

**TRAINING NEEDS ON RICE PRODUCTION TECHNOLOGIES FOR
THE FARMERS OF DHAMRAI UPAZILA UNDER DHAKA
DISTRICT**

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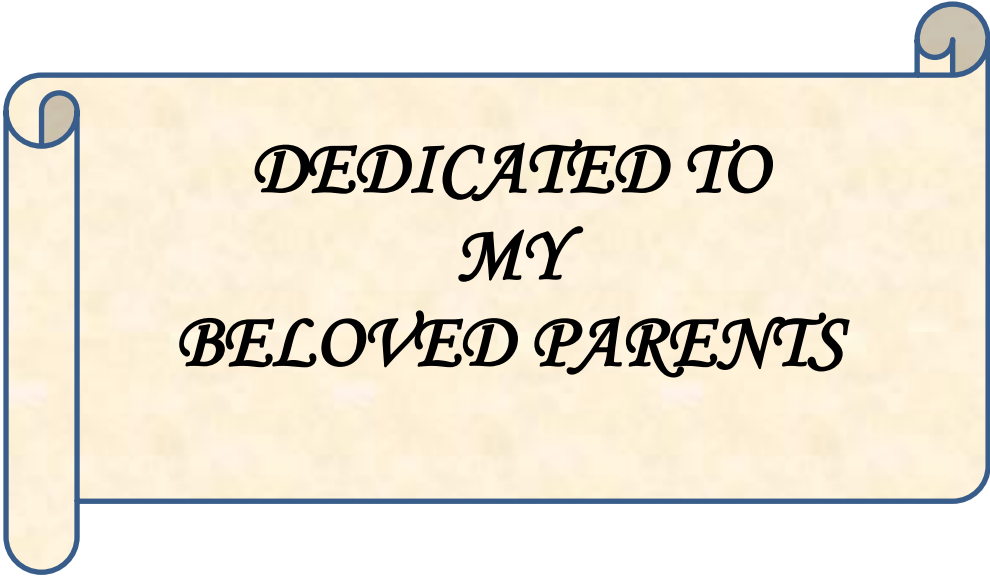
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*DEDICATED TO
MY
BELOVED PARENTS*

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ABSTRACT

The main purpose of the study was to determine the extent of training needs on rice production technologies for the farmers of Dhamrai Upazila under Dhaka district. This study was conducted over 98 farmers at three village named Foringa, Chorsungar, Chorbodayel in Rowail union of Durgapur Block. The objectives were to: (1) describe the socio— demographic characteristics of the farmers (2) determine the training needs of the farmers on rice production (3) explore the relationships between the selected characteristics of the respondents such as age, education, family size, farm size, annual gross income, farming experience, extension contact, organizational participation, cosmopolitaness, agricultural knowledge and training need .Appropriate scales were developed in order to measure the concerned variables . In the study group nearly 57.77% farmers were middle aged (42-58 yrs.). Majority of the farmers (46.66%) had primary level of education compared to other categories. About 50% respondents had medium family size with (5-6) members. Most of the (80%) rice growers owned small farm (0.2- 1.0 ha). Majority number respondents (53.33%) had lower level of farming experience. The annual gross income of the respondents ranged between 10000—200000 tk. Majority of the rice growers (53.33%) had low level extension contact. A little over 4.44% rice growers had high organizational participation. In respect of cosmopolitaness, 48.88% had medium level exposure outside to their localities and 33.33 % farmers had only sound knowledge in agriculture. In fact the rice growers expressed their training need for land preparation, seed technology, intercultural operation, HYV rice production, fertilizer application, plant protection measures, irrigation management, IPM practice and advanced equipment use. Sixty seven percent (67%) of the study group were highly in need of training on the above mentioned topics. Of the ten selected independent variables age, education, farming experience, extension contact, organizational participation and knowledge on agriculture had significant relationship with their training needs.

CHAPTER I

INTRODUCTION

1.1 Background of the study

Bangladesh is an agro-based country having a large population of 160 million. Where male and female ratio is 105:100 (BBS, 2014). With her large and rapid growing population, the demand for food is also increasing proportionately. In Bangladesh 47-48 percent manpower involved in agricultural sector (BRKB, 2014). Agriculture related sector contribute to as much as 17.2 percent of gross domestic product (GDP) of the country (BRKB, 2014). As far as area and production concerned rice is the most important food crops in Bangladesh. It is covered 76.66 percent of the total area under food crops in 2014 and contributed to 47 percent of the total food crop production (BRKB, 2014).

In Bangladesh, due to limited cultivable area, there is little scope of bringing more land under cultivation. The only alternative way to increasing agricultural production is to use certain modern agricultural technologies like better seed technology, better fertilizer application, better pest control measure and irrigation management. Knowledge and skills of the farmers in production technology are important factors for increasing agricultural production. Most of the farmers do not possess adequate knowledge about the methods of modern agriculture. Morill (1968) reported that, the farmers who are the backbone of the nation are mostly illiterate and traditional. They are often skeptical towards new practices in agriculture due to lack of proper understanding of the traditional practices. The Department of Agriculture Extension (DAE) has been working with a view to providing agricultural knowledge and skills to the farmers in Bangladesh. An effective extension program for crop production should have provision for continuous training facilities to educate its client system about the latest technologies. Research, education and extension are correlated with each other and to get benefit from applied research a sound extension program is essential. Agricultural extension service therefore, needs to develop sound plans and improving knowledge and skills of the farmers in various aspects of crop production.

Training prepares an individual to be more innovative and respective to new concepts or practices (Bhuyian, 1984). An effective and efficient training can bring about tangible results. In order to improve the knowledge, skills and attitudes of the farmers different aspects of rice cultivation training is obviously important.

Successful evaluation of any program should be based on the actual needs of any proper leads to its successful evaluation. In fact the training program been conducted to determine the training needs of the farmers in Bangladesh. The researcher therefore, felt the necessity for conducting an investigation on training need of farmers in rice cultivation.

