Challenges of Mushroom Production in Assam

ABSTRACT

Mushroom has various advantages including high nutritional and functional value, therapeutic properties, nutraceutical value along with organoleptic worth besides its economic importance. Mushroom production is remunerative, fetch quick return and needs less investment and less infrastructure. Despite all these merits in Mushroom production the mushroom farmers many a times discontinue the venture or do not expand the enterprise. Studying the problems to understand the factors responsible for discontinuation of the venture and what deters to expand the venture would contribute in improve in entire ecosystem of production. Considering this, the present study on 'Problems of Mushroom production in Assam' was conducted in Jorhat district using snow ball sampling method. Sample size for the study was 60. Problems in Mushroom production was studied in terms of the hindrance in mushroom production faced by the mushroom farmers. Altogether nineteen problem statements were prepared to explore the problems face by the respondents in mushroom production. Based on the mean scores obtained by the respondents and standard deviation, respondents were categorized as low, medium and high level of problem. Ranking of the problem was done based on the mean score of the statements. The results reveal that around 60.00 per cent respondents faced medium level of problem. 'Unavailability of quality spawn in mushroom Production', 'Lack of input', 'Lack of government scheme', 'Lack of assured market', 'Price fluctuation of the mushroom' were some of the highly ranked problems reported by the respondents.. The study concludes that there is an urgent need to remove the hindrances for accelerated adoption of mushroom enterprise for income generation in Assam.

Keywords: Mushroom production, importance, Problems, Assam

1. INTRODUCTION

Mushroom is a delicacy with high functional and nutritional value. It is a nutraceutical food with their medicinal characteristics. Mushroom is a commodity with economic significance and sensory properties. Mushroom has been utilized as source of nutrition since long back across the world. There are around 2,000 kinds of Mushroom varieties in nature, but only about 25 are frequently used as food. In terms of nutrients, mushrooms are positioned between meat and vegetables. They are rich in protein than cereals, fruits, and vegetables. Mushroom provides important minerals including iron, potassium, phosphorus, calcium, and copper. They are rich in niacin, thiamine, folic acid, biotin, pantothenic acid, riboflavin and vitamins D, K, A and C. Mushrooms have recently gained popularity not just as a healthy vegetarian meal, but also for their therapeutic properties. Mushroom is good food for diabetics as it has low calorific value, no starch, and low- fat, carbohydrate, and sugar content. Mushroom includes lean proteins that help the body to burn cholesterol. These are also good for heart health as they contain little fat and a higher proportion of unsaturated fatty acids and no cholesterol. The low sodium level of Mushrooms, combined with their high potassium content, improves salt balance and blood circulation in human. As a result, Mushrooms are beneficial to patients with high blood pressure. Mushroom nutraceuticals, a unique class of chemicals derived from the mycelium or fruiting body of Mushrooms. With an annual output of almost five million tons, China is the world's largest Mushroom grower. The current state of Mushroom production in India is reasonably optimistic, with an expected increase of 5 to 6 folds and a total production of more than 50,000 tones. The Mushroom market is anticipated to increase considerably due to multiple reasons such as numerous health benefits of Mushrooms, increasing per capita Mushroom intake, value production and growing adoption for vegetarian and organic foods in the diet, as well as a growing health-conscious population globally. India has varying climatic conditions in different places, making it feasible to cultivate a wide variety of Mushrooms (Sharma, et al., 2017)[1]. Because of these favourable conditions, production of various types of Mushrooms may be considered on big scale in various states of the country including Assam.The country is perfect for growing wide range of temperate, subtropical, and tropical Mushrooms. Mushroom needs less area than other agricultural crops and is primarily an indoor activity. Mushroom can be a viable source of livelihood and it can be profitably started by landless farmers, unemployed youths, rural women and other entrepreneurs.

Mushrooms has various advantages including high nutritional and functional value, therapeutic properties, nutraceutical value along with organoleptic worth besides its economic importance. Mushroom production is remunerative, fetches quick return and needs less investment and fewer infrastructures. Despite all these merits in Mushroom production, it is observed that the farmers many a times discontinue the venture or do not expand the enterprise. Studying the problems will help to understand which factors are responsible for discontinuation of the venture and what deters to expand the venture. Mushroom is highly nutritious food containing protein, vitamins and salts ideally required for heart and diabetic patients. Further with the increasing number of people refraining from non-vegetarian foods, Mushroom serves as one of the best alternatives. It is observed that though customers have accepted Mushroom in their diet, the demand for Mushroom is not met adequately. On one hand there is popularity and demand for Mushroom and on the other hand Mushroom production as a venture is not sustained. The present study will help to explore the underlying factors which will in turn contribute to popularization of Mushroom cultivation and ultimately expansion and development of the sector. If problems are accurately identified and necessary measures are taken for mitigating such problems, it will help the Mushroom farmers to fetch good earning. Such measures may catch the attention of people from different section; may it be landless families, women, young entrepreneurs, large entrepreneurs etc. With these justifications the present study was conducted to explore the problems of mushroom production in Assam.

