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Mushroom production and its discontinuance by the mushroom trainees in Odisha

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Abstract

Mushroom cultivation as an agribusiness activity generates income and employment opportunities for the weaker sections of the society particularly. Mushroom entrepreneurship as a technologically intensive agribusiness, its success is maximally subject to technological and institutional support available. Trainings on mushroom cultivation, spawn production is extensively provided by All India Coordinated Research Project (AICRP) on mushroom, OUAT, Bhubaneswar, Krishi Vigyan Kendras (KVKs) and other private organisations. The study is based on the primary data collected from the trainees of mushroom cultivation who started the enterprise after getting the training but later on due course of time abandoned the activity. Forty respondents were chosen for the study from four districts of Odisha viz. Puri, Dhenkanal, Khurda and Ganjam. In order to analyze the factors influencing discontinuance of mushroom cultivation and evoke the constraints in mushroom farming, Garreett ranking technique was used. The study indicated that the average time taken to start the cultivation after the training is completed is twenty five days and twenty five respondents did the preliminary survey before cultivating mushroom. On an average the respondents discontinued mushroom cultivation after carrying out the activity for three months. The respondents used to grow nearly three beds per day with average yield per bed at 550 grams and average per day production at 1700 grams. Forgetting the quantum of production, the quality of the produce was well appreciated by the consumers. It was also found out from the study that unsatisfactory production was the prominent problem. They could not get the expected level of output that reduced the level of interest of the respondents for further cultivation. Time constraints, delayed payment, labour unavailability and input problem basically straw and spawn were the respective factors that hindered their interest for continuity in mushroom cultivation. Seventy five per cent respondents opined that if the mushroom farming is carried out properly following the agribusiness principles then it is obviously a profitable venture. Besides, sixty per cent of the respondents willing to restart the cultivation if they are provided refresher training, marketing help and input subsidy facilitation.

Keywords: Mushroom, agribusiness, respondents, income

Introduction

Farmers are looking into pursuits that can enhance the stability and security of their livelihoods at a time when agriculture is in distress. Agribusiness owners are looking into high-value enterprises like floriculture and mushroom farming (Shirur *et al*, 2014) [4]. Mushroom cultivation as an agribusiness activity generates income and employment opportunities for the weaker sections of the society particularly (Singh *et al*, 2015). Cultivation of mushroom is a vibrant example of small scale family farming in many developing countries that has alleviated rural poverty and improved diversification of agricultural production (Easin *et al.*, 2017) [1].

In contrast to many other products or businesses, mushroom farming is a significant horticultural business activity that can assist producers in realising year-round returns. The demand for fresh quality mushrooms is on a very high rate, that requires more mushroom cultivation. However, because mushrooms are grown indoors, their growth is different from that of other conventional veggies. This is the cause of the growing demand for training among farmers. Mushroom entrepreneurship as a technologically intensive agribusiness, its success is maximally subject to technological and institutional support available (Shirur *et al*, 2016) [5]. Trainings on mushroom cultivation, spawn production is extensively provided by All India Coordinated Research Project (AICRP) on mushroom, OUAT, Bhubaneswar, krishi Vigyan Kendras (KVKs) and other private organisations. Follow up after training has mostly been neglected.

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With this backdrop, the objective of the current research is to better understand the trainee's profiles of those enrolled in the training programme on mushroom cultivation technology and factors affecting their discontinuance of the activity.

Methodology

The study is based on the primary data collected from the mushroom trainees who started mushroom production after getting the training but later on due course of time abandoned the activity. In this study, by mushroom production we mean paddy straw mushroom. The study was conducted during 2021-22. The respondents were purposively selected from four districts of Odisha viz. Puri, Dhenkanal, Khurda and Ganjam. It is because almost sixty per cent of total mushroom production in Odisha are from these districts and fifty percent of total growers in Odisha are there from these districts (table 1). So these four districts assume maximum proportion in the field of mushroom cultivation. As the objective of our study is to find out the reasons for discontinuance of mushroom cultivation, we have taken the favorable areas to find out the fact that in spite of prevailing conducting factors still there is cessation of the activity by some individuals. Again, purposively two best performing blocks in terms of mushroom production were taken from each district based on auxiliary information. In this way respondents were taken from eight blocks. From each block five respondents were randomly selected and in total forty respondents were chosen for the study. It is often argued that the advantage of conducting interviews with a small sample is that the findings are very often detailed and in depth and there is a very high rate of control of the entire process. (Naoum, 2012) [2].

