



**Full Length Article**

# Grower's Response to Mushroom Cultivation Technologies Disseminated by Mushroom Development Project

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## ABSTRACT

The study was carried out to find out the response, knowledge, attitudes and practice of mushroom growers towards mushroom cultivation technologies, explore the relationship between each of the selected characteristics of the mushroom growers and their response and identified the problems confronted by the growers during cultivating mushroom. A great majority of the respondents (92.6%) had medium to high level of knowledge on mushroom cultivation technologies while a majority (68.8%) of the them showed favorable to highly favorable attitude towards it and an overwhelming majority of the growers (96.3%) practiced the mushroom technologies moderately to frequently. As a whole, about 68% of the growers showed medium to high level of response to mushroom cultivation technologies. The characteristics of mushroom growers viz., education, annual income from mushroom cultivation, ownership of spawn packet, farming experience, training experience and extension contact influenced the level of response to mushroom production technologies. Three major problems ascertained by the growers were poor quality spawn packet, unavailability of spawn packet and disease attack and insect infestation. © 2010 Friends Science Publishers

**Key Words:** Mushroom; Knowledge; Attitude; Practice; Response

## INTRODUCTION

Mushroom is a soft delicate white fruit-body of the fleshy fungi. Real fungus is the microscopic fine thread-like body called mycelium, grows on the substratum or under the surface of soil. At maturity, the mycelia come together in a very compact form and sprout and spread as umbrella-like structure (Chung *et al.*, 1981). Mushrooms have been used most probably by the pre-historic human as food. The Egyptians considered mushrooms as a delicacy and the Greeks believed that mushrooms provided strength for warriors in battle. The Romans regarded mushrooms as a gift from God and served them only on festive occasions, while the Chinese treasured them as a healthy food (Sheryl, 2008).

Although mushroom is a popular and nutritious food in many countries of the world, it had long been ignored in Bangladesh. Conventionally it is considered as "toad stool" and "non-halal" food. According to the Holy Quran (Surah Bakara: 57-80) and many Hadith (Bukhari Sharif, 1912), mushroom is recognized as "Mannah" i.e., fully "halal" vegetable having medicinal qualities. However, a gradual change in that impression of people on mushroom has been taken place through mushroom projects' publicity. The concerned organizations worked a lot to change the view of

producers and consumers of mushroom. They consistently took several initiatives and launched various programs with a view to building awareness of the growers. As a result, the scenario of mushroom cultivation has been changed over time.

Mushroom cultivation was started first at Horticulture Centre, Sobhanbag, Savar, Dhaka, Bangladesh in 1979-80 with the help of Japan Oversees Cooperation Volunteers (JOCV). After 2002, the Government took initiatives and gave priority on mushroom development and approved a development project named "Mushroom Centre Development Project (MCDP) (2003-2006)". In connection with the success of MCDP, another project named "Mushroom Development Project (MDP) (2006-2009)" is also implemented by the Government of Bangladesh. These projects build up a lot of mushroom growers, entrepreneurs and thus created a unique opportunity for poverty alleviation. Presently mushroom project is performing its activities all over the country through National Mushroom Development and Extension Centre (NMDEC), Savar and its 16 sub-centers throughout the country (Anonymous, 2008).

Experts in Bangladesh opine that mushroom cultivation might play a significant role in eradicating malnutrition: one of the major problems of the people

dominating in Bangladesh. It offers special benefits to the peon and pauper as it helps manage a balance diet and prevent diseases easily. By mushroom cultivation, it is possible to alleviate poverty and create employment opportunity for educated unemployed youths, adolescents and women. At the same time, it might help earn foreign currency by exporting mushroom to the developed world after meeting up the domestic requirement. Truly there is an ample scope to transform mushroom cultivation into an industry.

