

A STUDY PROJECT

ON

MUSHROOM CULTIVATION

(WHITE BUTTON MUSHROOMS)

SUBMITTED BY:

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LEATURER IN MICRO-BIOLOGY

Verified

PROJECT WORK

On Behalf Of Our Project On Mushroom Cultivation We have Visited a near by Mushroom unit named "**Apple Mushroom unit**" **Sri B srinivasa rao** garu

the owner and Organiser of that unit have permitted us to do our Mushroom Cultivation inhis unit and guided us by giving the the necessary information recarding our Mushroom Cultivation . not only that he also guided us for another Mushroomunit Which is linked with his unit to continue Our Mushroom Cultivation In that unit also the organiser Katla revanth Garu guided us to Cultivate mushroom ie., White button mushrooms.As We got the necessary information through this guidance it have become so easy for us to know the practical method of Cultivation.



HISTORY OF MUSHROOM CULTIVATION

Chinese Were most probably feist People to describe Cultivation method of mushroom the cultivation of **Auricularie Spp**. Has been recorded in Chinese publication as for as **300B.C** Besibes, cultivation method of volvariella volvacea and lentinula Edodes are also reposted from ancient chinese sources however thesehas been no appreciable inprovement in their cultivation methods though cultivation of **white Button mushroom** started nardly three centeeris back it coveed about 80% of total mushroom production the world till early 1990 this variety has been benifited from the entensive work carried out on it and particulation on compositing and environmental factors howevar during the last two decades this variety has seen decline and at present **only30%** of the world production belongs to button mushroom the other varieties like shittake oyster paddy strahave now carred a place for them due to their easy method of cultivation, better yield and high nutritional and medical values.

The cultivation of white button mushroom originated in pairs during 1600 and later extended to other european countries Initially it was done outdoor where chrops were unprotected. Indoor cultivation started around 1810 in france and holland. French botanist tournefort described its cultivation method in 1707, gallow 1831 described compost presaration and cultivation in green houses spawn used to be collected from thefields where mushrooms were known to grow and pieces were inserted in compost beds constantine is france prepared pure spawn on sterilized house dung compost later on dugger in U.S.A prefected the production of pure spawn grain spawn was interoduced by since(1932) in U.S.A various workers have been engaged in developing high yielding strains strains have been imprrored through selection, hybridization and mutagenic techniques

INTRODUCTION:

Mushroom production is completely different from growing green plants. Mushrooms do most contain chlorophyll and therefore depend on others plant material for their food. The part of the organism that we used and call a mushroom is really just the fruiting body. Unseen is the mycelium-tiny threads that grow throughout the substrate and collect nutriente by breaking down the organic materioal generally, each mushroom species prefers a particular growth medium, although some species can grow on a wide range of materials the use of mushrooms as food is as old as human civilization through there are about 2000 edible mushroom species share majour part of the world production which is about one million tonnes per annum

Many peple are intrigued by mushrooms nutritional and medical properties, in addition to their cultnary appeal. Mushrooms contain many essential amino acids. Mushrooms are a good source of protein. It's a group, mushrooms also contain some unsaturated fattey acids, provide several of B vitamins and vitamin D. some even contain significant vitamin C, as well as the minerals potassium, Phosphorous, Calcium and magnesium.

Types of Edible Mushrooms

These are about 4 types of edible Mushrooms available

1. Paddy straw
2. Oyster
3. White button
4. Shittake

In these we tried to cultivate white button mushrooms in a near by Mushroom unit

Materials and methods:

Materials required

1. Substrate
   Paddy straw
   Rice bran
   Chicken manure
   Strawy house manure
   Wast papers
   Saw dust
   Wheat Bran
2. Formalin
3. Bavistin
4. Dettol
5. Black soil or Red
6. Cow pit
7. Chalk Powder
8. Spawn
   Sowar seeds
   Bazra seeds
9. Wates

Equipment:

1. Chop Cutter
2. Screw presser
3. Drrem – steam sterilization
4. Sprinklers
5. Foggers
6. Hygrometer
7. Poly tunnels

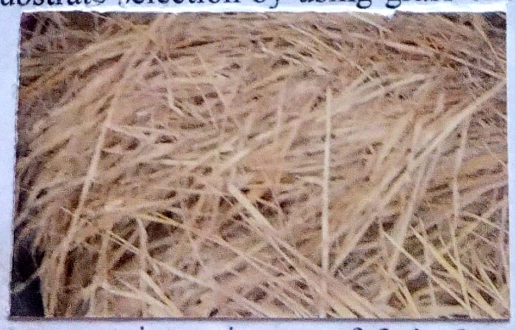
PROCEDURE:

The process that is followed to cultivated a milky mushroom involves the following steps. They are

1. Substrate Preparation
2. Sterilization & pasteurization
3. Bag filling & Spawning
4. Spawn running
5. Cropping

1.SUBSTRATE PREPARATION:

Different types of substances are used as substrate in the process of Mushroom cultivation they are **paddy straw, wheat straw, Saw dust, Waste papers etc**. for milky mushrooms I used paddy straw as it contains glucose and cellulose it helps in the **growth of mycelium**. The paddy straw is used as substrate in the mushroom cultivation. The straw keeps the moisture content stable for the growth of mycelium. After substrate selection by using grass chopper machine it was cut into small pieces.



Chopping:

The substrate paddy straw was cut into piceces of **2 inches** appoximately either manually or by chop cutter so that it will become easy for drying. The straw should be carefully handled and was cut by the **chop cutter** and later it is used as subsrate.



2.STERILIZATION OR PASTEURIZATION:

The chopped straw was sterilized by **chemical method** to avoid contamination of the spawn. It is the best method of sterilization when compassed to other methods like boiling and steam sterilization. In chemical sterilization some chemicals and sanitizes which will not make any harm to the mushrooms were used. I have taken tank with a capacity of approximately **200 litres with 100 litres** of water along that 250 ml of formalin and **1.5 to10 grams** of bavistin is added and the straw was soaked in it. That the whole process takes place for about 24 hrs for comlete sterilization. By this chemical sterilization about 90% of bacteria or any other spores of micro organisaims are killed. After sterilization the grass was dried under shade.



Drying:

Next the straw was dried under hygenic conditions to avoid contamination. The floor was cleansed with dettol and some sanitizers to avoid contamination and the grass was spreaded on the floor for drying. The growth of spawn is based on the moisture leads to less yield of the mushroom.

3.BAG FILLING AND SPAWNING:

In this process selection of spawn is important

Spawn selection:

There are different types of spawns. They are virgin spawn, flake spawn, brick spawn, manuse spawn, grain spawn, pertile spawn. The seed material used for planting beds is called "spawn". The yield purity as well asquality of the spawn is used as success of mushroom cultivation. The spawn is carefully cultivated labs under controlled conditions. The spawn is taken for cultivating milky mushrooms.

Bag filling:

The process of bag filling was under hygienic conditions to avoid further contamination polythene bags were taken for bag filling. These covers were dipped in sanitizers. In order to provide a base one end of the bag is closed with a rubber band. In bag filling first of all a layer of spawn is placed in it and 2 inches of straw is filled in the same way which was repeates for about 10 layers. After completion of filling the bag the other side is closed. The bags to regulate the mechanism of respiration holes were made on the cover by using a needle.



