

SRI Y.N COLLEGE(Autonomous)

DEPARTMENT OF MICROBIOLOGY



MUSHROOMS

- ▶ A Mushroom or toadstool is the fleshy, spore-bearing fruiting body of a fungus, typically produced above ground, on soil, or on its food source.
- ▶ The standard for the name "mushroom" is the cultivated white button mushroom, Agaricus bisporus; hence the word "mushroom" is most often applied to those fungi (Basidiomycota, Agaricomycetes) that have a stem (stipe), a cap (pileus), and gills (lamellae, sing. lamella) on the underside of the cap. "Mushroom" also describes a variety of other gilled fungi, with or without stems, therefore the term is used to describe the fleshy fruiting bodies of some Ascomycota. These gills produce microscopic spores that help the fungus spread across the ground or its occupant surface.
- ▶ Fruiting bodies of some mushrooms occur in arcs or rings called fairy rings. The mycelium starts from a spore falling in a favourable spot and producing strands (hyphae) that grow out in all directions, eventually forming a circular mat of underground hyphal threads.
- ▶ Mushrooms are free of cholesterol and contain small amounts of essential amino acids and B vitamins. However, their chief worth is as a specialty food of delicate, subtle flavour and agreeable texture.

TYPES OF MUSHROOMS:-

- (1) EDIBLE MUSHROOMS:-

Edible mushrooms are the fleshy and edible fruit bodies of several species of macrofungi (fungi which bear fruiting structures that are large enough to be seen with the naked eye).

They can appear either below ground (hypogeous) or above ground (epigeous) where they may be picked by hand.^[1] Edibility may be defined by criteria that include absence of poisonous effects on humans and desirable taste and aroma.

- (2) NON-EDIBLE MUSHROOMS:-

Poisonous mushrooms contain a variety of different toxins that can differ markedly in toxicity. Symptoms of mushroom poisoning may vary from gastric upset to organ failure resulting in death.

The most common consequence of mushroom poisoning is simply gastrointestinal upset. Most "poisonous" mushrooms contain gastrointestinal irritants that cause vomiting and diarrhea.

EDIBLE MUSHROOMS

▶ (1) Agaricus bisporus (white button):-

- *Agaricus bisporus* is an edible basidiomycete mushroom native to grasslands in Europe and North America. It has two color states while immature - white and brown - both of which have various names, with additional names for the mature state.
- *A. bisporus* is cultivated in more than seventy countries^[2] and is one of the most commonly and widely consumed mushrooms in the world.
- The *pileus* or cap of the original wild species is pale brown in color and 5-10 cm (2-4 in) in diameter; it is first hemispherical in shape before flattening out with maturity. The crowded gills are initially pink, then red-brown and finally a dark brown.

HISTORY:-

The cultivated *Agaricus bisporus* common mushroom originated in France. In France, mushroom cultivation was unreliable as mushroom growers would watch for good spots of mushrooms in fields and then dig up the mycelium, replanting in beds of composted manure.

Kingdom:	Fungi
Division:	Basidiomycota
Class:	Homobasidiomycetes
Order:	Agaricales
Family:	Agaricaceae
Genus:	<i>Agaricus</i>
Species	<i>A. bisporus</i>

CULTIVATION:-

▶ (1). Spawning and spawn run:-

▶ The steps involved are-

- Good quality compost with temperature of 25 °C.
- Mixing of grain based spawn (@ 0.5-0.7% of wet compost weight) of *A.bisporus* under clean conditions (i.e. with clean hands and pre-sterilized area).
- Filling of spawned compost into polythene bags (12-15'' depth) or beds (6-8'' depth).
- Little compressing and levelling of spawned compost.



Spawn Run:-

Loosely closing the mouth of polythene bags filled with spawned compost (Covering with a clean newspaper / plastic sheet if filled in trays/shelves)

- Shifting the compost filled bags in cropping rooms with a temperature of $23 \pm 1^\circ\text{C}$ (air temp.), RH of 95% and high CO₂ conc. (1.0-1.5% strain dependent), and keeping the bags under above conditions for 12-14 days
- Completion of spawn run (change of dark brown compost mass in to light brown colour)

(2). Casing and case run:-

- Casing is a 3-4 cm thick layer of soil applied on top of spawn run compost and is a pre-requisite for fructification in *A. bisporus*.

a. Casing materials

- Well decomposed Farm Yard Manure (FYM) preferably two years old
- Well decomposed Spent Mushroom Compost (SMC) (two years old anaerobically decomposed)
- Composted coir pith (coir industry waste) (well decomposed & water leached)
- 1:1, 2:1 and 1:2, v/v of well decomposed FYM and SMC
- v/v of decomposed FYM or SMC with composted coir pith
- Decomposed powdered bark of some forest trees
- Paper industry waste
- Burnt rice husk is also in use along with decomposed FYM (2:1, v/v) in season.

