EFFECTIVENESS OF TRAINING PROGRAMME ON MUSHROOM CULTIVATTION

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EFFECTIVENESS OF TRAINING PROGRAMME ON MUSHROOM CULTIVATTION

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TO
MY BELOVED PARENTS

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CERTIFICATE

This is to certify that the thesis entitled **"Effectiveness of Training Programme on Mushroom Cultivattion"** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka-1207, in partial fulfillment of the requirements for the degree of **Master of Science in Agricultural Extension,** embodies the result of a piece of bonafide research work carried out by **MD. SAZZADUR RAHMAN**, Registration No. **09-03504** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that any help or source of information, received during the course of this investigation has been duly acknowledged.

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TABLE OF CONTENTS

CHAPTER			Page
	ACKNOWLEDGEMENTS		**i**
	TABLE OF CONTENTS		**iii**
	LIST OF TABLES		**vii**
	LIST OF FIGURES		**viii**
	LIST OF APPENDICES		**viii**
	LIST OF ABBREVIATIONS AND ACRONYMS		**ix**
	ABSTRACT		**x**
1.	**INTRODUCTION**		01
	1.1	General Background	01
	1.2	Statement of the Problem	04
	1.3	Specific Objectives of the Study	06
	1.4	Justification of the Study	06
	1.5	Assumptions of the Study	07
	1.6	Limitations of the Study	08
	1.7	Definition of Key Terms	09
2.	**REVIEW OF LITERATURE**		12
	2.1	Review of Studies relating to Training	12
	2.2	Review of Studies relating to Effectiveness	14
	2.3	Review of Studies concerning Relationship between Selected Characteristics of the respondent with the Effectiveness of Training Programme or Related Matters	15 16
	2.2.1	Age and effectiveness of training programme	16
	2.3.2	Education and effectiveness of training programme	16

CHAPTER		Page
2.3.3	Family size and effectiveness of training programme	17
2.3.4	Annual family income and effectiveness of training programme	17
2.2.5	Peer group influence and effectiveness of training programme	18
2.3.6	Cosmopoliteness and effectiveness of training programme	18
2.3.7	Extension media contact and effectiveness of training programme	18
2.3.8	Organizational participation and effectiveness of training programme	19
2.3.9	Innovativeness and effectiveness of training programme	19
2.3.10	Fatalism and effectiveness of training programme	19
2.3.11	Problem faced by the farmers and effectiveness of training programme	20
2.4	Conceptual framework of the study	20
3.	**METHODOLOGY**	23
3.1	Locale of the Study	23
3.2	Population and Sampling Design	28
3.3	Selection of Variables	29
3.4	Research Instruments	30
3.5	Measurement of Variables	30
3.5.1	Measurement of explanatory variables	30
3.5.2	Measurement of focus variable	35
3.6	Validity of the Research Instruments and Ethical Considerations	38
		38

CHAPTER		Page
	3.6 .1 Validity of the research instruments	39
	3.6.2 Ethical considerations	39
	3.7 Data Collection	39
	3.8 Processing of Data	40
	3.9 Hypothesis of the Study	40
	3.10 Data Analysis	41
4.	**RESULTS AND DISCUSSION**	42
	4.1 Characteristics of the Trained Mushroom Farmers	42
	4.1.1 Age	43
	4.1.2 Education	44
	4.1.3 Family size	45
	4.1.4 Annual family income	46
	4.1.5 Peer group influence	47
	4.1.6 Cosmopoliteness	48
	4.1.7 Extension media contact	49
	4.1.8 Organizational participation	49
	4.1.9 Innovativeness	50
	4.1.10 Fatalism	51
	4.1.11 Problem faced in mushroom cultivation	52
	4.2 Effectiveness of Training Programme on Mushroom Cultivation	53
	4.2.1 Knowledge on mushroom cultivation	53
	4.2.2 Attitude of the farmers towards mushroom cultivation	54

CHAPTER		Page
	4.2.3 Adoption of mushroom cultivation	55
	4.2.4 Effectiveness of training programme on mushroom cultivation	56
	4.3 Relationship between Selected Characteristics of the Trained Mushroom Farmers with their Effectiveness of Training Programme on Mushroom Cultivation	57
5.	**SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**	70
	5.1 Summary of the Findings	70
	5.1.1 Selected characteristics of the farmers	72
	5.1.2 Effectiveness of training programme on mushroom cultivation	72
	5.1.2.1 Knowledge on mushroom cultivation	72
	5.1.2.2 Attitude of the farmers towards mushroom cultivation	72
	5.1.2.3 Adoption of mushroom cultivation	72
	5.1.2.4 Effectiveness of training programme on mushroom cultivation	72
	5.1.3 Relationships between the selected characteristics of the trained mushroom farmers and their effectiveness of training programme on mushroom cultivation	72
	5.1.4 Conclusions	73
	5.1.5 Recommendations	74
	5.1.5.1 Recommendations for policy implication	75
	5.1.5.2 Recommendations for further study	76
	REFERENCES	78
	APPENDICES	85

LIST OF TABLES

	Title	Page
Table 3.1.	Distribution of the sample population and number of trained farmers in the reserve list	29
Table 4.1.	Salient features of the selected characteristics of the trained mushroom farmers	43
Table 4.2.	Distribution of the respondents according to their age	44
Table 4.3.	Distribution of the respondents according to their level of education	45
Table 4.4.	Distribution of the respondents according to their family size	46
Table 4.5.	Distribution of the respondents according to their annual family income	47
Table 4.6.	Distribution of the respondents according to their peer group influence	47
Table 4.7.	Distribution of the respondents according to their cosmopoliteness	48
Table 4.8.	Distribution of the respondents according to their extension contact	49
Table 4.9.	Distribution of the respondents according to their organizational participation	50
Table 4.10	Distribution of the respondents according to their innovativeness	51
Table 4.11	Distribution of the respondents according to their fatalism	52
Table 4.12	Distribution of the respondents according to their problem faced in mushroom cultivation	53
Table 4.13	Distribution of the respondents according to their knowledge on mushroom cultivation	54
Table 4.14	Distribution of the respondents according to their attitude towards mushroom cultivation	54
Table 4.15	Distribution of the respondents according to their adoption of mushroom cultivation	55

Table 4.16	Distribution of the respondents according to their effectiveness of training programme on mushroom cultivation	56
Table 4.17	Co-efficient of correlation between explanatory and focus variables (n = 103)	58

LIST OF FIGURES

	Title	Page
Figure 2.1	The conceptual framework of the study	22
Figure 3.1	Map of Comilla district showing different upazilas	24
Figure 3.2	Map of Chandina upazila showing the study village	25
Figure 3.3	Map of Burichang upazila showing the study village	26
Figure 3.4	Map of Comilla sadar dakshin upazila showing the study villages	27

LIST OF APPENDICES

	Title	Page
Appendix-A	English version of the interview schedule	85
Appendix-B	Correlation matrix	95

LIST OF ABBREVIATIONS AND ACRONYMS

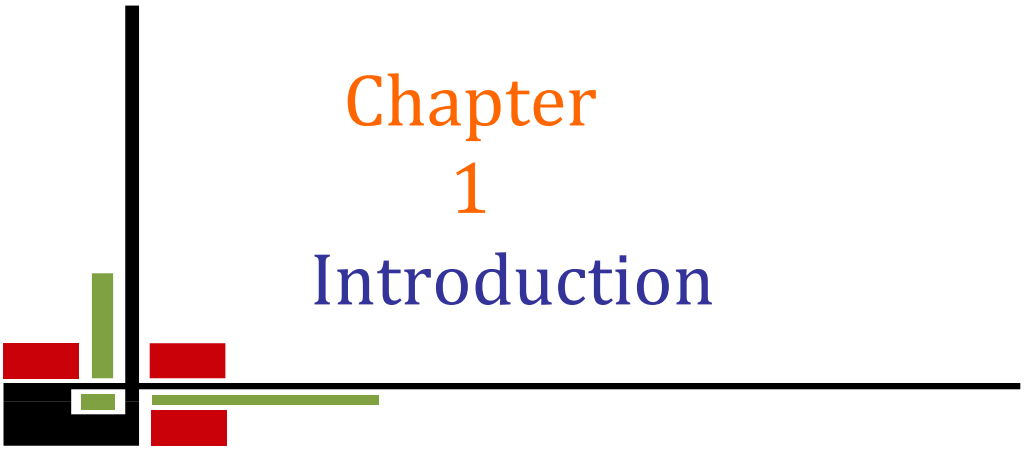
Abbreviation	Full Word
SAU	Sher-e-Bangla Agricultural University
et al.,	And others (at elli)
CV	Coefficient of Variation
d.f.	Degrees of Freedom
DAE	Department of Agricultural Extension
etc.	Etcetera
e.g.	Example
ha	Hectare
Tk.	Taka
i.e.	That is
Km	Kilometer
Kg	Kilogram
viz.	Namely
NGO	Non-Government Organization
%	Percent
r	Pearson's Product Moment Correlation Co-efficient
NMDEC	National Mushroom Development and Extension Centre
JOCV	Japan Oversees Co-operation Volunteers
FAO	Food and Agricultural Organization
AMDO	Assistant Mushroom Development Officer
KSS	Krishok Samabay Samity

EFFECTIVENESS OF TRAINING PROGRAMME ON MUSROOM CULTIVATTION

-MD. SAZZADUR RAHMAN

ABSTRACT

The purposes of the study were to investigate the effectiveness of training programme on mushroom cultivation and to explore the relationships of each of the selected characteristics of the mushroom farmers with their effectiveness of training programme. Data were collected from the trained mushroom farmers of selected eight villages of three upazilas of Comilla district during 01 to 16 March, 2016. The sample size of the study was 103 mushroom farmers and drawn from a population of 801 using proportionate random sampling technique. It was revealed that training programme on mushroom cultivation was medium effective among highest proportion (39.8%) of the trained mushroom farmers, while 32% and 28.2% were found low and high effective respectively. Pearson's Product Moment Correlation Co-efficient (r) was computed to explore the relationships between the effectiveness of training programme on mushroom cultivation of the trained farmers and their selected characteristics. The correlation analysis indicated that age, cosmopoliteness and extension media contact of the trained mushroom farmers had significant positive relationships with their effectiveness of training programme on mushroom cultivation. Fatalism and problems faced by the trained farmers in mushroom cultivation had significant negative relationships with their effectiveness of training programme on mushroom cultivation. Education, family size, annual family income, peer group influence, organizational participation, innovativeness had no significant relationships with their effectiveness of training programme on mushroom cultivation. It was found that training programme on mushroom cultivation was effective to the trained farmers from medium to very high level. So, necessary steps need to be taken to enhance the existing activities of mushroom training programme that could improve the sustainable mushroom production as well as the livelihood of the mushroom farmers throughout the country.



Chapter 1 Introduction

CHAPTER 1

INTRODUCTION

1.1 General Background

Bangladesh is an agricultural country with a total area of 147570 km^2.The total population of the country is about 149.77 millions of which about 67% are dependent on agriculture (BBS, 2011). Nearly all the arable area of the country has been brought under the plough and further agricultural expansion is almost impossible. On the other hand the unemployed population in our country is 2.2 million out of which 0.8 million is female (Kader, 2006). The fruits and vegetables produced by the country can fulfil 65-70% of the national demand. A significant portion of fruits and vegetables are lost after harvest, as a result the available fruits and vegetables fulfil only 50% of our requirement (Muzammel et al., 2005). Mushroom is an edible vegetable which is delicious, nutritious and having medicinal value cultivated scientifically from seeds produced in the laboratory in a neat and clean environment (Siddiqui, 2002). The nutritional and medicinal values of Mushrooms have long been recognized (Lucas et al., 1957 and Suzuki & Oshima, 1976). 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).The mushroom is a fleshy, spore-bearing organ of fungi. The fleshy nature of the mushroom is the main attraction to man as a source of food. But the biological role of the mushrooms is the production and dissemination of spores in numbers sufficient to assure the propagation of the species under diverse environmental conditions (Chang and Miles, 1993). Edible mushrooms are good source of protein, vitamins and minerals and contains about 85-95% water, 3% protein, 4% carbohydrates, 0.1% fats and 1% minerals and vitamins (Khan et al., 1981). In ancient cultures such as the Indian, Greek and Roman, mushrooms have been described as sophisticated delicious food associated with Royal class (Bahl, 1994). As a group, mushrooms

also contain some unsaturated fatty acids; provide several types of B vitamins, and vitamin D. They also contain significant amount of vitamin C, as well as the minerals, potassium, phosphorus, calcium and magnesium (Park, 2009). The detrimental cholesterol is absent in mushroom but necessary ergosterol is present (Chanda and Sharma, 1995). Lintzedl (2001) indicated that 100 to 200g (dry wt.) of mushroom was required to maintain nutritional balance in a normal human body weighing 70 kg.They are recognized as the alternate source of good quality protein and are capable of producing the highest quantity of protein per unit area and time from the worthless agro-wastes (Chadha and Sharma, 1995). Mushrooms are the source of extra ordinary power and virility and are used in the preparation of many continental dishes. Now, mushrooms are being cultivated in more than 100 countries of the world, with an estimated total production of over 12 million tons (Suman and Sharma, 2007). This increased production was due to increased production efficiency and increasing consumer demand. During the past few decades, the demand has been increased due to easy preparation of food items. In recent times, however, mushrooms have assumed greater importance in the diets of both rural and urban dwellers (Bruhn, 1995).

The mushroom cultivation history of Bangladesh is not so old. In 1976, the late Agricultural Advisor Mr. Azizul Haque first brought straw mushroom seed from Thailand to Bangladesh and gave that to the Horticultural Development Board. Horticultural wing cultivated that seed in Asadgate horticultural garden and started mushroom cultivation in Bangladesh. Mushroom cultivation was then shifted to Horticulture Centre, Sobhanbag, Savar, Dhaka, Bangladesh in 1979-80 with the technical help of Japan Oversees Co-operation Volunteers (JOCV) and DAE. In 1986, 15th November Japanese volunteer Kozima Masho was appointed as junior expert at Mushroom Center, Savar, Dhaka with the help of Japan Oversees Co-operation Volunteers (JOCV). That year Kozima brought low temperature mushroom in Bangladesh for the first time.

In 1987, Food and Agricultural Organization (FAO) funded two mushroom experts namely Dr. Fedhrico Jeni and Dr. Maziriona who came to Bangladesh from Italy and they gave training first time to Mushroom Center, Savar officers and staffs. That time they brought oyster mushroom from Italy which is high temperature mushroom. In 2003-2004 financial year, Govt. of Bangladesh took initiative to extend mushroom cultivation along with training to the farmers and private investors through a project titled "Mushroom Center Development Project". Then training programme started for mushroom cultivation through that project.

Mushrooms contain appreciable amount of potassium, phosphorus, copper, iron and low level of calcium (Anderson and Feller, 1997). The present nutritional status of Bangladesh is a matter of great concern. Most of our people have been suffering from malnutrition. Mushrooms can mitigate the sufferings from malnutrition to some extent. Because they grow in large quantities in a short time and provide more protein per unit area than any other crop (Gupta, 1986). In this situation, mushroom cultivation can be a new hope for Bangladesh. Mushroom culture is highly labour intensive but land saving short duration crop and can be welcomed by the poor farmers of Bangladesh, as it is a profitable agro business. The technology of artificial culture of mushroom is somewhat recent innovation and incorporation of this non-conventional crop in existing agricultural system can help in improving the social as well as economic status of the small farmers. Moreover, crop diversification and changes in food habit is an urgent need to build up our national health. Mushroom culture does not compete with other crops, can be grown in homestead with the active participation of family members. The agricultural and other wastes can be used as substrates. Thus, it can be produced in large quantity within a short time, provides more protein per unit area and can serves as income generating source in unemployed sector. Considering its nutritional, medicinal and economic importance, it is important to improve its production techniques using local low cost materials (Kader, 2006). The Department of Agricultural Extension (DAE) through its NMDEC 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. One of the main activities of the NMDEC is to train farmers and small entrepreneurs on mushroom cultivation. But there has been little effort to assess effectiveness of those training programmes so far.

