MUSHROOM CULTIVATION: AN OPPORTUNITY FOR AGRIPRENEURSHIP

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Abstract:

Cultivation of Mushroom is the conversion of low value inedible wastes into a higher value substance that can be used as medicine and food material for humans. In our country mushrooms are non- traditional cash crop grown indoor, both as seasonal and throughout the year. It is successfully cultivated on agricultural wastes material. India's present share in the world mushroom production is low but still the potential for future growth is very high. The natural advantages of Mushroom cultivation in India are availability of cheap labour, presence of seasonal variations and the abundance and availability of variety of agro-wastes at low prices. Different scheme are also provided by the Ministry of Rural Development such as training, information dissemination, technical and financial assistance for preparation of cultures/ spawn cultivation, harvesting, storage, processing, packaging, marketing linkages with farmers to employment opportunities and generating income. Mushroom is a source of high protein and vitamin content for human being especially for those people who are vegetarian. So, it can be used as a weapon against starvation and in a way contributing to food security by being easily available, affordable price.

Keywords: *Cultivation, Marketing and Production, Ligno-cellulose, Bio-Conservation.*

INTRODUCTION

In the period of last half century i.e. from 1965 to 2015 with the adoption of "***Green Revolution***", the food production of India multiplied by 3.7 times and population by 2.55 times. It means 45 per cent increase in per person food production, which makes India not only food self-sufficient, but also a net food exporting country. But farmers' income did not grow much with increase in output and the income of farmers' remains low. The **NSSO data on Consumption Expenditure Survey for year 2011-2012** revealed that more than one fifth of rural people who primarily engaged in agriculture occupations were having income less than the poverty line. In India about **22.5 per cent** farm household are with the income below poverty line and that is highest in Jharkhand i.e. 45.3 per cent. (NSSO, 2011-12). In the period of 1995 to 2004 there is sharp increase in the number of farmers' suicides due to losses from farming. This period coincided with the sharp slowdown

in the growth rate of agricultural output (Chand and Parappurathu, 2012). The high and low fluctuation in farm income create adverse effect on the interest in farming and farm investment, particularly younger age group, to leave farming. This can cause adverse effect on the future of agriculture in the country. So, our Prime Minister Shree Narendra Modi set a goal to double the farmers' income by 2022-23 to promote farmers' welfare, reduce agrarian distress etc. In this way to increase the farmers' income Mushroom cultivation can be a big alternatives or supplementary income generating way for all type farmer such as small, marginal and big farmer. Because growing a Mushroom can be both part time and full time work. The farmer can grow Mushroom with their crop at their home at very low initial investment and this will help them to increase their economic condition. Cultivation of Mushroom is also beneficial because farmers use that product in the production which has very low value such as crops residue and convert them in to a higher value substrate which can use as medicine and food material for humans and as a source of commercially important metabolites. It is also an efficient means of waste disposal mainly agricultural wastes in eco-friendly manner.

Objectives of the Study:

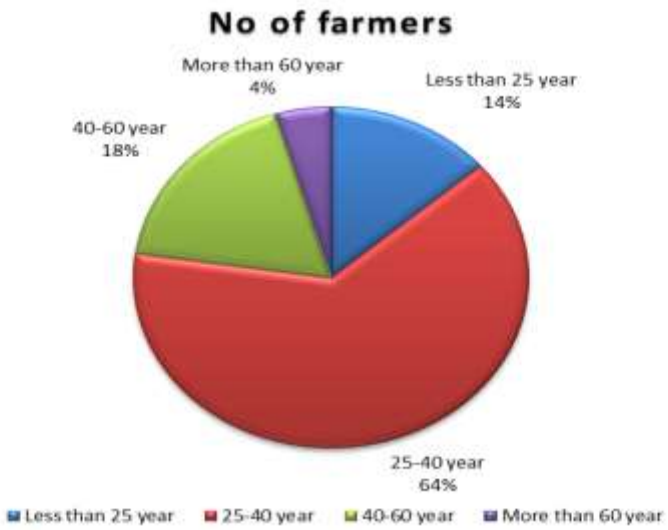
1) To know about requirement for Mushroom cultivation.
2) To study about the benefits derives from Mushroom Cultivation (mainly for the small farmers).
3) To identify the constraints in Mushroom Cultivation.