The specific objectives of the study was to (a) assess the level of response of the mushroom growers in terms of knowledge about, attitude and practice of mushroom cultivation technologies, (b) explore the relationship between each of the selected characteristics of the mushroom growers and their level of response to mushroom technologies and (c) identify the impediments as confronted by the growers to cultivate mushroom.

## MATERIAL AND METHODS

The study used a descriptive survey design. The population of the study included all the mushroom growers of Savar upazilla in Dhaka district. With the help of Mushroom Specialist and field staff, an updated list of mushroom farmers was prepared. There were 60 mushroom growers in Joypara and Jamsing, 30 growers were in Aukpara and 60 were in Sobahanbag, altogether 150 mushroom growers were in the locale. Thus all 150 mushroom growers of Savar upazila were considered as the population of this study. Out of which 80 farmers were selected as sample following simple random sampling technique.

The dependent variable of this study was growers' response, which is a reaction, as that of an organism or a mechanism, to a specific stimulus (Mangal, 1990). In this study it is considered as the reaction shown by the growers to cultivate mushroom technologies and measured in light of three different parameters such as: knowledge about, attitude towards and practice of mushroom cultivation technologies. It is reported that the knowledge, attitude and practice survey is a monitoring and evaluation technique, which shows the actual reaction of farmers to exposure to new ideas (DAE, 1999). Based on review of literature, discussions with experts and extension staff the following characteristics were selected as independent variables: age, education, family size, farm size, annual income from mushroom cultivation, ownership of spawn packet, mushroom farming experiences, participation in mushroom foundation, training experience and extension media contact.

Knowledge of the growers was assessed by asking ten questions about different aspects of mushroom cultivation. Each of the questions was assigned score two. For each of the correct answer the growers could secure full score, while for partial correct answer he/she obtain partial score as per

the extent of correctness. And if they could not reply the same correctly, they would get zero. Therefore, the knowledge score of the growers' was computed by adding up his or her obtained scores against each of the questions. Thus, total possible score that a grower could obtain would vary from 0 to 20, where zero indicates no knowledge and 20 indicates the highest knowledge about mushroom cultivation. Attitude of the respondent towards mushroom cultivation technologies was measured by using five point Likert type scale against ten statements about various aspects of mushroom cultivation. The scale was arranged on a five point continuum ranging from strongly agree =5, agree= 4, undecided= 3, disagree=2 and strongly disagree=1, while for negative statements scoring was put in reverse order. However, total attitudinal score of the respondents was calculated by summing up the scores obtained from each of 10 statements. The maximum possible score was 50 and minimum score 10. Hence, the attitudinal score of a respondent could range from 10 to 50, where zero indicates slightly favorable attitude and 50 indicates highly favorable attitude of the growers towards the mushroom cultivation technologies. Practice of mushroom cultivation technologies was measured in connection with different management practices. However, the score of practice was computed in the light of ten management practices for mushroom cultivation. The respondents indicated each of mushroom management practices to the scale whether they used the practices 'frequently', 'occasionally', 'rarely' and 'never'. Scores assigned to the above four responses were 3, 2, 1 and 0, respectively. Total practice score of the respondents, however were determined by summing up the scores obtained from each of 10 different practices. Thus, the range of practice score could vary from zero to 40, where zero indicates no practice and 40 indicates always use of different practices for mushroom cultivation.

The response of growers was assessed by summing up the weights obtained from knowledge, attitude and practice by using the following formula as followed by Hasan (2004), Haider (2005) and Talukder (2006):

$$OR = R_k + R_a + R_p$$

Where,

$OR$  = Overall performance of the respondents

$R_k$  = Response in terms of knowledge

$R_a$  = Response in term of attitude

$R_p$  = Response in term of practice.

To explore the relationship between each of the selected characteristics of growers and their level of response to mushroom cultivation technologies, a new set of data on knowledge, attitude and practice was generated on the basis of manipulating mean and standard deviation of original data.