1.2 Statement of the Problem

Mushroom research and extension activities were being carried by the DAE initially through its Mushroom Center Development Project. Later on, these activities are being implemented phase by phase, mainly on project basis. Mushroom expansion got accelerated through the "Mushroom Center Development Project-Phase II" during 2006 to 2009. With this project Govt. of Bangladesh upgraded Mushroom Cultivation Center, Saver to National Mushroom Development and Extension Centre (NMDEC) which became the national level organization to conduct research and extension activities on mushroom and coordinator of mushroom cultivation. This project developed six (6) Horticulture Center as Mushroom Sub-Center in the six zone of Bangladesh viz. Comilla, Faridpur, Jessore, Sylhet, Dinajpur and Chittagong. With the help of this project NMDEC has done research on mushroom, created skilled manpower through training. Besides, this center is also responsible for determination and confirmation of quality of mushroom and mushroom products, creation of mushroom entrepreneurs, creating national and international markets, expansion of mushroom cultivation technologies across the country.

Presently, mushroom project is performing its activities all over the country through NMDEC, Savar and its 16 sub-centers throughout the country (Anonymous, 2008). NMDEC, Savar and its 16 sub-centers are running training pogramme for the farmers about mushroom cultivation, marketing and processing. Training on mushroom cultivation has been given mainly to the farmers, youth, women, service-holders, and near about 1,00,000 people through NMDEC and its sub-centers. Mushroom Cultivation Sub Center, Comilla was

established during 2008-2009 and provided training from 2009-2010 year to 2013-2014.This center provided training to more than 3000 people. But no systematic study has yet been conducted to identify the effectiveness of training programme on mushroom cultivation. Kamal (2012) found that a vast majority of the trained farmers in Faridpur district had low to medium adoption (88.66%) and knowledge (83.50%) on mushroom cultivation. Basar (2006) found that training exposure had significant negative relationship with problem confrontation in mushroom cultivation by the farmers of Savar upazila. A training programme can be said effective if the trained farmers possess attitude, proper knowledge and adopt mushroom cultivation in considerable amount. This is why, the researcher took the research on "Effectiveness of Training Programme on Mushroom Cultivattion". In the light of above discussions and the background information, the present study has been undertaken to answer the following research questions:

i. How much training programme on mushroom cultivation was effective in technology transfer?

ii. Which socio-economic characteristics of the trained farmers made training programme on mushroom cultivation effective?

1.3 Specific Objectives of the Study

In order to find proper direction of the present study, the following specific objectives were formulated:

1. To determine the effectiveness of training programme on mushroom cultivation;
2. To determine the following selected characteristics of the trained mushroom farmers:
   - i. Age
   - ii. Education
   - iii. Family size
   - iv. Annual family income
   - v. Peer group influence
   - vi. Availability of credit
   - vii. Training exposure
   - viii. Cosmopoliteness
   - ix. Extension media contact
   - x. Organizational participation
   - xi. Innovativeness
   - xii. Fatalism, and
   - xiii. Problems faced in mushroom cultivation; and
3. To explore the relationships between each of the selected characteristics of the trained mushroom farmers with the effectiveness of training programme on mushroom cultivation

1.4 Justification of the Study

The findings of the study were expected to manifest the effectiveness of training programme on mushroom cultivation and would give a hypothetical thought of mushroom cultivation all over the nation. It is expected that this study will inspire other researchers to conduct same sorts of research in other parts of the country. Through this research the project authority of NMDEC will be able to appraise the effectiveness of their training effort. Lastly, it was assumed that recommendations of this study will be helpful in formulating mushroom extension programs that will increase the rate of adoption of mushroom cultivation. Besides, the findings of this research will be helpful to extension personnel and policy makers to decide further institutions of mushroom in order to educate the farming community about mushroom cultivation through out the country.

1.5 Assumptions of the Study

An assumption is the supposition that an apparent fact or principle is true in the light of available evidence (Goode and Hatt, 1952). The researcher had the following assumptions in his mind while undertaking this study:

a. The respondents in the sample were capable of furnishing proper responses to the questions contained in the interview schedule.
b. The responses furnished by the respondents were reliable. They expressed the truth about their convictions and awareness.
c. Views and opinions furnished by the respondents included in the sample were the representative views and opinions of the whole population of the study area.
d. The information sought by the researcher revealed the real situation to satisfy the objectives of the study
e. The researcher who acted as interviewer was well adjusted to the social and cultural environment of the study area. Hence the respondents furnished their correct opinions without hesitation. Hence, the data collected by him from the respondents were free from biasness.

f. The items included in the interview schedule to ascertain the effectiveness of training programme on mushroom cultivation were adequate to reflect the effectiveness of training programme.

g. The socio-economic conditions of the farmers were deemed more or less similar throughout the study area.

h. The findings would be helpful in planning, execution and evaluation of mushroom extension programme.

1.6 Limitations of the Study

Considering the time, money and other necessary resources available to make the study manageable and meaningful, it was necessary to consider the following limitations:

1. The study was confined to eight villages of three Upazillas of Comilla district.
2. There were many farmers in the study area, but only the farmers who were trained on mushroom cultivation were considered for this study.
3. For information about the study, the researcher was dependent on the data furnished by the randomly selected trained mushroom farmers during interview with them.
4. Characteristics of the farmers were many and varied but only eleven characteristics were selected for investigation in this study.
5. During data collection the researcher had to depend on data furnished by the respondents. As most of the farmers do not keep records of their farming activities, they furnished information to the different questions by recall.
6. Effectiveness of training programme on mushroom cultivation of the farmer could be measured in various ways. However, in this study it was measured by considering knowledge, attitude and adoption regarding mushroom cultivation.
7. The present study highlighted a new dimension of research in the field of agricultural extension in Bangladesh. So, the researcher could not

provide sufficient evidence in equipping his study report with relevant literature reviews.

1.7 Definition of Key Terms

Certain terms have been used in this research which are defined and interpreted as follows for clarity of understanding:

Effectiveness

Effectiveness is defined as the extent to which a programme achieves its intended objectives.

Training

Training is defined as a sequences of experiences or oppurtunities designed to modify behavior in order to obtain stated objectives.

Effectiveness of training programme

Effectiveness of training programme means the degree to which training programmes achieved its objectives.

Age

Age of a respondent refers to the period of time in complete years from the time of birth to the date of interview.

Education

Education is measured on the basis of classes passed from a formal educational institution by the trained mushroom farmers.

Family size

Family size of a trained mushroom farmer is defined as the number of individuals in his family including himself, his wife, children and other dependent members.

Annual family income

This refers to the yearly income of a trained mushroom farmer and his family members various sources of income like agriculture, livestock, fisheries, business etc. during last year.

Peer group influence

It is the extent of influence by the peer group in making any decision, take part in action or do something by the trained mushroom farmers.

Cosmopoliteness

It refers to the degree to which an individual's orientation is external to his own social system.

Trained farmer

Farmer who participated and received training to learn skill on special technical aspects are said to be trained farmers. In this study trained farmers mean farmers who received training on mushroom cultivation.

Extension media contact

Extension media contact refers to an individual's contact with different information sources and personalities being used for technology dissemination among the farmers.

Organizational participation

Organizational participation of a respondent refers to his/her taking part in various social organizations as various membership.

Innovativeness

Innovativeness is the degree to which an individual is relatively earlier in adopting agricultural innovations, new ideas, practices and things than the other members of a social system (Rogers, 1995). This is comprehended by the quickness of accepting innovations by an individual in relation to others and is measured on the basis of time dimension.

Fatalism

The term fatalism refers to the belief of a respondent farmer that a particular event happened in a way that could not be explained by reason of science, or in other words, the belief that particular event could bring good or bad luck.

Problem faced by the farmer

It refers to the degree of problems faced by the trained farmers in mushroom cultivation.

Knowledge on mushroom cultivation

It is the extent of basic understanding of the farmers in different aspects of mushroom cultivation e.g. variety choosing, selection and cutting spawn packets, insects, water management etc. It includes the basic understanding of the use of different inputs and practices for mushroom cultivation.

Attitude towards mushroom cultivation

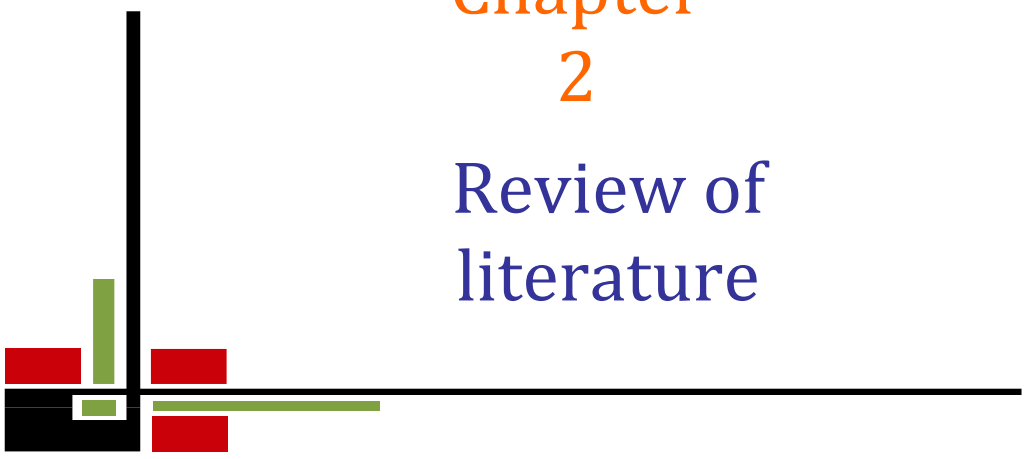
It is the extent of the mental act, condition, or habit of possessing confidence in mushroom cultivation by the farmers.

Adoption of mushroom cultivation

Simply, adoption is an implementation of a decision to use of an innovation. According to Rogers, (1995), “Adoption is a decision to make full use of an innovation as the best course of action available”. When an individual takes up a new idea as the best course of action and practices it, the phenomenon is known as adoption (Ray, 1999). In this study, adoption means a decision to cultivate mushroom by the mushroom trained farmers.

Chapter 2

Review of literature



CHAPTER 2
REVIEW OF LITERATURE

The purpose of this Chapter is to review previous studies and opinions of experts having relevance to this investigation. The researcher made an elaborate search of available literatures to review the findings of past researches in this respect. But, unfortunately, no studies were found directly related to the effectiveness of the training programme on mushroom cultivation. However, a number of studies were available which assessed effectiveness of training in general, explored relationships of the characteristics of the farmers with their effectiveness. These are briefly reviewed and discussed in this Chapter under the following sections and sub-sections.

2.1 Review of Studies relating to Training

Flippo (1961) differentiates education and training by locating at two ends of a continuum of personal development ranging from general to specific. Education is concerned with increasing general knowledge such as science, liberal arts, philosophy etc... While training is concerned with increasing skills.

Van dersal (1962) defined training as the process of teaching, informing or educating people so that (i) they may become as well qualified as possible to do

their job, and (ii) they become qualified to perform in positions of greater difficulty and responsibility.

McCormick and Tiffins (1965) conceptualized training as any planned organized effort that is specifically designed to help individuals develop increasing capabilities.

According to Torpey (1980) training is the process of developing skills, habits, knowledge and aptitudes of employees in their present government position as well as preparing employees for future government position.
While Wahiduzzaman, (1989) considered training as technology. When applied judiciously it leads to individual development, organizational development and development of society as a whole.

Islam, (1992) compared training with the sharpening of an axe for chopping tree. This is particularly true for extension personnel who are directly responsible for extension of new agricultural technologies.

Miah and Hossain (1991) expressed that training is one of the best weapons to improve the level of confidence of the extension personnel and to broaden their subject-matter knowledge, skills and attitudes.

The above definitions reveal certain important characteristics of training as follows:

- Training involves a series of planned, goal-directed activities.
- Training aims at changing the knowledge, skills and attitudes of the persons so that an individual can carry out his present job satisfactorily or prepare him for greater responsibility in the future.
- Training outcomes are measurable.
- Training involves learning process for bringing about the desired change in the learners behavior. The role of learners depends to a great extent on the nature and type of methods and media used for training.

The concept of training widely varies from person to person, organization to organization and academics to practitioners. Quite often the academics draw a

line between the wide and narrow meaning of training. In its wider sense training may be defined as:

> "A sequence of experience or opportunities designed to modify behavior in order to obtain stated objectives".

In the narrow sense, training has been defined as: (a) An effort to teach learner to some physical or mechanical tasks at some predetermined standard. (b) An education or drill.

In view of the above discussion, the concept of training has some clear implications, that it is pre-requisite for development of skill, enhancing knowledge and transforming behavior of individuals. Training thus, has been recognized as important instruments for human resource development.

2.2. Review of Studies relating to Effectiveness

There is a problem to conceptualize the effectiveness of any activities. The term effectiveness may be variously perceived depending on one's orientation, purpose and field investigation. Relevant literatures have been reviewed to clarify the concept of effectiveness and the factors that are likely to influence it. However, the word effectiveness is relatively a new concept for the field worker and client of agricultural extension and rural extension work.

Effectiveness refers to the degree of results of any kind of activity that is expected or unexpected by one and does or does not positively contribute to crop production, economic, environment and socio-cultural aspect (Atish, 2009).

Job effectiveness refers to the degree of agricultural extension worker in performing the various duties and responsibilities effectively assigned to them. Sometimes, the word performance is used in place of job effectiveness for brevity (Mahboob *et. al*., 1978).

Effectiveness may be defined as the degree to which a group or social system achieves its goal. An effective group is one that shows high level of both task

performance and human resource maintenance overtime (Scharmeron et. al., 1988).

Mortuza *et. al*., (1998) observed that more than half of the KSS (52 percent) had moderate effectiveness and 6 percent had very low and 4 percent had low effectiveness. Only 8 percent were very highly effective KSSs.

Ramanna *et. al.,* (1991) revealed that group meeting was more effective when audio-visual aids like charts, slides, flip charts and others were used in combination than group meeting alone.

Suryanarayana *et. al.,* (1990) revealed that 65 percent of the contact farmers were effective in influencing other fellow farmers, 23 percent of the contact farmers were more effective, and 12 percent were less effective. It was particularly observed that the contact farmers who effectively used extension teaching methods were significantly successful in extension knowledge on improved technology to other farmers in the area of their operation.

Tripathy and Pandey (1967) reported that indirect methods were most effective followed by personal contact, demonstration, group discussion and literature. Radio, film show and meeting were moderately effective. Tours, exhibits and fairs were less effective.

Paul (1989) observed that 95 percent of the farmers considered result demonstration either as medium or high in respect of their effectiveness.

Majydyn (1996) determined the effectiveness of 11 communication media by farmer's perception on four message characteristics adequateness, understandability, applicability, land persuasiveness etc.

Roy (2013) found that about four-fifth of the FFS farmers (91%) perceived FFS for soil and crop management as medium to high effective in Farmer Field School (FFS) for soil and crop management in the study area.

Afroz (2014) observed that result demonstration program had medium effectiveness (64.40 percent) among the farmers in the transfer of BRRI dhan50.

2.3 Review of Studies concerning Relationship between Selected Characteristics of the respondent with the Effectiveness of Training Programme or Related Matters

No literatures were directly avaiable regarding the relationship between selected characteristics of the farmers and effectiveness of training programme on mushroom cultivation. However, some related studies available in literatures are presented below:

2.3.1 Age and effectiveness of training programme

Afroz (2014) found no relationship between age of the Boro rice farmers and effectiveness of result demonstration program in the transfer of BRRI dhan50.