1.2 Statement of the problem

The forgoing discussion leads to assumption that farmers are needed to develop with adequate knowledge and skills throughout appropriate training program. This in return will help to have increased food production for the vast and fast growing population of Bangladesh. But in case of farmers, possibly seldom training need assessment has been done. Therefore this study entitled "Training Needs on Rice Production Technologies for the Farmers of Dhamrai Upazila under Dhaka District" has been undertaken to answer the following questions:

1. What are the existing socio-demographic characters of the farmers to ascertain the extent of training need in Dhamrai upazila?
2. What are the actions of training needs of the farmers of Dhamrai upazila?
3. What are those characteristics of the farmer which motivate for more training in learning rice production technologies?

1.3 Specific objectives

In context to the said problem, the following specific objectives were formulated:

1. To identify the characteristics socio-demographic characteristics of the farmers:

- a) Age
- h) Education
- c) Family size
- d) Farm size
- f) Annual gross income
- g) Farming experience
- h) Extension contact
- i) Organizational participation
- j) Cosmopolitaness
- k) Agricultural knowledge

2. To determine the extent of training needs of the farmers in eight dimensions of rice cultivation. The selected dimensions were:

- a) Seed selection
- b) Land preparation
- c) Seed preservation and seedling management
- d) Sowing and transplanting
- e) Intercultural operation
- f) IPM practice and management
- g) HYV cultivation
- h) Agricultural equipment use

3. To explore the degree of relationships of the socio-demographic characteristics of the farmers with their extent of training needs in rice cultivation.

1.4 Scope and limitation of the study

The study was undertaken to have an understanding of the training need of the farmers in some of the specific life aspects of rice cultivation and its relationships with their selected characteristics. However, in order to make the study manageable and meaningful, it was necessary to impose the following limitations as stated below:

1. The study was confined at three villages in Rowail union of Dhamrai Upazila.
2. Population for this study was kept confined within the heads of the farm families.
3. Relationships of the training needs of the farmers could be examined with the various characteristics of the farmers. However, only ten characteristics were selected for investigation.
4. There are various aspects of the rice cultivation on which training need of the farmers could be studied. This study, however, investigated the training need of the farmers in eight selected dimensions of rice cultivation, namely seed selection, land preparation, seed preservation and seedling management, sowing and transplanting, intercultural operation, IPM Practice and management, HYV cultivation, Agricultural equipment use.

The finding of the study will be applicable, particularly at Rowail union in Dhamrai Upazila. However, the finding may also be applicable to other areas of Bangladesh where the physical, socio-economic and culture conditions do not differ much with those of the study area. Thus, the findings are expect to be useful to the planners, trainers and extension workers for planning and extension workers to improve their techniques and strategies is of action for working effectively with the people.

1.5 Assumptions

An assumption is the suppositions that an apparent fact or principle is true in the light of the available evidence. Therefore, the following assumptions were in the mind of the researcher while under taking this study.

1. The respondents included in the sample were capable of furnishing proper responses to the questions included in the interview schedule.
2. The researcher who acted as interviewer was well adjusted to the social environment of the study area. Hence, the data collected by him from the respondents were free from bias.
3. Views and options furnished by the sample farmers were the representative views and opinions of the study population.
4. The responses furnished by the respondents were trustworthy.
5. The finding of the study will have general application to other parts of the country where the physical, geographical, socio-economic and cultural conditions do not differ much from the study area.

1.6 Hypothesis

A hypothesis simply means a mere assumption or some supposition to be proved or disproved. In broad sense it is divided two categories, (a) research hypothesis(H_i) and (b) Null hypotheses(H_o). The null hypothesis (H_o) was formulated to examine the relationships of the selected characteristics of the farmers with their training needs in rice cultivation as below:

There is no relationship between the selected socio-demographic characteristics of the farmers such as age, education, family size, farm size, annual income, farming experience, extension contact, organizational participation, cosmopolitaness, agricultural knowledge and their training needs in rice cultivation.

1.7 Definition of related terms

Certain terms used throughout the study are defined below for clarity of understanding.

Training needs in rice production technology

It refers to one's need for acquire knowledge and skill regarding the different aspects of rice cultivation. Here the training needs of the farmers were studied in seven aspects, namely, land preparation, seed preservation & seedling management, sowing and transplanting, intercultural operation, IPM practice & management, HYV of rice, advanced equipment use.

Training needs in land preparation

It includes training on ploughing, leveling, mowing, weeding, seedbed preparation and others operation which can prepare the land for future use.

Training needs in seed preservation & seedling management

The term refers to one's need for gaining understanding and skills about the different aspects of seed, namely, quality of good seed, purity of seed, gem capacity of seed, seed treatment, seed rate and collection of seed and preservation of seed which are necessary for successful cultivation of rice.

Training needs in sowing and transplanting

It is necessary to know the proper way of uprooting, sowing time, seedling age, transplanting stage, nursing of uprooted plant, hardening etc. In this aspect training can assure a better future of seedling for the next.

Training needs in intercultural operation

Intercultural operation like weeding, roughing, irrigation, fertilizer application, pest and disease management etc. are important for rice growth. Training on this aspect makes a positive aspect on rice cultivation.

Training needs in HYV of rice

The referred to one's need for gaining understanding and skills about different type of the high yielding varieties of rice and their morphological characteristics and yields.

Training needs in fertilizer application

The term refers to one's need for gaining understanding and skills about the different aspects of fertilizer, namely, advantages of organic manures, use of chemical fertilizers for rice, functions of different chemical fertilizers, doses of chemical fertilizers and procedure for applying chemical fertilizers which are necessary for successful cultivation of rice.

Training needs in advanced equipment use

Different types of technologies have been introduced in recent years like harvester, leveler, thresher, weeder. Training is essential to introduce and using these technologies properly.

Organizational participation: Organizational participation is referred to farmers contact with and participation in various organizations within a specific period of time. Farmers could take part in different activities of organizations within a specific period of time as ordinary member/executive committee member/ an officer (President, secretary, treasurer, etc). All these forms of participation were considered.

Agricultural Knowledge: Agricultural knowledge was the extent of basic understanding of the respondent in different aspects of agricultural subject matters. It includes the basic understanding of the use of different agricultural activities i.e. crops, livestock and fisheries etc.

