

# NewsLetter

ISSUE | 03 | SEPT - OCTOBER 2021

## MEGHA FOOD COOPERATIVE SOCIETY

### Inside THE ISSUE

- WHO or WHAT is Megha Mushroom?
- Indian Mushroom Industry
- For the Beginner
- Meet our Farmers & LSPs
- Bits & Pieces – Growing Locally
- Vitamin D – The Problem
- Upcoming Issue

“  
For a Healthier Future –  
Where Passion meets Taste

### Science of Mushroom & Sustainable Development Goals

Addressing unemployment and malnutrition  
in tribal region of North Garo Hills, Meghalaya

PROJECT FUNDED UNDER SFURTI SCHEME OF MINISTRY OF  
MICRO SMALL & MEDIUM ENTREPRISES (MSME),  
GOVERNMENT OF INDIA



### Common Facility Centre – Progress so far

Oyster mushroom cultivation in  
Meghalaya- building the  
foundation step-by-step



### Bolstering Mushroom for Future Resilience

Building partnership paradigm -  
helping farmers make money in the  
mushroom business



### Supporting Mushroom value Chain with Digital Agriculture

Stay connected 24x7. Using power of  
technology to make our farmer  
engagement better, sustainable, eco-  
friendly, and equitable for all.

# OYSTER MUSHROOMS

*The fungus among us*

## 1 OYSTER mushroom



PER 100 GRAMS:  
33KCAL

- 3.3 G PROTEIN
- 0.41 G FAT
- 6.1 G CARBS
- 2.3 G FIBER

MORE POTASSIUM  
THAN



## SOURCE



Megha food coop society, Mendipathar, NGH



## DESTINATION

## WHAT IS IT GOOD FOR?

BLOOD PRESSURE    BONES    CHOLESTROL    ANEMIA    REGULATES INSULIN    BOOST IMMUNE SYSTEM

Contains almost  
**AS MANY VITAMINS AS MEAT**

Their caps  
Can  
measure  
upto



# 25 CM



## Vitamins

	Oyster Mushrooms	
Vitamin A	2 µg	0.22%
Thiamine	0.13 mg	10.4%
Vitamin B2	0.35 mg	27%
Vitamin B3	4.96 mg	31%
Vitamin B6	0.11 mg	8.46%
Vitamin B12	0 µg	0%
Vitamin C	0 mg	0%
Vitamin D	29 IU	4.83%
Vitamin E	0 mg	0%
Vitamin K	0 µg	0%
Folate	38 µg	9.5%

## POPULAR WAYS TO

# EAT

### SALAD



### PASTA



### SOUP



## WHO OR WHAT IS THE MEGHA FOOD?

So, who, or what, is The Megha Food? The Megha Food Cooperative Society is a special purpose company created for oyster mushroom production created by MMCS and MLF together under the aegis of MoMSME, Gol.

The primary interest of the company is supporting the establishment and growth of the oyster mushroom as an industry in the state by empowering the tribal people especially women to reach their full potential by imparting life skills. We work with people who are concerned about improving their quality of life in the face of major changes that are taking place in the agriculture industry.

The state-of-the-art facility envisages empowering unskilled and semi-skilled mushroom farmers by providing end to end support through technology, capacity building, value addition and access to funds & markets. We aim to create sustainability in farmers' income through infrastructure development and building a robust supply chain line through cultivation of Oyster Mushroom.

## FROM THE EDITOR'S DESK

Dear Readers,

It has been an extremely eventful journey in the past 2 months as we are nearing completion of the construction of our Common Facility Centre. We have had a significant LSP training over a span of 3 days wherein our initial batch of farmers have undergone rigorous training which will eventually help them to train the next batch of farmers. We are hopeful that the training will help us build a strong partnership among all the stakeholders and will prove to be beneficial in achieving all our goals in a timely manner.

We are extremely grateful to all our readers for the support and encouragement in every step of our journey

With Thanks & Best Wishes

**Editor in-Chief**

## INDIAN MUSHROOM INDUSTRY

Though the global mushroom industry has grown rapidly in the last two decades, it has yet to find its place with the Indian consumer. Presently India produces approximately 0.13 million ton of Mushroom annually which includes 73% button mushroom, 16% oyster mushroom, 7% paddy straw mushroom and around 3% milk mushroom. The per capita consumption is meagre at 100 grams per annum<sup>1</sup>.

