



## Construction of Low Cost Wooden Framed Shading Nets Mushroom Greenhouse (With Detachable Roof)

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### Introduction

We are excited to introduce the, Construction of Low Cost Wooden Framed Shading Nets Mushroom Greenhouse (With Detachable Roof). An innovative solution designed to provide cost-effective and versatile shading for various agricultural engineering applications. This shade net house is specifically engineered to protect mushroom from excessive sunlight, harsh weather conditions, and pests while maintaining an optimal growing environment.



### Key Features of Low Cost Wooden Framed Detachable Roof Shading Nets Green House

- 1. Affordability:** These greenhouses are designed to be cost-effective, making them accessible to small-scale farmers or gardening enthusiasts with limited budgets. The materials used are inexpensive and readily available, reducing the overall construction cost.
- 2. Portability:** The detachable feature allows easy disassembly and relocation of the greenhouse. This is particularly useful for farmers who may need to change growing locations or move the greenhouse to avoid extreme weather conditions.
- 3. Shade protection:** The shade net fabric used in this type of greenhouse helps filter sunlight and provides shade to the plants, preventing excessive heat and light from damaging or stressing them. It allows for proper ventilation and air circulation while reducing the risk of sunburn or heat stress.
- 4. Pest and insect control:** The shade netting also acts as a barrier against pests and insects, preventing them from entering the greenhouse and damaging the plants. This reduces the need for chemical pesticides and promotes healthier, organic plant growth.
- 5. Temperature control:** The shade net greenhouse helps regulate temperature by reducing direct sunlight exposure. It creates a microclimate that is cooler than the external environment, allowing for better temperature management and minimizing temperature fluctuations.
- 6. Versatility:** These greenhouses can be used for various purposes, including seedling propagation, growing delicate plants, protecting crops from extreme weather conditions, or extending the growing season for certain crops.



6. **Digging holes for posts on marked locations:** Dig the holes as deep as 60X15cm depth along the length for larger poles and 30 cm for relatively smaller poles.



7. **Build the frame:** Most of the poles are described in layout and compact the foundation by concrete mix (RCC). Build the frame in sections, complete one bay structure first and construct subsequent bays one after another, leaving the space for small diameter poles which are used to join bays afterwards.



8. **Covered the frame:** Cover the frame firstly 75 to 85% with green shade net. Use the thick needle and polypropylene rope to secure the frame. Make sure there is no gaps or holes in shade net. Then the roof top is covered in grass layers and the polythene sheet. And the shed's interior is lined with jute gunny sacks (for darkness & Coldness), and racks are constructed to hold the mushroom beds/bags. (Twice daily, water is sprayed over the floor and gunny bags.) Fix the side pole for support the main frame.



**Economic Analysis**  
**Non -Recurring Expenditure**  
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S. N	MATERIAL	QUANTITY	AMOUNT
1	Poles [14ft/12ft/10ft]	[6+6+16]=28	3,060/-
2	Bamboo[18ft]	13	2,080/-
3	GI wire	4 kg	360/-
4	Nails	1 kg	120/-
5	Polythene sheet	2 kg	440/-
6	White paint	1 lit	240/-
7	Nylon rope	1 kg	140/-
8	Coal Tar	5-10 lit	100/-
9	Shed Net 75% [green]	30 m	3,000/-
10	Gunny Bags	100	1,500/-
11	Dried Grass for [Thatching]	300	1,500/-
		1 kg	
A]	<b>Total Recurring Expenditure</b>		<b>12,540/-</b>

## Mushroom Cultivation

**Introduction:** The oyster mushroom (*Pleurotus* spp.), also called "Dhingri" in India, is a lignocelluloses-loving fungus that grows naturally on living or dead tree trunks, stumps, or bark. Oyster mushroom cultivation is a pretty straight forward process that doesn't call for expensive.

**Infrastructure:** In India, oyster mushrooms are primarily grown on seasonally inexpensive growing spaces with very little infrastructure investment. In India, large oyster mushroom growing operations with year-round production are rare. One of the most effective fungi for creating protein-rich meals from various agricultural wastes without composting is the oyster mushroom.

### Requirements

• Agro-Climate requirement: Oyster mushroom can readily grow in most of Indian climate. It requires temperature of about 20-30°C and humidity of about 55-70%.

- i. Thatched shed
- ii. Grains
- iii. Straw substrate
- iv. Polyethylene Bags
- v. Plastic drum
- vi. Cooler fan
- vii. LED lights
- viii. Thermo-hygrometer
- ix. Sterilizing vessel
- x. Water spray bottle
- xi. Lab supplies

### Procedure

- ✓ Chop up paddy straw into 2-3cm size
- ✓ Clean and wash straw with clean tap water and soak it for 10-12 hours
- ✓ Drain the excess water and boil the straw in clean tap water for 90 min.
- ✓ Dry the straw in shed drying/ sunlight (60% moisture content) Spawning @ 3% per kg of substrate (wet basis) Make bundles in 35×50 cm size polythene bag (2 kg of substrate/bag)
- ✓ Incubate in a dark cropping room for 15-20 days at 20-24 °C temperature till mycelium colonize the straw
- ✓ After mycelium growth remove the polythene and keep the bundles separately Mushroom pinhead appears in 6-8 days
- ✓ Spray water (alternate day), fresh air, 8-12 hour light (200 lux)
- ✓ Oyster mushroom matures within 2-3 days after primordial initiation
- ✓ Uproot oyster mushroom by twisting from the base and package it in suitable packaging material

### Different Activities and Observation Dates



S.N	DATE	OBSERVATIONS AND ACTIVITIES
1	25/02/24	Chopping of dry straw with chopping machine and soaking overnight
2	27/02/24	Cleaning of overnight soaked straw and cleaning with clean water.
3	28/02/24	Squeezing and sterilized soaked straw .
4	28/02/24	Filling of bags with cooled straw and compressed it.
5	28/02/24	Spawning in each 4-5 cm thick layer .
6	02/03/24	Placing of filled bags on wooden racks..
7	07/03/24	Little growth of mycelium were seen .
8	21/03/24	Pin head size fruiting body appears on the surface of substrate.
9	10/04/24	First harvesting of fruiting bodies yield was 1.61 kg.
10	30/04/24	Second harvesting of fruiting bodies yield was about 770 gm.
11	09/05/24	Third harvesting of fruiting bodies yield was about 300gm.

**Recurring Expenditure**

S.N	MATERAILS	QUANTITY	AMOUNT/COST[Rs]
1	Spwan	1kg	200/-
2	Plastic Bags	14	180/-
3	Rubber	1packet	40/-
4	Straw	1500kg	500/-
5	Carbendazim	500g	600/-
6	Formalin	500ml	760/-
<b>B]</b>	<b>Total recurring expenditure</b>		<b>2,280/-</b>

**Non – Recurring and Recurring Expenditure:**

**Total Expenditure**

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S.N	PARTICULAR	AMOUNT IN [Rs]
1	NON-RECURRING	12,540
2	RECURRING	2,280
3	TOTAL EXPENDITURE	14,820

**Conclusion**

We are excited to introduce the Low-Cost Mushroom Cultivation Shed, An innovative solution designed to provide cost-effective and versatile shading for various agricultural engineering applications. This shade net house is specifically engineered to protect mushroom from excessive sunlight, harsh weather conditions, and pests while maintaining an optimal growing environment. Cultivation of oyster mushroom is very easy and grows on variety of substrate (Paddy straw, wheat straw, sugarcane bagasses, saw dust etc.) which has already available with farmers as waste. One KG of substrate can produce 600-900 gm of fresh oyster mushroom.