CHAPTER II

REVIEW OF LITERATURE

The present study is mainly concerned with the training needs of the farmers in rice cultivation and its relationships with their selected characteristics. So far little research work has been done relating to this problem in Bangladesh. Few researches work which available to the researcher, mainly dealt with the training needs of extension agents or different organizations in different subject matters. Moreover, almost all these research studies were conducted in relation to western societies. However, a good number of studies dealt with the relationships of certain variables with the adoption of agricultural practices were available to the researcher. These studies though not directly connected with the training need have been reviewed in this study with the consideration that the adoption of a particular practice by an individual indicates the possession of his knowledge about that practice. It is likely that higher the adoption of a practice by a farmer, the higher will be his knowledge about that practice. On the other hand, the higher the knowledge of a farmer about a practice the less will be his need for training about that particular practice. Such considerations suggest a negative relationship between adoption of improved practices by the farmers and their training need.

The review of researches connected with the present study, has been presented in two sections of this chapter. The first section will review the studies in relation to training needs of individuals. Studies connected with the relationships of the selected variables and the training needs of individuals will be reviewed in the second section.

2.1 Review on study relating to training needs

Training prepares an individual to be more innovative and respective to new concepts or practices. In a conference (May, 2004) in Mexico some scientist opined that there is definitely a demand for it (Training). The biggest thing for training us is that it builds partnership. It builds trust. Judge (1967) while presenting a paper at the CENTO Conference on Agricultural Extension at Ankara, mentioned that training program for preparation of Agricultural Extension workers must include the following areas:

1. A general educational program with emphasis on knowledge and understanding of the basic science.
2. An understanding of agricultural procedures, process and their relationships with other segments of the economy of the area in which he is to work.
3. Specific agricultural knowledge which will contribute to increase agricultural production.

Bajaj (1963) reported that the male county extension Agents of Oklahoma felt most urgent training needs in technical subject matters followed by understanding an extension program, understanding human relationships, planning, organizing and determining objectives, communication, educational process and teaching method and evaluation.

Leagans (1963) expressed the view that the professional abilities needed by the extension workers being numerous, complex and high level, the need to have knowledge on such areas as technical subject matters, understanding the extension service, human relations, planning objectives and goals, principles and practices, counseling, working with local leaders, teaching evaluation and communication techniques.

Halim's (1968) study regarding the training Needs of Union Agricultural Assistants of Mymensingh Sadar North Sub Division revealed that the Union Agricultural

Assistants were in need of Training in the following subject matter areas in descending order to importance:

- 1) Program Evaluation.
- 2) Program Planning.
- 3) Program Execution.
- 4) Extension Teaching Methods.
- 5) Technical Subject matters.
- 6) Local Leadership Development.
- 7) Understanding Extension Program

Nazeeh (1963) in his research in Kansas stated the following nine areas of training needs of the country agricultural extension agents of Kansas in rank order of importance:

1. Technical Knowledge
2. Research and evaluation
3. Effective thinking
4. Program planning and development
5. Human of development
6. Communication
7. Education
8. Social systems
9. Extension organization and administration

Mian's (1974) study regarding the training needs of Managers and Model Farmers under upazila irrigation program in Mymensingh sadar south sub division revealed that the managers and model framers were in need of training in the following subject matter areas in descending order of importance:

1. Plant protection
2. Fertilizer
3. Seed
4. Irrigation

He further concluded that 65 percent or more of the managers and model farmers needed some or much training in seed fertilizer and plant protection. In irrigation however 70 percent of managers and model farmers had little training need and 30 percent had some.

Akanda's (1978) study regarding the training need of the farmers in transplanted Aman rice in Bhalia union of Mymensing district revealed that the farmers in transplanted Aman rice cultivation were need of training in the following subject matter areas:

1. Insect control
2. Disease control
3. Fertilizer
4. Soil
5. Seed

He further concluded that the percentage of farmers having very high and high training need in each of the above stated subject matter were insect control 100 percent , disease control 100 percent, fertilizer 90 percent , soil 82 percent and seed 73 percent .

Singh and Gill (1985) reported that subject matter areas in training need fulfillment of agricultural extension workers were agronomy, horticulture and farm machinery and intensity of training need of these matter areas were only to medium from high level of respectively.

Chauchan and Kokate (1986) reported that majority of the farmers had low extension contact poor credit orientation and medium arid farming knowledge. The farmers had high need for training in agronomical practices for 2 to 4 days just before the Kharif and Robi season.

Babu and Sing (1986) reported that training of young farmers essentially contributes to human resources development in agriculture. Information need for young farmers are crop wise information the other information needed by them included improved seed, inter cultural operation fertilizers salt testing, irrigation, new implement plant protection measures mushroom cultivation poultry animal husbandry and credit information.

Ali and Hossain (1989) found that the teachers of Bangladesh Agricultural University expressed substantial need of training for their career development which cannot be fulfilled only by earning academic degree. Two important fields indicated by them were research and extension.

The review of literature indicates that very little research has been conducted related to determine the training need of the farmers or farm leaders in Bangladesh. This signifies the importance of conducting research at farmers' level for determine their training need. In most studies the training need in technical subject matter has been reported by the researchers. Therefore it is expected that the farmers and farm leaders also will have training need in technical subject matters.

Haider *et al.* (1990) identified that majority (53%) of the contact farmers showed high training needs in agricultural subject matters (plant protection measure, fertilizer seeds of HYV of important crops irrigation) compared to 44 percent having moderate training need and only three percent low training needs.

Hussain *et al.* (1990) undertake a study on the training need of farm house wives and revealed that most of the house wives were interested in receiving on different aspects of agricultural and livestock production. The housewives from smaller farm groups needed more training on different aspects of agricultural and livestock production compared to larger groups.

Miah and Hossain (1990) conducted a study on training need on the female Sub Assistant Agriculture Officers or FBSs (Female Block Supervisors) and revealed that 46 percent of the FBSs felt medium necessity obtaining well the rest demanded higher extent of training need in seven areas of their jobs. Responsibilities included agricultural extension motivation leadership homestead gardening and nutrition backyard poultry development foods processing and preservation and bee keeping.