16% of Oyster mushroom production accounts for approx. 10,000 tons of annual production in India and is mainly grown in the states of Orissa, Karnataka, Maharashtra, Andhra Pradesh, Madhya Pradesh, West Bengal and in the North-Eastern States of Meghalaya, Tripura Manipur, Mizoram and Assam<sup>2</sup>.

There are more than 10 large scale button mushroom production units in India with an annual production varying from 3000 tones to 10,000 tones per annum but there are no major players and/ or established industries for Oyster mushroom production in the country. Emphasis on R&D and market-based innovations is being given by Gol.

## FOR THE BEGINNER

Aren't mushrooms the small umbrella-shaped creatures that grow in the woods? Yes and No. The fruit of the mushroom is what you generally see growing out in the woods. Most of the mushrooms are found below the forest floor. Mycelium is the collective name for this component. We know that mushrooms do not produce fruit at random. Certain prerequisites must be met. Mushroom farming is all about recreating these conditions. The substrate is the substance in which the mycelia grow. While the amount of fresh air and carbon dioxide available impacts growth, temperature, humidity, and light are the most important factors in getting the mycelia to grow and ultimately fruit.

Oyster Mushroom requires, a temperature of roughly 80°F is recommended when the hyphae are spreading across the substrate. They also want humidity of 90 to 100 percent and complete darkness. Cooler temperatures (55-60°F), same humidity, and twelve hours of natural sunlight per day are required to get the mycelia to grow fruit. While the mushrooms grow and are harvested, somewhat warmer temperatures (60-64°F) and lower humidity (about 90%) appear to help the most.

<sup>1</sup> [https://www.researchgate.net/publication/322520732\\_Status\\_of\\_mushroom\\_production\\_in\\_India](https://www.researchgate.net/publication/322520732_Status_of_mushroom_production_in_India)

<sup>2</sup> Directorate of Mushroom Research (ICAR) Solan, 2011.



## TRAINING OF THE TRAINER - LSPs

The LSP meet, held over a span of 3 days covering 35 farmers (who are into mushroom production), was conducted to essentially prepare these farmers into leadership and supervisory roles and train them to function as Local Service Providers (LSP) for reaching out and handholding all 600+ farmer members.

The criterion for selection of these farmers was based on their current level of production and understanding and based on the assessment of each on their willingness to work as LSPs and work towards building their units into enterprises.

The LSP model adopted is a decentralized extension model whereby local actors (farmers, small business owners, producers, etc.) are given training to provide extension services (knowledge, technology transfer, training, etc.) to farmers. This session aims towards empowering and enhancing the skills of the Master trainers who in turn will train the new farmers having less or no experience in the field of Oyster Mushroom cultivation/ Production.

This workshop helped us build a pool of competent trainers who will eventually lead all discussions and initiate a plan of action/ intervention to strengthen and motivate all the existing and new farmers that are a part of the Megha Food Cluster.

## OUR LSPs

Name: Koltha Rabha, Village: Manikganj

Koltha Rabha started Mushroom cultivation in the year 2019. He got motivated by seeing YouTube videos and learned how to cultivate mushroom from YouTube. Normally he is cultivating 100 to 150 bags in one time.

He is purchasing spawn from MMCS. He stated that his income increased by cultivating mushroom and told us that he is approximately getting ₹400 profits from one bag. He is one of our farmer members and is also an LSP who supports and trains other farmers in mushroom production. He is very optimistic and excited about the mushroom project and hopes to increase his income with support from the cluster by reaching a larger market with a quality product.



Name: Neena & Minabell Sangma

Village: Mongre

Neena & Mina are two of the most active and dynamic LSP member of the cluster. They both started cultivating mushroom in the year 2019 with a small batch of 10 bags on trial basis and today put up 100 bags per batch on an average per cycle for mushroom production. They are getting spawn locally and earning an average income of ₹ 25,000 per batch over and above their investment.

Both feel that the mushroom cluster will help improve their quality of life and support in reaching a larger market.

## BITS & PIECES - GROWING LOCALLY

**SHG IN LAWSOHTUN<sup>3</sup>** - Melina Kharkongor and Ainada Rani are part of an all-woman Self-Help Group (SHG) in Lawsohtun engaging in organic OYSTER mushroom cultivation, all by themselves.



Even during lockdown, the duo was taking care of the nursery under a shed put up by them with the help of SHG members' contributions and sold the mushroom @ 300/kg in baskets door-to-door.



