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Adoption Level and Constraints Faced by Mushroom Cultivators in Uttarakhand

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ABSTRACT

Mushroom demand has huge growth all over the World due to its nutritional and medicinal qualities. In order to identify the constraints in mushroom cultivation, a study was undertaken in Nainital District of Uttarakhand state. A total of 100 respondents from Nanital district of Uttarakhand were selected for the study. Data was collected through telephonic interview. Online Discussion was also organized on Goggle meet. To find out the constraints faced by mushroom cultivators, Garrett's ranking technique was used. Garrett's Ranking Technique provides the constraints into numerical scores. The advantage of this technique is that the problems are arranged based on their harshness from the point of view of respondents. Data was collected through telephonic interview. The study reveals that majority of respondents were middle age group and educated up to medium level. All the respondents were using mobile phone and television for taking the information. Majority of respondents were using WhatsApp and You tube as social media. Majority of respondents (45%) were using fresh spawn and recommended seed rate (44%) and purchasing spawn from Govt Agency (64%). Majority of respondents had medium level of adoption rate in use of wheat straw (56%), Knowledge of Sanitation (67%). The results of constraints analysis revealed that problem of marketing was found as a significant constraint (Score 59.02), followed by lack of transportation facilities (Score 58.88) for mushroom cultivation and lack of technical knowledge (Score 56.99). Therefore, training of farmers on the mushroom cultivation is needed. Financial support from banking institutions on the subsidized rate is also required to set up mushroom units.

Key words : *Garret ranking; Constraints; Mushroom Cultivation; Mushroom cultivators.*

According to Directorate of Mushroom Research (2018), Mushroom farming is one of the most profitable agri-businesses. Presently, total mushroom production in India is approximately 0.13 million tons. (*Singh et.al., 2008*). From 2010-2017, the mushroom industry in India has registered an average growth rate of 4.3 per cent per annum. Spawn demand in India is estimated about 8000-10000 tons per annum. Mushroom cultivation in India is growing gradually as an enterprise for income generation. (*Sharma et.al, 2017*). In Hills of Uttarakhand, People have been eating mushrooms for quite a while. The state department of Horticulture and Krishi Vigyan Kendras are playing major role for popularization of this enterprise (*Singh et. al. 2008*).

According to *TOI (2016)* Mushroom cultivators in Uttarakhand have literally had a golden harvest in Uttarakhand. Highest grown is the button mushroom (80%) followed by dhingri (12-13%) and milky (7-8%).

Mushroom entrepreneurship being technologically intensive agribusiness, its success in a country like India is contingent upon the technological and institutional support available to it. (*Shirur et. al., 2016*). Mushroom - an edible fungus is grown worldwide for its palatability. Out of 2000 species of prime edible mushrooms, only 4-5 species are grown on commercial scale throughout the world having an annual production of 3.763 million metric tones (*Paul et al. 2001*). According to *Beetz and Kustudia (2004)* the choice of species to raise depends both on the

growth media available and on market considerations. Oyster mushrooms, which grow on many substrates, are easiest for a beginner. Shiitake mushrooms already have earned considerable consumer demand. Researches showed that in Uttarakhand people are interested in mushroom cultivation but due to lack of knowledge, information and education people are not able to start their enterprise related to mushroom. (*Lucier et. al, 2003*). Mushroom cultivation is an ideal complementary enterprise for poultry farmers, since it can be grown within a limited space and short intervals (*Sawant et al., 2001*). Mushroom cultivation is the most economical way of upgrading lignocellulolytic waste and hence, is the way to increase the income of the farmers other than field crops, which ultimately increase the human resource directly or indirectly (*Singh et al., 2003*). Although so many programme have been initiated but still many of the mushroom cultivators were unaware on many aspects. (*Patterson, 2003). Sharma et.al (2020)* reported that people were unaware of many aspects and are facing many constraints. Keeping view in mind, the present study has been under taken to find out the adoption level and constraints faced by the respondents in improved mushroom cultivation techniques with the following objectives:To study the general information of mushroom cultivators.

i. To find out the adoption level of mushroom cultivators.
ii. To assess various constraints faced by mushroom cultivators.

METHODOLOGY

This study was undertaken to study the constraints perceived by mushroom cultivators in Bhimtal block of Nainital district in Uttarakhand. Total Five villages viz; *Banna, Syalikhet, Ghingrani, Songaon, Pandeychhor* were selected purposively for the study. Total 25, 15, 25, 15, 20 mushroom growers were selected from the respective villages. Data was collected in month of December 2021. Total 100 mushroom cultivators were selected through purposive sampling method. The descriptive research design was used to meet out the objectives set forth for the study. Data was collected through telephonic interview. To measure the extent of adoption modified adoption index of *Kushwah and Chaudhary (2015)* was used. Online meeting on Google meet was also organized to study the problems faced by the farmers in mushroom cultivation. Garrett's Ranking Technique was applied to study the constraints into numerical scores.