Table 1: District wise mushroom growers in Odisha

Sl. No.	District	Mushroom growers
1	Puri	4800
2	Ganjam	2600
3	Dhenkanal	2400
4	Khurda	2400
5	Balasore	1600
6	Bhadrak	1500
7	Jagatsinghpur	1200
8	Koraput	830
9	Nayagarh	680
10	Cuttack	600
11	Sonepur	460
12	Keonjhar	430
13	Jajpur	400
14	Kendrapara	380
15	Bargarh	300
16	Sambalpur	250
17	Angul	250
18	Mayurbhanj	250
19	Rest	4000
	Total	25330

A pre tested interview schedule was used to gather information from the respondents. After a thorough review of

the literature and with an emphasis on the study's objectives, the interview schedule was framed. The pretesting of the interview schedule was appropriately done and necessary changes were incorporated. The interview schedule was a mix of both open and closed ended questions for providing objective data and for expressing fee opinion wherever essential. Proper care was taken for ensuring objectivity during the process of data collection.

The data and information collected were analyzed by descriptive statistics in terms of frequency and percentage. In order to analyze the factors influencing discontinuance of mushroom cultivation and evoke the constraints in mushroom farming, Garrett ranking technique was used. Unlike simple frequency distribution, in this technique, the constraints were arranged based upon their importance as stated by the respondents. In other words, respondents were asked to assign rank for all the factors and the outcomes of such ranking were converted into score value as per the following formula.

$$\text{Per cent position} = \frac{100 * (R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij} = Rank given for i th factor by j th individual

N_j = Number of factors ranked by j th individual

With the help of Garrett's table given by Garret and Woodsworth (1969), the per cent position of each rank was converted into scores. For each factor, the scores of each individual were added together and divided by the total number of the respondents for whom scores were added. Thus, mean value of scores were calculated. These mean scores for all the factors were arranged in descending order and ranks were given. The factor with the highest mean value was considered the most important factor.

Results and Discussion

The socio-economic characteristics of mushroom non growers are represented in table 2. Out of the forty sample respondents, half of the respondents were in the age group of 45 to sixty years while a quarter of the respondents are in the age group of thirty to forty five years. Most of the respondents almost forty five respondents were intermediates that means completed their senior secondary education. Thirty percent of the respondents were graduates and post graduates. Twenty five respondents have single family system while fifteen respondents live in joint family system. The respondents have varied forms of occupational system. Thirty per cent of them were involved in the farming system while twenty five per cent of the respondents were in different type of service activities. Five respondents were pension holders. Others occupational category included carpentry, masonry activities. If the average income of respondents were to be seen then the highest earners were those who were doing services followed by the pension holders whereas the farmers had the least income.

Table 2: Socio economic characteristics of mushroom non growers

Sl. No.	Particulars	Frequency	Per cent
1.	Number of mushroom non growers contacted for sampling	40	100
2	Age		
	<30 yrs	6	15
	30-45	10	25
	45-60	20	50
	>60	4	10
3	Education		
	Matriculate	10	25
	Intermediate	18	45
	Graduate and above	12	30
4	Family type		
	Single family	25	62.5
	Joint family	15	37.5
5	Occupation		
	Service	10	25
	Pension	5	12.5
	Shop keeping	8	20
	Farming	12	30
	Others	5	12.5
6	Occupation wise monthly average income		
	Service	14800	
	Pension	14500	
	Shop keeping	14300	
	Farming	80200	
	Others	10700	

In the table 3, certain typical information about the respondents regarding mushroom training and subsequent cultivation has been pointed out. It is seen that half of the respondent paid fees for mushroom cultivation training. So it can be said that they had very good degree of interest for mushroom cultivation. The average time taken to start the cultivation after the training is completed is twenty five days and twenty five respondents did the preliminary survey before cultivating mushroom. On an average the respondents discontinued mushroom cultivation after carrying out the activity for three months. The respondents used to grow

nearly three beds per day with average yield per bed at 550 grams and average per day production at 1700 grams. Forgetting the quantum of production, the quality of the produce was well appreciated by the consumers. Seventy five per cent respondents opined that if the mushroom farming is carried out properly following the agribusiness principles then it is obviously a profitable venture. The other twenty five respondents were somewhat indifferent regarding it apprehended it as non-profitable. However, sixty per cent of the respondents willing to restart the cultivation.

Table 3: Additional information regarding mushroom cultivation by the respondents (N=40)

Sl. No.	Particulars	Frequency
1	Number of respondents paid the fees for mushroom training	20 (50%)
2	Average time duration between end of training and start of mushroom cultivation	25 days
3	Number of respondents did preliminary survey before cultivating mushroom	25(62.5%)
4	Average duration of mushroom cultivation carried out	3.3 months
5	Average beds per day grown	3 beds
6	Average yield per bed	0.55kg
7	Average per day production	1.7kg
8	Reaction of the consumers about the quality of the produce	
	Excellent	15 (37.5%)
	Satisfactory	25(62.5%)
	Poor	0
9	Opinion regarding Profitability	
	Profitable	30 (75%)
	Not profitable	10(25%)
10	Number of respondents willing to restart the cultivation	24(60%)

The reasons for discontinuance of mushroom cultivation have been discussed in table 4. Unsatisfactory production was the prominent problem. They could not get the expected level of output. As discussed earlier, the average per bed production was only 550 grams. The production was shortfall by an average quantity of 350-400 grams. The possible causes of this below par production were discussed with the

respondents. Although they had contacted the specialists in this regard, still they could not find out the root cause for it. Institutional support in this respect is aptly required. Practical training sessions along with result demonstration may be recommended as mushroom has short crop cycle. Next follows the time constraints in the sense that everyone is preoccupied in their own activity and hardly finds anytime.