To identify the impediments as confronted by the growers a rating scale was followed as developed by Shah *et al.* (2001) and Akanda *et al.* (2004). Although 15 probable

problems were initially enlisted, finally 10 problems were selected based on pretest experience of the researcher. Every member during data collection rated each problem. The rating of the members was noted by putting a marking on any one of the three columns viz. much, moderate and little and was quantified by 3, 2 and 1. Then a Problem Confrontation Index (PCI) was computed for each problem by summing up the weight: higher the value of PCI of a problem, the greater the magnitude of the problem. PCI of any problem could range from 80 to 240. In order to understand the severity, the problems were arranged in rank order (Table III).

Data were collected by personal interview of the mushroom growers from door to door visit using interview schedule. All possible precautions were taken to shun bias and maintain fidelity and fairness of responses. It was researcher's privilege to be native in the study area in order for establishing rapport with mushroom growers to secure authentic information. The utmost priority was given to the growers' understanding of the questions, not correct usage or uniformity of interview. Responses were recorded accordingly what the growers said, without making judgments or comments on them. Questions were asked in different ways by the researcher until the respondents got understood. If farmer's response was not clear enough, supplementary questions were asked for clarification. The entire process of data collection took 20 days from June to October, 2008.

## RESULTS AND DISCUSSION

Assessing the knowledge about, attitude towards and practice of mushroom cultivation technologies is important in order to measure the response of the growers (DAE, 1999). Thus, these three intervening variables were assessed first. The knowledge assessment score of the mushroom growers ranged from 8 to 20 with an average of 18.25 and standard deviation of 2.55. According to the knowledge assessment score, the respondents were classified into three categories. Findings presented in Table I evince that only 7.4% of the respondents had low level of knowledge, while a great proportion of them (88.8 %) had medium level of knowledge and a negligible fraction (3.8%) had high level of knowledge about mushroom cultivation technologies. It was found that an overwhelming majority of the respondents (88.8%) had medium level of knowledge on mushroom cultivation. This may be due to the fact that growers were trained and guided by the Mushroom Development Project moderately.

Attitude assessment scores of the growers towards mushroom cultivation ranged from 20 to 50 with an average and standard deviation of 45.86, 5.07, respectively against the possible scores of 10 to 50. The respondents were classified according to their attitudinal scores into three categories. About 40% the respondents had favorable attitude towards mushroom cultivation, while 28.8% had

**Table I: Distribution of the growers according to their knowledge about, attitude towards and practice of mushroom cultivation technologies**

Category of the growers	Number	percent	Mean	Standard deviation
<b>Knowledge</b>				
Low knowledge (up to 10)	6	7.4	18.25	2.55
Medium knowledge (11-19)	71	88.8		
High knowledge (above 19)	3	3.8		
Total	80	100		
<b>Attitude</b>				
Slightly favorable (up to 25)	25	33.2	45.86	5.07
Favorable (26-49)	32	40.0		
Highly favorable (above 49)	23	28.8		
Total	80	100		
<b>Practice</b>				
Poorly practiced (up to 22)	3	3.7	27.94	2.88
Moderately practiced (23 – 29)	44	55.0		
Frequently practiced ( above 29)	33	41.3		
Total	80	100		

**Table II: Correlation between Farmers' Response to mushroom cultivation technologies and Their Characteristics**

Selected personal attributes	Correlation co-efficient (r)
Age	(1) .121 <sup>NS</sup>
Education	(2) .499**
Family size	(3) -.070 <sup>NS</sup>
Farm size	(4) .085 <sup>NS</sup>
Ownership of spawn packet	(5) .256*
Annul income from mushroom cultivation	(6) .294**
Farming experience	(7) .238*
Participation in Bangladesh Mushroom foundation	(8) .104 <sup>NS</sup>
Training experience	(10) .241*
Extension media contact	(11) .441**

\*Correlation co-efficient is significant at the 0.05 level of probability (2-tailed)

\*\*Correlation co-efficient is significant at the 0.01 level of probability (2-tailed)