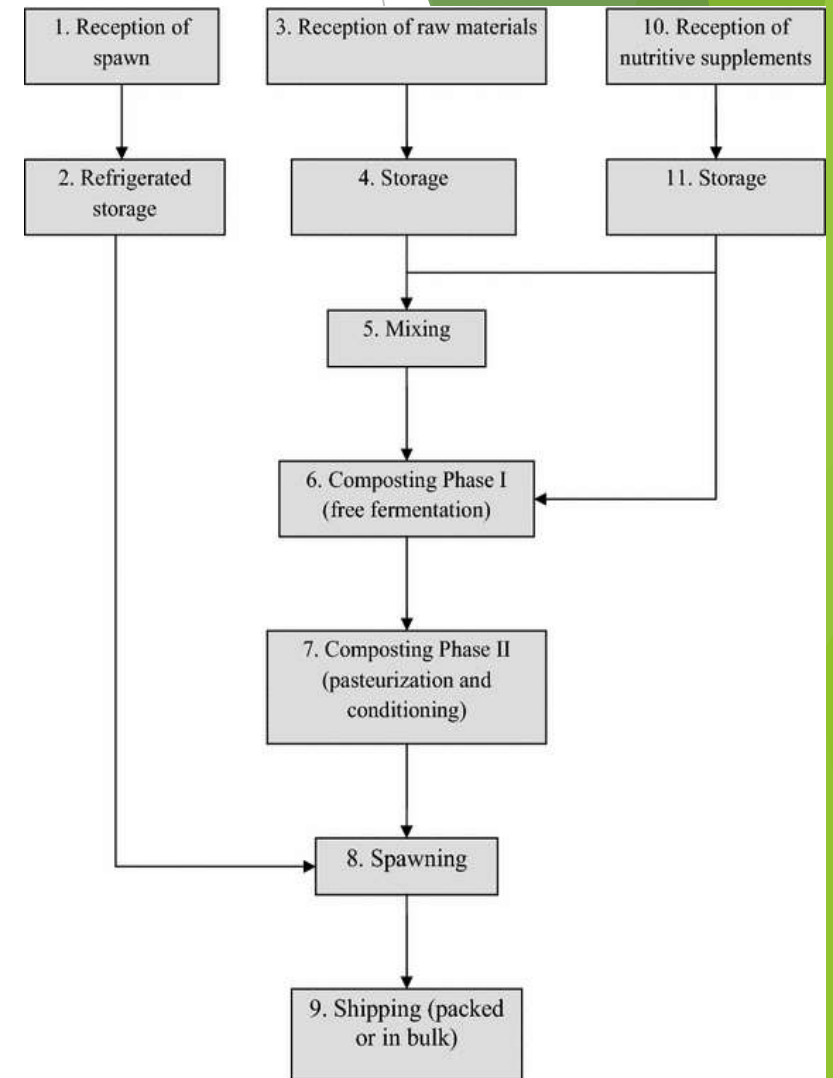
Casing treatment:-

Casing material should be treated properly before its application on the spawn run compost and the steps involved are:

- Make a heap of casing material
- Wet it up to 50-60% water holding capacity
- Fill in trays and shift them to pasteurization chamber
- Steam pasteurization at 60-65 °C for 6-8 hours and then sent for Other processes and finally packed for supply.

APPLICATIONS:-

1. White button mushroom helps in lowering the cholesterol level.
2. Prevents cancer.
3. Good source of potassium, iron, copper, and other amino acids.
4. Mushrooms are Anti-viral and Anti-bacterial.
5. Protein content is much higher than rice and helps to overcome malnutrition.



Agaricus bisporus:-



(2)pleurotus ostreatus(oyster fungus)

1. Pleurotus ostreatus, the oyster mushroom, oyster fungus, or hiratake, is a common edible mushroom.it was first cultivated in Germany as a subsistence measure during World War and is now grown commercially around the world for food. It is related to the similarly cultivated king oyster mushroom. Oyster mushrooms can also be used industrially for mycoremediation purposes..
2. The Latin pleurotus (sideways) refers to the sideways growth of the stem with respect to the cap, while the Latin ostreatus (and the English common name, oyster) refers to the shape of the cap which resembles the bivalve of the same name.
3. P. ostreatus is a carnivorous fungus, preying on nematodes by using a calcium-dependent toxin that paralyzes the prey within minutes of contact, causing necrosis and formation of a slurry to facilitate ingestion as a protei

Kingdom:	Fungi
Division:	Basidiomycota
Class:	Agaricomycetes
Order:	Agaricales
Family:	Pleurotaceae
Genus:	Pleurotus
Species	<i>P. ostreatus</i>

CULTIVATION:-

▶ (1). Spawning and spawn run:-

▶ The steps involved are-

- Good quality compost with temperature of 25 °C.
- Mixing of grain based spawn (@ 0.5-0.7% of wet compost weight) of *A.bisporus* under clean conditions (i.e. with clean hands and pre-sterilized area).
- Filling of spawned compost into polythene bags (12-15'' depth) or beds (6-8'' depth).
- Little compressing and levelling of spawned compost.