Roy (2013) concluded that age of the FFS farmers had no significance on the effectiveness FFS for soil and crop management.

Kamal (2012) concluded that age of the famers had no significant relationship with the adoption of mushroom cultivation.

Alam (2004) concluded that the age of the respondents had significant negative relationship with their opinion regarding the effectiveness of farm information receive from printed materials.

Azad (2004) concluded that age of the farmers of four groups had no significant relationship with their attitude towards seed uptake programme.

Hossain (2003) found that the knowledge of quality rice seed production and preservation did not vary significantly with age of the farmers.

Jahan (2001) concluded that the age of the farmers had no significant relationship with the farmers' opinion on effectiveness of farm forestry towards sustainable agricultural development.

2.3.2 Education and effectiveness of training programme

Afroz (2014) indicated that there was no relationship between education of the Boro rice farmers and effectiveness of result demonstration program among farmers in the transfer of BRRI dhan50.

Roy (2013) concluded that the FFS farmers having more years of schooling perceived FFS for soil and crop management as highly effective.

Rasel (2004) concluded that there was a positive significant relationship between education of the adivasi people and their training needs for their income generating activities. Similar finding was found by Fatema (1995) in her respective study.

Hossain (2003) concluded that education of the farmers had a significant and positive relationship with their adoption of modern Boro rice cultivation practices.

Chowdhury (2003) found that academic qualification of the farmers had positive significant relationship with their attitude towards crop diversification.

Jahan (2001) concluded that the education of the farmers had significant relationship with opinion of the farmers on effectiveness of farm forestry towards sustainable agricultural development.

Shah (2001) concluded that there was no relationship between education of the farmers and their knowledge on improved practices of pineapple cultivation.

2.3.3 Family size and effectiveness of training programme

Roy (2013) concluded that household size of the FFS farmers did not play an important role for the effectiveness of FFS for soil and crop management.

Chowdhury (2003) found that there was no significant relationship between family size of Prosika farmers and attitude of farmers towards crop diversification programme.

Afroz (2014) reported that a positive significant relationship was found between the farm sizes of Boro rice farmers and effectiveness of result demonstration programme in transfer of BRRI Dhan50.

2.3.4 Annual family income and effectiveness of training programme

Roy (2013) concluded that annual family income of the Farmers Field School (FFS) farmers had no significance on the effectiveness of FFS for soil and crop management.

Alam (2004) reported that the annual income of the farmers had significant relationship with opinion of farmers on effectiveness of farm information receive from printed materials.

Islam (2002) concluded that annual income had no relationships with adoption of modern agricultural technologies by the farmers of Sandip.

Aurangozeb (2002) found that there was a positive significant relationship between annual income of the respondent and their adoption of integrated homestead farming technologies by the rural women in RDRS.

2.3.5 Peer group influence and effectiveness of training programme

Kamal (2012) concluded that neighbourhood influence had highly significant positive relationship with the adoption of mushroom cultivation.

2.3.6 Cosmopoliteness and effectiveness of training programme

Afroz (2014) reported that there was no relationship between cosmopoliteness of the Boro rice farmers with their effectiveness of result demonstration program in the transfer of BRRI dhan50.

Kamal (2012) concluded that cosmopoliteness of the famers had no significant relationship with the adoption of mushroom cultivation.

Aurangozeb (2002) reported that cosmopoliteness of the respondents had a significant positive relationship with their adoption of integrated homestead farming technologies by the rural women in RDRS.

2.3.7 Extension media contact and effectiveness of training programme

Afroz (2014) reported that there was no relationship between extension media contact of the Boro rice farmers and their effectiveness of result demonstration program in the transfer of BRRI dhan50.

Roy (2013) concluded that extension media contact of the Farmers Field School (FFS) farmers had significant positive relationship with the effectiveness of FFS for soil and crop management.

Kamal (2012) concluded that extension contact of the famers had significant positive relationship with the adoption of mushroom cultivation.

2.3.8 Organizational participation and effectiveness of training programme

Afroz (2014) found no relationship between organizational participation of the Boro rice farmers and effectiveness of result demonstration program in the transfer of BRRI dhan50.

Kamal (2012) concluded that organizational participation of the famers had no significant relationship with the adoption of mushroom cultivation.

Mostafa (1999) conducted a study on adoption of recommended mango cultivation practices by the mango growers of Nawabganj Sadar thana. He found that organizational participation of the mango growers had a significant positive relationship with their adoption of recommended mango cultivation practices.

2.3.9 Innovativeness and effectiveness of training programme

Afroz (2014) in her study found that innovativeness of Boro rice farmers had a positive significant relationship with the effectiveness of result demonstration program in the transfer of BRRI dhan50.

Roy (2004) found no relationship between innovativeness and effectiveness of mass media in adoption of rice production technologies.

2.3.10 Fatalism and effectiveness of training programme

Sarker (2004) found that there was no relationship between the fatalism of the Imams and their overall attitude towards improved agricultural technologies.

Lovell (1992) reported that fatalism of the rural women had significant negative influence on their adoption of BRAC programmes. The higher the fatalism of the women, the lower was their adoption of BRAC programmes.

2.3.11 Problem faced by the farmer and effectiveness of training programme

Basher (2006) concluded that mushroom cultivation knowledge of the farmers had significant negative relationship with their problem confrontation in mushroom cultivation. Farmers with higher mushroom cultivation knowledge were likely to have lower level of problem faced in mushroom cultivation.

2.4 The Conceptual Framework of the Study

This study was concerned with the effectiveness of training programme on mushroom cultivation which was considered as the main focus variable and the selected characteristics viz. age, education, family size, annual family income, peer group influence, cosmopoliteness, extension media contact, organizational participation, innovativeness, fatalism and problem faced by the farmers in mushroom cultivation were explanatory variables.

The effectiveness of training programme on mushroom cultivation might be influenced by the characteristics of the mushroom farmers and pertinent issues in their surroundings. But it is not possible to deal with all the characteristics of the mushroom farmers in a single study. It was, therefore, necessary to limit the characteristics into eleven. The effectiveness of training programme on mushroom cultivation could also be influenced by the policy support i.e. implementation of mushroom cultivation training programme and regular monitoring of their activities. To measure focus variable of the study, the following related terms were defined firstly:

Effectiveness: Effectiveness was defined as the extent to which a programme achieves its intended objectives.

Training: Training was defined as a sequence of experiences or oppurtunities designed to modify behavior in order to obtain stated objectives.

Effectiveness of training programme: Effectiveness of training programme meant the degree to which training programmes achieved its objectives.

Roy (2013) measured effectiveness on the basis of direct perceptions of the farmers on various aspects of Farmer Field School for soil and crop management.

Afroz (2014) measured effectiveness of result demonstrations programs in transfer of BRRI Dhan50 by combining and averaging of knowledge, attitude and adoptions scores of the respondents.

Like any agricultural extension education programs, training program on mushroom cultivation have general objectives like i. to increase knowledge, ii. to change attitude and iii. to increase adoption. The trained farmers of the study area had no previous knowledge, attitude and adoption behavior regarding mushroom cultivation. The overall achievement of those three dimensions would be the effectiveness of training programme on mushroom cultivation. This is why the formula developed by Afroz (2014) was followed to measure the effectiveness of training programme on mushroom cultivation. It was conceptualized that the focus variable and explanatory variables of the study were interreleted. These two variables would have varying degrees of influence with their variations in knowledge, attitude and adoption behaviour of the mushroom cultivators. However, for clear understanding, a conceptual model of the study based on above discussions and review of literatures, has been formulated as shown in Figure 2.1

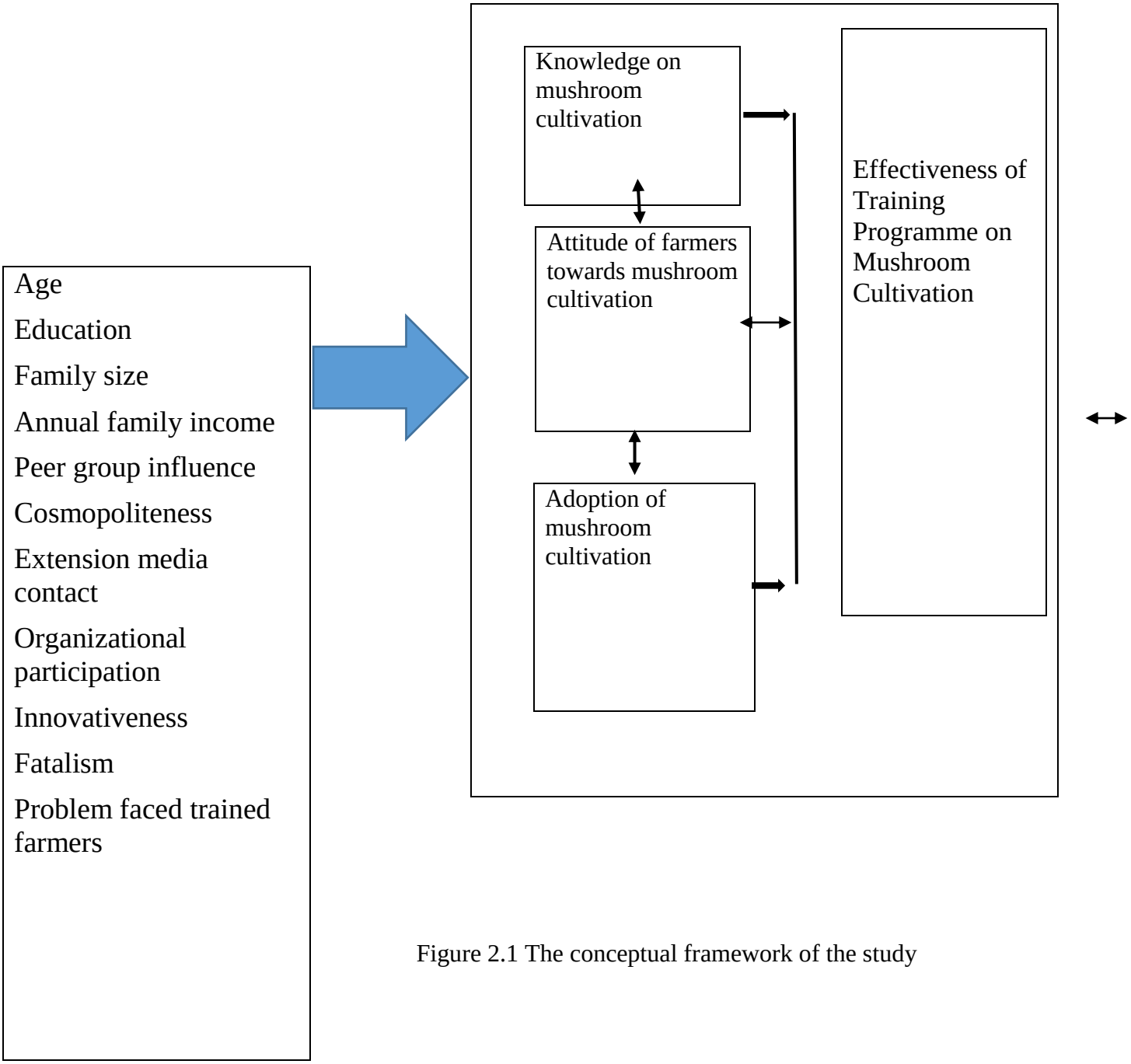
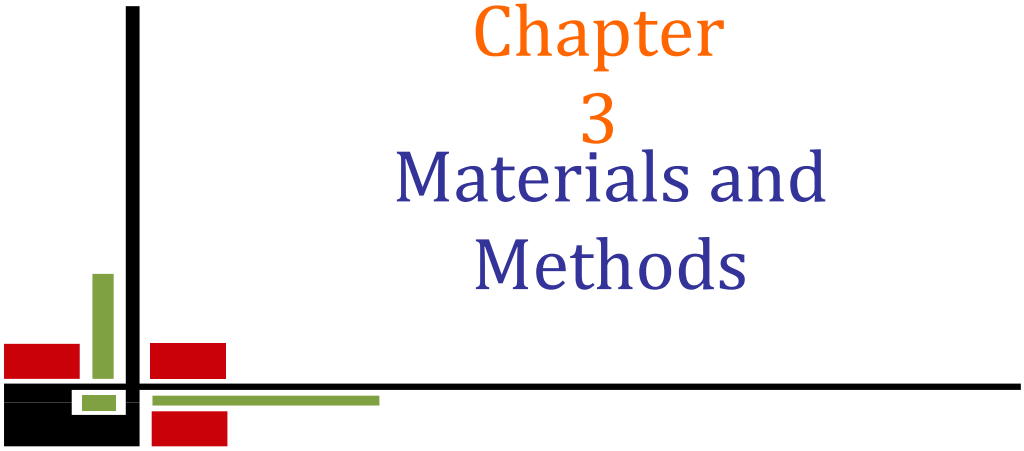


Figure 2.1 The conceptual framework of the study



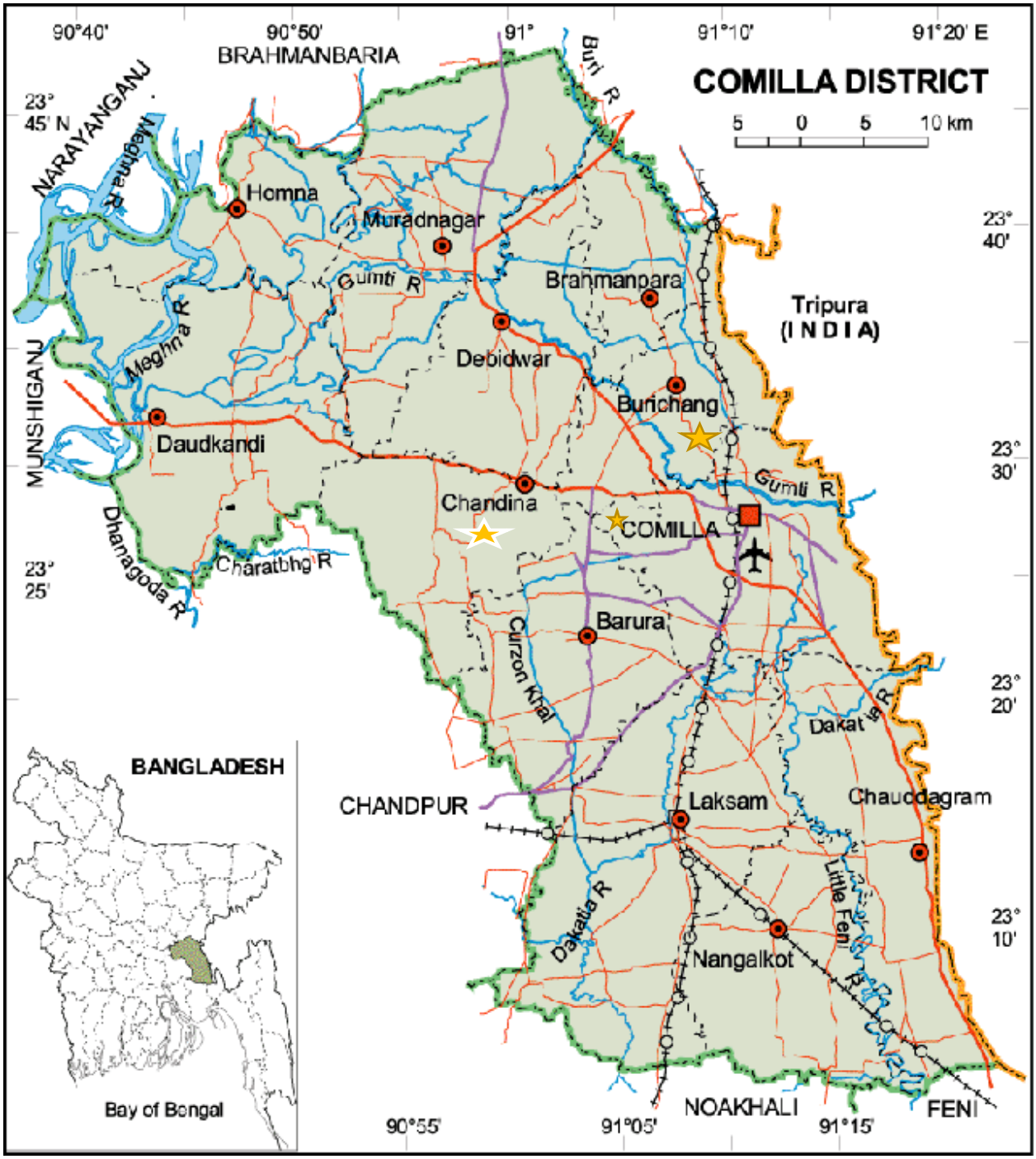
CHAPTER 3
METHEDOLOGY

Methodology is an important and integral part of research which determines whether a scientific research will be fruitful or not. It deserves a very careful consideration to organize methodology to make the study systematic. A proper methodology helps researcher collecting valid and reliable data for arriving at fruitful decisions. The

methods and procedures followed in conducting this study has been described in this Chapter and are presented below in the following sections and sub-sections.

