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## Analysis of constraints and communication channels in adoption of mushroom production technology

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### Abstract

This study attempts to investigate the easily acceptable and low cost technology of Oyster mushroom cultivation. Locally and easily available substrates such as corn cob, vegetable residue and waste paper were examined with the supplementation of rice bran and chicken manure separately. During the study mycelial growth, spawn run, pin head formation, yield and biological efficiency were observed. Mushroom cultivation is a good enterprise for small, marginal and landless farmers as it is grown on agricultural waste, require less land, and require short span of time to grow. Mushroom is now getting significant importance due to their nutritional and medicinal value and today their commercial cultivation is being done at large scale. Hence, keeping the above facts in view the present study was undertaken to ascertain the constraints in adoption of mushroom production technology in purposively selected Tikamgarh district of Madhya Pradesh. Ten villages were selected from two blocks of Tikamgarh district. A sample of 120 respondents i.e. 12 mushroom growers from each village was drawn from selected villages who were engaged in mushroom production technology. The constraints perceived by the mushroom grower were studied and data so collected tabulated and analyzed. The data were collected with the help of a structured schedule by personal interview method. The constraints as expressed by mushroom growers were non availability of good quality spawn, non availability of spawn in time, difficulty in compost making, difficulty to maintain proper indoor temperature, lack of cold storage facilities, fluctuating price prevailing in the market, Lack of transportation facilities and high charges, lack of Knowledge of spawn production, lack of technical guidance in Post Harvest Technology, lack of training of scientific Mushroom Production Technology, complicated procedure in getting loans and lack of government support in the form of loan and subsidy. It is suggested by the mushroom growers that Marketing of mushroom plays a vital role in cultivation of mushroom. The efficient marketing provides high return to the mushroom growers. Mushroom growers shared that they could not get the desired price for their produce due to price fluctuation and lack of marketing system. It is suggested by them that similar to other crops like Wheat, Rice, Bajra, Mustard etc. minimum support price also be fixed for Mushroom crop. It is suggested that there is an emergent need to enhance mushroom growers knowledge about latest techniques of mushroom marketing.

**Keywords:** Mushroom, constraints

### Introduction

The consumption of mushrooms by humans is an age-old practice. However, in recent days mushroom has become a part of every continental dish because of its good taste, flavor and nutritional value. It contains large amount of nutrients, proteins, vitamins, minerals, fiber etc., and hence can be considered as pool of nutrients. The discovery of bio-active compounds, including antitumor substances has stirred a growing interest in such mushrooms from industry, the media and the scientific community. Cultivation of Oyster mushroom with agricultural residues, such as rice and wheat straw is a value added process to convert these materials into human food. It represents one of the most efficient biological ways by which these residues can be recycled. Mushroom cultivation not only helps to reduce the protein deficiency especially in developing countries like Nepal but also increases income of the rural poor people. The objectives of rural development in developing countries are mainly diversification of rural income and attaining a competitive structure for agriculture in order to increase job opportunities and development. Mushroom cultivation can be a big source of income through rural development program for farmers if they are made aware its cultivation process and its importance. By taking into consideration of drought and food and nutrition security problems in some countries, mushroom production could be an alternative source to overcome these problems. In addition, livelihood can be improved because the demand of mushroom has been increasing due to increasing population, market expansions and changing of consumer behavior. The raw materials which can be applied for Oyster mushroom cultivation are cheaply available in farmer's yards and easily cultivated in various climatic conditions as a fast maturing crops.

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Therefore the aim of the study is to evaluate the growth and yield of *P. ostreatus* on locally available substrates with supplementation in ambient environmental conditions which can be easily applied by farmers from hinterlands.