<sup>NS</sup>Stands for not significant at 0.05 percent level of probability (2- tailed)

highly favorable and only 33.2% had slightly favorable attitude. Majority of the respondents (73.2%) showed slightly favorable to favorable attitude towards the mushroom cultivation technologies. The practice assessment score of the growers ranged from 18 to 30 with an average of 27.94 and standard deviation of 2.88. The respondents were classified into following three categories according to their obtained score against the practices. Results revealed that 3.7% of the respondents practiced the recommended technologies of mushroom poorly, while 55% of them practiced it moderately and 41.3% practiced frequently. An overwhelming majority of the respondent (96.3%) practiced the mushroom technologies moderately to frequently. This may be due to the fact that mushroom growers are trained by Bangladesh Mushroom Foundation at regular interval; they were guided and monitored properly. These all together help develop their level of confidence in practicing mushroom technologies moderately to frequently.

Finally the response of the mushroom growers were

**Table III: Impediments to Mushroom Cultivation as confronted by the growers**

Problems	Extent of problem			PCI <sup>4</sup>	Rank order
	F <sup>1</sup>	O <sup>2</sup>	R <sup>3</sup>		
Poor quality spawn packet	60	8	12	208	1 <sup>st</sup>
Unavailability of spawn packet	15	37	28	147	2 <sup>nd</sup>
Disease attack & insect infestation	10	37	33	137	3 <sup>rd</sup>
Lack of exposure of mushroom technologies to the growers	7	36	37	130	4 <sup>th</sup>
Lack of capital	10	24	46	124	5 <sup>th</sup>
Poor investment due to economic hardship	12	8	60	112	6 <sup>th</sup>
Meager marketing facilities	5	15	60	105	7 <sup>th</sup>
Poor storage opportunity	0	15	65	95	8 <sup>th</sup>
Poor contact with extension staff	2	3	75	87	9 <sup>th</sup>
Lack of adequate information about mushroom cultivation	0	0	80	80	10 <sup>th</sup>

F<sup>1</sup>-Frequently; O<sup>2</sup>-Occasionally; R<sup>3</sup>-Rarely; <sup>4</sup> Problem Confrontation Index

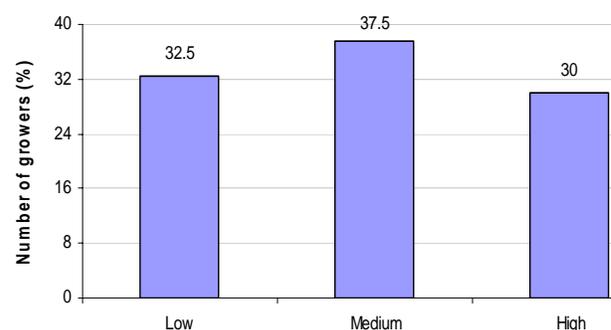
assessed and put in the following figure (Fig. 1). The score against response ranged from 70 to 100 with an average and standard deviation of 92.05 and 9.82, respectively. The response assessment score of the respondent were classified into three categories viz., low (up to 80), medium (81-99) and high (above 99) and presented in Fig. 1.

These data indicated that 32.5% of the mushroom growers showed low level of response, while 37.5% of them showed medium level of response and 30% highly responsive. These findings indicated that majority of the growers showed (70%) low to medium level of response most likely owing to the acquisition of low to medium level of knowledge on mushroom cultivation technologies, holding slightly favorable to favorable attitude towards the same and practicing of mushroom cultivation technologies moderately to frequently.

It is reported that farmers' respond differently due to their varied personal, socio-economic or psycho-physical characteristics (Ali *et al.*, 1989). Hence, the nature of relationship between growers' characteristics and their response were assessed by Pearson's product moment correlations co-efficient (Table II).