Spawn run:-

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- Shifting the compost filled bags in cropping rooms with a temperature of $23 \pm 1^\circ\text{C}$ (air temp.), RH of 95% and high CO₂ conc. (1.0-1.5% strain dependent), and keeping the bags under above conditions for 12-14 days
- Completion of spawn run (change of dark brown compost mass in to light brown colour)

► (2). Casing and case run:-

- Casing is a 3-4 cm thick layer of soil applied on top of spawn run compost and is a pre-requisite for fructification in *A. bisporus*.

a. Casing materials

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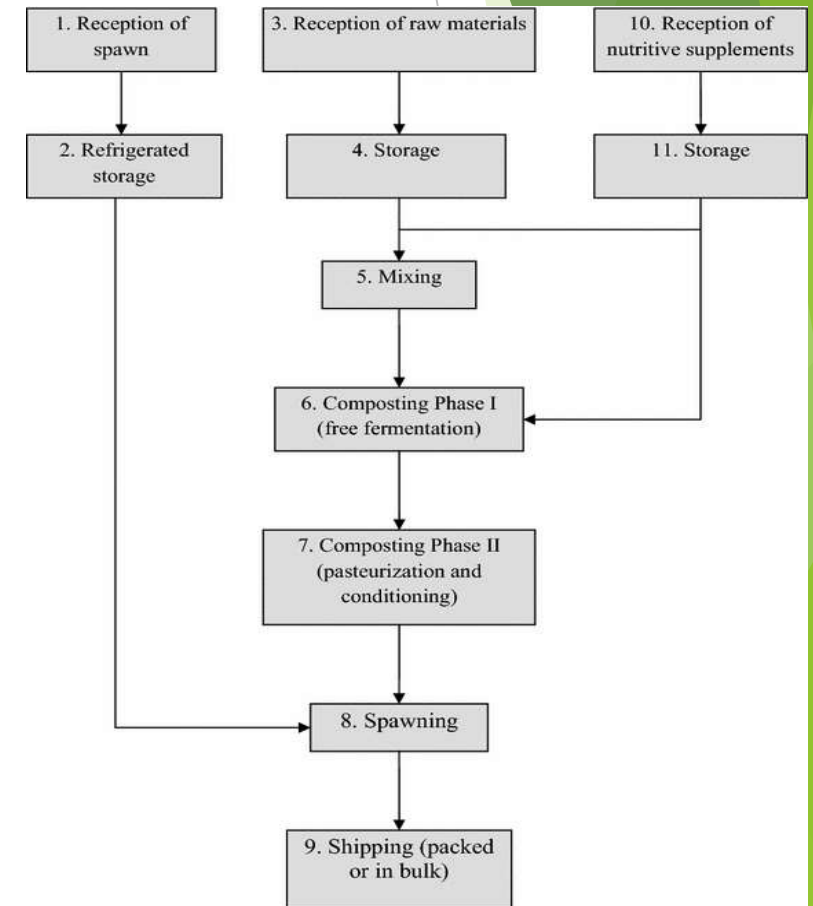
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APPLICATIONS:-

1. Oyster mushroom helps in lowering the cholesterol level.
2. Prevents cancer.
3. Good source of potassium, iron, copper, and other amino acids.
4. Mushrooms are Anti-viral and Anti-bacterial.
5. Protein content is much higher than rice and helps to overcome malnutrition.