Any activity to be carried out needs to be given due care and time. The respondents had a false notion that they will adopt mushroom cultivation as it is least time taking. But after practically experiencing how to perform mushroom cultivation they learnt that it is not as quick doing as it seems starting from straw collection to soaking of straw bundles to bed preparation to after care to final harvest and disposal of produce rather it is time consuming. Similar result was found by Sonam *et al.* in their research in the state of Bihar, India in 2021. Although mushroom cultivation may be taken as a supplemental activity, a portion of time needs to be given for this activity with physical presence or any of the family members. Next to it ensues the delayed payment system. It means the respondent used to sell the produce in the village itself as the produce was of low quantity hardly two to three kilograms. The consumers didn't pay timely and in turn paid the price as per their wish for which the respondents incurred loss. So, the cultivators need to find out the appropriate disposal system or the proper marketing channels. It was seen that although the respondents were using self-labour, they wanted hired labour for assistance. But instant labor availability was not possible. If it was available, the charge was too high. Self-labour was not sufficient. Input problem specially the spawn was the least of all the problems, still a few of them experienced. It is similar to the findings of Simi *et al.* in Kerala in 2021 where mushroom spawn was not a significant issue. In contrast to it, studies by Roy *et al.* in 2020 reported unavailability of quality spawn was the highest-ranked technical constraint.

Table 4: Reasons for discontinuing mushroom cultivation

Sl. No.	Reasons	Mean Garrett Score	Rank
1	Unsatisfactory production	71.7	I
2	Time constraints	59.4	II
3	Delayed payment	52.5	III
4	Labour unavailability	33.75	IV
5	Input problem	32.6	V

Table 5 represents the facilitation required to help the farmers to restart the mushroom cultivation. Out of the twenty four respondents who are still willing to start mushroom cultivation affirmed that with refresher training, marketing aid, and subsidy facilitation they can restart the cultivation. From them, fifty per cent respondents wanted refresher training while twenty five per cent respondents wanted marketing help and others required easy facilitation for availing subsidy in setting up a mushroom unit.

Table 5: Facilitation needed to start the cultivation again

Sl. No.	Particulars	Frequency (24/40)	Percent
1	Refresher training	12	50
2	Marketing aid	6	25
3	Subsidy facilitation	6	25

Conclusion

It is well known that the mushroom production industry has a high potential for providing rural youth with work. However, the study's findings indicate that the mushroom growers in the study region perceived a number of barriers to the adoption of mushroom production enterprises for which in spite of starting the enterprise, discontinued the activity. Therefore, it is advised that problems be kept to a minimum in order to strengthen this business. To achieve this, policymakers should develop some appropriate measures to lessen these restrictions. There is a vast awareness gap in understanding the cultivation practices that needs to be closed through the extension system. Additionally, the extension organisations should launch widespread knowledge and skill-oriented training programmes for rural youth, women and mushroom growers along with refresher training and follow up activities to make self-employed

Therefore, the study is beneficial for expanding mushroom cultivation, designing and planning proper agricultural management system, and giving mushroom farmers appropriate guidance who are facing challenges that compel them to abandon such a profitable enterprise.

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Appendix**Interview schedule for mushroom non-growers (Passive adoptors)**

Respondent no.:

Date:

General information:

Name: _____ Mobile No. _____

Age: _____ Caste: _____ Religion: _____ Education: _____

Type of family: Single/ Joint**Occupation**

Primary: _____

Secondary: _____

Earnings

Primary: _____ pm

Secondary: _____ pm

Sl. No.	Questions	Responses
1	Attended training before mushroom growing	Duration Place
2	Fees paid for training	Yes No
	Time duration between end of training and start of mushroom cultivation	Amount
3	Preliminary survey conducted before mushroom cultivation	Yes No
4	When did you start mushroom enterprise?	
5	With how many beds per day did you start it?	
6	Initial yield per bed	
7	Per day production	
8	Where did you sell your produce	
9	What was the reaction of the customer about quality produce?	Good Fair Poor
10	What was your experience regarding mushroom enterprise	
11	Was mushroom production profitable?	Yes/ No
12	Why did you abandon mushroom production?	Due to low production Delayed payment Due to labor problem Problem in input supply Time constraint
13	Do you wish to start mushroom cultivation again?	Yes/ No
14	What facilitation do you need to start this enterprise again?	Refresher training Subsidy /incentive on production Marketing aid Any other