Rahman (1995) in his study reported that majority of the subject matter officers (SMOs) felt very much to have training on pest and disease control, seed production, fruit production, vegetable production, principles and methods of teaching preparation of training materials and planning execution and evaluation of agricultural extension plan. However the respondents expected the training on fertilizer management irrigation and general crop production were not so necessary for them. Considering overall training needs of the subject matter officers the study also revealed that three-fifties (58%) of the SMOs had high level of training needs as compared to 42 percent having medium level of needs.

2.2 Reviews on study relating to relationship of selected characteristics with training need

Very few studies dealing with relationships of individuals' Characteristics and their training need were available in course of literature. However, adoption of a farm practices by an individual is likely to be positively related to his knowledge regarding that practice and consequently negatively related to his training need about that practice. Therefore, findings of studies dealing with the relationship of individuals characteristics and their training need. Such consideration promoted the researcher to review a few of such studies in this section.

2.2.1 Age and training Need

Gharu (1989) reported on the basis of his study on training needs of Horticulture Inspectors in Punjab states that age of the respondents was not significantly associated with their training needs.

Haider *et al.* (1990) reported that age of the contact farmers had significant positive relationship with their training needs. Miah and Hossain (1991) reported that age of FBS (Female Block Supervisors) had significant positive relationship with their extent of training needs.

Fatema (1995) concluded that there was no relationship between age of the respondent and training needs in homestead agricultural production. Islam (1997) and Mondal (2000) found similar relationships between age and training needs of the respondents.

Shaha (2003) reported that age of the SRI (System of Rice Intensification) farmers had significant positive relationship with their training needs for SRI programs. Haider *et al.* (1990), Akanda (1978) and Ali (1995) found similar relationships between age and training needs of the respondents.

Ahsan (2004) found non-significant relationship between age of the Block Supervisors and their training needs. Similar findings were revealed by Shrestha (1983) and Rasel (2004) in their respective studies.

Yesmin (2007) concluded that there was significant but negative relationship between age of rural woman and their extent of training needs to participate in income generating activities.

Findings of studies presented above, indicate the relationship between age and training is not definitely established. Some studies showed negative relationship, some positive relationship and some had no relationship between age and adoption of improved farm practices. However there was a need to investigate the relationship of age of the farmers and their training need.

2.2.2 Education and training need

Several studies showed the importance of education on the behavior of farmers through improved agricultural knowledge and training which ultimately increased the production of crop per unit.

Beal and Sibely (1967) studied on the adoption of fertilizer revealed a positive relationship between functional literacy of transplanted Aman rice growers and their adoption of fertilizer.

Ahsan (2004) revealed that there was significant negative relationship between education of the Block Supervisors and their training needs. Similar findings were found by Shaha (2003), Islam (1997), Shrestha (1983), and Mian (1974) in their respective studies.

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

Yesmin (2007) concluded that there was significant and positive relationship between education of rural woman and their extent of training needs to participate in income generating activities.

Most of the studies reviewed above indicate a positive relationship between education of the farmers and training need. Training need of the farmers is likely to have negative relationship with education education and training need of the farmers.

2.2.3 Family size and training need

The family is the basic social institution which socially recognized rights and obligations. Research study was scarce relating to the affects of family size on agricultural knowledge development and training.

Ali (1995) stated that there was no significant effect on family size of the respondents on training needs in ecological agriculture.

Mondol (2000) reported that the family size of the respondent has insignificant relationship with their training needs in post harvest activities.

Yeasmin (2002) reported that there was a significant negative relationship between family size and training needs i.e. bigger the family sizes the less training needs were felt by the respondent.

Shaha (2003) reported that the family size of the farmers had positive and significant relationship with their perceived training needs for SRI program.

Findings of the studies presented above indicate that there is positive and negative relationship on that case. As a result, it should be under consideration of farmers' family size and their training need.

2.2.4 Farm size and training need

Farm size is one of the first factors on which the empirical adoption literature focuses.

Singh and Gill (1985) in their study found that size of the holdings had significant relationship with training need fulfillment of the farmers.

Fatema (1995) found that there was no significant relationship between farm size of the farmers and their training needs for homestead agricultural production. Similar findings were found by Ali (1995) and Islam (1997) in their respective studies.

Rasel (2004) reported that there was significant and negative relationship between farm size of the adivasi people and their training needs in carrying out income generating activities.

Yesmin (2007) concluded that there was significant and positive relationship between farm size of rural woman and their extent of training needs to participate in income generating activities.

Many studies reviewed above indicate both positive and negative relationship between farm size and training needs of farmers.

2.2.5 Income and training need

Many studies have shown a positive relationship between income and training needs of farmers of improved agricultural practices.

Fatema (1995) reported that there was a positive significant relationship between annual income of the farm farmers and their training needs for homestead agricultural production.

Islam (1997) found no significant relationship between annual income of the farmers and their training needs for crop cultivation. Similar relationship between annual income and training needs for ecological agriculture reported by Ali (1995).

Rasel (2004) stated that annual income of the Adivasi people was significantly but negatively correlated with their training needs in carrying out income generating activities. Haider *et al.* (1990) and Akanda (1978) found similar relationships between annual income and training needs.

Yesmin (2007) concluded that there was non-significant but positive relationship between annual family income of rural woman and their extent of training needs to participate in income generating activities.

2.2.6 Framing experience and training need

Farming experience makes a farmer more skilled and conscious about farming. It helps to reduce losses and precaution for the upcoming event. Experienced farmers are the reliable source of information and solution maker.

Verma *et al.* (1989) conducted a study on gain in knowledge and change in attitude through farming experience. The study revealed that attitude of farm farmers changed significantly after farming involvement. They remarked that due to gain practical knowledge the attitudes become more favorable.

BRAC (2006) observed that individual contact of rural farmers and skill development activities had significant influence on their improvement of knowledge, attitude and skills. Training makes them more confident and realistic through their farming life.

2.2.7 Extension contact and training need

Karim and Hossain (1993) reported a significant positive relationship between extension contact of the farmers and their agricultural knowledge. Therefore, it can be assumed that there was a negative relationship between extension contact of the farmers and their training needs.

