



## FOOD RESEARCH INSTITUTE



## STEPS IN OIL PALM MUSHROOM CULTIVATION IN GHANA

Prepared by  
M. Dzomeku, M. Obodai, and R. K. Takli

P. O. BOX, M20 ACCRA  
TEL: 233-21-519091 / 519092

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## INTRODUCTION

*Volvariella volvacea* an edible basidiomycete, occurs in both tropical and subtropical regions of the world. The species grows naturally on dead leaves, dead wood, animal droppings, on trees and waste stumps.

The oil palm/paddy mushroom is widely cultivated by farmers in China and Thailand for supplemental income. This mushroom can be grown on uncomposted straw-based substrates.

Oil palm mushrooms are low in calories and lack cholesterol. It contains selenium and niacin which are both important in the immune system, thyroid system, the male reproductive system and in cancer prevention.

The four methods available for the cultivation of oil palm mushroom are:

- i. The local/traditional method
- ii. The high bed method
- iii. The low bed method
- iv. The Indoor or commercial method

In Ghana, two main methods are used:

- i. The local /traditional method
- ii. The low bed method

## LOCAL METHOD

1. Dig a large pit about 14.4m in diameter and 4.8m in shaded area, e.g. under a tree or shed, and cover

the sides and bottom of the pit with fresh plantain or banana leaves.

2. Dump cassava, cocoyam, yam peelings or cocoa wastes into the pit to form a heap
3. Mash a mature fruit body of the oil palm mushroom in a bowl of water and sprinkle the brown suspension of spores all over the surface of the materials.
4. Cover the heap with some more fresh plantain leaves.
5. Mushrooms start to appear after 3-4 weeks, especially during the wet season and are ready for harvesting when they reach the button stage.

**NOTE:** Pure mushroom spawns can be obtained from the Mushroom Unit of the CSIR-Food Research Institute for spawning instead of using the spore suspension. A covering of plastic sheet will also be preferable to the plantain leaf cover. The yield in this method is low and irregular.

#### **LOW BED METHOD**

Substrates that can be used in the low bed method include: cotton waste, sugarcane bagasse, elephant grass, cocoa shells, rice straw, cassava and cocoyam peelings, jute waste, oil palm empty bunches and pericarp fibre etc.

The method is as follows:

1. Construct a trapezoid wooden mould which is open both at the top and bottom and the base of which is 14 inches (35cm), the top 12 inches (30cm) the height 14 inches (35cm) and the length 2-3 ft (60-90cm) or more. See Fig. 1.
2. Select the site for your beds. This may be the bare ground or

cemented floor, in the shade or in the sun, or in a building.

3. Steep or soak the dry bedding materials in water overnight. Some materials e.g. cotton waste can be soaked and used immediately. Place the wooden mould on the ground with the base downwards.
4. Put some of the materials into the mould, up to one third the height and push them down with the hands to make them compact.
5. Break up the mushroom spawn into pieces by shaking the bottle and pour a few spawn grains into the palm. Sprinkle the spawn on top of the materials along the periphery of the inside of the mould, to complete the first layer.
6. Make two other layers on top of the first in the same manner. The top most layer is spawned on the entire surface.
7. Remove the wooden mould and use it to make other beds. The beds should be spaced about 4-6 inches (10-15 cm) apart. At least 5 beds should be made parallel to each other in one row.
8. Cover each row of beds with a transparent plastic sheet and place the straw mat on top of this to protect the beds from sunlight and wind.
9. Allow the spawn to spread through the culture materials for the next 10 days. Then remove the mats and plastic and water the area around the beds.
10. Replace the plastic sheet and straw mats, but raising them about 6 inches (15 cm) above the beds on poles to provide enough space for growing mushrooms. Mushroom pinheads appear 3-5 days later on the beds as well as the ground, and



egg-stage mushrooms can be picked 48 hours later (Fig. 2).

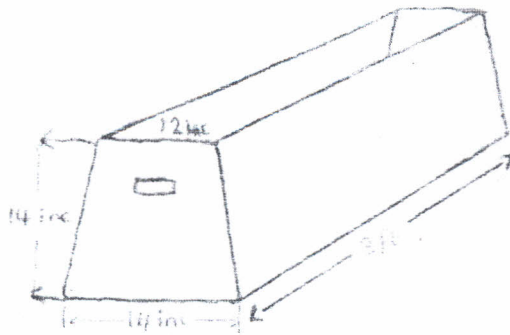


Fig. 1: Diagram of wooden frame.

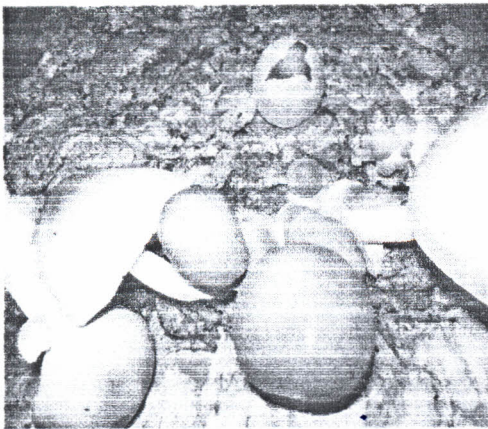


Fig. 2: Oil palm mushroom growing on cotton waste.

### PRESERVATION

Preservation of mushrooms includes processes that maintain the quality of mushroom thus preventing spoilage. Preservation methods of this mushroom includes: Drying, Canning, Refrigeration & Freezing, Pickling, Vacuum sealing.

### PESTS

The pests that affect the oil palm mushroom include insects, mites, snails and rodents. There may also be the occurrence of saprophytic fungi, viruses,

termites, eelworms, parasitic fungi and bacteria.

Some routine hygienic measures;

- Mushrooms should be picked from the uninfected substrate and end with picking from the possibly contaminated (older) substrate.
- Multiple use of picking baskets, mushroom or substrate containers should be sterilized before reuse: 2% formaldehyde, 1% alcohol or 1% hypochlorite can be used.

### MUSHROOM RECIPE

#### SAUTEED MUSHROOM

##### INGREDIENTS

- 500g mushroom
- 60g Margarine
- 2 table spoon soya oil
- 1 small onion or pinch of powdered ginger or ground fresh ginger
- 1 Tablespoon chopped fresh parsley and seasoning

##### METHOD

Wipe mushroom with a damp napkin and season, leave to stand for about 30 mins. Heat oil or margarine in a saucepan Add mushroom and stir fry over heat for 6 mins till water is completely evaporated Add onion, ginger and sauté for 2 more mins. Add parsley and serve hot as an hors d'oeuvre or an accompaniment to a main dish

**For spawns and further information please contact CSIR-Food Research Institute, Accra.**