**J. Lyngdoh Micro Enterprises** - Jacinta Lyngdoh started her enterprise in 2008, but it was in 2015 that she came struck a conversation during her journey in Assam about mushroom cultivation.

She immediately started with 4 packets of spawn and within 25 days harvested 8 kgs of mushroom, earning a profit of ₹ 1000. Presently she sells mushroom locally @ ₹ 260 per kg giving her four times the profit of her investment<sup>4</sup>.

**MEGHALAYA TARGETS 5000 TONNES OF MUSHROOM IN 5 YEARS UNDER ITS MUSHROOM MISSION**

<sup>3</sup> <https://theshillongtimes.com/2020/04/24/women-mushroom-farmers-make-a-difference/>

<sup>4</sup> <https://www.zizira.com/blogs/people-and-process/meghalaya-woman-mushroom-farmer>

# VITAMIN D – *The Problem*

Vitamin D insufficiency is a common occurrence throughout the Indian subcontinent. It affects people of all ages, genders, races, and backgrounds. It contributes significantly to India's tremendous healthcare burden. Because Vit. D-enriched nutritional and food products are restricted in our country and usually pricey, especially to the poorest sectors of society, the most susceptible category is the impoverished. In addition, most Indians are unaware of the necessity of vitamin D in our daily lives

According to the National Institutes of Health (NIH), the Recommended Daily Allowance (RDA) of Vitamin D is 15 micrograms (2). If you eat 150 grams (about 5 ounces or 4 to 5 mushrooms) of light-exposed button mushrooms daily, you'll get 15 micrograms of vitamin D. Oyster mushrooms that underwent UV-B light exposure had the highest concentrations of Vitamin D2 followed by Shiitake then button mushrooms<sup>7</sup>.

As a result, the value of oyster mushrooms in preventing vitamin D insufficiency emerges. Mushrooms are one of the few fungus species on the planet that naturally contain vitamin D, therefore we don't need to fortify them to get more vitamin D. They have the unique capacity to enhance Vit. D concentration due to exposure to sunlight and UV rays, according to a USDA study. When exposed to sunshine, naturally occurring chemicals in mushrooms called ergosterols convert to vitamin D.

Oyster Mushroom project supports in breaking the barrier of vitamin D deficiency prevalent in our country, particularly in Meghalaya, and work to close the health gap through production, value addition, training and capacity building of farmers, and encouraging environmentally friendly practises.

## MUSHROOM AS FUNCTIONAL FOOD

Diet influences and modulates numerous processes of the human body, including disease, according to scientific research, and so diet contributes to the maintenance of good health. The concept of functional foods and the development of functional food science arose from this recognition of the link between diet and disease. According to the Institute of Food Technology's IFT Expert Report<sup>5</sup>, functional foods are foods and food components that give health benefits in addition to basic nutrition. Foods that have been fortified, enriched, or enhanced, as well as dietary supplements, are examples. Mushrooms and mushroom derivatives that are edible functional foods have a high nutritional value and can provide health advantages.

Edible mushrooms are a superior source of healthy foods due to their aroma and nutritional characteristics. It's also utilised as a dietary supplement. These mushrooms are widely used not only as supplements, but also as important raw materials in the production of functional foods. Due of its distinct flavour, taste, and texture, it is also preferred as an addition. Mushrooms are used in a variety of foods, including breads, soups, pastas, rice dishes, fish, and meat. Many researchers have successfully used mushroom and its many elements into a variety of food products over the years. Using mushrooms as a functional food has several advantages, including improved flavour and nutritional quality.

As mushroom growers we like to highlight the unique qualities of mushroom in terms of taste, texture, and nutritional benefits, and we do believe that people should eat mushrooms because it is beneficial to you. The abundance of phytochemicals (ceramides, cerebrosides, sterols, glycerides, trehalose, and -glucans) found in culinary mushrooms provide considerable antioxidant and cyclooxygenase enzyme activity, implying that they could be regarded functional foods with health advantages<sup>6</sup>.