REVIEW OF LITERATURE

Reviews related to problems faced by the respondents in production of Mushroom, Pallavi (2006)[2] conducted one study on among tribal women and summarized that poor marketing facilities, poor transport facilities, lack of remunerative price, insufficient loan amount and high cost of raw materials were the major problems in mushroom production expressed by the tribal women. Similarly Singh and Suresh (2007)[3] in their study on Cost - Benefit Analysis of Mushroom Cultivation in Sonepat and Gurgaon districts of Haryana found that the major problems regarding the production of Mushroom were lack of finance, lack of availability of good quality spawn, high price of spawn and problems of insect & pest. Pattnayaik and Mishra (2008)[4] reported the problem of perishability (87.50%) in the study conducted in Kendrapara District of Orissa which needs quick disposal. Lack of marketing facility (79.17 per cent), infected spawn (75.83%) lack of knowledge about improved cultivation technology (70.83 per cent), non-availability of quality straw (58.33%), lack of Govt. subsidy (56.67%) were some of the other constraints reported in the study. Gautam et.al. (2014)[5] in their study on Constraints in Adoption of Mushroom Production Enterprise revealed that 'lack of proper marketing channel was the most important constraint responsible for low rate of adoption. 'Distantly located markets', 'lack of government support', 'Non availability of quality spawns' and 'risk involved due to perishable nature' were the major obstacles in this process. Karthick and Hmsalaksmi (2016)[6] conducted a study on marketing problems of Mushroom Cultivation in Nilgiris with a sample of 30 Mushroom growers selected randomly and the findings revealed that cultivators were facing major problems like storage, defaulters, advertising and transport and also high price of spawn, attack of insects technical and awareness problems. Mayanja and Tipi (2016)[7] conducted a study on identifying the constrains of Mushroom farming as well as possible solutions to the constrains as a basis of boosting Mushroom production in Uganda. The study conducted with 52 respondents through use of questionnaires and the findings showed that the cultivators were facing major problems like low market price, scarcity and low-quality seed, inadequate extension services etc. Priyanka *et al.* (2016)[8] reported economic constraints as major constraints felt by the respondents (6.00%). Technical constraints as Mushroom production requires constant technical supervision and these constraints were perceived by 23.00 per cent of respondents. Sharma *et al.* (2016)[9] conducted a study on economic viability, technological gap, and problems of mushroom cultivation in Mandi district of Himachal Pradesh with 60 respondents and found that attack of insects and incidence of disease was high and also marketing, storage were some major constrains. Shirur and Shivalingegowda (2016)[10] conducted a research on Technological Adoption and Constraint Analysis of Mushroom Entrepreneurship in Karnataka and found that non-availability of spawn, lack of technical information and exploitation by consultants were major constraints. Gurdarsha and Gurmeet (2017)[11] in their study on constraints in adoption of recommended button Mushroom cultivation techniques found that category of marketing constraints (82.70%) was the top ranked category as perceived by the growers engaged in Mushroom production. This was followed by input constraints (75.85%), technological constraints (72.00%), general constraints (64.46%) socio-cultural constraints (62.47%) and crop management constraints (55.90%).Maharajan (2013)[12] conducted a case study on Mushroom Cultivation in Matatirtha vdc Kathmandu and found that most of the farmers were untrained and had been farming without using modern means and technique mainly due to lack of instruments. Muyal and Sharma (2018)[13] conducted a study on Constraints faced by Small, Medium and Large Farmers in Mushroom Cultivation and found that respondents had lack of awareness regarding procurement of raw material, lack of physical facilities like cold storage and infrastructure, financial constraints like difficulty in borrowing loans and lack of proper marketing channels etc. Pattnaik, and Mishra. (2015)[14] conducted a case study on Constraints in Adoption of Mushroom Cultivation Technology among rural women and reported that Mushroom was highly perishable, lack of marketing facility, infected spawn, non- possession of technical knowledge, low risk bearing capacity, lack of technical guidance, lack of flow of information, non-availability of spawn in time, non- availability of quality straw, lack of Govt. subsidy and lack of transport facility. Roy et al (2020)[15] in their study on Constraints in Mushroom Production Enterprise in West Bengal found that unavailability of quality spawn was highest ranked technical constraint. High cost of spawn and poor supply of