It is well known fact that India is second largest populated country in the world. Like other developing countries, India has so many problems like malnutrition due to scarcity of food, poverty, unemployment etc, among them lack of food scarcity is one of the major problem. India is a country where more than 70 percent of total population earns their livelihood from agriculture but in last few decades due to rapid urbanization and population explosion, rural landholders have loss access to their land, turning to mere wage labours. Hence to bridge the gap between the population and food production, the non-traditional food resources have to be explored. In this course production of mushroom might be a great business enterprise to attain the desired goal. Mushroom is one of the Fungi and has the properties of both plant and animal. It is also called "White Vegetables" or "Boneless Vegetarian meat" contains ample amounts of proteins, Vitamins, carbohydrates, minerals and fiber. It has also certain nutritional and medicinal properties [1]. It is highly nutritious food which is useful for heart and diabetic patients. Majority of Indian like non vegetarian foods, mushroom serves as the best substitute because of its high nutritional and calorific constituents. Mushroom cultivation is a good enterprise for small, marginal and landless farmers as it is grown on agricultural waste, require less land, and require short span of time to grow. Mushroom is now getting significant importance due to their nutritional and medicinal value and today their commercial cultivation is being done at large scale.

The major mushroom producing countries viz., China, USA and Netherland account for more than 60 per cent of the world production. According to current Indian estimates, mushroom production of India is about 1 Lakh metric ton [2]. Major mushroom producing states in India are Punjab, contribute 20-25 percent of total produce followed by Himachal Pradesh and Haryana. Currently, three varieties viz. white button mushroom, the paddy straw mushroom and the oyster mushroom are cultivated in India. In Haryana mushroom growers produce mostly White Button Mushroom (*Agaricus bisporus*) that alone contributes about 95 per cent of the total mushroom production in the state, a large quantity (80%) is consumed as fresh and remaining is canned. Cultivation of mushroom is based on recycling of agricultural residues, which are available in huge amount in northern part of Haryana. Haryana has also a location specific advantage being nearer to national capital and therefore, potential market is available for marketing of agro-products. Keeping in view the availability of abundant quantity of agricultural waste, there is ample scope of increasing mushroom production in Haryana state. Hence, keeping the above facts in view a study was undertaken to identify the constraints perceived by the mushroom growers in adoption of mushroom production technology.

### Material and Methods

The present study is based on the primary data collected from the mushroom growers in district Tikamgarh. The study was

conducted purposively selected Tikamgarh district of Madhya Pradesh. Ten villages were selected from two blocks of Tikamgarh district. A sample of 120 respondents i.e. 12 mushroom growers from each village was drawn from selected villages who were engaged in mushroom production technology. The constraints perceived by the mushroom grower were studied and data so collected tabulated and analyzed. The data were collected with the help of a structured schedule by personal interview method. Focused Group Discussions (FGD) were also conducted to be familiar with the reflection of the mushroom growers.

### Results and Discussion

The mushroom growers were asked to report the constraints experienced by them in adoption of mushroom production technology. These constraints were grouped into five categories viz. input, Production, Marketing, Technological & Financial constraints.

#### I. Input constraints perceived by mushroom growers

The data in table 1 revealed that non availability of good quality spawn was the most serious factor affecting the mushroom production (81.66%), non-availability of spawn in time ranked II. The constraints like unavailability of skilled labour (68.33%) and high wages rate of labour (60.00%) ranked III and IV. Almost half of the mushroom growers highlighted that unavailability of inputs at local market was important constraint with regard to mushroom production.

**Table 1:** Constraints related to Input of Mushroom

Sr. No.	Constraints	Frequency	Percentage	Rank
1.	Unavailability of Inputs at local level	62	51.66	V
2.	Non availability of spawn in time	88	73.33	II
3.	Non availability of good quality spawn	98	81.66	I
4.	Unavailability of skilled labour	82	68.33	III
5.	High wages rate of labour	72	60.00	IV

Majority of the mushroom growers shared that Government should provide facilities of cold storage, timely availability of good quality of spawn at cheaper rate to the mushroom growers. Agriculture College and Krishi Vigyan Kendra should also organized more numbers of skill development training programme on mushroom cultivation.