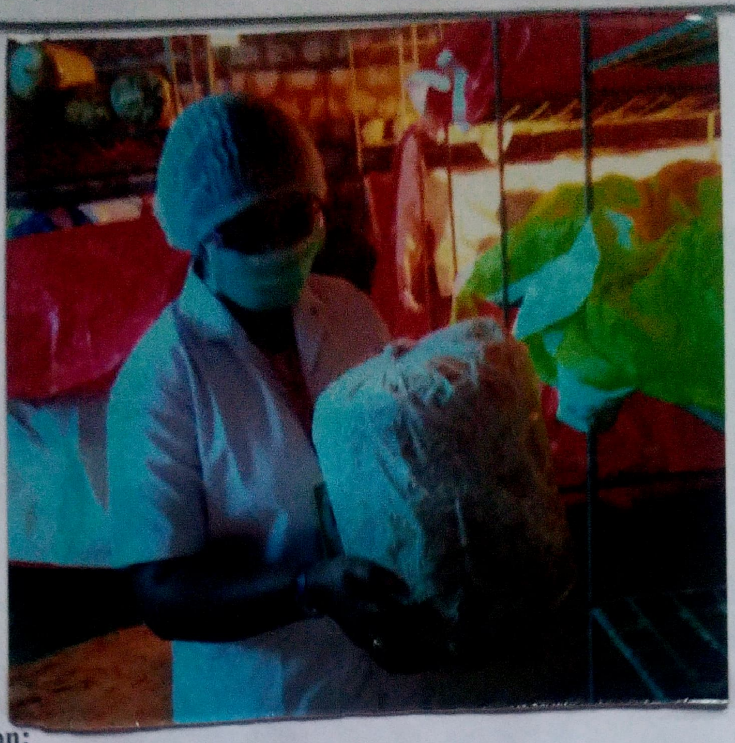
Dark room:

The room that is closed without light expose and so to increase the amount of Co2 in it is considered as dark room. In this room the temperature should be 32- 33°c and the humidity levels are maintained from 50-70. It used rain gun and spinkers above the room in order to regulate the tempaerature and moisture in the room as thoe two factors play a major role in the growth of mycelium. There are different types of systems used while placing those bags in dark room. I used rack system and placed my bags in racks in dark room in that mushroom unit that I have been guided.



4.SPAWN RUNNING:

The spawn that is pored in the bags are in the from of layers system slowly took over the glucose and cellulose from the straw that we used we used as substrate. The spawn slowly spreads over i.e, mycelium slowly utilises the mosture levels in the straw and spreads over the bag. Regular checking of bags is done to avoid the contamination. The spawn growth is seen after bagging of 21 days.



Casing soil preparation:

For the process of casing soil preparation the soil should be well prepared. The black soil is taken by me as they have the capacity to maintain required amount of moisture for the growth of mushroom. The coco pit, 50ml of formalin, 2 gm of bavistin and 1 kg og chalk powder is taken for an approximate amount of 25 kgs of soil and 1 liter of water is added. The quantity of soil is increased based on the size and number of bags.



Casing Room:

The poly tunnels were used in the casing rooms in which temperature is 32-35°C and the humidity is maintained from 80-95 to regulate the conditions that suitabilises the growth of mushrooms. The bags from the dark room are taken out and placed on atable in sterilized conditions. By cutting the bag into two equal values the casing soil is pored over each half of the bag. By placing

the soil on the bag the moisture contaents can be maintained that are suitable for the growth of mushrooms. A hygrometer is maintained in the room to check out the levels of temperature and humidity.



Cropping :

After casing about 21 days later pin heads are observed the bags are carefully checked regularly in order to avoid contamination and hense for about a week ar 10days after the appearance of pin heads the growth of mushrooms recasing of soil is done and second flush of mushroom can be observed after a short period of time and later the remained content in the bags can be used as manureand also can be mixed with these of food in pouttries and sheds for birds and animals



CONCLUSION:

under the guidance of expiriance d mushroom formers. I got out a good yield of mushrooms from my bags that ihave prepared in that indishroom mushroom unit .i my self checked and prepared these bags and got a good result of mushroom growth with milky mushrooms . from my observation of the whole prousewof mushroom cultivation I came to know that the process of mushroom cultivation is eithes too easy or too hard and hence care should be taken while Cultivating mushrooms. And also I came to know that milky mushrooms can be cultivated over indoors also by maintaining required temperature and humidity that could regulate the growth of mushrooms.

ACKNOWLEDGMENT

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