Ali (1995) reported that extension contact of the landless and marginal farmers had no significant effect on their training needs in ecological agriculture.

Rasel (2004) concluded that there was non-significant but positive relationship between Communication exposure of Adivasi people and their extent of training needs to participate in income generating activities.

Yesmin (2007) concluded that there was non-significant but positive relationship between communication exposure of rural woman and their extent of training needs to participate in income generating activities.

Findings of the studies indicate positive and negative relationship of extension contact with training need of farmers for their cultivation. Such a relationship might be due to the fact that through extension contact farmers became aware of different innovations and learn their methods and procedures.

2.2.8 Organizational participation and training needs

Islam (1998) reported that a positive relationship between organizational participation and agricultural knowledge. Marsh and Coleman (1995).

Karim and Hossain (1993) found similar relationships between organizational participation and training needs.

Rasel (2004) reported that organizational participation did not have any significant relationship with the training needs. Haider *et al.* (1990) found similar relationship between organizational participation and training needs. Yesmin (2007) reported that organizational participation did not have any significant relationship with the training needs.

2.2.9 Cosmopolitanism and training need

Haider (1990) concluded that there was a significant relationship between cosmopolitanism and training needs of the in transplanted Aman rice cultivation.

Fatema (1995) found that there was a significant relationship between cosmopolitanism and training needs of the farmwomen towards homestead agricultural activities.

Shaha (2003) found that the cosmopolitanism of the farmers had negative and significant relationship with their perceived training needs for SRI program. Islam (1997) found similar relationship between cosmopolitanism of the farmers and training needs for crop production.

Rasel (2004) found that the cosmopolitanism of the farmers had negative and non-significant relationship with their extent of training needs to participate in income generating activities.

2.2.10 Agricultural knowledge and training need

The National Horticulture and Livestock Project (NHLP) in 2011 under World Bank reported that "An effective training and supervision to the farmer can be increased 60-70 percent production in different levels of agricultural production in South Asia".

Mian (1974) reported that agricultural knowledge of managers and model farmers had no relationship with their training needs in each of seed, fertilizer, plant protection, irrigation, and composite agriculture.

Sing and Gill (1985) reported that agricultural knowledge was found to have a significant positive effect in fulfillment of training needs in knowledge of farmers in India. Ghuru (1989) focused in his study that agricultural knowledge of respondents was significantly associated with their in-service training needs. Agricultural Knowledge of the respondents increased their training needs in the selected areas and sub areas of horticultural technology were observed to be decreased.

Haider *et al.* (1990) concluded that agricultural knowledge of the contact farmers had negative relationship with their training needs in respect of production aspects.

Ali (1995) stated that there was no significant effect of agricultural knowledge of the respondents on training needs in ecological agricultural.

Fatema (1995) concluded that there was a positive significant relationship between agricultural knowledge of the farm farmers and their training needs in homestead agricultural production.

2.3 Conceptual framework

This study was concerned with the training needs of farmers on rice cultivation. Thus the extent of training needs for rice cultivation was the Dependent Variable and ten selected characteristics of the rice growers were considered as the independent Variables. Extent of training needs of an individual may be affected through interacting forces of many independent Variables. It is not possible to deal with all independent Variables in a single study. It was therefore, necessary to limit the independent Variables, which included age, educational qualification, family size, farm size, annual gross income, farming experience, extension contact, organizational participation, cosmopolitaness and agricultural knowledge.

In order to have a clear understanding of the extent of training needs of rice cultivation, which act as a Dependent Variable. Different training area has been taken under consideration in the sight of Dependent Variable like seed selection, land preparation, seed preservation and seedling management, sowing and transplanting, intercultural operation, IPM practice and management, HYV cultivation, agricultural equipment use.

Based on the above discussion and review of literature the conceptual framework is constructed by the researcher in order to facilitate the conceptualization of the study.

However the conceptual framework is self explanatory, which has been diagrammatically shown in the Figure 2.1.

