

## CULTIVATION OF MUSHROOM

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### INTRODUCTION

The cultivation of mushroom has large importance in the human's life. The record of commercial production of mushroom was in the year of 1780, when a French gardener cultivated mushroom underground near Paris. It was introduced to north America using dark areas underneath in greenhouse. In 1894, the special structure was design to grow mushrooms in Chester countries Pennsylvania (Lo and Wasee, 2011).

Mushroom was cultivated in India in the year 1940.It was cultivated on small scale in Solan, Himachal Pradesh. In India commercial cultivation of mushroom had been with joint efforts of scientist and farmers. The mushroom is a macro fungus with a distinctive fruiting which can either epigeous or hypogenous and large enough to be seen with naked eyes and to pick by hand.

The global market of mushroom accountedfor us \$38.13 billion in 2017 and expending 7.8% from 2016-18.

The Indian market regarding mushroom is that is produce 73% of button mushroom. Paddy straw mushroom 7%, milky

mushroom 3% and produce oyster mushroom 16%, the total average mushroom production has registered of 0.13 million ton with an average growth of 4.3% per annum.

COUNTRY	PRODUCTION(mt)
CHINA	6269802
ITALY	350716
US	396689.4
NETHERLAD	285909.1
POLAND	239755
SPAIN	149860.6
FRANCE	113785.9
CANADA	115867.5
UK	82974.82
IRELAND	62836.36
GERMANY	60645.73
JAPAN	66272
AUSTRALIA	47264.91
BELGIUM	36227.91
INDONESIA	40983.18
INDIA	44767.82

### MUSHROOM CULTIVATION:-

The consumption of mushroom is increasing at faster rate with changing lifestyle, increasing nutritional awareness and benefits of mushroom ensuring food safety to the increasing population. Demand of mushroom has been increasing day by day due

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to population growth, market expansion, changing of consumer education and awareness along with the development friendly and they biosynthesize their food from agriculture crop residues, which is readily available in rural areas. Mushroom one of the most loved foods not only for its exotic taste but also for the benefits with which it comes. It can consume in various form like fresh, pickled, dried, powdered, canned etc.

### DEFINITION AND NUTRITIONAL IMPORTANCE: -

Mushroom are a fleshy fungi Basidiomycota, Agaricomycetes having a stem, cap and gills underneath the cap. They can be edible, wild and some of them can be toxic too. Mushroom are rich in riboflavin, potassium, proteins etc. and important nutrients including vitamin B, vitamin D, potassium etc. They provide carbohydrates, but are low in fibers and fats. Edible mushrooms are excellent source of high-quality protein. In addition to essential amino acids, some mushrooms have medicinal benefits of certain polysaccharides. When are known to boost immune system. It is a precursor of vitamin D which when stimulated by sunlight or artificial lightening source converts to vitamin D.

### TYPES OF MUSHROOMS

Some of the major variety of mushroom consumed in India are as follow;

### + BUTTON MUSHROOM: -

Button mushroom (*Agaricus bisporus*) belongs to class *Basidiomycetes* and family *Agaricaceae* and is native to *Europe and North America*. It is of two types white and brown, out of which white button mushroom is commonly grown in India. It is most relished variety used in eateries and household.

### + SHIITAKE MUSHROOM: -

Shiitake mushroom are native to *East Asia* and are highly consumed in Asian countries. They readily grow on wood of deciduous and hard wood trees such as oak, chesnut, and maple etc. and required they cause allergic reaction like itching but can be eliminated by through cooking. They are used in Asia cuisines and traditional medicines.

### + OYSTER MUSHROOM: -

Oyster mushroom (*Pleurotus ostreatus*) belongs to *Pleurotus spp.* It is known as 'Dhingri' in India and has fan or oyster shaped cap they grow easily on decaying wood or straw.

### + PADDY STRAW MUSHROOM: -

*Volvariella volvacea* belongs to division Basidiomycota. It is usually grown on rice straw bed and is used extensively in Asian cuisines.

### CULTIVATION: -

The basic requirements for mushroom cultivation are;

1. Manure/Compost

2. Spawn
3. Right temperature
4. Humidity

Favorable growing conditions involve 80-90% of relative humidity, ample ventilation, a temperature range of 20-28<sup>0</sup> C during spawn run and 12-18<sup>0</sup> C for reproductive growth. Initially for a week temperature must be maintained at 23±2<sup>0</sup> C and then it can be reduced to 16± 2<sup>0</sup> C for subsequent weeks. The CO<sub>2</sub> concentration should be 0.08 ± 0.15%.

If the above stated conditions are maintained appropriately the pin head start to appear within few days and progressively mature into button stage. The following steps are to be followed for mushroom cultivation;

#### COMPOST PREPARATION: -

The compost synthetic or natural used for mushroom growth usually comprises of wheat straw, horse manure, poultry manure, rice brane, gypsum etc. Utmost care is taken to protect the raw compost against rain or external moisture as it might introduce undesirable microbes. The chopped wheat straw or rice bran are mixed with horse dung sprinkled with water and are happed in a pile to allow fermentation. The fermentation process along with heat development breaks down the chemical compound in small component. Frequently turning and watering is done at a specific interval so as to avoid the

drying up of compost. Gypsum is some time added to the compost to reduce greasiness and allow more aeration. Within 15-20 days the compost gets all set to be used as bed. It is then spread onto wooden trays and sowed with spawn.

#### SPAWNING: -

Spawn refers to the mycelium carefully propagated on agars or grains. Spawning is a process of sowing or mixing spawns in compost. Although mushroom produces spores which act as a seed for further propagation but are not used generally due to uncertain germination and growth. The spawns are thoroughly mixed with the compost, are covered with newspaper and is watered sufficiently to maintain the moisture.

Throughout the cultivation period humidity is kept high to avoid loss of moisture. Gradually they growth into white cottony mycelium growth.

#### CASING: -

Casing is a kind of sterilized soil or dressing containing cow manure which is spread onto the spawn mixed compost. It is applied when the mycelium growth commences on the compost surface. After 15-20 days of its application mushroom head or pons start becoming visible on the surface. They are allowed to nature for a specific time period, and are harvested before opening of the cap. Mushrooms with opened cap are

undesirable and are considered of menial quality.

### **HARVESTING: -**

Harvesting is done by plucking them from soil using hands or the hands are chopped off using knife. The harvested mushrooms are then subjected to primary processing.