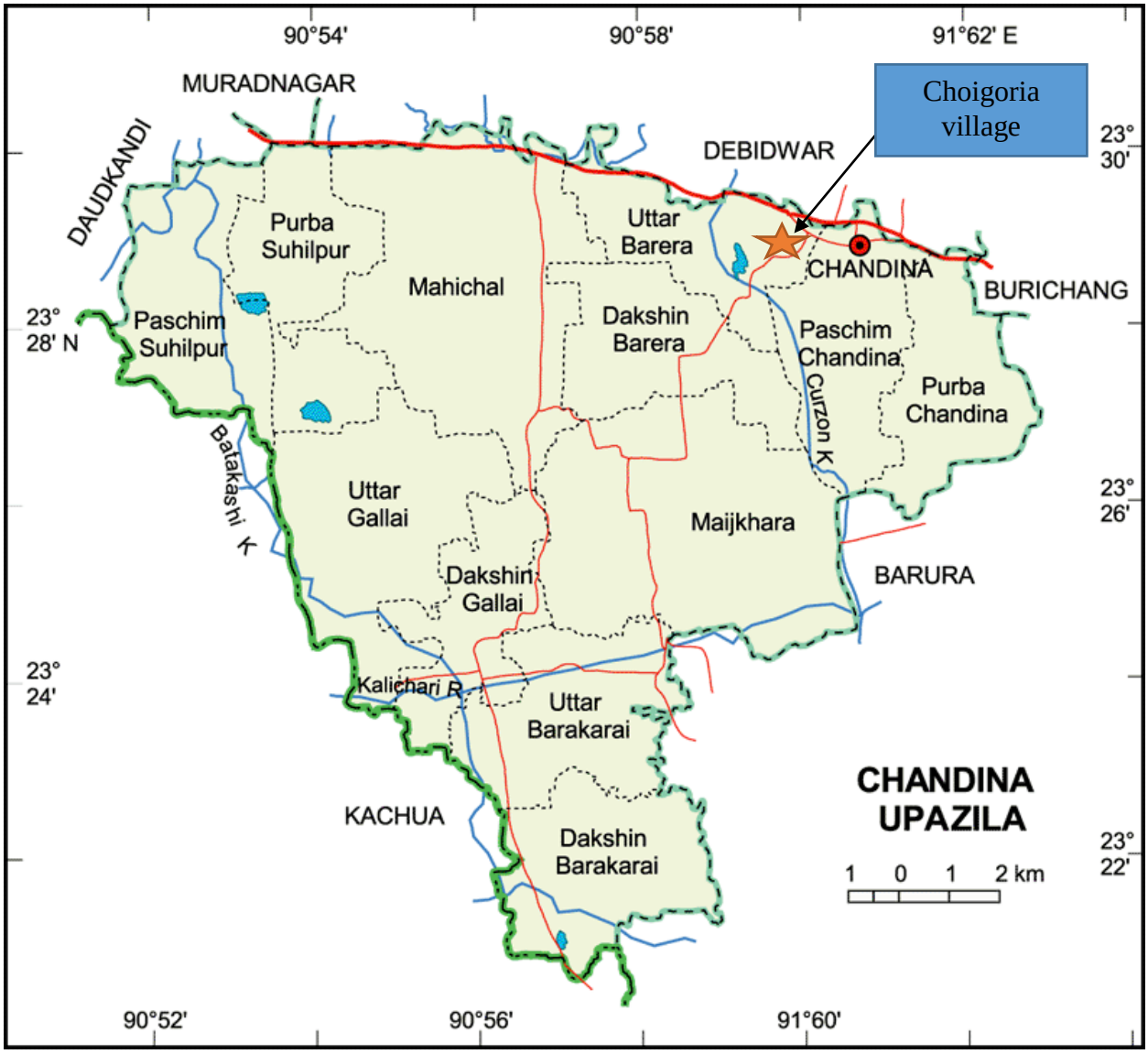
3.1 Locale of the Study

The locale of the study was Choigoria village under Keronkhal union of Chandina upazilla, Ulurchar village under Comilla Sadar Dakshin Pourashova and Mohammadpur, Jospur, Shovarampur, Vatera villages under Galiara union of Comilla Sadar Dakhin upazilla and Kharataia, Gazipur villages under Sholonol union of Burichang Upazilla under Comilla district. The study area was about 100 k.m. south-east from central Dhaka and well communicated. Most of the farmers of these villages undertook training on mushroom cultivation from Mushroom Development and Extension Sub-center of Comilla Mushroom Center. That is why, these eight villages were purposively selected. Effectiveness of training programme varies from farmer to farmer. So, it is important to determine how much effective the training programme was among the farmers of this area. A map of Comilla district showing Comilla Sadar Dakhin upazilla, Chandina upazilla, Burichang upazilla and another three maps showing the study unions within the upazilas are presented in the Figures 3.1, 3.2, 3.3 and 3.4 respectively.



Study Area= ★

Figure 3.1 Map of Comilla district showing diffrent upazillas

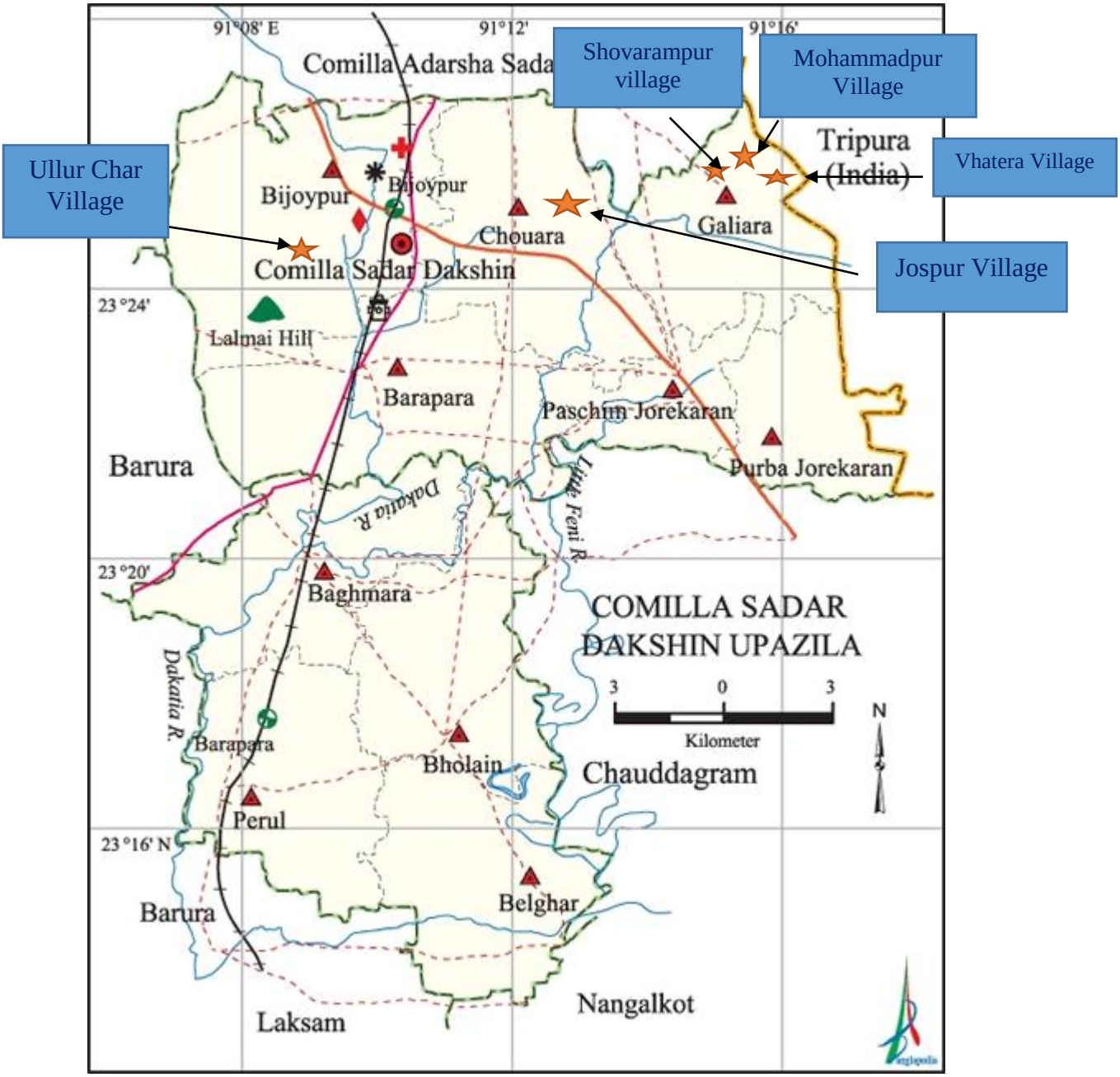


Study Area= ★

Figure 3.2 Map of Chandina upazila showing the study village

Study Area = ★

Figure 3.3 Map of Burichang upazila showing the study villages



Study Area= ★

Figure 3.4 Map of Comilla Sadar Dakshin upazila showing the study villages

3.2 Population and Sampling Design

The researcher himself with the help of local leaders and concerned Assistant Mushroom Development Officer (AMDO) prepared an updated list of trained mushroom farmers of the selected eight villages. A total number of 801 trained mushroom farmers were listed. According to Yamane's (1967) formula, the sample size was determined as 103.

In calculating sample size 9% precision level, 50% degree of variability and value of Z= 1.96 at 95% confidence level were chosen from the following formula:

$$\mathbf{n} = \frac{Z^2 P(1-P)N}{Z^2 P(1-P)+Ne^2}$$

Where;

n = Sample size

N = Population size

e = The level of precision

Z = The value of the standard normal variable at the chosen confidence level

P = The proportion or degree of variability

Then 103 trained mushroom farmers were selected from the population following proportionate random sampling technique. A reserve list of 20 trained mushroom farmers was also prepared. Farmers in the reserve list were used only when a respondent in the original list was not available. The distribution of the sample farmers and those in the reserved list from the villages is shown in Table 3.1.

Table 3.1 Distribution of the population, sample and number of trained farmers in the reserve list

Name of villages	Population size	Sample size	Reserve list size
Choigoria	98	13	3
Ulurchar	96	13	3
Mohammadpur	95	12	2
Jospur	92	12	2
Shovarampur	96	12	2
Vatera	95	12	2
Kharataia	134	17	4
Gazipur	95	12	2
Total	801	103	20

3.3 Selection of Variables

The researcher employed adequate care in selecting the variables of the study. Considering personal, economic, social and psychological factors of the rural community, time and resources availability to the researcher, reviewing relevant literature and discussing with relevant experts, the researcher selected the variables for the study.

Effectiveness of training programme on mushroom cultivation by the trained farmers was the main focus of this study. The researcher selected 11 characteristics of the respondents as the explanatory variables. These were: age, education, family size, annual family income, peer group influence, cosmopoliteness, extension media contact, organizational participation, innovativeness, fatalism and problems faced by the farmers in mushroom cultivation.

3.4 Research Instruments

In order to collect valid and reliable data from the respondents a structured interview schedule was designed carefully keeping the objectives of the study in mind. Simple, easy and direct questions and different scales were used to obtain information from the respondents. Both open and closed form questions were included in the interview schedule. The schedule was checked by the Supervisory Committee and extension experts of the Department of Agricultural Extension and Information System, SAU.

In case of age, education, family size, annual family income direct questions were used but in case of peer group influence, cosmopoliteness, extension media contact, organizational participation, innovativeness, fatalism, problems faced in mushroom cultivation, attitude towards mushroom cultivation and adoption of mushroom cultivation etc. scales were used to obtain data. An open form of question was designed to obtain data on knowledge on mushroom cultivation. An English version of the interview schedule has been shown in the Appendix A.

3.5 Measurement of Variables

This section contains procedures for measurement of both explanatory and focus variables.

3.5.1 Measurement of explanatory variables

The explanatory variables of the study were 11 selected characteristics of the trained mushroom farmers. These were age, education, family size, annual family income, peer group influence, cosmopoliteness, extension media contact, organizational participation, innovativeness, fatalism and problems faced by the farmers in mushroom cultivation.

3.5.1.1 Age

Age of a farmer referred to the period of time from his/her birth to the time of interview. It was measured in terms of actual years on the basis of his/her statement. One score was assigned for each year of his/her age.

3.5.1.2 Education

Education was measured by the year of schooling. Educational level of the respondent farmers was measured on the basis of completed years of schooling in an academic institute. If a respondent did not attain formal education, his score was assigned as

zero (0). A score of 0.5 was assigned to a respondent who only could sign his/her name. A score of one (1) was assigned for each year of schooling, i.e. 10 for S.S.C, 12 for H.S.C., and so on

3.5.1.3 Family size

The family size was measured by the total number of members in the family of a respondent. The family member included the respondent himself, spouse, children and parents. Assigned score one for each member of the family. For example, if a respondent had 6 members in his family, then his/her family size score was 6.

3.5.1.4 Annual family income

This referred to the total earnings in taka of all family members of a respondent from agriculture (crop, livestock and fisheries), business, employment and other sources. A score of one (1) was assigned for each thousand taka.

3.5.1.5 Peer group influence

Peer group influence is a great trigger to adopt an innovation. Peer group influence of a respondent was measured by asking ten statements about their peer group. Four point scale was used to compute the peer group influence. The score was assigned on the basis of extent of influence to each statement. The scoring was done in the following manner:

Extent of influence	**Assigned score**
High influence	4
Medium influence	3
Weak influence	2
Very weak influence	1

Thus, the peer group influence score of a respondent was obtained by adding his/her scores for all the ten items and it could range from ‘10’ to 40 where ‘10’ indicated ‘very weak peer group influence’ and 40 indicated ‘very high peer group influence’.

3.5.1.6 Cosmopoliteness

Cosmopoliteness of a respondent was measured in terms of his/her nature of visits to six different places external to his/her own social system. The scale used for computing the cosmopoliteness score was presented below:

Extent of visit	Assigned score
Not at all	0
Rarely	1
Occasionally	2
Often	3
Regularly	4

Logical frequencies of visits were considered in each of the alternative responses of each items as shown in question No. 6 of the interview schedule. The cosmopoliteness score of a respondent was determined by adding together the scores obtained from visit to each of the six (6) types of places. The cosmopoliteness score of the respondents could range from 0 to 24, where, 0 indicating no cosmopoliteness and 24 indicating very high cosmopoliteness.

