

## Paddy Straw Mushroom

By

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Mushrooms represent the spore-bearing (reproductive) portions of a group of fungi, coming above ground. The vegetative portion consisting of a system (or mycelium) of thread like branched structures called the 'spawn' remains underground. Mushrooms are of various shapes, sizes and colours. Some of these are edible and can be made into delicious dishes. But there are many which are poisonous and if any of these species are unwittingly consumed, it may lead to fatal consequences. Edible mushrooms are cultivated on a large scale in Europe and America. *Psalliota campestris* is the species that is grown in most of these countries. The cultivation of this mushroom is a specialised art. But this species grows only in cool places with temperature below 70°F. As such it is not possible to grow this species on the plains districts of our province.

In various parts of our province several species of mushrooms come up during the rains or in the cooler months (October—December). These are gathered and used by village folk or offered for sale. But these are available only for a short period and only experienced people can differentiate between edible and poisonous mushrooms.

In Burma and Malaya, a mushroom (*Volvaria diplosia*) known as the 'paddy straw mushroom' is cultivated. As the name implies this is usually grown on paddy straw. It is possible that the same mushroom may be seen coming up in the hay stacks in Malabar during the rainy months but no attempt at regular cultivation of this or other species is evident in our province.

Pure cultures and a bottle of spawn of *Volvaria diplosia* were obtained through the kind courtesy of the Mycologist to the Government of Burma and with these attempts were made to cultivate the fungus at Coimbatore. These were very successful.

The method of cultivation is as follows: To start with, there must be good paddy straw available in sufficient quantities. It would be more convenient if the straw is in bunches (sheaves as made during harvest) each bundle being 8 to 10 in thick at the base and 3 to 4 ft in length. A shaded place well protected from winds is selected. A corner in a back verandah protected by screens will serve the purpose. The flooring must be well drained. A cement floor, or a slightly raised platform made of bricks or planks may be used. The straw bundles that are to be used must first be steeped in water for 24 hours. To prepare the bed, one layer of

straw bundles is first laid on the floor. This layer will be 8—10 in. in thickness and must be uniform. The bundles of straw are usually thicker at the base and smaller at the other end. Uniformity of thickness can be obtained by placing 4 or 5 bundles side by side with the base pointing in one direction. Over this an equal number of bundles is placed with the bases on the opposite side. Both these sets together form one layer of straw of uniform thickness. Bits of the pure-spawn grown in a bottle are placed over this layer all round the bed 4 to 5 in. from the edge. Each bit is about an inch or  $1\frac{1}{2}$  in. in thickness. The bed is then sprinkled with a handful of *dhal* powder. Next the second layer of straw bundles is placed over the first, these bundles being placed across those of the first. The bed is then drenched with water applied through a rose can. Bits of spawn are placed over this layer all round about 4 to 5 in. from the edge and *dhal* powder, sprinkled (as over the first layer). A third layer is formed over the second, the bundles being placed across those of the second layer. Water is applied over this by the rose can. Bits of spawn are now spread all over the third layer and not merely round the margin. Again *dhal* powder is sprinkled all over the surface. This is covered by a fourth and last layer of straw bundles placed across the third layer. The straw is pressed down and compacted and water is poured over the topmost layer by means of a rose can. The entire bed will form almost a cube  $3\frac{1}{2}$  to 4 ft. on each side. A bed of this size can be easily attended to from all sides. The bed has to be watered once or twice a day according to the weather conditions. Too much water should not be applied but the bed must be kept always moist. Mushrooms appear in 15 to 20 days after spawning. These come out in clusters from the sides of the lower layers and from the top. A few mushrooms develop on the first day. The largest number is formed on the second or third day. Usually mushroom formation ceases after the fifth or sixth day. Sometimes a second crop develops from the same bed a week later. But this crop is poor.

The yield from one bed of the aforementioned dimensions varies from 6 to 10 lb. of mushroom during favourable seasons. The results of monthly spawning carried out last year show that the heaviest crops are produced in June—July. Fairly good crops are obtained in April, May and August. In March and September few mushrooms develop. During the other months mushrooms are not formed under Coimbatore conditions.

The spawn that is used is a pure culture of the fungus grown on chopped straw in ordinary narrow mouthed bazar bottles. The bottles are filled with chopped straw. Then plenty of water is poured in and the bottle allowed to stand for 24 hours. Then the excess water is drained off, the bottle is plugged with cotton wool and sterilised by autoclaving at 15 lb. pressure for 2 hours. After sterilisation the bottle is inoculated with a bit of the pure culture of the fungus. The latter grows on the straw in the bottle and in 3 to 4 weeks extends completely throughout the bottle and the spawn is ready for use. One bottle is sufficient for one bed but with

two bottles per bed, the yield is better. The spawn is taken out by breaking the bottle. It will be more or less a compact mass of straw and fungus mycelium. This mass is cut into small pieces and used for spawning.

It is advantageous to use the bottle spawn which can be had from the Government Mycologist, Agricultural Research Institute, Lawley Road P. O., Coimbatore. In Malaya it is reported that the straw from the bed which had borne a crop of mushrooms is used as spawn for inoculating a new bed. But at Coimbatore this method was not successful.

The cultivation of this mushroom is possible for six months in the year. Since it comes up well only during the warmer months its cultivation can be attempted in the plains tract of our province. It grows in places where the temperature is above 75°F. It is very tasty and delicious. Fresh straw gives a better yield than old straw from hay stacks.

This mushroom is fairly big with a cap 4 to 5 in. in diameter. The cap is dark grey on the top and slightly raised (umbonate) in the centre. The stalk is white 2 to 4 in. in length. At the base of the stalk is a prominent dark grey cup-like structure (volva) from which the fungus receives its name. There is no ring (annulus) on the stalk. The gills are light flesh coloured when fresh.

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## SELECTED ARTICLE

### The Wealth of India

India is a subcontinent of Asia shaped like a battered triangle, the northern part entirely landlocked and the southern bounded on the west and east by the Indian Ocean and the Bay of Bengal, respectively. The base of the triangle stretches eastward from the Iranian border to the western frontier of Burma, over which the Japanese now stand guard. From north to south, India is 2,000 miles long and from east to west 2,500 miles wide. The total area is estimated at 1,578,000 square miles.

Into this area which is about half the size of the United States there is crowded a population estimated in 1941 at 389 millions. It is a fast growing population, as indicated by an increase of some 60 millions in the past two decades. In any evaluation of the material wealth of India the population factor is of great importance. A mere enumeration of the country's wealth in terms of agricultural and mineral resources makes for very impressive reading, but it is considerably less so when the resources are related to the needs of so huge a population.

The wealth of India is essentially agricultural. Much has been said in recent years about the industrialization of India, but the fact is that now—more so than in the past—the country is predominantly rural. It has been estimated that agriculture provides directly or indirectly, the livelihood of 89 per cent of the people. The remainder derive their income from industry, which has failed to