Research Methodology

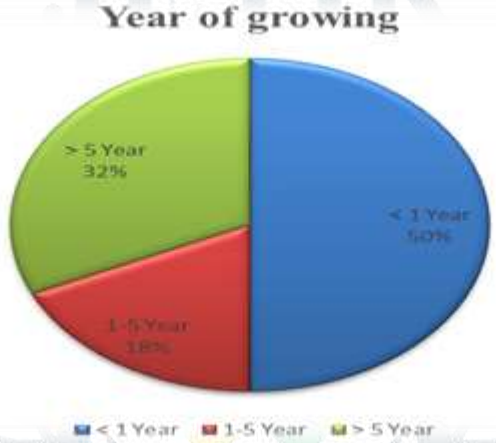
Research Design: In this review we are using Descriptive cum Exploratory research design for the study

Data Collection: The data collection for the research is based on Primary Data & on Secondary Data. Primary data is collected through structured questions (Questionnaire Method) developed by the researcher.

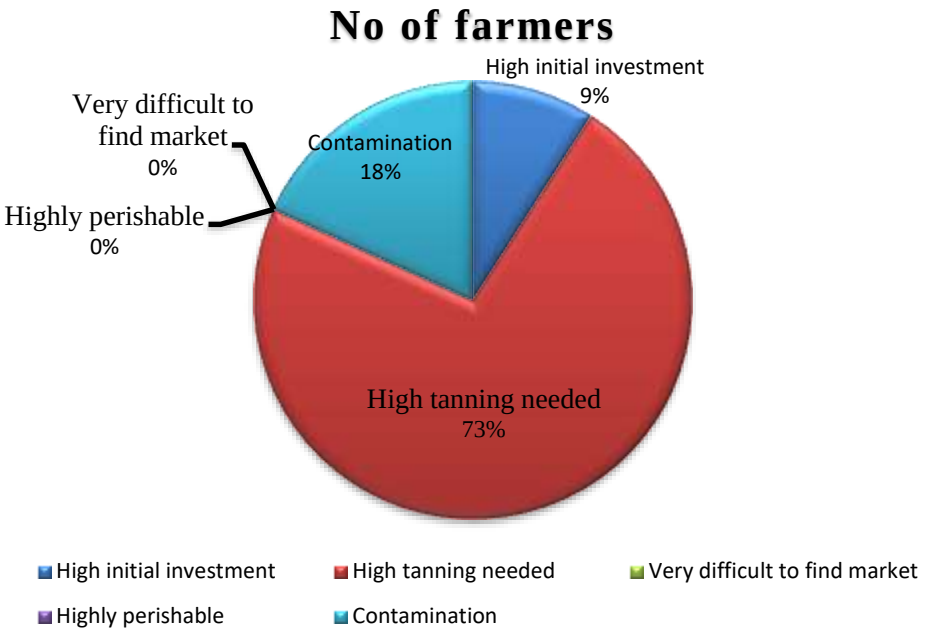
Findings of work in the Varanasi district:



- Majority of the farmers are in the category of 25-40 age group Followed by 40-60 and less than 25years of age group. The least were belonging to the group of people above 60 years of age.



- Majority of the farmers are growing the mushroom from less than one year i.e. 50%, 18% farmers are growing 1-5 year and 32% farmers are growing mushroom from more than five year. But all are seasonal Mushroom grower.



- According to the farmers there is high training is needed in the mushroom, High investment is only problem for those farmers who wants to setup a production unit at a commercial level otherwise if a farmer wants to start production as a secondary source of income in this case investment is very low. Perishability is not a problem in Varanasi reason due to high demand of mushroom and less producers.
- Almost every farmer accepted that growing Mushroom is highly profitable, require low cost for cultivation and in Varanasi reason there is less competition between the growers, has also good market for sale. The growers were very happy with the profit margin of Mushroom.

Cultivation of Mushroom:

Mushroom cultivation is not so easy because it is temperature sensitive and highly perishable in nature but low cost required for its production or cultivation. If any small farmer wants to start grow Mushroom, they can start their work with only 10000/- rupees (For four ton compost kipping capacity) to making roof, but this cost can be lower down if farmer have their own straw and bamboo according to Mushroom grower and Directorate of Mushroom Research-ICAR (**Plate 1 & 2**).

Plate 1: *Production house made from bamboo and mud*

Plate 2: *Production of Mushroom in a room which is made from bamboo and mud*

But farmers of urban area can use their room or their building basement place for growing the Mushroom which is not in used. Farmers which are successfully growing Mushroom the cost of cultivation of one kg Mushroom in season in about **35-40 rupees** and selling price never goes down 100 rupees per kg and this price normally increase in off- season, marriage season, festivals season etc. goes more than 200 rupees per kg. A farmer can increase their profit if they will produce spawn for production of Mushroom and also can sale the surplus spawn and farmer can be a regular spawn seller for more income. The Mushroom grower can take extra profit and increase productivity of their field through recycle the Spent Mushroom Substrate (SMS). Compost is almost considered to be used up, when current yield of mushroom has been taken or when further extension of cropping becomes non useful.