3.5.1.7 Extension media contact

It was measured on the basis of a respondents' extent of exposure to 12 selected information sources related to agricultural extension. A respondent was asked to choose one answer among five options of contact for each medium, namely; regularly, often, occasionally, rarely and not at all. Weight was assigned for all extension media in the following manner:

Extent of visit	Assigned score
Not at all	0
Rarely	1
Occasionally	2
Often	3
Regularly	4

Logical frequencies of contacts were considered in each of the alternative responses of each items as shown in question No. 7 of the interview schedule. The extension contact score of a respondent was, therefore, determined by adding the total responses against 12 selected extension media. Thus, the extension contact score could range

from 0 to 48, where 0 indicating no extension contact and 48 indicating the highest extension contact.

3.5.1.8 Organizational participation

The organizational participation score was computed for each respondent on the basis of his/her membership with seven different types of organizations. The following scale was used for computing the organizational participation score.

Categories of participation:	**Score**
No participation	0
Participation as ordinary member	1
Participation as executive member	2
Participation as executive officer	3

Each membership category was multiplied by duration of membership. If a respondent had membership in two or more organizations his scores were computed by adding the scores obtained for each organization according to the categories of his membership. Organizational participation score of a respondent for each organization was obtained by adding the scores according to the formula mentioned below:

Organizational Participation = $\sum P \times D$

Where,

P= Participation score

D= Duration score

Finally, organizational participation score was measured by the scores obtained from all the seven selected organizations.

3.5.1.9 Innovativeness

The term innovativeness referred to the degree to which an individual is relatively earlier in adopting new ideas than the other members of a social system (Rogers, 1995). In this study, innovativeness of a respondent was measured on the basis of the period of adoption of 9 improved technologies. Scores were assigned on the basis of time required by an individual to adopt each of the technology in the following five-point scale:

Score 4	For adoption of technologies within one year after hearing

Score 3	For adoption of technologies within >1 to 2 years after hearing
Score 2	For adoption of technologies within >2 to 3 years after hearing
Score 1	For adoption of technologies after 3 years of hearing
Score 0	For non-adoption of technologies

Innovativeness score of a respondent farmer was obtained by adding his scores for adoption of all the 9 improved technologies. Innovativeness score of a respondent farmer could range from 0 to 36, where, 0 indicating no innovativeness and 36 indicating very high innovativeness.

3.5.1.10 Fatalism

Fatalism score was computed by using a ten item Likert scale as furnished in serial No. 10 of the interview schedule. Among the ten statements five were positive and five were negative to fatalism. The respondents indicated for each statement of the scale whether they strongly agree, agree, undecided, disagree and strongly disagree. Scores assigned to these responses for positive statements were 5, 4, 3, 2 and 1 respectively. For negative statements the scoring system was reversed. Fatalism score of a respondent was determined by summing the scores of her/his responses to all the ten items in the scale. Fatalism score of the respondents could range from 10 to 50, where '10' indicating no fatalism and '50' indicating very high fatalism.

3.5.1.11 Problem faced in mushroom cultivation

The Researcher used a 5-point scale for measuring problem faced by the farmers in mushroom cultivation. The farmers were asked to give their response against 10 selected problems which the farmers faced in mushroom cultivation. The weights assigned for each response were: 4 for very high problem, 3 for high problem, 2 for medium problem, 1 for low problem and 0 for not at all.

The problem faced score was obtained by adding weights of responses of the problems and therefore, the problem faced score could vary from 0 to 40, where 0 indicating no problem and 40 indicating highest problem.

3.5.2 Measurement of focus variable

Effectiveness of training programme on mushroom cultivation was the focus variable of the study. Three dimensions were identified for measurement of effectiveness of training programme viz. (i) knowledge on mushroom cultivation (ii) attitude of the farmers towards mushroom cultivation and (iii) adoption of mushroom cultivation. The effectiveness of training programme on mushroom cultivation was measured by combining and averaging knowledge, attitude and adoption scores of the farmers and expressed in percentage.

To determine the effectiveness of training programme on mushroom cultivation, effectiveness score was computed by using the following formula (Afroz, 2014):

$$ES = \frac{1}{3} \times \left(\frac{O_K}{P_K} + \frac{O_{At}}{P_{At}} + \frac{O_{Ad}}{P_{Ad}} \right) \times 100$$

Here,

ES= Effectiveness score

OK = Observed Knowledge score

PK= Possible Knowledge score

OAt= Observed attitude score

PAt= Possible attitude score

OAd= Observed adoption score

PAd= Possible adoption score

Thus the values of ES could range from 0.00% to 100%, where 0% indicates not at all effective and 100% indicates very high effectiveness. Each of the dimensions was measured by applying appropriate scale. Knowledge on mushroom cultivation was measured by knowledge test and attitude of farmers towards mushroom cultivation was measured by Likert scale and adoption of mushroom cultivation was measured on the basis of spawn and experience sub-scores.

3.5.2.1 Knowledge on mushroom cultivation

Mushroom cultivation knowledge of a respondent was measured by asking him/her 14 questions related to different aspects of mushroom cultivation e.g. selection and cutting spawn packets, insects, water management, variety choosing etc. It was

measured assigning weightage 2 for each question. So, the total assigned scores for all the questions was 28. Answering a question correctly an individual could obtain full score. While for wrong answer or no answer he obtained zero (0) score. Partial score was assigned for partially correct answer. Thus, the mushroom cultivation knowledge score of a respondent could range from 0 to 28, where 0 indicates very low knowledge and 28 indicates very high knowledge.

3.5.2.2 Attitude of the farmers towards mushroom cultivation

Twelve relevant statements were carefully constructed to develop attitude scale. Basically, the Likert-type summated rating scale was used to serve the purpose. There were 6 positive and 6 negative statements in the scale. These statements were alternately arranged. A respondent was asked to indicate her/his degree of agreement about each of the statements along with a five point scale as, strongly agree, agree, no opinion, disagree and strongly disagree. Scores were assigned to these five alternate responses as 4, 3, 2, 1 and 0 respectively for each positive statement. In case of negative statements, the reverse scores were assigned. However, the score of a respondent was obtained by adding her/his scores for all the 12 statements. Thus, the attitude score of a respondent could range from 0 to 48, where, 0 indicates most unfavorable attitude towards mushroom cultivation and 48 indicates most favorable attitude towards mushroom cultivation.

3.5.2.3 Adoption of mushroom cultivation

The adoption of mushroom cultivation score was calculated by multiplication of spawn sub-score and experience sub-score. This was done in the following way.

Adoption of mushroom cultivation = Spawn sub-score × Experience sub-score

a) Spawn sub-score

Spawn sub-score was determined on the basis of the number of spawn packets having used by him/her last cultivation period for adoption of mushroom cultivation. Scoring was made as follows:

Number of spawn packets used	Sub-score
1-100 spawn packets	1

101-200 spawn packets	2
201-300 spawn packets	3
Above 300 spawn packets	4

Possible number of spawn sub-scores for the farmers could vary from a minimum of 1 to a maximum of 4. It was assumed that the higher the number of spawn sub-score the higher would be the adoption.

b) Experience sub-score

Experience sub-score was measured on the basis of years of mushroom cultivation by the respondent. To determine experience sub-score, the respondent was asked how many years s/he had been cultivating mushroom. The sub-score was assigned as follows:

Years of mushroom cultivation	**Sub-score**
No cultivation	0
Up to 1 year	1
> 1 year to 2 years	2
> 2 years to 3 years	3
> 3 years	4

Possible experience sub score of the respondents could range from 0 to 4. It was assumed that the higher the experience sub-score, the more would be the adoption. Therefore, the adoption score was computed by multiplying spawn sub-score and experience sub-score. Thus, the obtained score could range from 0 to 16. Therefore, the score zero (0) indicated no adoption and 16 indicated highest adoption of mushroom cultivation

3.6 Validity of the Research Instruments and Ethical Considerations

3.6.1 Validity of the research instruments

The validity is the degree to which a test measures what it is supposed to measure. The validity of a test or other measuring instruments depend on the fidelity with which it is measured whatever it purports to measure. The researcher went through several similar research instruments from home and abroad, Besides, the research

instruments, especially questionnaire for the survey were judged by the Supervisory Committee. By conducting a seminar the researcher modified and refined the contents and scales of the research instruments according to the suggestions of the experts of the Department of Agricultural Extension and Information System, SAU.

3.6.2 Ethical considerations

Some basic ethical principles were maintained throughout the study and pointed out below.

- The researcher established rapport with the respondents properly.
- The researcher treated the respondents with great respect.
- The purposes of the study were made clear before starting interviews with the respondents.
- Autonomy, privacy and non-judgmental views were considered substantially during making interviews with the respondents.
- Special care was taken to avoid subjective judgments and misinterpretations during collection and documentation of qualitative data.

3.7 Data Collection

The researcher himself collected data from the respondents with the help of interview schedule through personal interviewing. Assistant Mushroom Development Officer (AMDO) and village representatives of the selected villages helped to introduce the respondents with the researcher.

The researcher collected data using pre-tested interview schedule and on the basis of pre-test experiences necessary corrections, additions, modifications and alternations were made before finalizing the interview schedule for final data collection. Appointment with the respondents was made in advance with the help of AMDO of DAE. The researcher took all possible care to establish rapport with the respondents

so that they don't hesitate to answer to the questions and statements. Whenever any respondent faced any difficulty in understanding any question care was taken to explain the same clearly. The researcher was also aware about side talking during data collection and tried to avoid that problem tactfully. Data collection took place from 01 to 16 March, 2016.

However, researcher didn't face any serious difficulties during data collection because the respondents and other villagers of the study area were very much helpful and cooperative.

3.8 Processing of Data

The collected raw data were examined thoroughly to detect errors and omissions. Qualitative data were converted into quantitative data by means of suitable scoring whenever necessary. For this the collected data were given numerical coded values. The obtained data were then compiled on a master sheet and then tabulated and analyzed with keeping the objectives of the study in mind.

A wide range of relevant theories and empirical researches were collected and reviewed. The researcher contacted different relevant sources such as books, journals, articles, theses, abstracts, and internet in order to set a concrete research plan and to delineate the research background.

3.9 Hypothesis of the Study

According to Karlinger (1973), a hypothesis is a conjectural statement of the relation between two or more variables. A null hypothesis states that there is no relationship between the concerned variables.

'A hypothesis is a conjectural statement of the relationship between two or more variables' (Mancheim, et. al., 1977). It may seem contrary to, or in accord with common sense. Moreover, a hypothesis is an inference which has to be proven. It may prove to be correct or incorrect in any circumstances, however, it leads to an empirical test.

The following null hypothesis was undertaken for the present study:

> "There is no relationship between each of the selected characteristics of the farmers and their effectiveness of training programme on mushroom cultivation".

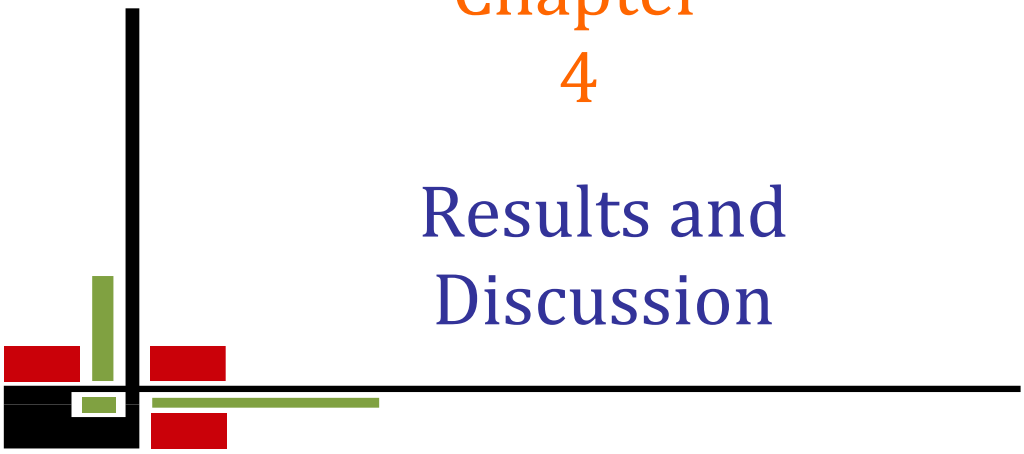
3.10 Data Analysis

Data were analyzed based on the nature of the data collected. The statistical measurement used in describing the selected explanatory and focus variables were frequency distribution, range, mean, percentage and standard deviation whenever necessary. To clarify the understanding tables were used in presenting data. Some figures were also used for clarification.

To find out the relationships between each of the selected characteristics of mushroom farmers with the effectiveness of training programme on mushroom cultivation, Pearson's Product Moment Co-efficient of Correlation was used. For rejecting/accepting any null hypothesis, 5% level of significance was used. Coefficient values (r) significant at 0.05 level was indicated by one asterisk and at 0.01 level by two asterisks. The SPSS (Statistical Package for Social Science version: 20) computer program was used in analyzing data.

Chapter 4

Results and Discussion



CHAPTER 4

RESULTS AND DISCUSSION

In accordance with the objectives of the study, the findings were presented in three sections in this Chapter. The first section deals with the selected characteristics of the trained mushroom farmers. The second section dealt with the effectiveness of training programme on mushroom cultivation, and the last section dealt with the relationships between the selected characteristics of the trained mushroom farmers and their effectiveness of training programme on mushroom cultivation.

4.1 Characteristics of the Trained Mushroom Farmers

Effectiveness of training programme on mushroom cultivation are affected largely by different characteristics of an individual. The characteristics of the trained mushroom farmers were selected to find out their relationships with the effectiveness of training program on mushroom cultivation. The salient features of the respondents with their eleven selected characteristics have been presented in Table 4.1.

Table 4.1 Salient features of the selected characteristics of the trained mushroom farmers

Characteristics	Measuring Unit	Range		Mean	S.D.
		Possible	observed		
Age	Year	-	19-60	33.44	9.54
Education	Years of schooling	-	0.5-16	7.35	2.98
Family size	No of members	-	3-11	5.23	1.38
Annual family income	Thousand Taka	-	24-696	73.16	93.25
Peer group influence	Score	0-40	25-38	32.53	1.89
Cosmopoliteness	Score	0-24	3-24	7.30	2.40
Extension media contact	Score	0-48	10-41	19.95	4.46
Organizational participation	Score	-	0-22	4.48	4.09
Innovativeness	Score	0-36	6-32	20.09	5.45
Fatalism	Score	10-50	10-44	14.09	4.24
Problems faced by the farmers in mushroom cultivation	Score	0-40	12-34	19.28	6.38

4.1.1 Age

Tripp and Woolley (1989) reported that one individual character which pertaining to individual personal make up and play key role in individual adoption behavior is age. The age of the respondents ranged from 19 to 60 years with a mean of 33.44 and standard deviation of 9.534. On the basis of their age, the respondents were classified into three categories i.e. young, middle and old aged. Distribution of the respondents according to their age has been shown in Table 4.2.

Table 4.2 Distribution of the respondents according to their age

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Young aged (up to 35 years)	75	72.80	33.44	9.54
Middle aged (36-50 years)	20	19.40		
Old aged (above 50 years)	8	7.80		
Total	103	100.00		

Data presented in Table 4.2 shows that the majority (72.80%) of the trained mushroom farmers were young aged category, compared to 19.40% of them being middle and 7.80% of old aged. The overwhelming majority (92.20%) of the respondents belonged to young to middle aged categories. The young to middle aged group normally show more positive attitude towards trying new ideas. The extension providers can target those farmers in planning their extension activities.

4.1.2 Education

Level of education of a respondent was measured by the level of her/his formal education. Education scores of trained mushroom farmers ranged from 0.5 to 16, with an average of 7.35 and standard deviation of 2.98. On the basis of their education, the respondents were classified into four categories i.e. can sign only, primary, secondary and above secondary as shown in Table 4.3.