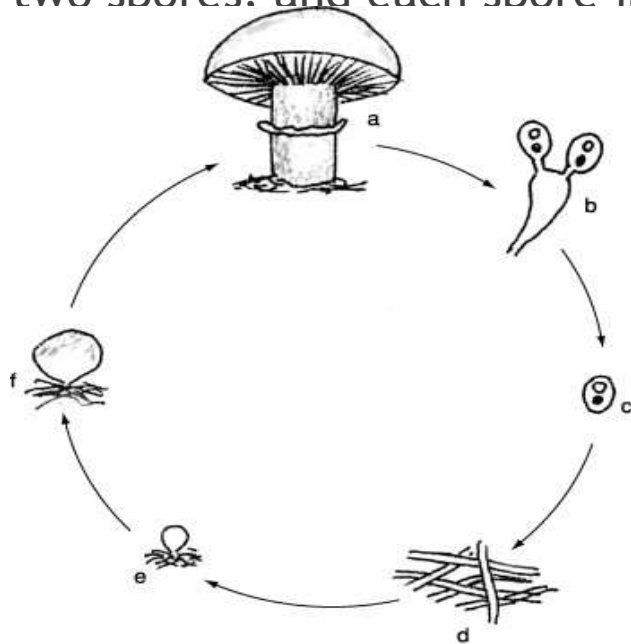


Pleurotus ostreatus:-



(3) Volvariella volvaceae(paddy straw):-

1. Volvariella volvacea (also known as paddy straw mushroom or straw mushroom) is a species of edible mushroom cultivated throughout East and Southeast Asia and used extensively in Asian cuisines. They are often available fresh in regions they are cultivated, but elsewhere are more frequently found canned or dried. Worldwide, straw mushrooms are the third most consumed mushroom.
2. Agaricus bisporus is an example of this phenomenon, wherein the basidium by name itself bears only two spores. and each spore in turn is binucleate.



Kingdom:	Fungi
Division:	Basidiomycota
Class:	Agaricomycetes
Order:	Agaricales
Family:	Pleurotaceae
Genus:	Pleurotus
Species	<i>P. ostreatus</i>

CULTIVATION:-

▶ (1). Spawning and spawn run:-

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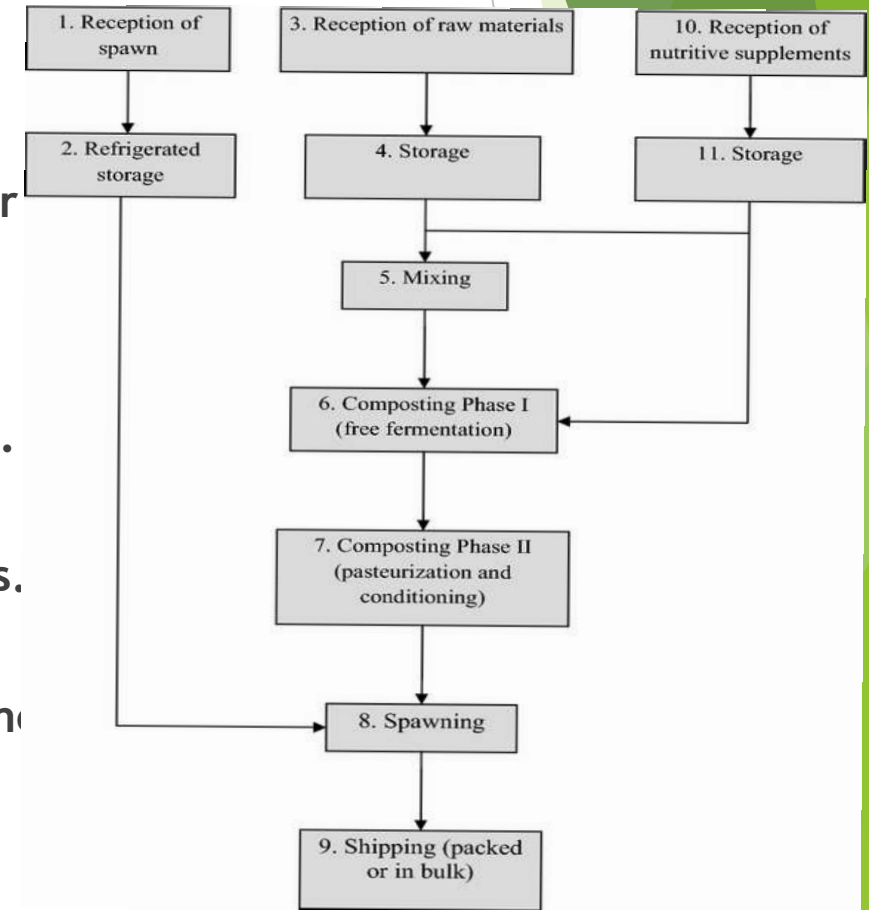
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APPLICATIONS:-

1. Paddy straw mushroom helps in lowering the cholesterol level.
2. Prevents cancer.
3. Good source of potassium, iron, copper, and other amino acids.
4. Mushrooms are Anti-viral and Anti-bacterial.
5. Protein content is much higher than rice and helps to overcome malnutrition.



Volvariella volvaceae:-



Thank you

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect against the white background.