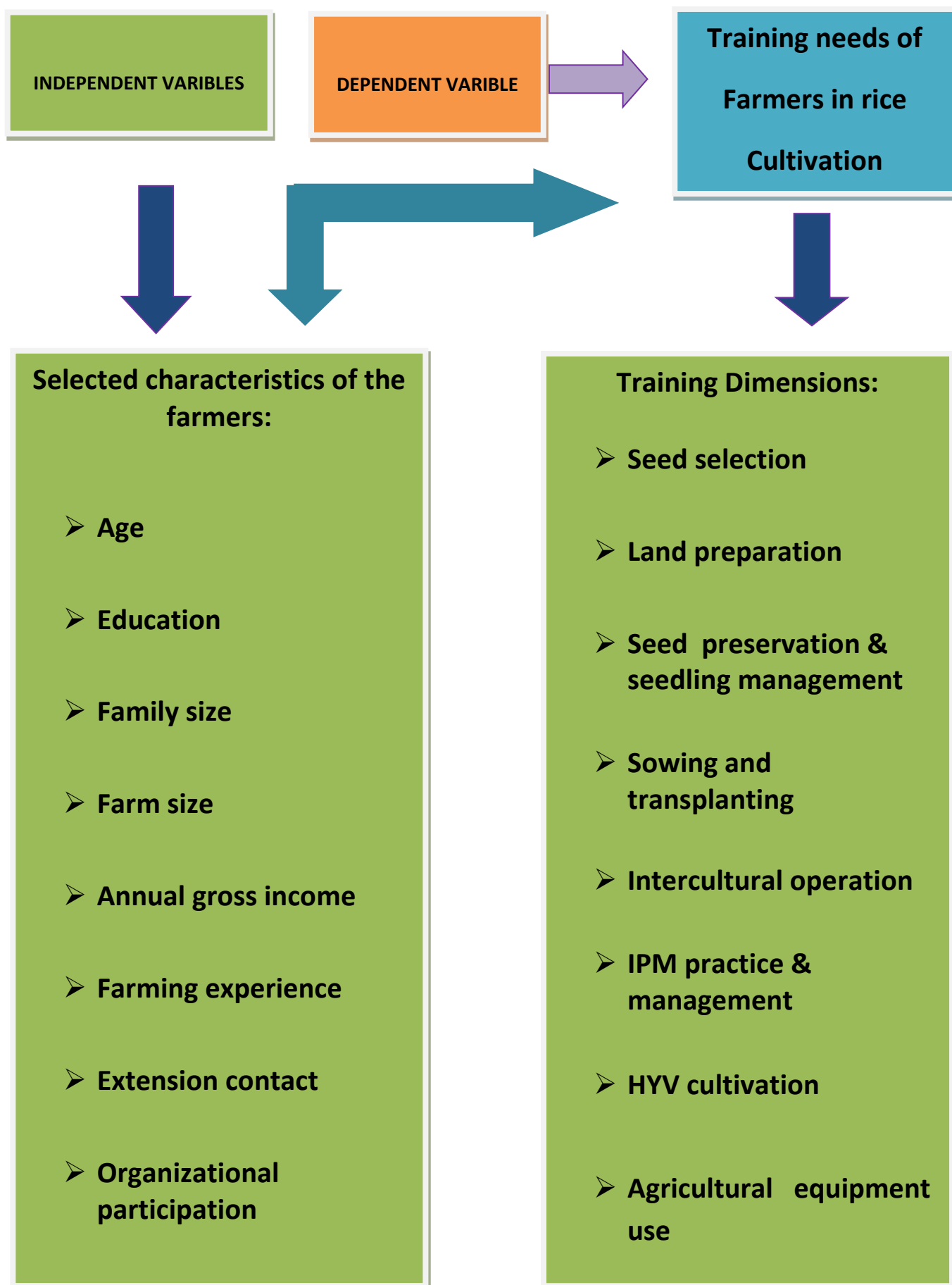


Figure 2.1 The conceptual framework of the study

CHAPTER III

METHODOLOGY

Methodology plays a very important role in any scientific research. It is the foundation on which the research process rest upon. This chapter explains the methodological approach and design of the study, the study area, sampling design, methods and procedures used for data collection and validity of the study and different variables and their measurement procedures used for data analysis.

3.1 Methodological approach and research design of the study

This study contained quantitative research approaches in order to get a comprehensive view of the rice growers and their training needs about rice production. The quantitative survey (personal interview) approach was used for determining some selected characteristics of the rice growers and for determining the extent of training needs about rice cultivation. Thus, a mixed method research design was applied to determine the training needs of rice growers about rice cultivation technologies.

3.2 Study area

This study was conducted at three villages purposively named Foringa, Chorsungar, Chorbodyal under Rowail union of Durgapur block in Dhamrai Upazila of Dhaka district. Dhamrai upazila is not so far from Department of Agricultural Extension (DAE), Bangladesh Agricultural Research Institute (BARI), Bangladesh Rice Research Institute (BRRI) and also Central Extension Resources Development Institute (CERDI). For this reason the farmers of this area are well exposed about various agricultural development and latest technologies. Now it is important that the farmers of this area may have different training needs on different agricultural development activities. This is the reason behind the selection of this area as the locale of the study.

3.3 Sampling design

Three villages were selected from Rowail union purposively. List of the farmers of that villages were prepared by the cooperation of SAAO of Durgapur block. Population of that area was 850. From the entire population, 90 farmers were taken as a sample size through using standard formula (Moral, 2011) with 10% marginal error and selected them by random sampling method. A reserve list of respondents was also prepared so that the farmers of the list could be used for interviewing if the farmers included in the original sample were not available during data collection period.

Sample size is,

$$n = N / (1 + Ne^2)$$

$$= 850 / \{1 + (850 \times 0.1^2)\}$$

$$= 90$$

Here,

n = Sample size

N = Population size

e = Marginal error

Table 3.1 Population and sample of farmers at Rowail union in Durgapur block of Dhamrai Upazilla

Union	Village	Population of farmers	No. of farmers included in sample	No. of farmers included in reserve list
Rowail	Foringa	400	43	10
	Chorbordyal	90	09	
	Chorsungor	340	38	
Total		850	90	10

3.4 Selection of the variables

In a social research, selection and measurement of variables is a significant task. Ezekel and fox (1969) defined a variable as any measurable characteristics which can assume varying or different values in successive individual areas. It is essential to delineate the problem and decide the variable where relationships are involved, because relationships are fundamental staff out of which all sciences are built. In all relationships, two kinds of variables are identified, one is the independent Variable and the other is the Dependent Variable. A independent Variable is that factor manipulated by the experiment in his attempt to ascertain its relationships to an observed phenomenon. A Dependent Variable, on the other hand, is that factor which appears, disappears or varies as the experiment introduces, removes or modifies the independent Variable.

3.5 Instrumentation

In order to collect relevant data, a structured interview schedule was carefully prepared keeping the objectives of the study in mind. The questions and statements contained in the schedule were simple, direct and easily understandable by the respondents. The schedule contained mainly closed form questions. Scales were included in the schedule, wherever necessary. The interview schedule was pre-tested with 15 rice growers. Based on the pre-test necessary corrections were made in the interview schedule. The research instrument included the following major information: (a) respondent's ten characteristics namely age, educational qualification, family size, farm size, annual gross income, farming experience, extension contact, organizational participation, cosmopolitaness and agricultural knowledge and (b) Respondents eight selective aspects in training need on rice cultivation such as seed selection, land preparation, land preparation, seed preservation and seedling management, sowing and transplanting, intercultural operation, IPM practice and management, HYV of rice, advanced equipment use.

3.6 Methods and procedure of data collection

In the survey, two trained enumerators along with the researcher himself collected data from 90 rice growers through face to face interviewing. The researcher first established rapport with the respondents and clearly explained the objectives of the study using local language as far as possible. As a result, the respondents furnished proper response to the questions without any hesitation. The questions were clarified whenever any respondent had difficulties in understanding. Excellent co-operation was received from the respondents and other people of the study area. No serious difficulty was faced by the researcher in collecting data. The survey was conducted in 02nd April to 15th April 2015.

3.7 Processing of the primary data

Collected primary data were coded, recoded and transferred into SPSS (Statistical Package for Social Science) software package (20.0 Version). This package helps to perform a wide range of statistical analyses.