Table 4.3 Distribution of the respondents according to their level of education

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Can sign only (0.5)	5	4.90	7.35	2.98
Primary education (1-5)	22	21.30		
Secondary education (6-10)	64	62.10		
Above secondary education (above 10)	12	11.70		
Total	103	100.00		

Data presented in Table 4.3 show that the considerable proportion (62.10%) of the trained mushroom farmers had secondary education, where as 21.30%, 11.70%, and 4.90% of them comprised of primary education level, above secondary education and can sign only respectively. Literate trained mushroom farmers are comparatively more innovative than the trained illiterate farmers. Literate farmers are more cosmopolite and capable of maintaining frequent extension contact. So, the educational level of the respondents in the study area is a good ground for disseminating new practices.

4.1.3. Family size

Family size of the trained mushroom farmers ranged from 3 to 11 members, with an average of 5.23 and standard deviation of 1.80. On the basis of their family size, the respondents were classified into three categories as shown in Table 4.4.

Table 4.4 Distribution of the respondents according to their family size

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Small family (up to 4 members)	28	27.19	5.23	1.38
Medium family (5 to 7 members)	71	68.93		
Large family (above 7 members)	4	3.88		
Total	103	100.00		

Data presented in Table 4.4 show that the highest proportions of the trained mushroom farmers (68.93%) had medium sized household, compared to 27.19% of them had small and 3.88% of them had large sized household. The medium and large sized household heads always try to increase their productivity through their family human resources. They are more cosmopolite and have access to various communication media.

4.1.4 Annual family income

The annual family income of the trained mushroom farmers ranged from 24 to 696 thousand taka with an average of 73.16 and standard deviation of 93.25. On the basis of their annual family income, the respondents were classified into three categories as shown in Table 4.5.

Table 4.5 Distribution of the respondents according to their annual family income

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low income (up to 60)	64	64.10	73.16	93.25
Medium income (61 to 120)	31	30.10		
High income (above 120)	8	5.80		
Total	103	100		

Data presented in the Table 4.5 show that the highest proportion of the trained mushroom farmers (64.10%) had low income, whereas 30.10% and 5.80% of them were medium and high income category, respectively. The findings indicate that majority of the farmers (94.20%) had low to medium income. So, it was expected that the farmers of low to medium income category would likely to participate in mushroom cultivation to a greater extent to increase their income.

4.1.5 Peer group influence

Peer group influence score of the respondents ranged from 25 to 38 against the possible range from 0 to 40. The average score was 32.53 with a standard deviation of 1.89. Based on the score of peer group influence, the respondents were classified into two categories as shown in Table 4.6.

Table 4.6 Distribution of the respondents according to their peer group influence

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Medium influence (≤30)	14	13.59	32.53	1.89
High influence (>30)	89	86.41		
Total	103	100		

Data shown in Table 4.6 indicate that the highest proportion (86.41%) of the respondents had high peer group influence, while only 13.59% of the respondents had medium peer group influence. From the above findings it was evident that trained mushroom farmers were highly influenced by their peer groups.

4.1.6 Cosmopoliteness

The extent of orientation of an individual external to her/his own social system is referred to as cosmopoliteness. The maximum cosmopoliteness score of the respondents was 24 and the minimum score was 3 against the possible range of 0 to 24. However, the average was 7.30 and the standard deviation was 2.40. Based on their cosmopoliteness scores, the respondents were classified into three categories as shown in Table 4.7.

Table 4.7 Distribution of the respondents according to their cosmopoliteness

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low cosmopolite (Mean – 0.5 Sd, i.e. <6.1)	41	39.80	7.30	2.40
Medium cosmopolite (Mean ± 0.5 Sd, i.e. 6.1 to 8.5)	42	40.78		
High cosmopolite (>8.5)	20	19.42		
Total	103	100.00		

Data contained in Table 4.7 indicate that the highest proportion (40.78%) of the trained mushroom farmers were medium cosmopolite as compared to 39.80% low cosmopolite and 19.42 percent high cosmopolite. The findings revealed that more than four fifth (80.58%) of the trained farmers were low to medium cosmopolite in the study area. Cosmopolitan habit of a person increases his/her knowledge about mushroom cultivation in one hand and change attitude on the other hand. Besides, a cosmopolite person also influences low and medium cosmopolite groups.

4.1.7 Extension media contact

Extension media contact scores of the trained mushroom farmers ranged from 10 to 41 against a possible range of 0 to 48, with an average of 19.95 and standard deviation of 4.46. On the basis of their extension media contact, the respondents were classified into three categories as shown in Table 4.9.

Table 4.8 Distribution of the respondents according to their extension media contact

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low contact (<18)	29	28.16	19.95	4.46
Medium contact (>18-22)	53	51.45		
High contact (>22)	21	20.39		
Total	103	100.00		

Data presented in Table 4.8 reveal that the highest proportions (51.45%) of the trained mushroom farmers had medium extension media contact, where as 28.16 % and 20.39% had low and high extension media contact, respectively. It also showed that more than three fourth (79.61%) of the trained farmers had low to medium extension contact in this study. With different extension media increases the opportunity of farmers in getting information about farming activities. So, it can be mentioned that the respondents were highly aware about different aspects of mushroom production.

4.1.8 Organizational participation

Organizational participation of the farmers was determined on the basis of their nature and duration of membership in different organizations. The maximum organizational participation score of the respondents was 22 and the minimum score was 0. However, the average was 4.48 and the standard deviation was 4.09. Based on their organizational participation scores, the respondents were classified into three categories as shown in Table 4.10.

Table 4.9 Distribution of the respondents according to their organizational participation

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low participation (Up to 7)	90	87.40	4.48	4.09
Medium participation (>7-14)	6	5.80		
High participation (>14)	7	6.80		
Total	103	100.00		

Data contained in Table 4.10 indicate that the highest proportion (87.80%) of the trained mushroom farmers had low organizational participation while 6.80% had high organizational participation and only 5.80% had medium organizational participation. The findings revealed that an overwhelming majority (93.20%) of the farmers had low to medium organizational participation in the study area. The extent of organizational participation in the study area was very poor. Probably, most of the respondents were involved only to their own occupation. That is why, their organizational participation scores were not satisfactory. Afroz, (2014) also found similar findings in her studies.

4.1.9 Innovativeness

Innovativeness scores of the trained mushroom farmers ranged from 6 to 32 against a possible range of 0 to 36, with an average of 20.09 and standard deviation of 5.45. On the basis of their innovativeness, the respondents were classified into three categories as shown in Table 4.10.

Table 4.10 Distribution of the respondents according to their innovativeness

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low innovative (Mean – 1 Sd, i.e. <14.64)	22	21.40	20.09	5.45
Medium innovative (Mean ± 1 Sd, i.e. 14.64 to 16.21)	75	72.80		
High innovative (Mean – 1 Sd, i.e.>25.59)	6	5.80		
Total	103	100.00		

Data presented in Table 4.10 indicate that the highest proportions (72.80%) of the trained mushroom farmers were medium innovative, while 21.40% and 5.80% were low and high innovative, respectively. The findings revealed that more than three fourth (78.60%) of the farmers were medium to high innovative in the study area. The reason might be that most of the farmers in the study area were young aged (72.89%) and got secondary to above secondary education (73.80%) having medium to high cosmopoliteness (60.20%). Young, educated and cosmopolite people are mostly venturesome and adopt new practices earlier than other people in the society.

4.1.10 Fatalism

Fatalism of the respondents ranged from 10 to 44 against a possible range of 0 to 50 with the mean of 14.09 and standard deviation of 4.24 as shown in Table 4.11. Data contained in the table indicate that the highest proportion (41.75%) of the farmers were medium fatalist, while 34.95% and 23.30% were low and high fatalist, respectively.

Table 4.11 Distribution of the respondents according to their fatalism

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low fatalist (Mean – 0.5 Sd, i.e. <11.97)	18	17.50	14.09	4.24
Medium fatalist (Mean ± 0.5 Sd, i.e. 11.97 to 16.21)	70	67.90		
High fatalist (Mean – 0.5 Sd, i.e.>16.21)	15	14.60		
Total	103	100.00		

Fatalist persons believe that human situation and acts are predetermined by some supernatural power and could never or seldom be influenced by individual or by the act of any person. The findings revealed that more than four fifth (82.50%) of the respondents in the study area were medium to high fatalist. The reason behind this might be that the farmers were well educated, as a result they believed their own efforts rather than fate. Other reason might be that more three fourth of the respondent (78.60%) were medium to high innovative in nature. Innovative farmers seldom believe in fate.

4.1.11 Problems faced in mushroom cultivation

Problems faced scores of the trained mushroom farmers ranged from 12 to 34 against a possible range of 0 to 40, with an average of 19.28 and standard deviation of 6.38. On the basis of their problem faced, the respondents were classified into three categories as shown in Table 4.12.

Table 4.12 Distribution of the respondents according to their problem faced in mushroom cultivation

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low (Mean – 0.5 Sd, i.e. <16.09)	41	39.80	19.28	6.38
Medium (Mean ± 0.5 Sd, i.e. 16.09 to 22.47)	42	40.80		
High (Mean – 0.5 Sd, i.e.>22.47)	20	19.40		
Total	103	100.00		

Data contained in Table 4.12 indicate that the highest proportion (40.80%) of the mushroom farmers had medium problem while 39.80% faced low problem and only 19.40% faced high problem in mushroom cultivation. The findings reveal more than three fifth (60.2%) of the farmers faced medium to high problems in in the study area.

4.2 Effectiveness of Training Programme on Mushroom Cultivation

For measurement of effectiveness of training programme on mushroom cultivation, three dimensions were considered viz. (a) knowledge on mushroom cultivation, (b) attitude of the farmers towards mushroom cultivation, and (c) adoption of mushroom cultivation. The findings are discussed into four sub-sections as follows:

4.2.1 Knowledge on mushroom cultivation

The observed knowledge score of the trained mushroom farmers ranged from 18 to 28 against a possible range of 0-28, with an average of 24.27 and standard deviation of 1.67. On the basis of their knowledge scores, the respondents were classified into two categories as shown in Table 4.13.

Table 4.13 Distribution of the respondents according to their knowledge on mushroom cultivation

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Medium (18-22)	10	9.70	24.27	1.67
High (>22-28)	93	90.30		
Total	103	100.00		

The findings seem that the highest proportion (90.30%) of the trained mushroom farmers had high knowledge on mushroom cultivation while only 9.70% of the farmers had medium knowledge. The findings lead to the conclusion that training programme on mushroom cultivation was highly effective in respect of increasing knowledge of the farmers.

4.2.2 Attitude of the farmers towards mushroom cultivation

The observed attitude scores of the respondents ranged from 35 to 47 against a possible range of 12 to 48, with a mean of 42.75 and standard deviation of 2.21. On the basis of attitude scores, the respondents were classified into two categories as shown in Table 4.14.

Table 4.14 Distribution of the respondents according to their attitude towards mushroom cultivation

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
High favorable attitude (35-41)	24	23.30	24.27	1.67
Very high favorable attitude (>41)	79	76.70		
Total	103	100.00		

The findings reveal that highest proportion (76.70%) of the respondents had very high favorable attitude towards mushroom cultivation, while only 23.30% of them had high favorable attitude. The formation of highly positive attitude towards mushroom cultivation might be due to their knowledge on mushroom cultivation through training programme. Other reasons might be that low investment is require in mushroom cultivation, quick return and high benefit from mushroom cultivation.

4.2.3 Adoption of mushroom cultivation

The observed adoption scores of the respondents ranged from 3 to 16 against the possible range from 0-16. The average score was 10.15 with a standard deviation of 4.04. Based on the scores of adoption of mushroom cultivation, the trained farmers were classified into three categories as shown in Table 4.15.

Table 4.15 Distribution of the respondents according to their adoption of mushroom cultivation

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low adoption (Mean – 1 Sd, i.e. <6.11)	30	29.10	10.15	4.04
Medium adoption (Mean ± 1 Sd, i.e. 6.11 to 14.19)	50	48.60		
High adoption (Mean – 1 Sd, i.e. >14.19)	23	22.30		
Total	103	100.00		

Findings shown in Table 4.15 reveal that the highest proportion (48.60%) of the respondents had medium adoption of mushroom cultivation, while 29.10% had low adoption and the rest 22.30 % had high adoption of mushroom cultivation. Table 4.15 also revealed that more than three fourth (77.7%) of the farmers had low to medium adoption of mushroom cultivation. This could be due to the fact that most of the trained mushroom cultivators were younger in age. They were ready to accept risk, but most of them had low income. So, they started their business with minimum number of spawn packets. Besides, unavailability of spawn packets, lack of marketing facilities, and low demand in local market might be reasons for comparatively low adoption of mushroom cultivation by the trained farmers.

4.2.4 Effectiveness of training programme on mushroom cultivation

Effectiveness of training programme on mushroom cultivation was the main thrust of the research. The observed effectiveness of training programme on mushroom cultivation scores of the respondents ranged from 63.10 to 96.23% against the possible ranged from 0 to 100%, with an average of 79.75 and standard deviation of 8.70. On the basis of their effectiveness of training programme on mushroom cultivation scores, the respondents were classified into three categories as shown in Table 4.16.

Table 4.16 Distribution of the respondents according to their effectiveness of training programme on mushroom cultivation

Categories	**Respondents**		**Mean**	**Standard deviation**
	Number	**Percent**		
Medium effective (63.10 -75.00)	33	32.00	79.75	8.70
High effective (>75.00-85.00)	41	39.80		
Very high effective (>85.00)	29	28.20		
Total	103	100.00		

Data presented in Table 4.16 indicate that training programme on mushroom cultivation was found high effective among 39.80% of the trained farmers, while 32.00% and 28.20% of them were found medium and very high effective, respectively. Islam (1998) and Meagy (2001) also found similar findings in their studies.

The findings also reveal that training programme on mushroom cultivation was found high to very high effective among more than two third (68.00%) of the trained farmers. This happened mostly due to increased knowledge and attitude development towards mushroom cultivation by the trained farmers through training programme although rate of adoption was not comprehensive and satisfactory. To increase adoption rate, proper follow up, availability of spawn packets, marketing facilities etc. should be ensured by the concerned extension providers that will make training programme more high effective in the study area.

4.3 Relationship between the Selected Characteristics of the Trained Mushroom Farmers and their Effectiveness of Training Programme on Mushroom Cultivation

This section deals with exploring the relationships between the explanatory and focus variables of the study. The explanatory variables were age, education, family size, annual family income, peer group influence, cosmopoliteness, extension media contact, organizational participation, innovativeness, fatalism and problem faced by the trained farmer. The focus variable was “effectiveness of training programme on mushroom cultivation”.

Pearson’s Product Moment Co-efficient of Correlation (r) was used to test the null hypothesis concerning the relationships between two variables. Five percent (0.05) and one percent (0.01) level of probability was used as the basis for acceptance or rejecting the null hypothesis. The table value of r was calculated at (103-2) =101 degrees of freedom. The results of correlation of co-

efficient (r) test between the explanatory and focus variables have been shown in Table 4.17. The details of inter correlation among all the variables have been shown in Appendix B.

Table 4.17 Co-efficient of correlation between explanatory and focus variables (n = 103)

Focus variable	**Explanatory variables**	**Correlation co-efficient values (r)**	**Tabulated value of 'r' with 101 df**	
			0.05	**0.01**
Effectiveness of training programme on mushroom cultivation	Age	0.228*	0.194	0.253
	Education	-0.164^{NS}		
	Family size	0.069^{NS}		
	Annual family income	0191^{NS}		
	Peer group influence	0.102^{NS}		
	Cosmopoliteness	0.338**		
	Extension media contact	0.254**		
	Organizational participation	0.021^{NS}		
	Innovativeness	0.002^{NS}		
	Fatalism	-0.272**		
	Problem faced by the trained farmer	-0.254**		

NS Not Significant

* Significant at 0.05 level, (5 percent)
** Significant at 0.01 level (1 percent)

4.3.1 Relationships between age of the trained farmers and effectiveness of training programme on mushroom cultivation

The following observations were recorded regarding relationship between age and effectiveness of training programme on mushroom cultivation on the basis of correlation coefficient:

a. The computed value of 'r' (0.228) was found to be greater than the tabulated value (0.194) with 101 degrees of freedom at 0.05 level of probability as shown in table 4.17.

b. The relationship between the concerned variables was significant at 0.05 level of probability and showed a positive trend.

c. The null hypothesis could not be accepted.