#### II. Production constraints perceived by the Mushroom growers

The data in Table -2 depicted that difficulty in compost making was the major constraint perceived by the mushroom growers affecting the production of mushroom. Low production due to unfavorable humidity was also other constraint perceived by the mushroom growers (63.33 %). Difficulty to maintain proper indoor temperature and difficulty to maintain the proper moisture in compost were also other major constraints ranked III and IV by the mushroom growers.

**Table 2:** Constraints related to production of Mushroom

Sr. No.	Constraints	Frequency	Percentage	Rank
1.	Difficulty in compost making	82	68.33	I
2.	Difficulty to maintain the proper moisture in compost	58	48.33	IV
3.	Low production due to unfavorable humidity	76	63.33	II
4.	Difficulty to maintain proper indoor temperature	71	59.16	III

Proper training of mushroom growers in mushroom production technology may be of great value to tackle the problems of compost preparation, maintenance of moisture in compost, maintain proper indoor temperature and proper humidity in mushroom shed.

### III. Marketing constraints perceived by Mushroom growers

It is observed from the data in Table-3 that equal percentage of mushroom growers perceived that fluctuating price

prevailing in the market and lack of cold storage facilities found to be the major constraint expressed by 81.66 per cent mushroom growers. This was followed by lack of transportation facilities and high charges (75.00%) and Poor Marketing facilities (71.66%). The constraints like lack of awareness about proper marketing place and markets are distantly located ranked IV and V respectively. who revealed that high fluctuation in marketing price, high cost of inputs and lack of cold storage facility were the important obstacles faced by mandarin growers.

**Table 3:** Constraints related to Marketing of Mushroom

Sr. No.	Constraints	Frequency	Percentage	Rank
1.	Poor Marketing facilities	86	71.66	III
2.	Markets are distantly located	66	55.00	V
3.	Fluctuating price prevailing in the market	98	81.66	I
4.	Lack of transportation facilities and high charges	90	75.00	II
5.	Lack of awareness about proper marketing place	73	60.83	IV
6.	Lack of cold storage facilities	98	81.66	I

Marketing of mushroom plays a vital role in cultivation of mushroom. The efficient marketing provides high return to the mushroom growers. Mushroom growers shared that they could not get the desired price for their produce due to price fluctuation and lack of marketing system. It is suggested by them that similar to other crops like Wheat, Rice, Bajra, Mustard etc. minimum support price also be fixed for Mushroom crop. The establishment of cooperative organization for marketing of the produce needs to be promoted. There is a need to promote cold storage facilities and co-operative marketing system for safe storage, quick transportation and better marketing.

### IV. Technological constraints perceived by Mushroom growers

The data in Table-4 highlighted that the lack of knowledge of spawn production was the major constraint uttered by 79.16 per cent of mushroom growers; Lack of technical guidance in Post-Harvest Technology (73.33%) is the second technological constraint. Lack of training of scientific Mushroom Production technology was the third most serious constraint expressed by 68.33 per cent mushroom growers. The fourth and fifth constraints were Lack of proper knowledge of compost preparation (63.33%) and Lack of literature in simple language on marketing of mushroom (56.66%).

**Table 4:** Constraints related to Technology of Mushroom Production

Sr. No.	Constraints	Frequency	Percentage	Rank
1.	Lack of proper knowledge of compost preparation	76	63.33	IV
2.	Lack of Knowledge of spawn production	95	79.16	I
3.	Lack of technical guidance in Post Harvest Technology	88	73.33	II
4.	Lack of training of scientific Mushroom Production technology	82	68.33	III
5.	Lack of literature in simple language on marketing of mushroom.	68	56.66	V

### V. Financial constraints perceived by the Mushroom growers

The data in table-5 depicted that complicated loaning procedure was experienced as major constraint by the mushroom growers (68.33%) lack of government support in the form of loan and subsidy (59.16%) and lack of finance for

purchase of Inputs (62.50%) ranked II and III. Majority of the mushroom growers shared that mushroom cultivation is capital incentive enterprise, the assistance of government financial agencies at cheaper rate of interest help to promote mushroom production among the small farmers and landless farmers.