3.8 Processing of the secondary data

In order to develop conceptual basis of study, the researcher collected information from different relevant sources, such as books, journals, thesis, abstracts, reports and the Internet. The researcher also collected documents from various organizations and personnels for this purpose.

3.9 Measurement of the variables

3.9.1 Measurement of independent Variables

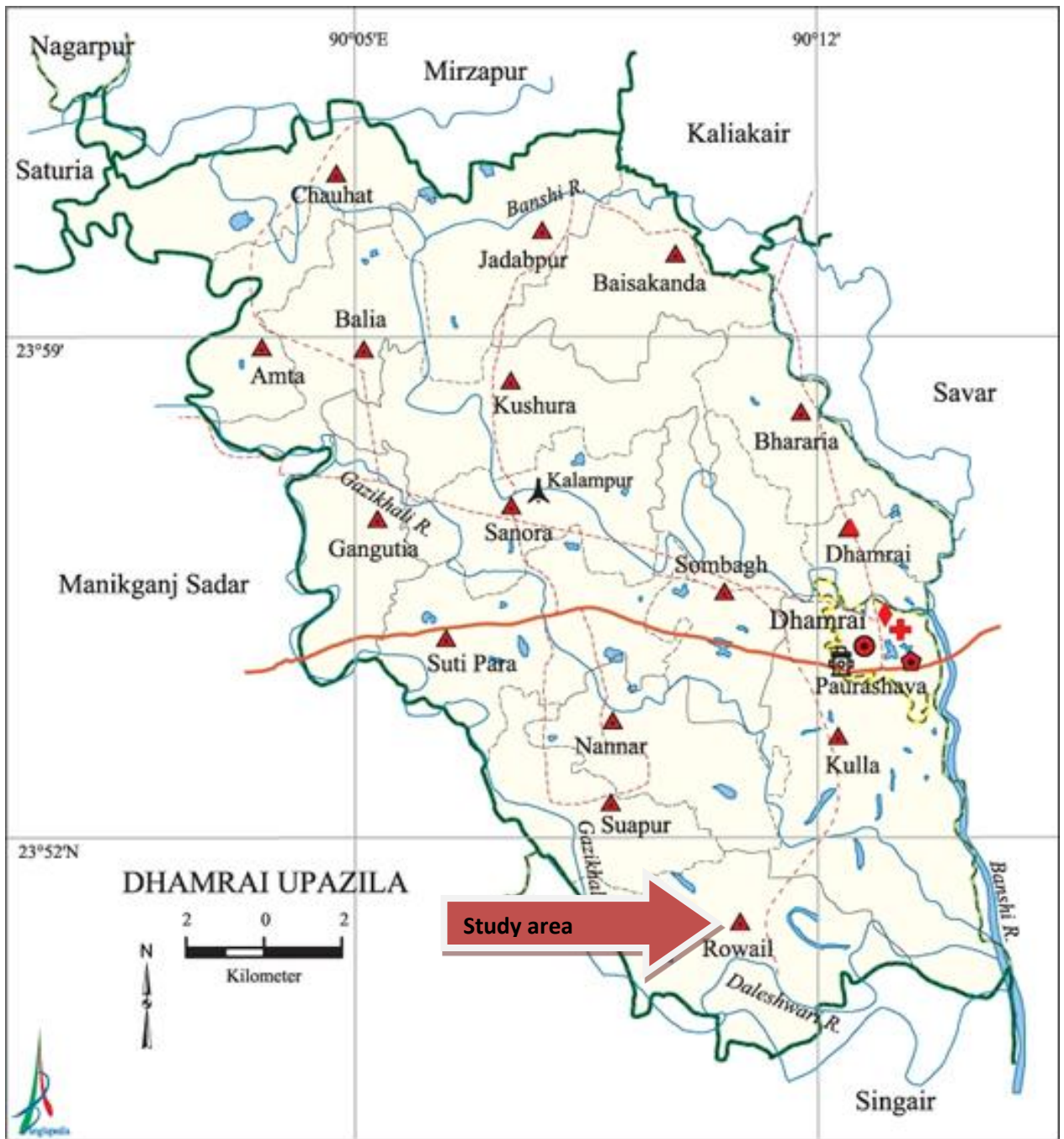
The independent Variables of this study were 10 selected characteristics of the farmers. These were age, educational qualification, family size, farm size, annual gross income, farming experience, extension contact, organizational participation, cosmopolitaness and agricultural knowledge. The procedures followed in measuring these variables are briefly discussed below:

3.9.2 Age

The age of a respondent was measured in terms of actual complete years from his birth to the date of interview. A score of one was assigned for each year of age.

3.9.3 Education

Education was measured in terms of one's year of schooling. One score was given for passing each level in an educational institution (Paul, 2010). For example, if a respondent passed the SSC examination, educational score was given as 10. If a respondent did not know how to read and write, his educational score was given as '0'.



Legend: Study area



Figure 3.2: Map of Dhamrai upazila showing the study area (Rowail block)

3.9.4 Family size

Household size of a rice grower was determined by the total number of member in his/her family including himself/herself, his/her wife/husband, sons, daughters and others fully and partially predicted on him/her. Total number of family members was considered as the family size score of a respondent. For example, if a respondent has 4 members in his/her family, his/her family size score was 4.

3.9.5 Farm size

The farm size of a respondent referred to the total area of land on which his/her family carried out farming operations, the area being in terms of full benefit to the family. The farm size measured for each respondent in hectare by using the following formula.

$$Fs = a + 1/2(b+c)+d+e$$

Where,

Fs = farm size

a = Own land under own cultivation

b = Other's land taken on share cropping

c = Own land given to others' on share cropping

d = Other's land taken on lease

e= Homestead area

3.9.6 Annual income

Annual family income was the total financial return of a family from cereals crops, vegetables, poultry, cattle, fisheries, services, business, labor and others in one year. The earnings from these sources were added together for computation of annual family income score. Annual family income was expressed in `1000' Taka.