Based on the above findings, it was concluded that age of the trained farmers had significant positive relationship with their effectiveness of training programme on mushroom cultivation. This implies that with increase in the age of the farmers their effectiveness of training programme on mushroom cultivation is increased. With the increase in the age of the farmers, their responsibility to their family is increased, they become more practical, they try to apply whatever they were taught from training programme in their profession to maximize their advantages, meet their immediate needs, which might have played roles to have more effectiveness of training programme on mushroom cultivation among elderly farmers than young aged farmers.

4.3.2 Relationship between education of the trained farmers and effectiveness of training programme on mushroom cultivation

The following observations were recorded regarding relationship between education and effectiveness of training programme on mushroom cultivation on the basis of correlation coefficient:

a. The computed value of 'r' (-0.164) was found to be lesser than the tabulated value (0.194) with 101 degrees of freedom at 0.05 level of probability as shown in table 4.17.

b. The relationship between the concerned variables was not significant at 0.05 level of probability and showed negative trend.

c. The null hypothesis could be accepted.

Based on the above findings, it was concluded that the education of the trained mushroom farmers were not an important factor for effectiveness of training programme on mushroom cultivation. This means that both the variables were independent to each other.

4.3.3 Relationship between family size of the trained farmers and effectiveness of training programme on mushroom cultivation

The following observations were recorded regarding relationship between family size and effectiveness of training programme on mushroom cultivation on the basis of correlation coefficient:

a. The computed value of ‘r (0.069) was found to be smaller than the tabulated value (0.194) with 101 degrees of freedom at 0.05 level of probability as shown in table 4.17

b. The relationship between the concerned variables was not significant at 0.05 level of probability and showed a positive trend.

c. The null hypothesis could not be rejected.

Based on the above findings, it was concluded that family size of the mushroom farmers did not play an important role for the effectiveness of training programme on mushroom cultivation. This means that both of the variables were independent to each other

4.3.4 Relationships between annual family income of the trained farmers and effectiveness of training programme on mushroom cultivation

The following observations were recorded regarding relationship between annual family income and effectiveness of training programme on mushroom cultivation on the basis of correlation coefficient:

a. The computed value of 'r' (0.191) was found to be smaller than the tabulated value (0.194) with 101 degrees of freedom at 0.05 level of probability as shown in table 4.17.

b. The relationship between the concerned variables was not significant at 0.05 level of probability and showed a positive trend.

c. The null hypothesis could not be rejected.

Based on the above findings, it was concluded that annual family income of the mushroom farmers had non-significant relationship with the effectiveness of training programme on mushroom cultivation. This means that effectiveness of training programme on mushroom cultivation was not related to their family income. Mushroom cultivation, being an easy economic activity, was liked by all the farmers irrespective of their income.

4.3.5 Relationship between peer group influence of the trained farmers and effectiveness of training programme on mushroom cultivation

The following observations were recorded regarding relationship between peer group influence and effectiveness of training programme on mushroom cultivation on the basis of correlation coefficient:

a. The computed value of 'r' (0.102) was found to be smaller than the tabulated value (0.194) with 101 degrees of freedom at 0.05 level of probability as shown in table 4.17.

b. The relationship between the concerned variables was not significant at 0.05 level of probability and showed a positive trend.

c. The null hypothesis could not be rejected.

Based on the above findings, it was concluded that peer group influence of the mushroom farmers had no significance for the effectiveness of training programme on mushroom cultivation. This means that both the variables were independent to each other.

4.3.6 Relationship between cosmopoliteness of the trained farmers and effectiveness of training programme on mushroom cultivation

The following observations were recorded regarding relationship between cosmopoliteness and effectiveness of training programme on mushroom cultivation on the basis of correlation coefficient:

a. The computed value of 'r' (0.338) was found to be larger than the tabulated value (0.194) with 101 degrees of freedom at 0.01 level of probability as shown in table 4.17.

b. The relationship between the concerned variables was significant at 0.01 level of probability and showed a positive trend.

c. The null hypothesis could not be accepted.

Based on the above findings, it was concluded that cosmopoliteness of the trained farmers had significant positive relationship with the effectiveness of training programme on mushroom cultivation. It means that effectiveness of training programme on mushroom cultivation was found more among those farmers who were more cosmopolite than the farmers with low cosmopolite trait. Higher level of cosmopoliteness enable farmers to form positive attitude, gather knowledge and prompt them to adopt new practices As such training programme on mushroom cultivation was more effective among those farmers having more cosmopoliteness.

4.3.7 Relationship between extension media contact of the trained farmers and effectiveness of training programme on mushroom cultivation

On the basis of correlation coefficient, the following observations were recorded regarding relationship between extension media contact and effectiveness of training programme on mushroom cultivation:

a. The computed value of 'r' (0.254) was found to be larger than the tabulated value (0.194) with 101 degrees of freedom at 0.01 level of probability as shown in table 4.17.

b. The relationship between the concerned variables was significant at 0.01 level of probability and showed a positive trend.

c. The null hypothesis could not be accepted.

Based on the above findings, it was concluded that the effectiveness of training programme on mushroom cultivation was observed more effective among those farmers who had higher contact with extension media. Media exposure pertains to ones contact with multifarious bodies of knowledge and information. The farmers having more exposure with communication sources have better knowledge about different aspects of mushroom cultivation. This exposure is also helpful in the formation of favorable attitude of the farmers towards mushroom cultivation as well as adoption of mushroom cultivation. Roy (2013) found the similar relationship between extension media contact and effectiveness of FFS for soil and crop management.

4.3.8 Relationships between organizational participation of the trained farmers and effectiveness of training programme on mushroom cultivation

The following observations were recorded regarding relationship between organizational participation and effectiveness of training programme on mushroom cultivation on the basis of correlation coefficient:

a. The computed value of 'r' (0.021) was found to be smaller than the tabulated value (0.1934) with 101 degrees of freedom at 0.05 level of probability as shown in table 4.18.

b. The relationship between the concerned variables was not significant at 0.05 level of probability and showed a positive trend.

c. The null hypothesis could not be rejected.

Based on the above findings, it was concluded that the organizational participation of the farmers had significant relationship with the effectiveness of training programme on mushroom cultivation. This means that both the variables were independent to each other. Afroz (2014) also found similar findings in her study.

4.3.9 Relationship between innovativeness of the trained farmers and effectiveness of training programme on mushroom cultivation

On the basis of correlation coefficient, the following observations were recorded regarding relationship between innovativeness and effectiveness of training programme on mushroom cultivation:

a. The computed value of 'r' (0.002) was found to be smaller than the tabulated value (0.194) with 101 degrees of freedom at 0.05 level of probability as shown in table 4.17.

b. The relationship between the concerned variables was not significant at 0.05 level of probability and showed a positive trend.

c. The null hypothesis could not be rejected.

Based on the above findings, it was concluded that innovativeness of the mushroom farmers was not an important factor for their effectiveness of training programme on mushroom cultivation. This means that both the variables were independent to each other.

4.3.10 Relationship between fatalism of the trained farmers and effectiveness of training programme on mushroom cultivation

The following observations were recorded regarding relationship between fatalism and effectiveness of training programme on mushroom cultivation on the basis of correlation coefficient:

a. The computed value of 'r' (-0.272) was found to be greater than the tabulated value (0.1934) with 101 degrees of freedom at 0.01 level of probability as shown in table 4.17.

b. The relationship between the concerned variables was significant at 0.01 level of probability and showed a negative trend.

c. The null hypothesis could not be accepted.

Based on the above findings, it was concluded that fatalism of the mushroom farmers had significant negative relationship with their effectiveness of training programme on mushroom cultivation. In other words, the farmer who had comparatively higher fatalism had less effectiveness for training programme on mushroom cultivation.

The farmers who are less fatalist do not depend only on their fate. They work hard and take necessary measures to apply knowledge, attitude, skills obtained from training programme on mushroom cultivation. But more fatalist farmers only depend on their fate, do not use updated knowledge, skills and attitude in mushroom cultivation. So, more fatalist farmers are supposed to face comparatively more constraints than less fatalist farmers in adopting mushroom cultivation.

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4.3.11 Relationship between problems faced by the trained farmers and effectiveness of training programme on mushroom cultivation

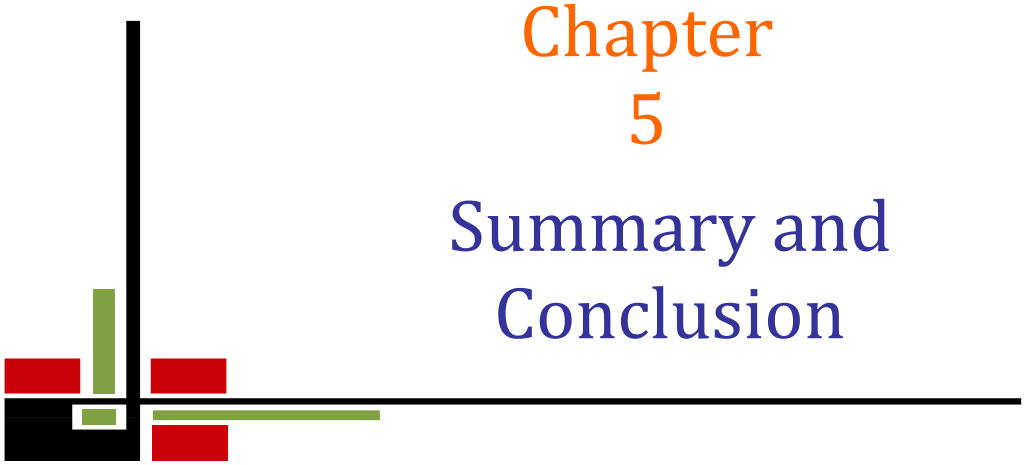
The following observations were recorded regarding relationship between problems faced by trained mushroom farmer and effectiveness of training programme on mushroom cultivation on the basis of correlation coefficient:

a. The computed value of 'r' (-0.254) was found to be greater than the tabulated value (0.194) with 101 degrees of freedom at 0.01 level of probability as shown in table 4.17.

b. The relationship between the concerned variables was significant at 0.01 level of probability and showed a negative trend.

c. The null hypothesis could not be accepted.

Based on the above findings, it was concluded that problems faced by the trained mushroom farmer had significant negative relationship with their effectiveness of training programme on mushroom cultivation. In other words, the farmer who had comparatively higher problem had less effectiveness of training programme on mushroom cultivation. The problems like unavailability of spawn packets in time, high price of spawn, low demand of mushroom in the local market, and middle man problem hindered trained farmers in the adoption of mushroom cultivation. These might be the reasons which exerted negative effectiveness of training programme on mushroom cultivation among those farmers who faced comparatively higher problems in mushroom cultivation.



Chapter 5

Summary and Conclusion

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This Chapter summarizes the significant empirical results of the selected characteristics of the trained farmers, the effectiveness of training programme on mushroom cultivation and relationships between selected characteristics of the trained farmers and effectiveness of training programme. It also draws some conclusions and recommendations for policy actions as further steps in improving the existing curricula and dimensions of training programme on mushroom cultivation. This Chapter finally recommends probable research endeavors that can be carried out in future:

5.1 Summary of the Findings

Interpretation of the results and the findings of the study have been presented elaborately in Chapter 4. The summarized findings of the study are now described below:

5.1.1 Selected characteristics of the farmers

Age: The highest proportion (72.80%) of the trained mushroom farmers was in young aged category, compared to 19.40% and 7.80% of them being middle and old aged category, respectively.

Education: The highest proportion of the mushroom farmers (62.10%) had secondary education, while 21.30%, and 4.90% of the trained mushroom farmers had primary and above secondary education respectively. Only 11.70% of the farmers had no formal education but could sign only.

Family size: The present study reveals that highest proportion (68.93) of the trained mushroom farmers had medium sized household, compared to 27.19% and 3.88% of them had small and large household size.

Annual family income: The highest proportion of the trained farmers (64.10%) had low income, where as 30.10% and 5.80% of them had medium and high income respectively.

Peer group influence: The highest proportion (86.41%) of the respondents had high peer group influence, while 13.59% of them had medium peer group influence.

Cosmopoliteness: The highest proportion (40.78%) of the trained mushroom farmers were medium cosmopolite as compared to 39.80% and 19.42% of them were low and high cosmopolite, respectively.

Extension media contact: The highest proportion (51.45%) of the trained mushroom farmers had medium extension media contact, while 28.16% and 20.39% of them had low and high extension media contact, respectively.

Organizational participation: The highest proportion (87.40%) of the trained farmers had low organizational participation, while 6.80% had high organizational participation and only 5.80% had medium organizational participation.

Innovativeness: The highest proportion (72.80%) of the respondents were medium innovative followed by 21.40% low and 5.80% high innovative.

Fatalism: The highest proportion (67.90%) of the respondents belonged to medium fatalist category followed by 17.50% low and 14.60% high fatalist category.

Problem faced by the trained farmers: The highest proportion (40.80%) of the respondents belonged to medium problem faced category followed by 39.80% low and 19.40 % high problem faced category.

5.1.2 Effectiveness of Training Programme on Mushroom Cultivation

5.1.2.1 Knowledge on mushroom cultivation: The highest proportion (90.30%) of the trained farmers had high knowledge on mushroom cultivation, while 9.70% of them had medium knowledge on mushroom cultivation.

5.1.2.2 Attitude of the farmers towards mushroom cultivation: The findings reveal that highest proportion (76.70%) of the respondents had very high favorable attitude, while 23.30% of them had high favorable attitude towards mushroom cultivation.

5.1.2.3 Adoption of mushroom cultivation: The highest proportion (48.60%) of the respondents had medium adoption of mushroom cultivation, while 29.1% had low adoption and the rest 22.30 % had high adoption of mushroom cultivation.

5.1.2.4 Effectiveness of training programme on mushroom cultivation

Effectiveness of training programme on mushroom cultivation scores of the respondents ranged from 63.10 to 96.23% with an average of 79.75. The findings reveal that training programme on mushroom cultivation was found high effective among 39.80% of the trained farmers, while 32.00% and 28.20% of them belonged to medium and very high effective categories respectively.

5.1.3 Relationships between the selected characteristics of the trained mushroom farmers and their effectiveness of training programme on mushroom cultivation

- Age, cosmopoliteness and extension media contact of the trained mushroom farmers had significant positive relationships with their effectiveness of training programme on mushroom cultivation. Fatalism and problem faced by the trained farmers in mushroom cultivation had significant negative relationships with their effectiveness of training programme on mushroom cultivation.
- Characteristics of the farmers like family size, annual family income, peer group influence, organizational participation, and innovativeness had no

relationship with the effectiveness of training programme on mushroom cultivation.

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5.1.4 Conclusions

Conclusions drawn on the basis of the findings of this study and their logical interpretation in the light of the other relevant factors were furnished below:

1. Findings of the study indicate that training programme on mushroom cultivation was found high to very high effective among more than two thirds (68.00%) of the trained farmers compared to 32.00% of them were found medium effective. This was happened due to increased knowledge and attitude development towards mushroom cultivation by the trained farmers through training programme through adoption rate was not comprehensive and satisfactory. This facts lead to the conclusion that any arrangement made to increase the adoption of the mushroom cultivation by the trained farmers would ultimately increase the effectiveness of training programme on mushroom cultivation.
2. Age of the respondents had significant positive relationship with their effectiveness of training programme on mushroom cultivation. On the other hand, overwhelming majority (92.20%) of the respondents were young to middle aged groups. Therefore, it was concluded that there is a good ground for increasing effectiveness of training programme on mushroom cultivation among the young and middle aged trained mushroom farmers of the study area. It is often found that young and middle aged people show more favorable attitude towards adopting new practices.
3. Cosmopolite farmers are more innovative. The research findings showed that comopoliteness had significant positive relationship with the effectiveness of training programme on mushroom cultivation. On the contrary, more than four fifth (80.58%) of the respondents had very low to medium comopoliteness. This result concludes that for increasing

effectiveness of training programme on mushroom cultivation, the respondents need to increase their comopoliteness.