spawn at appropriate time were highest ranked economical and infrastructural constraints respectively. Sapkota et. al[2020] [16] in their study conducted in Nepal reported that tThe major constrains of mushroom production in Nepal is thel ack of modern and latest technology and inadequate funding in scientific investigations of mushroom production. Ferdousi, et al(2020)[17] conducted a study in Bangladesh and reported problem of mushroom farmers during production as 'lack of cultivation house' , 'capital crisis', insects attack (flies and cockroach)', 'lack of the availability of quality spawn', 'high price of raw materials', 'lack of equipment', 'high temperature in summer', 'lack of trained and experienced labour', 'heavy rainfall during monsoon', 'very low temperature in winter', etc. While reporting problems confronting during marketing 'lack of available markets', 'high transportation cost', 'Large number of middlemen', 'very limited wholesale market', 'lack of advertising', and 'absence of storage facilities' as highly mentioned problems of the mushroom farmers.

2. MATERIAL AND METHODS

The present study was conducted in Jorhat district of Assam. For selecting the representative sample for the study, purposive and snow ball sampling was used. The respondents were selected using snow ball sampling method. Thus, four villages were covered for the study after selection of the respondents. The farmers who were involved in Mushroom production were included as respondents using snow ball sampling method. Total sixty respondents were selected from four villages of Jorhat district of Assam. The data were collected from the respondents with the help of prepared interview schedule through personal interview. All the respondents were interviewed during September to October, 2021. Problems in Mushroom production was studied in terms of the hindrance in mushroom production faced by the mushroom farmers. Altogether nineteen statements in six sub-groups were prepared to identify the problems among the respondents. The responses were recorded as "not a problem" "moderate problem" and "high problem" with assigned score "0", "1" and "2". Based on the mean of the scores obtained by the respondents and standard deviation, respondents were categorized as low, medium and high level of problem. Ranking of the problem was done based on the mean score of the statements.

3. RESULTS AND DISCUSSION

Problems faced by respondent in production of Mushroom

The problem faced by the respondents on scientific production practices of Mushroom cultivation was assessed including different aspects such as problem related production, guidance and technology, consumption related problem, problems related to Infrastructure, Management, Marketing and problem related to post-harvest of Mushroom. It is evident from Fig. 1 that 30.00 per cent respondents faced high level problems in Mushroom production, because of which they did not want to continue Mushroom production. Around 58.00 per cent respondents faced medium level(58.34) problem followed by low level of problem (11.67%).

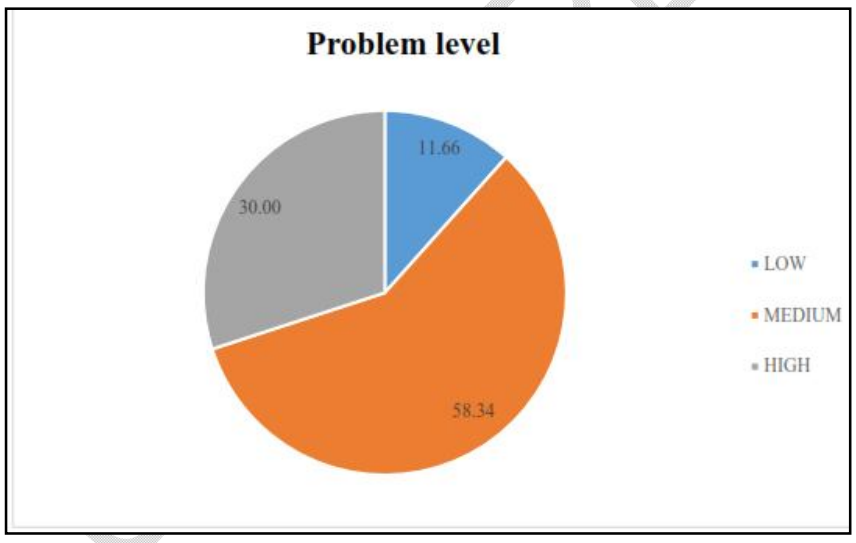

Figure 1. Distribution of respondents according to their problems faced in during production of Mushroom

Ranking of problems related to production of Mushroom faced by the respondents is presented in the table.1. It is observed that 'Unavailability of quality spawn' and 'Lack of input in Mushroom production' especially during pandemic ranked I with mean score 2.00. 'High attack of insect-pest and disease in Mushroom production' ranked II with mean score 0.96, followed by 'production of Mushroom is irregular due to its seasonal nature' ranked III with mean score 0.75. It is observed that availability of quality spawn for Mushroom production is a cause of concern as there is no dedicated spawn production center available in the Jorhat district. Though some entrepreneurs or some small farms started spawn production, these are not very familiar to the respondents. It was observed during data collection that the Covid-19

pandemic aggravated the environment for Mushroom production in a negative way as they faced acute problem in input supply and marketing during lockdown and curfews. As a result many Mushroom farmers expressed that they would not continue Mushroom production in future. In a way it may be interpreted that the nationwide lockdown compelled the Mushroom farmers to abandon their businesses. The data in line with Sharma et al. (2016).