It can be used in different ways-

1. Reclamation of soil
2. Organic fertilizer
3. Manure in horticultural crops
4. Bioremediation of contaminated soil and water

POSITIVE ASPECTS OF MUSHROOM CULTIVATION:

In India agriculture is the main source for income generation for most of the people and it play a vital role in the Indian economy. However our fight to achieve nutritional security for people is still on. Though we have

achieve a very good level in the production of milk, vegetable and fruit but still we have to do more. The population of world increasing day to day and agriculture land are deleting day to day so in changing environment it is a very big challenge to produce a quality food at a competitive rates of growing population.

Diversification of agriculture to other areas like horticulture is necessary to provide quality food coupled with nutrition to entire population. Mushrooms can be one crop that to bring diversification, solving the problems of providing quality food and environment related issues. As like milk, mushroom is also consider a complete, healthy and suitable food for all age group. The exotic flavor, taste and fleshiness of mushroom have made it delicacy in human diet. It do not have cholesterol, but they it has ergo sterol that acts as a precursor for Vitamin- D synthesis in human body. The protein content in edible mushroom is usually high but it varied from species to species i.e. from 12-35%

NUTRATIONAL VALUES OF DIFFERENT MUSHROOMS (dry weight basis g/100g):

Mushroom	Carbohydrate	Fibre	Protein	Fat	Ash	Energy k cal
Agaricus bisporus	46.17	20.90	33.48	3.10	5.70	499
Pleurotus sajor-caju	63.40	48.60	19.23	2.70	6.32	412
Lentinula edodes	47.60	28.80	32.93	3.73	5.20	387
Pleurotus ostreatus	57.60	8.70	30.40	2.20	9.80	265
Volvariella volvaceae	54.80	5.50	37.50	2.60	1.10	305
Calocybe indica	64.26	3.40	17.69	4.10	7.43	391
Flammulina velutipes	73.10	3.70	17.60	1.90	7.40	378
Auricularia auricula	82.80	19.80	4.20	8.30	4.70	351

Courtesy: Stamets, 2005 *(A.bisporous, P. sajor-caju, Lentinula edodes)*, Doshi and Sharma, 1995 (*Calocybe indica*), Crison and Sand, 1978 (*Flammulina velutipes* and *Auricularia spp*) and FAO, 1972 (*Pleurotus ostreatus, V. volvaceae*).

The risk of obesity and diabetes, heart disease gets decreases by consumption of naturally-grown foods like mushrooms and it also promotes a healthy complexion and hair, increased energy, and overall lower weight. It cures various diseases like- cancer, diabetes, heart diseases & it improves the immunity of the body. Just as high an antioxidant capacity as carrots, tomatoes, green and red peppers, pumpkins, green beans, and zucchini are also present in it. Selenium is a mineral that is not found in most vegetables and fruits but found in mushrooms. Research shows that in type 1 diabetics who consume high-fiber diets have lower blood glucose levels and type 2 diabetics may have high blood sugar, lipids and insulin levels. A cup of grilled portabella mushrooms and one cup of stir-fried shiitake mushrooms provide about 3 grams of fiber. Potassium and sodium work together in the body to help regulate blood pressure so consuming mushrooms is very beneficial

to lower blood pressure and decrease the risk of high blood pressure and cardiovascular diseases. If we take extra 3 grams of beta-glucans per day can lower blood cholesterol levels by 5%.

GOVERNMENT AGENCIES FOR THE ENCOURGEMENT AND SUPPORT OF THE MUSHROOM GROWER:

- For establishment of modern commercial production units of Mushroom and its product, many agencies like **National Horticulture Board (NHB)** provide subsidy leading to alternative agriculture technique resulting in high value yielding crops.
- **Ministry of Food Processing Industries (MOFPI) –** MOFPI also provide credit in the area of agriculture, horticulture and food processing for the Technology up gradation and establishment or modernization of food processing industries.
- **Small Farmer's Agribusiness Consortium (SFAC) -** SFAC is a registered society, works under Department of Agriculture and Cooperation, Government of India. It is operating scheme for Agribusiness Development through venture capital assistance and project development facility, though which government to promote investments in Agri-business projects with the nationalized banks.
- **National Bank for Agriculture and Rural Development (NABARD)**
  - **A.** Through "Area Development Scheme on Mushroom."
  - **B.** Through watershed development projects NABARD are promoting mushroom cultivation.
- NABARD also provide support to the farmer through different scheme such as model Bankable schemes for different practice of Mushroom cultivation viz., Compost making, Spawn production and Mushroom production.
- **Directorate of Mushroom Research**