4. The findings indicate that the extension media contact had a significant positive relationship with the effectiveness of training programme on mushroom cultivation. It also showed that more than three fourth (79.61%) of the respondents had low to medium extension contact. Therefore, it was concluded that any arrangement made to increase the extension media contact would ultimately increase the effectiveness of training programme on mushroom cultivation.
5. The findings indicate that the fatalism had a significant negative relationship with effectiveness of training programme on mushroom cultivation. On the other hand, more than four fifth (82.50%) of the respondents were medium to high fatalist. Therefore, it was concluded that any arrangement made to reduce the fatalism would ultimately increase the effectiveness of training programme on mushroom cultivation.
6. Problems faced by the trained farmers had a significant negative relationship with the effectiveness of training programme on mushroom cultivation. Data revealed that more than three fifth (60.2%) of the farmers faced medium to high problems in mushroom cultivation. Therefore, it was concluded that any arrangement made to reduce the problems faced by the trained farmers in mushroom cultivation would ultimately increase the effectiveness of training programme on mushroom cultivation.

5.1.5 Recommendations

The recommendations for the study were formulated on the basis of the major findings and conclusions. However, some of the strategic actions were suggested in the following.

5.1.5.1 Recommendations for policy implication

The following recommendations based on the findings and conclusions of the study were drawn.

1. The findings of the study indicate that knowledge and attitude towards mushroom cultivation by the trained farmers were highly encouraging, but their adoption rate was not satisfactory. To increase adoption rate, proper follow up, availability of spawn packets, marketing facilities etc. should be ensured by the NMDEC in order to make training programme more effective in the study area.
2. Age had significant positive relationship with the effectiveness of training programme on mushroom cultivation. Therefore, it was recommended that NMDEC should target young and middle aged farmers to increase effectiveness of training programme on mushroom cultivation.
3. Comopoliteness had significant positive relationship with the effectiveness of training programme on mushroom cultivation. Hence, it was recommended that NMDEC should include model mushroom farmers field visit, field trip in their training curriculum for increasing effectiveness of training programme on mushroom cultivation.
4. Extension media contact had significant positive relationship with the effectiveness of training programme on mushroom cultivation. Therefore, it was recommended that steps should be taken by the concerned authorities to maximize individual, group and mass contact methods like farm and home visit, results and method demonstrations and TV programs on mushroom cultivation. Care should be taken to use these media in combination rather than singular use.
5. Fatalism had a significant negative relationship with the effectiveness of training programme on mushroom cultivation. So it was recommended that NMDEC should include case study, success story, and result demonstration for reducing fatalism of the respondents.

6. Problems faced by the trained farmers had a significant negative relationship with the effectiveness of training programme on mushroom cultivation. Therefore, it was recommended that steps should be taken by the NMDEC to reduce problems like unavailability of spawn packets in time, high price of spawn packets, low spawn germination rate etc.

5.1.5.2 Recommendations for further study

This study investigated effectiveness of training programme on mushroom cultivation in Comilla district. It was a small and limited research effort which cannot provide much information related to this aspect. Further studies should be undertaken to cover more information in the relevant matters. So, the following suggestions were put forward for further research:

1. The present study was conducted in eight villages of Burichang, Comilla Sadar Dakshin, Chandina Upazilla under Comilla district. But with this small piece of research work, generalization of the overall effectiveness is difficult. Hence, similar study can be undertaken in the other parts of the country, which could be more helpful for generalization of the effectiveness of training programme on mushroom cultivation.
2. The current study explored the relationship of eleven characteristics of the farmers with the effectiveness of training programme on mushroom cultivation. So, it is recommended that further study should be conducted with other variables with the effectiveness of training programme on mushroom cultivation.
3. Knowledge, attitude and adoption of the farmers were focussed to determine the effectiveness of training programme on mushroom cultivation in this study. Measurement of effectiveness of the farmers is not free from questions. More reliable measurement of concerned variables is necessary for further study.
4. Review of literature indicates that no research work had so far been conducted in Bangladesh on effectiveness of training programme on mushroom cultivation. The present study was concerned only on the

effectiveness of training programme on mushroom cultivation. Further studies should be conducted covering other aspects of mushroom cultivation, like skill learning and other profiles of the farmers.

5. To measure the effectiveness of training programme on mushroom cultivation, the researcher developed a scale and the validity of the scale may be verified by further studies. This would help for improvement and generalization of the scale.
6. Findings indicated that family size, annual family income, peer group influence, organizational participation, innovativeness from mushroom cultivation had no relationship with effectiveness of training programme on mushroom cultivation. Further research is necessary to verify such relationships.

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Appendices

APPENDIX-A

English Version of the Interview Schedule

Department of Agricultural Extension & Information System

Sher-e-Bangla Agricultural University, Dhaka-1207

An Interview Schedule on "Effectiveness of Training Programme on Mushroom Cultivation"

(This interview schedule is entitled for a research study)

Part-A

Serial No: …… Date:……

Name of respondent: …… ContactNo.:……..

Village: ..... Union:…..……..

Thana: …….... District:…….

Part-B

(Please answer the following questions. Give tick (√) marks if necessary)

1. Age

How old are you? ……. Years

2. Education

Please mention your educational status

a) Can't read and write ( )

b) Can sign only ( )

c) Attended class up to……..

3. Family size

How many members do you have in your family? …….. Nos.

4. Annual family income

Please furnish information about your family income from different sources in previous year

a. Agricultural sources

Sl. No	Source of Income	Quantity	Unit Price (Tk)	Amount of Taka
1	Rice			
2	Wheat			
3	Maize			
4	Pulses			
5	Oil Seeds			
6	Potato			
7	Brinjal			
8	Chili			
9	Cauliflower			
10	Others Vegetables			
11	Fruits			
12	Livestock			
13	Poultry			
14	Fish Culture			
15	Others			
Sub-total (a)				

b. Non-agricultural sources

Sl No.	Source of Income	Amount of Taka
1	Business	
2	Service	
3	Lobour	
4	Others (If any)	
Sub-total (b)		
Total (a+b)		

5. Peer Group Influence

To what extent your peers have influenced you in adoption of mushroom cultivation? Please give tick (√) mark against appropriate degree of influence of each statement written in the box below

Sl. No.	Statements	Extent of influence			
		High	Medium	Weak	Very weak
1.	My peers are very much innovative and their activities are imitable				
2.	My peers frequently visit to my house and advise me to adopt mushroom cultivation				
3.	My peers ask me to participate in group discussions about mushroom cultivation				
4.	My peers successfully conducted result demonstration of mushroom cultivation				
5.	Extension worker gives much value to my peers				
6.	My peers help me managing necessary inputs for me				
7.	My peers have more knowledge about mushroom cultivation				
8.	My peers visit my house, observe my mushroom cultivation activities and give me necessary suggestions				
9.	My peers are good enough to make good decision				
10.	My peers keep good contact with extension personnel				

6. Cosmopoliteness

How frequently do you visit in the following selected places? Give (√) tick mark against appropriate place

Sl. No.	Place of visit	Nature of visit				
		Not at all	Rarely	Occasionally	Often	Regularly
1.	Mushroom Cultivation center (Govt.)	0 times/ year	1-2 times/year	3-4 times/year	5-6 times/year	>6 times/year
2.	Mushroom Cultivation center (NGOs / Private)	0 times/ year	1 times/year	2 times/year	3-4 times/year	>4 times/year
3.	Upazilla Agricultural Fair (Own upazilla Sadar)	0 times/ year	1 times/year	2 times/year	3-4 times/year	>4 times/year
4.	Upazilla Agricultural Fair (Other upazilla Sadar)	0 times/ year	1 times/year	2 times/year	3 times/year	>3 times/year
5.	District Agricultural Fair (Other District)	0 times/ year	1 times/year	2 times/year	3 times/year	>3 times/year
6.	National Agricultural Fair (Capital city)	0 times/ year	1 times/life	2 times/life	3 times/life	>3 times/life

7. Extension media contact

Please indicate the extent of your contact with the following media.

Sl. No.	Communication media	Extent of visit				
		Regularly	Often	Occasionally	Rarely	Not at all
1.	Mushroom Development Officer	> 6 times/year	5-6 times/year	3-4 times/year	1-2 times/year	0 times/year
2.	Assistant Mushroom Development Officer	>9 times/year	7-9 times/year	4-6 times/year	1-3 times/year	0 times/year
3.	Model mushroom cultivator	> 6 times/year	5-6 times/year	3-4 times/year	1-2 times/year	0 times/year
4.	Agricultural Extension Officer	> 6 times/year	5-6 times/year	3-4 times/year	1-2 times/year	0 times/year
5.	Sub Assistant Agriculture Officer	> 6 times/year	5-6 times/year	3-4 times/year	1-2 times/year	0 times/year
6.	Group discussion	Once in a month	Once/ 2 months	Once/ 3 months	Once/ 4 months	0 times/6 months
7.	Viewing agricultural related programs on TV	Daily	Weekly	Fortnightly	Monthly	0 times/year
8.	Listening agricultural related programs on radio	Daily	Weekly	Fortnightly	Monthly	0 times/year
9	Reading agricultural related periodicals magazine	Daily	Weekly	Fortnightly	Monthly	0 times/year
10	Internet	Daily	Weekly	Fortnightly	Monthly	0 times/year
11	Call center	Daily	Weekly	Fortnightly	Monthly	0 times/year
12.	Newspaper	Daily	Weekly	Fortnightly	Monthly	0 times/year

8. Organizational participation

Please state your nature of participation with the following organization in last five years. Please tick (√) mark against right place

Sl No	Name of Organization	Nature and duration of participation			
		No Participation	Ordinary Member	Executive Member	Executive Officer
1	Farmers' co-operative				
2	Bazar committee				
3	Mosque/Temple committee				
4	School committee				
5	Youth –Club				
6	NGO group				
7	Somobay Samity				

9. Innovativeness

Please mention the extent of use of the following practices?

Sl. No	**Name of Innovations / Practices**	**Extent of use**				
		Used within one year	**Used within >1-2 years**	**Used within >2-3 years**	**Used after 3 years**	**Never Used**
1	Use of mobile					
2	Use of computer					
3	Use of internet					
4	Use of straw spawn method					
5	Use of hybrid varieties					
6	Practice of mushroom preservation					
7	Practice of recipes					
8	Use of mother culture					
9	Use of IPM					

10. Fatalism

Mention the extent of your opinion towards the following statements

SL No.	Statements	Strongly agree	Agree	No opinion	Dis-agree	Strongly disagree
1 (+)	For getting better yield, it is not necessary to apply balanced fertilizer. If the luck is good, production of crops will automatically increase.					
2 (-)	For development of life, we should not depend on our luck, rather we should do hard work					
3 (+)	It is not right to think about food and cloths of the children, because "He gives foods, who creates us".					
4 (-)	It is necessary to take proper steps for controlling mushroom diseases, we should not depend on fate about it.					
5 (+)	It is not necessary to work hard always to establish in life. If luck is good, establishment in life is possible automatically					
6 (-)	Success of life depends on knowledge, skill and hard work but not on luck.					
7 (+)	If luck is not good, then no good result is obtained by using improved agricultural practices.					
8 (-)	Because of population pressure, everybody should adopt family planning measure.					
9 (+)	If luck is good, it is possible to get the yield of local variety equal to that obtained from HYV.					
10 (-)	Nobody should entirely depend on fate without trying to get rid of the danger.					

11. Problems faced by the trainers in mushroom cultivation

Sl. No	Problems	Extent of problem				
		Very High	High	Medium	Low	Not al all
1	Unavailability of spawn packets in time					
2	Low spawn germination rate					
3	High price of spawn					
4	Pest management problem					
5	Lack of knowledge about edible mushroom					
6	Problem of transportation facilities					
7	Religious taboo					
8	Middle man problem					
9	Low demand in the local market					
10	Lack of storage facilities					

12. Effectiveness of training programme on mushroom cultivation

a. Knowledge on Mushroom cultivation

Please answer the following questions about Mushroom cultivation

Sl. No.	Questions	Full marks (2)	Marks obtain
1	What is mushroom?		
2	Mention the name of two edible mushrooms.		
3	What type of temperature needed in mushroom cultivation?		
4	Mention the importance of mushroom cultivation		
5	Mention medicinal and nutritional values of mushroom		
6	State the types of food that are made of mushroom		
7	State the water management procedure of mushroom		
8	Mention two major diseases of mushroom		
9	How to cut spawn packet?		
10	How many times mushroom can be collected from each spawn packet?		
11	Mention two major insects of mushroom		
12	What are the criteria for selection of good spawn packet?		
13	Mention the appropriate time of mushroom harvesting.		
14	What types of moisture are needed in mushroom cultivation?		

b. Attitude towards mushroom cultivation

Mention the level of agreement on the following statements.

Sl. No.	Statements	Agree	Strongly agree	No opinion	Disagree	Strongly disagree
+1	Mushroom is a nutritious food					
-2	Mushroom cultivation is laborious					
+3	Mushroom has medicinal values					
-4	Mushroom cultivation need more investment					
+5	Mushroom called vegetable meat					
-6	Production materials for mushroom cultivation is inadequate					
+7	Mushroom cultivation can provide economic solvency to the cultivators					
-8	The market value of mushroom is very low					
+9	Mushroom is cultivated in indoor place, so it requires less amount of land					
-10	There are many technical problems in mushroom cultivations.					
+11	Mushroom cultivation can create employment opportunity					
-12	There are lack of information about mushroom cultivation					

c. Adoption of mushroom cultivation

Do you cultivate mushroom? A) Yes ( ) B) No ( )

If yes, answer the following questions:

i) Number of spawn

How many spawn do you use for mushroom cultivation? Give tick (√) mark against appropriate place

a) 1-100 spawn packets
b) 101-200 spawn packets
c) 201-300 spawn packets
d) > 300 spawn packets

ii) Mushroom cultivation experience

Please indicate for how many years are you cultivating mushroom?

a) No cultivation
b) Up to 1 year
c) > 1 to 2 years
d) > 2 to 3 years
e) > 3 Years

Thank you very much for your kind co-operation

Dated: ----------

Signature of the interviewer

Appendix-B. Correlation Matrix

Characters	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	Y
X_1	1											
X_2	-.484**	1										
X_3	.453**	-.410**	1									
X_4	.294**	.159	.148	1								
X_5	.044	.067	.038	.157	1							
X_6	.225*	.240*	.007	.602**	.174	1						
X_7	.047	.436**	-.208*	.355**	.181	.450**	1					
X_8	.315**	.173	.131	.229*	.085	.106	.389**	1				
X_9	-.339**	.370**	-.218*	-.067	-.097	.204*	.038	-.080	1			
X_{10}	.148	-.138	.180	.007	.000	-.144	-.044	.048	-.397**	1		
X_{11}	-.055	-.114	-.051	-.195*	-.144	-.195*	-.043	-.060	-.048	.195*	1	
Y	.228*	-.164	.069	.191	0.102	0.338**	0.254**	0.021	0.002	-.272**	-.254**	1

Notes:

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

X_1: Age
X_2: Education
X_3: Family size
X_4: Annual family income
X_5: Peer group influence
X_6: Cosmopoliteness
X_7: Extension media contact
X_8: Organizational participation
X_9: Innovativeness
X_{10}: Fatalism
X_{11}: Problem faced by the trained farmers
Y: Effectiveness of training programme on mushroom cultivation