, utilizing a small area and requiring minimal investment.

The growing demand for chemical-free and locally-produced

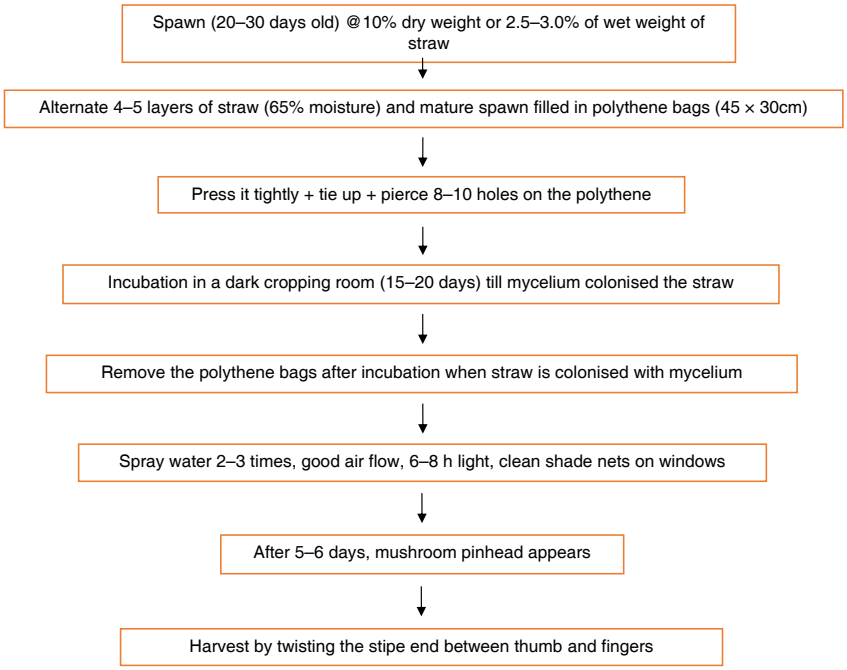
Straw cutting | Bed preparation | Incubation | Mature mushroom

Packaging and selling of freshly harvested wild edible mushrooms

Mizo farmers venturing into mushroom cultivation for livelihood enhancement
Oyster mushroom cultivation by Mizo farmers from medium preparation to packaging and marketing

mushrooms has created a good market opportunity for farmers in Mizoram. Mushroom cultivation requires low-cost raw materials like paddy straw and does not need much space or expensive infrastructure, making it an ideal option for small and marginal farmers. This initiative has not only provided an additional source of income but has also encouraged self-employment, especially among rural youth and women. The success of these farmers highlights how skill-based training, scientific farming methods, and market-oriented production can play a vital role in improving rural livelihoods and promoting sustainable agriculture in the region.

Thus, mushroom cultivation in Mizoram shows strong potential for scaling up beyond household levels through wider adoption of improved and location-specific production practices. Development of *in-situ* cultivation techniques for native wild mushrooms such as *Schizophyllum commune* can support safe production and reduce pressure on natural forests. With institutional and technical support, mushroom farming can evolve into a stable and sustainable livelihood option.



Flow chart of oyster mushroom cultivation

SUMMARY

Mizoram is blessed with rich mushroom diversity, where wild edible mushrooms have long been an important source of food and seasonal income for rural communities. The collection and sale of wild mushrooms contribute significantly to livelihood security, especially during the rainy season. However, proper identification of wild mushrooms is of prime importance to avoid misfortune like accidental poisoning. With scientific intervention and skill development support from ICAR Research Complex NEH Region, Mizoram Centre, Kolasib, oyster mushroom cultivation has emerged as a sustainable and profitable farming option. It offers a reliable source of income for farmers with minimal investment, using locally available resources like paddy straw. Thus, the rich mushroom diversity of Mizoram, along with scientific cultivation practices, holds immense potential for ensuring food security, improving rural livelihoods, and promoting sustainable agricultural development in the region.

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