Growing oyster mushroom (*Pleurotus* sp.)
on straw in plastic bags

**Oyster** mushrooms (*Pleurotus* sp.) are a delicious and nourishing food, with a nutritional value similar to that of meat or fish (Fig. 1). This technology makes full use of rice straw, a common crop residue which might otherwise have no economic value.

**Preparing the straw**

The straw should be soaked in a container of limewater. The limewater contains 2 kg of slaked lime per 100 kg dry straw, with as much water added as is needed to just cover the straw. The straw is left in the limewater for half an hour, so that it is thoroughly soaked.

The straw is then piled up on a cement floor and covered with plastic or sacking. The top of the pile should be left uncovered. The straw is left to ferment for 7 - 10 days. During this time, it will begin to ferment and become hot.

The straw is turned once every three days, first from the top downwards, then from the bottom upwards, then from the inside outwards, and finally from the outside inwards.

The moisture content of the straw can be checked by rolling a handful of straw into a ball and squeezing it tightly. If your hand is wet, the straw has the proper moisture content. If your hand remains dry, you should add more water.

**Bagging and culturing the spawn**

**Preparing the spawn**

Mushroom spawn must be purchased commercially, unless it is provided by an extension center. Around 2.5 to 3.0 kg of spawn are needed for 100 kg of straw. Open the container and press it gently, to make sure all the spawn has been emptied out. You can improve the germination rate by mixing the spawn with rice husk, at a ratio of 1:1.

![Fig. 1. Oyster mushroom (*Pleurotus* sp.) growing from the side of a plastic bag filled with damp straw](image-url)
Filling the bags

Plastic bags measuring 20 x 30 cm, or 18 x 25 cm, are used as mushroom beds. Open the bag and put a handful of straw inside it. Press the straw down tightly, to make a layer 3 - 5 cm thick at the bottom of the bag. Spread the spawn/rice husk mixture around the edges of this layer (but don’t put any in the middle). This makes the first straw-spawn layer.

Continue to add 3 - 4 additional layers in the same way until you have nearly filled the bag. Put a final layer of straw on top, so the top of this final layer is 5 - 7 cm below the mouth of the bag.

Put a clean piece of cotton in the mouth of the bag. This makes a ventilation hole, and filters out harmful microorganisms. Then close the mouth of the bag with a rubber band.

Tie the bags each to other with nylon rope (3 - 5 bags per rope) and hang them in the mushroom house. The mouth of each bag should be pointing upwards. The bags should not touch each other, but should be a few centimeters apart (Fig. 2).

The mushroom crop

Looking after the bags

☐ The bags should be covered, sheltered from wind and light, but with good ventilation.

☐ After 25 - 30 days, mycelium will develop throughout the bag. Use a sharp knife to cut 4 - 6 slits in the sides of the bag. Each slit should be 3 - 5 cm long, and an equal distance from the other slits. The cuts should not be in a line around the bag, as this will weaken the bag.

☐ After the bags have been cut, they should be sprayed with water two or three times a day to keep the mushrooms moist. Be careful not to give them too much water. No water should collect inside the bag.

☐ Take the cotton out of the mouth of the bag and suspend the bags on a wire or rope, with the mouth of the bag pointing downwards.

☐ Soon the mushrooms will begin to appear in the slits, looking like small round buttons. As soon as these begin to appear, move the bag to the growing/harvesting area. The bags should be placed 7 - 10 cm apart.

Harvesting the mushrooms

The first oyster mushrooms can be harvested 7 - 10 days after the bag is cut (Fig. 3). After the mushroom are harvested, stop spraying water for several days. When the button mushrooms begin to appear again, begin to spray the water again. This cycle can be repeated three or four times, giving a total harvest of 50 - 80 kg (fresh weight) of oyster mushrooms from 100 kg of straw (Fig. 4).

Fig. 2. Preparing a bag with cotton on the top. In the background are more than twenty completed mushroom bags of straw and spawn, hanging from nylon ropes.

Fig. 3. Bag of mushrooms ready for harvesting.

Fig. 4. Farmer with harvested mushrooms.