Six of the selected characteristics of mushroom growers out of ten, viz., education, annual income from mushroom cultivation, ownership of spawn packet, farming experience, training experience and extension contact showed significant positive relationship with the response to mushroom production technologies. The relationship between education of the farmers and their response in mushroom cultivation as reflected by *r* value (0.499) was significant at 0.01 level of probability (Table II). This implied that the education of the respondents had significant positive relationship with their response in mushroom cultivation i.e., more education the growers had, more positive response they showed.

The correlation co-efficient between ownership of spawn packet and the response of the growers to the mushroom cultivation technologies was 0.256 (Table II). This led to the fact that there was a significant positive relationship between ownership of spawn packets of the growers with their response i.e., the more number of spawn packet grower had, the more positive response they showed. The value of *r* = 0.294 for the relationship between annual

**Fig. 1: Distribution of the mushroom growers according to their response**

income of the farmers and their response in mushroom cultivation implied that the income of the respondents had positive relationship with their response to mushroom cultivation technologies. It may be due to the fact that farmers having high income had increased financial ability to make adequate investment for the adoption of modern technologies of mushroom cultivation. The correlation coefficient between growers' farming experience and their response to the mushroom cultivation technologies was 0.238, which indicated a positive association (Table II). Similar finding is obtained by Talukder (2006), which indicated that more experienced growers preferred advanced mushroom cultivation technologies. The relationship between training of the growers and their response to mushroom cultivation technologies as reflected by the *r* value (0.241) was significant ( $P < 0.01$ ), which showed that training of the respondents had a significant positive influence on their response to mushroom cultivation technologies (Table II). Furthermore, the growers having long duration training are expected to show high level of response. There is also a significant positive association ( $r = 0.441$ ) between extension contact of the growers and their response to mushroom cultivation technologies, which is in conformity with the finding of Talukder (2006) and Haider (2005). The above findings suggested that growers maintaining frequent extension contact are supposed to respond better mushroom cultivation technologies.

Growers confronted with copious problems in cultivating mushroom. As many of the growers adopted

mushroom cultivation as a major profession, they spent all out effort to secure stable income. But in many cases they failed to harvest maximum profit because of the prevalence and emergence of untoward situations. Data showed that the most crucial problem the growers confronted with was poor quality spawn packet. The second key problem prevalent in the study area was unavailability of spawn packet in due course of time. The third significant problem growers faced was disease attack and insect infestation (Table III).

However, the 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> problems based on the growers evaluation, as shown in Table III, were lack of exposure, lack of capital, poor investment due to economic hardship, meager marketing facilities, poor storage opportunity, poor contact with extension staff and lack of adequate information about mushroom cultivation, respectively. To overcome the top three problem growers put forward some suggestion. With regards to problem number one they suggested that quality of spawn packet should be maintained meticulously. As for second problem growers suggested that more number of spawn packet should be produced and supplied to the growers in due course of time. To address third problem, growers suggested that culture house should be handled carefully and immaculately in order to avoid spread of disease. It was also suggested that concerned organizations should have to be more proactive and concentrated on addressing the problems immediately for extirpating them to settle thus making mushroom cultivation as one of the common crops (Table III).

## CONCLUSION

A great majority of the respondents (88.8%) had medium level of knowledge on mushroom cultivation technologies, while a majority (73.0%) of them showed slightly favorable to favorable attitude towards it. An overwhelming majority of the growers (96.3%) practiced the mushroom technologies moderately to frequently. As a whole it is found that seventh-tenth of the growers showed low to medium level response to mushroom production technologies. Hence, it might be concluded that growers' response to mushroom cultivation technologies was poorly satisfactory.

Six selected characteristics of mushroom growers out of 10 were education, annual income from mushroom cultivation, ownership of spawn packet, farming experience, training experience and extension contact. They showed positive relationship with their response to mushroom production technologies. Out of 10, three leading problems confronted by growers were "poor quality spawn packet", "unavailability of spawn packet" and "disease attack and insect infestation" in descending order.

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(Received 08 March 2010; Accepted 02 May 2010)