Application of the Garret's Ranking Technique: An attempt is made to recognize the problems faced by the mushroom growers in the cultivation of Mushroom. The identified problems of mushroom growers in the cultivation of Mushroom are ranked by making use of Garrett's Ranking Technique with the help of the following formula:

$$\text{Percent position} = 100\ (Rij-0.5)/\ Nj$$

Where,

Rij = Rank given for the ith variable by jth respondents

Nj = Number of variables ranked by jth respondents

RESULTS AND DISCUSSIONS

General Information of respondents: The results of the study on socio-personal and communication characteristics of mushroom cultivators are depicted in Table 1.

Age: Data pertaining to age of mushroom cultivators are presented in Table1. Majority of respondents were age group 31-40 year (43%) followed by more than 40 year (30%) and young people below 30 years were 27 per cent in number. Thus, majority of respondents belonged to middle age group. The findings are supported with *Sharma (2021)*.

Education: A medium level of education was observed among mushroom cultivators. Majority of respondents

Table 1. General Information of Mushroom Cultivators

Characteristics	Categories	No.	%
Age	Young <30	27	27
	Middle 31-40	43	43
	Old >40	30	30
Educational Level	No formal education	18	18
	Primary education	25	25
	Secondary education	52	52
	Graduation	5	5
Information Sources	Internet	98	98
	Television	100	100
	Radio	58	58
	Print media	89	89
	Mobile phone	100	100
	Extension agent	35	35
	Neighbours and friends	45	45
Use of social media	Facebook	98	98
	WhatsApp	100	100
	You Tube	97	97

(52%) were educated upto the secondary level followed by primary education 25 per cent and No formal education 18 per cent. Only 5 per cent respondents were graduate. Thus, this can be observed that majority of respondents were literate. The findings gain support from *Tanni et. al (2012).*

Use of Information sources: People are using different types of information sources**.** All the respondents were using television and mobile phone. Majority of respondents (98%) were using Internet followed by print media (89%). Total 45 per cent respondents were interested to take information from Neighbours and Friends followed by extension agents (35%). Total 58 per cent respondents were using radio as an Information Communication tool. Today is the ICTs era. People are using various information communication sources to take information on different aspects. These findings were supported with *Sharma (2021)* that majority of respondents were using mobile phone and television as the source of information.

Use of social media: Today social media play a very important role to aware the people on different aspects. Table 1 depicts that all the respondents (100%) were using WhatsApp followed by Face book (98%) and You Tube (97%). Various researches showed that WhatsApp is best social media app to communicate the information on different aspects. The findings are in line with *Sharma (2020).*

It is found from Table 2 the majority (45%) of the respondents had high use of fresh spawn, while 32 per cent had medium use of fresh spawn. It indicates that respondents were aware about the quality of spawn. They do not know about the problems or losses found by the use of old mushroom seed. In case of recommended seed rate, it is evident from Table 1, that majority (44%) of respondents were using recommended appropriate seed rate, while 38 per cent had medium and 18 per cent had low use of recommended seed rate Adoption rate was high in the respondents. The adoption of wheat straw in bagging was concerned, majority (56%) of the respondents from had medium use of wheat straw in bagging, while 27 per cent had high use of wheat straw in mushroom bag and 17 per cent had low use of wheat straw. Thus, it can be concluded that respondents had higher extent of adoption of wheat straw, i.e. congenial media for the mushroom production. Similar findings concluded by (*Sharma and Singh, 2018*). It is evident from the Table 2, majority (67%) of the respondents had medium knowledge of sanitation; while 29 per cent had medium knowledge of sanitation and 4 per cent had low knowledge of sanitation. Thus, it can be concluded that respondents showed medium knowledge of sanitation and it showed they have good adoption in respect of button mushroom cultivation. Majority (76%) of the respondents had low purchase of spawn from private agency; while 19 per cent respondents showed medium purchasing of spawn from private agency and 5 per cent had high level of high purchase of spawn from private agency. Thus, it can be concluded that respondents from showed low adoption of purchase of spawn from the private agency. They were not shown interest to purchase the seed from the private agency. It is evident from the Table 1 that the majority of the respondents had high purchase of spawn through govt. agency; while 34 per cent had medium purchase of spawn through govt. agency and 2.00 per cent had low purchase of spawn from the govt. agency. Thus, it is observed the respondents from showed high adoption of purchase of spawn through govt. agency.