**Table 5:** Constraints related to Finance of Mushroom Production

Sr. No.	Constraints	Frequency	Percentage	Rank
1.	Complicated procedure in getting loans	89	74.16	I
2.	Lack of government support in the form of loan and subsidy	82	68.33	III
3.	Lack of awareness of the incentive meant for them	71	59.16	V
4.	Lack of finance for purchase of Inputs of mushroom	75	62.50	IV
5.	Non possession of technical knowledge	84	70.00	II
6.	Lack of flow of information	56	46.66	IX
7.	Infected Spawn	68	56.66	VIII
8.	Non-availability of spawn in time	71	59.16	VI
9.	Lack of marketing facility I	70	58.33	VII
10.	Lack of transport facility	68	56.66	VIII

Proper institutional arrangements are required to popularize the various government scheme launched for the promotion of mushroom production. Financial institution must simplify the

loaning procedure and it must be widely publish by the institutions.

## VI. Effect of communication channels on success rate of entrepreneurial SMEs

**Table 6:** Frequency distribution based on the contact priority with used information sources/channels.

Information sources	Mean*	SD	Variation coefficient	Priority
Other businesses	3.97	0.96	0.244	1
Neighbors and acquaintances	3.97	1.20	0.304	2
Input sellers	3.20	0.97	0.304	3
Junior technical (Extension agent)	3.72	1.29	0.347	4
Credit institutions	3.54	1.23	0.347	5
Example entrepreneurs	3.54	1.24	0.352	6
Relatives	3.97	1.40	0.352	7
Agricultural books and publications	3.54	1.53	0.432	8
Group visits	3.54	1.53	0.432	9
Radio and television	3.46	1.52	0.439	10
Educational and extension courses	3.72	1.64	0.440	11
Local creditors	3.32	1.46	0.440	12
Extension journals	2.64	1.23	0.465	13
Experts	3.04	1.44	0.470	14
Educational films	2.28	1.02	0.478	15
Public institutions (Jihad Agricultural Organization)	2.64	1.42	0.539	16
Agricultural research centers	2.30	1.28	0.565	17

0 = none, 1 = very little, 2 = little, 3 = medium, 4 = much, 5 = very much.

### Prioritization of information sources and channels used by respondents

The mean score and the variation coefficient values of using the information sources/channels (Table 6) show that consulting with other businesses and advisory contacts with neighbors and acquaintances, input sellers, and promotion agents respectively have respondents' highest priorities regarding the reference to under-study sources.

### Suggestions of Mushroom Growers to overcome the constraints

- Majority of the mushroom growers shared that availability of quality spawn on time is very essential for better production of mushroom. Unfortunately, there is lack of quality spawn centre or institutions in Madhya Pradesh resulting low production. Govt. should ensure timely availability of good quality spawn for mushroom growers.
- Post Storage facility is very essential as mushroom is highly perishable in nature. Therefore, Govt. should provided facilities of cold storage and good transportation to the mushroom growers.
- A great need to promote Mushroom Producer organizations in mushroom growing area for quick transportation and better marketing of produce.
- Mushroom cultivation is capital incentive enterprise, the assistance of government financial agencies at cheaper rate of interest help to promote mushroom production among the small farmers and landless farmers.
- Proper institutional arrangements are required to popularize the various government scheme launched for the promotion of mushroom production.

### Conclusion

Mushroom cultivation is a good enterprise for small, marginal and landless farmers as it is grown on agricultural waste, require less land, and require short span of time to grow but having some limitations. It can be concluded that non availability of good quality spawn, non availability of spawn in time, difficulty in compost preparation, fluctuating price prevailing in the market, lack of cold storage facilities, lack of knowledge of span production, lack of technical guidance in post Harvest Technology, complicated procedure in getting

loans and lack of Govt. support in the form of loan and subsidy were found to be the important constraints perceived by more than 85.00 per cent of the mushroom growers. Effective and intensive trainings should be organized for mushroom growers to enhance their technical knowledge particularly on post harvest techniques.

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