Table 1. Ranking of production related problem faced by the respondent on Mushroom production

Sl no	Statements	Mean score	Rank
1	Unavailability of quality spawn in Mushroom Production	2.00	**I**
2	Lack of input in Mushroom production during pandemic	2.00	**I**
3	High attack on insect-pest and disease in Mushroom production	0.96	**II**
4	The production of Mushroom is irregular due to its seasonal nature	0.75	**III**

Ranking of problems related to guidance and technical support

Table 2. shows that 'Lack of technical guidance in harvesting technology of Mushroom production' ranked I with mean score 0.98 followed by 'Lack of trained extension workers in Mushroom production' ranked II with mean score 0.95.'Poor knowledge about nutritive value of Mushroom' ranked III with mean score 0.93 followed by 'Insufficient literature on Mushroom production' ranked IV with mean score 0.88. 'Lack of knowledge about training facilities' ranked V with mean score 0.85**.** It was reported that many of the respondents lacked training exposure as well as knowledge of the resources where they could learn about the scientific aspects of Mushroom production. The data is line with Singh and Suresh (2007).

Table 2. Ranking of guidance and technical support related problem faced by the respondent on Mushroom production

Sl no	Statements	Mean score	Rank
1	Lack of technical guidance in harvesting technology of Mushroom production	0.98	**I**
2	Lack of trained extension workers in Mushroom production	0.95	**II**
3	Poor knowledge about nutritive value of Mushroom	0.93.	**III**
4	Insufficient literature on Mushroom production	0.88	**IV**
5	Lack of knowledge about training facilities	0.85	**V**

Ranking of problems related to consumption and food fallacy

Consumption related problem faced by the respondent on Mushroom production presented in the table.3. It is evident that Social taboo among common people and misconception about Mushroom consumption ranked I with mean score 0.86. 'People consider Mushroom as non- vegetarian food' ranked II with a mean score of 0.56. Many people have the misunderstandings about intake of Mushroom as there have been numerous cases of people mistakenly consuming deadly Mushrooms and suffering major health consequences. Due to lack of knowledge, many individuals are afraid of consuming Mushrooms which was also reported by Shirur et al. (2016).

Table 3 Ranking of consumption related problem faced by the respondents

Sl no	Statements	Mean score	Rank
1	Social taboo among people and misconception about Mushroom consumption	0.86	**I**

2	People consider Mushroom as non- vegetarian food	0.56	**II**

Ranking of Infrastructure related problem faced by the respondents in Mushroom production

Infrastructure related problem faced by the respondents in Mushroom production is presented in the table 4. It is observed that 'Unavailability of skilled labourers ranked I with mean score 1, followed by' Lack of suitable place for Mushroom production' ranked II with mean score 0.75. Such problems might occur due to not getting trained person for maintaining Mushroom beds. It was reported that many labourers did not practice spraying insecticide on Mushroom beds even after repeated reminders may be because they were not exposed to any training on Mushroom production. Such practices create production related problems. The data is line with Shivalingegowda et al. (2016) and Ferdousi, et al(2020) where 'lack of cultivation house' and 'lack of trained and experienced labour' was reported.

Table 4. Ranking of infrastructural related problem faced by the respondent on Mushroom production

Sl no	Statements	Mean score	Rank
1	Unavailability of skilled labourers	1	**I**
2	Lack of suitable place for Mushroom production	0.75	**II**

Ranking of management and general problems faced by the respondents

Management and general problem faced by the respondents in Mushroom production is presented in the table.5. It shows that 'Lack of government scheme for Mushroom production' ranked I with mean score 1.05, followed by 'Non availability of government subsidy for Mushroom farmers' ranked with mean score 0.9. .'Unavailability of transportation facility to carry the Mushroom to the market' ranked III with mean score 0.86, followed by 'Lack of fund to start Mushroom farming' ranked IV with mean score 0.83. 'The risk bearing capacity of Mushroom grower are less' ranked V with mean score 0.76. From the data it is observed that the respondents had no awareness on existing govt. schemes for Mushroom farmers. Mushroom growing need a significant initial expenditure including infrastructure and production input etc. Since the respondents belonged to marginal farmers category it was reported that entire expenditure from their own pockets to start Mushroom venture cannot be covered and hence need financial support which they expected from govt.