Table 2. Distribution of respondents according to their adoption of mushroom cultivation practices

Practices	Adoption level	No.	%
Use of fresh spawn	Low	23	23
	Medium	32	32
	High	45	45
Recommended Seed Rate	Low	18	18
	Medium	38	38
	High	44	44
Use of Wheat straw	Low	17	17
	Medium	56	56
	High	27	27
Knowledge of Sanitation	Low	4	4
	Medium	67	67
	High	29	29
Private agency	Low	76	76
	Medium	19	19
	High	5	5
Govt Agency	Low	2	2
	Medium	34	34
	High	64	64
Control of disease	Low	18	18
	Medium	59	59
	High	23	23

The average score and ranks of different constraints are shown in the above Table 3. The commercial aspect

Table 3. Constraints perceived by mushroom cultivators (N=100)

Category	Ranks given by the Respondents							
	Ist	IInd	IIIrd	IVth	Vth	VIth	VIIth	VIIIth
Non-availability of spawn and manure	13	20	29	17	7	11	12	1
Lack of separate storage unit for mushroom	13	23	20	20	17	12	5	0
Lack of technical knowledge	24	4	6	27	13	10	21	4
Problem of marketing	15	33	21	14	13	10	3	1
Lack of transportation facility	29	24	13	10	8	14	8	4
Problems of pest and disease	12	5	10	3	35	21	17	7
High investment on infrastructure	7	4	8	6	5	17	24	40
Shortage of labour	2	0	4	5	10	15	20	54

is yet to take a front seat to meet market challenges. However, the market challenges can only be met if problems of mushroom cultivators are identified and prioritized for further improvement. Based on the Garret's Ranking Technique it was calculated that 'Marketing problem' is the major problem with highest Garret score of 6846 and an average score of 59.02. Accordingly, 'Lack of transportation facility' with average scores of 6831 and an average score of 58.88 is represented second. The calculation with an average score of 56.99 ranked 'Lack of technical knowledge' to third. 'Non-availability of Spawn and Manure' with average score of 55.35 ranked IV. Lack of separate storage unit for mushroom was found constraints having score of 51.59 ranked V followed by Problems of Pest and Disease ranked VI and High investment on infrastructure ranked VII. Shortage of labour was also constraint score 31.58 ranked VIII.

Table 4 depicts the percent positions, calculated value and Garret value of the constraints. The Garret ranks were calculated by using appropriate Garret Ranking formula. Based on the Garret ranks, the garret value was calculated. Garret tables and scores of each constraint in the above table and multiplied to records scores in table 5, finally by adding each row, the total Garret scores were obtained.

Table 5 depicts ranking scores calculation by Garret Ranking method. Based on the Garret's Ranking Technique it was calculated that 'Marketing problem' is the major problem with highest Garret score of 6846 and an average score of 59.02. Accordingly, 'Lack of transportation facility' with average scores of 6831 and an average score of 58.88 is represented second. The calculation with an average score of 56.99 ranked 'Lack of technical knowledge' to third. 'Non-availability of Spawn and Manure' with average score of 55.35 ranked IV. Lack of separate storage unit for mushroom was found constraints having score of 51.59 ranked V followed by Problems of Pest and Disease ranked VI and High investment on infrastructure ranked VII. Shortage of labour was also constraint score 31.58 ranked VIII.

Problem of marketing is a big constraint of entrepreneurs. Majority of people want to start their enterprises but the major problem is marketing of products. To solve this problem four to five villages should start a food mart like channels so that people can keep their products here for sale. One of the good solutions of marketing a product is people can start online marketing of products. Thus, Training on how to start food mart of online marketing should be organized.

Lack of transportation facility is also one of the major challenges. To solve this problem, a group of farmers should arrange the vehicle for products sale. Thus, training on group dynamics or SHGs formation should be organized.

Lack of technical knowledge is also big challenge. Thus, training on mushroom cultivation should be organized. Non-availability of Spawn and Manure is also one of the big challenges. Thus, training on from where people can collect spawn will be organized.

Lack of separate storage unit for mushroom, High investment on infrastructure, Shortage of labour are also major constraints in mushroom cultivation. Thus, training will be organized on above issues.

Today is the ICTs era. People can take the information through You tube video, Facebook pages or from the WhatsApp group. Thus, the knowledge on how to use online media is necessary. There is a need to provide such type of knowledge to the mushroom growers.

CONCLUSION

On the above discussion, this can be concluded that mushroom cultivators were middle age group having education up to secondary level. Majority of respondents were using different media for taking information on various aspects and using social media like WhatsApp, Facebook etc. The major constraint in mushroom cultivation was problem of marketing. Marketing and transportation are the big problems among the hill entrepreneurs. They are not aware about the online marketing of products. Training in mushroom cultivation is one of the important and crucial segments for mushroom growers because it involves some highly technical skills having many complex stages during cropping cycle and it provides the information about how to sale the products. There is an urgent need to organize training or develop communication strategy for mushroom growers. This will be helpful to provide them knowledge on various aspects on mushroom cultivation.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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