## UPCOMING ISSUE

- Plants and Machineries – The focus
- Farmers' training and capacity building
- Farmer Exposure Visits
- Value addition of mushroom products

A P P C P M O D E L  
O F D E V E L O P M E N T



*"Nature alone is antique, and the oldest art is mushroom"*

<sup>5</sup> Functional foods: opportunities & challenges. F. Clydesdale. 2004. Food Technology. 58(12): 35-40

<sup>6</sup> <https://www.mycopia.com/blog/mushrooms-as-functional-foods>

<sup>7</sup> <https://totalgardener.com/which-mushrooms-are-high-in-vitamin-d/>



# SNAPSHOTS- LSP TRAINING



33 LSPs trained

40% women participants

Compost – to – Bag making

Incubation – to – Harvest

Area coverage: Chisim Apal, Dandakol, Harinkatabakra, Chipakram, Jampara, Chirimdare, Manikganj, Sepikol, Babupara, Mongrey, Dalbinggre, Thapa Dangre, Dajonggre, Chidimit)





## HISTORY – OYSTER MUSHROOM EVER PRESENT

*So, where did all this mushroomy goodness originate?*

Oyster mushroom was **initially identified in 1775** by Dutch naturalist **Nikolaus Joseph Freiherr von Jacquin**, however he placed it in the *Argaricus* genus, the same genus as button mushrooms!

The mushroom was **reclassified** as *Pleurotus* by German mycologist **Paul Kummer in 1871**, and it has remained in that genus ever since.

**FIRST CULTIVATED IN GERMANY DURING WORLD WAR I** and are currently farmed as culinary mushrooms in countries all over the world.

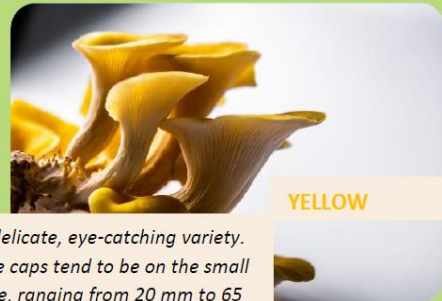
## MEET THE OYSTER MUSHROOM FAMILY

*There are over 200 species of Pleurotus, but these five popular varieties are most likely to be cultivated and sold*



**PINK**

*A delicate, striking variety. The caps grow anywhere between 2 cm and 5 cm (3/4 inch to 2 inches) and give off a strong umami scent with meaty, chewy texture!*



**YELLOW**

*A delicate, eye-catching variety. The caps tend to be on the small side, ranging from 20 mm to 65 mm (3/4 inch to 2 1/2 inches) across and sport a beautiful yellow color*



**KING**

*Its large, thick stems and small caps stand out from the crowd at specialty stores and Asian markets. Different oxygen levels will give different sizes of caps and stems. It's a FUN CROP!*



**BLUE**

*A fan of cold weather, the blue oyster thrives in temperatures between 7°C and 18°C (45°F to 65°F). High oxygen requiring mushroom has earthy, rich flavor.. a good meat substitute.*



**ELM WHITE**

*Grows high up on elm trees in dense clusters of large caps that can range from white to tan in color. Caps are typically between 6 cm and 15 cm (2.3 inches and 5.9 inches) but can grow up to 30 cm (11.8 inches)*

*Fun fact: Sometimes oyster mushrooms are carnivores! The hyphae (filaments on the mycelium) attract both bacteria and little worms known as nematodes, which the mushrooms then paralyze and feed on.*

# MUSHROOMS VARIETIES

**STRENGTH** for your food, **VIGOR** for your Body

## OYSTER

Named for their appearance and a taste that's like an oyster, these mushrooms are commonly found in Japanese and Chinese cooking. Because of their delicate caps, they cook quickly and should be added to dishes at the later stages of cooking.



## PORTOBELLO



Hearty shape and texture make them perfect for grill or sandwiches

## MAITAKE

Tastes the way it looks – fleshy in texture and earthy in flavour



## FRENCH HORN



Largest specie of oyster mushroom, has a delicate flavor when sautéed in butter.

## WHITE BUTTON



Mildest, commonly found and largest produced mushroom. It is a feel at home variety now.

## HEDGEHOG

Tooth like protrusions make them intimidating and straggly appearance.



## ENOKI



Snowy white colour, these grow wild on logs in the mountains near the snow area.

## BEECH



Bitter when eaten raw, these mushrooms give sweet flavour when cooked.





## PROJECT PARTNERS

- Funding Agency: SFURTI Scheme of Ministry of Micro Small & Medium Enterprises (MSME), GoI
- State Support Agency: Meghalaya Basin Development Authority (MBDA), GoM
- Nodal Agency: Indian Institute of Entrepreneurship (IIE), Guwahati
- Technical Agency: Madhukar Livelihood Foundation, New Delhi
- Implementing Agency: Mendipathar Multipurpose Cooperative Society, NGH, Meghalaya