Table 5. Ranking of management and general problems faced by the respondents

Sl no	Statements	Mean score	Rank
1	Lack of government scheme for Mushroom production	1.05	**I**
2	Non availability of government subsidy for Mushroom farmers	0.9	**II**
3	Unavailability of transportation facility to carry the Mushroom to the market	0.86	**III**
4	Lack of fund to start Mushroom farming	0.83	**IV**
5	The risk bearing capacity of Mushroom grower are less	0.76	**V**

Ranking of Marketing and post-harvest related problem faced by the respondent

Data on Marketing and post-harvest related problem faced by the respondent presented in the table 6. reflects that 'Lack of assured market for Mushroom and Price fluctuation of the Mushroom' ranked I with mean score 2, followed by 'Less remunerative price for Mushroom ranked' II with mean score 0.85. Lack of technical knowledge on value added products and 'problems in grading and packaging' ranked III with same mean score 0.88. 'Existence of the middlemen in Mushroom production ranked IV with mean score 0.56. Marketing is a key factor for running the production wheel.

However, it is evident from the data that thee respondents faced problems in marketing which may be one of the reasons that they were not willing to continue Mushroom production in future. It is also worth noting that the price of Mushroom varies significantly from location to location and also seasonally. All these are some concerning factors for Mushroom production which calls for adequate programmes and schemes for motivating the Mushroom farmers as Mushroom is a health food.

Table 6. Ranking of marketing and post-harvest related problem faced by the respondent on Mushroom production

Sl no	Statements	Mean score	Rank
1	Lack of assured market for Mushroom	2.00	**I**
2	Less remunerative price for Mushroom	0.85	**II**
3	Price fluctuation of the Mushroom	2.00	**I**
4	Existence of the middlemen in Mushroom production	0.56	**IV**
5	Lack of technical knowledge on value added products	0.88	**III**
6	Problems in grading and packaging	0.88	**III**

Ranking of problem areas in Mushroom production

Overall ranking of problem areas in Mushroom production is presented in the table.7. The data reflects that production related problem ranked I with mean score 1.42 followed by marketing and post-harvest problem ranked II with mean score 1.25.Guidance and technical support ranked III with mean score 0.91 followed by management and general problem ranked IV with mean score 0.88.Infrastructural problem ranked V with mean score 0.87 followed by consumption problem ranked VI with mean score 0.71. Though there is variation in the mean score of the problem areas, it is observed that mushroom farmers face problems almost in all areas.

Table 7. Ranking of problem area faced in Mushroom production

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Sl no	Statements	Mean score	Rank
1	Production related problem	1.42	**I**
2	Marketing and post-harvest problem	1.25	**II**
3	Guidance and technology problem	0.91	**III**
4	Management and general problem	0.88	**IV**
5	Infrastructural problem	0.87	**V**
6	Consumption problem	0.71	**VI**

4. CONCLUSION

Sustainability and growth of any enterprise or venture largely depends on certain facilitating and hindering factors. In case of mushroom production in Jorhat district of Assam it is observed that there are lots of chnallnnges the mushroom farmers have to encounter in different areas such as production, marketing and post- harvest management of mushroom along with infrastructure related problem. ‘Unavailability of quality spawn’, ‘Lack of input for mushroom production’ especially

during pandemic, 'Lack of assured market for mushroom', 'Price fluctuation of mushroom' were the problems that concerns the mushroom growers . The study revealed that a large percentage of the respondents did not want to continue mushroom production especially due to the problems they had faced during the pandemic. The problems faced by the mushroom farmers need to be addressed by government and other concerned authorities so that the farmers do not get disoriented and demotivated. In order to encourage mushroom production in the state of Assam quality spawn and proper storage facilities must be available. For sustainability and expansion of the mushroom sector in order to ensure the livelihood security of the farmers there should be encouragement from the Government and other concerned authority by providing necessary input support and marketing and storage facility. Government, universities and concerned agencies may take appropriate measures for establishing spawn production laboratory and storage facility for mushroom production. Similarly value added products from mushroom should be standardized so that mushroom is not wasted if cannot be sold immediately after harvesting. The state Government should provide subsidy for establishing infrastructure and promote processing of mushrooms so that market prices may be stable and remunerative to mushroom growers. Value chain development of mushroom is recommended to the concerned authorities.

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