  DMR is a institution of Indian Council of Agricultural Research which is situated at Solan. The scientist of this institution provide support to the farmer through different activity viz. training, Consultancy services, Extension services like organization of Mushroom Mela, exhibitions. DMR also provides culture, spawn of improved strains to the farmers.
- **KVK also provides support and technical assistance to the farmer.**

CONCLUSION

It is concluded that the cultivation of mushroom is a beneficial approach to improve the condition of Indian farmers through its huge to improve food security and income generation especially for the farmer who has low income and small land holding. It is also helpful to provide healthy food in the plat of villagers, vegetarian

and other people of the country. In the country, the cultivation of mushroom and their marketing is not in tradition like other cereal and vegetable crops such as maize, wheat, rice, potato etc. On the basis of above study we found that there is no problem of market for mushroom and cost of production of mushroom is very less with respect to selling price. But advertisement and governmental support like technical support, financial support, storage facilities and knowledge of market is needed to popularize of the cultivation of mushroom between farmers. Mushroom cultivation helps to establish a new business in less space and less cost for better income source and in improving the farmers' livelihood.

LIMITATIONS IN MUSHROOM PRODUCTION

In India, there are very big future for production of mushroom from profusely available of recyclable agro-wastage like cereals straws, vast domestic market, low labour cost, favorable climatic condition, strong technical base and government support (Kaul, P.L. 1999). In our country most of the farmer are marginal and small, who are showing interest in adopting Mushroom cultivation, due to high profitability the unemployed youths and farmers are attracted towards mushroom cultivation because there is no space or very less space requirement for mushroom cultivation. Small and marginal farmer can grow even at home and with the family member in a judicious manner. It is also a good food supplement as they contain minerals and vitamins (Beetz and Greer 1999) and contains both a nutritional and medicinal importance. It is important and beneficial component for increasing food production of the country, and can provides further income to the growers other than their traditional agricultural output.

But, in spite of all these benefit, there are many problems, faced by the mushroom growers in its cultivation:

1. Insufficiency of cold storage.
2. Non- availability of equipment used for growing mushrooms.
3. Lack of finance
4. Dearth of transportation facilities.
5. Inadequate know how about mushroom production technology.
6. Shortage of spawn.

Limitations related to mushroom production - These are some limitations in mushroom production in India as follows:

- **Non-availability of quality spawn and no proper electricity in summer.** Lack of government spawn laboratories and presence of unqualified spawn producers in the nearby areas is a major problem. Apart from these, non-availability of spawn in productive time coupled with high wage rate of labour, adds to the problem.

- **Storage Problems –** Unavailability of cold storage facilities and drying equipment is other most important problem which is given by the farmer. It leads to detrimental effect of climatic conditions and coupled with lack of separate storage place for mushroom.
- **Financial Problems -** Unavailability of finance is also a big problem for proper running of mushroom cultivation, especially in the case of when farmer want to grow at commercial level. Inadequate facilities of funds by institutional sources such as banks and other organized sector.
- **Inadequate knowledge and awareness about mushroom production technology-** Inadequate knowledge about mushroom cultivation technique, Lack of long duration training program and farmer's has no proper knowledge of spawn production and inadequate knowledge of current market situation, especially those who are away from the city.

SCOPE FOR FURTHER RESEARCH IN MUSHROOM CULTIVATION

The population of India is growing day to day but the land is not increasing i.e. constant so it is very challenging to provide nutritious food to all the people. In this way cultivation of mushroom can be a big option for the farmers in the way of food security and in the way of improving their standard of living, because cultivation of mushroom is not only highly profitable also require very less area for cultivation. But in present time mainly in north India where temperature becomes high at most of the time so there are also some difficulties in the production of mushroom cultivation. So here are some areas where research should be needed i.e. production of quality spawn, method of mushroom production mainly in warm region and providing farmers cost effectively technique for the long time storage process, technique for manufacture processed product through mushroom so that farmer can earn more money and cultivation of mushroom is also not very popular like traditional crop such as wheat, rice, maize etc. among farmers so there is need for work on how it can be popularized.

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