3.9.7 Farming experience

Farming experience meant the experience which was gained by an individual from farming. The experience of a farmer indicated the experience he gained directly by performing various farming activities and it was expressed in year.

3.9.8 Extension contact

Extension contact scores of the respondents were computed on the basis of their extension contact with extension staff. The respondents indicated whether they contacted with those extension staff how many time in a year. It was scored within a limitation of 0 to 4 and multiplied by 2.

Nature of extension contact	Frequency	Score assigned
>8 times /year	Regularly	4
>6-8 times /year	Often	3
>3-5 times /year	Occasionally	2
>1-2 times /year	Rarely	1
>0 times /year	No contact	0

3.9.9 Organizational participation

Organizational participation of a respondent was measured by computing an organizational participation score according to his nature and duration of participation in seven (7) selected different organizations up to the time of interview. The organizational participation score of a respondent was measured by using the following formula:

$$\text{Organizational participation score} = \sum P \times D$$

Where,

P= Participation score

D=Duration score

Participation scored was assigned in the following way:

Nature of participation	Score
No participation	0
General member	1
Member of executive committee	2
President / Secretary	3

Duration scored was assigned in the following way:

Duration of participation	Score
Nil period	0
One year	1
Two year	2
Three year and above	3

Organizational participation score was obtained by adding the scores for his participation in all organizations.

3.9.10 Cosmopolitaness

An individual develops a heterophilious link when he/she visits a new place. The heterophilious links of low proximity play a crucial role in the flow of information about an innovation (Rogers, 1983). Cosmopolitaness of a respondent was measured by computing a social mobility score (0-3) based on his/her frequency of visits to ten different places external to his/her own social system in a month. Each respondent was asked to indicate the number of his/her visits to those places. Score assigned according to the nature and extent of visits as presented below:

Table. 3.2 Scoring ,nature of visit and frequency of Cosmopolitaness

Sl. No.	Place of visit	Nature of visit/month	Score assigned	Frequency
01	Visit of market familiar home outside of your own village	≥ 7 times 4-6 times 1-3times 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all
02	Visit of relatives/friends	≥ 5 times 3-4 times 1-2times 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all
03	Visit to Upazilla sadar	≥ 5 times 3-4 times 1-2times 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all
04	Visit to other Upazila sadar	≥ 5 times 3-4 times 1-3times 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all
05	Visit to Upazila agricultural officer	≥ 4 times 2-3 times Once 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all

06	Visit to Upazila/District agricultural fair	≥5 times 3-4 times 1-2times 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all
07	Visit to IPM practice demonstration plots	≥5 times 3-4 times 1-2times 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all
08	Attend to result demonstration plots	≥3 times 2 times Once 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all
09	Attend in meeting organized by UAO/AEO/SAAO	≥5 times 3-4 times 1-2times 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all
10	Visit to IPM related workshop	≥5 times 3-4 times 1-2times 0 times	3 2 1 0	Regularly Occasionally Rarely Not at all

3.9.11 Agricultural knowledge

Agricultural knowledge referred to the knowledge gained by the respondent farmers in agricultural activities like crop cultivation, fish farming, livestock rearing, agricultural news etc. Twenty questions on different aspect of production related to various aspects of agriculture were asked to the respondent farmers to ascertain their knowledge score. The score was assigned as 2 for full correct answer, 1 for half answer and 0 for incorrect or no answer. Thus agricultural knowledge scores of the respondents could range from 0 to 40 where 0 indicated very low and 40 indicated very high Agricultural knowledge.

3.11 Measurement of Dependent Variable

Training needs

Training needs of the farmers on rice cultivation was the Dependent Variable of the present study. To measure the training needs of the farmer on rice cultivation eight dimensions of rice cultivation were included to measure the need. It was calculated by subtracting the number of training received from expected or desired number of training in particular area of rice cultivation. Farmers expressed their desirable area of training with numbers and number of training they received. Duration was scored and multiplied as the following manner. If training duration less than one week or equal scored 1, less than two week or equal scored 2, less than 3 week or equal scored 3 and for above scored 4. Finally, it is calculated by subtracting sum of training received (Y) from sum of expected or desired number of training (X) needs of farmers. Training needs is expressed by T.N (Training Need).

$$\text{Training need (T.N.)} = \sum \text{Expected or desired no. of training (X)} - \sum \text{No. of Training received (Y)}$$

3.12 Data analysis strategy

The collected data were coded, compiled, tabulated, and analyzed in accordance with the objectives of the study. Score is given where it is necessary. Descriptive statistics such as range, mean and standard deviation were used for describing the variables of the study. Pearson's Product Moment Correlation Co-efficient was used to explore the relationships between any two concerned variables.

The analysis of data was performed by using SPSS (Statistical Package for Social Sciences) computer program. Throughout the study, at least five percent (0.05) level of probability was used as a basis for rejecting a null hypothesis.

CHAPTER IV

FINDINGS AND DISCUSSION

In this chapter the findings of the study and their interpretations have been conveniently presented according to the objectives of the study. Results have been discussed in relation to other similar studies whenever applied. The Chapter has been divided into three sections. The first section has dealt with the selected characteristics of the rice growers. The Dependent Variable of the study has been discussed in the second section. Finally, the relationship between the predicted and independent Variables of the study has been presented at the last section.

4.1 Socio-demographic characteristics of the farmers

There were various characteristics of the farmers that influence their training needs on rice cultivation. In the present study, ten characteristics of the rice cultivars were selected as independent Variables, which included age, educational qualification, family size, farm size, annual gross income, farming experience, extension contact, organizational participation, cosmopolitaness and agricultural knowledge. The characteristics of the respondents have been presented below.

4.1.1 Age

The age of the farmers ranged from 24 to 75 years with an average of 51.44 year and standard deviation of 11.13 year. On the basis of their age, the farmers were classified into three categories as young (up to 41), middle age (42-58) and old aged (>58) are presented in Table 4.1. Data contained in Table 4.1 reveal that (57.77 percent) of the farmers were middle aged, 15.55 percent of them belonged to young age category and 26.66 percent of the farmers belonged to the old age category having age above 58 years.

Table 4.1 Distribution of the farmers according to their age

Categories (Years)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Young (up to 41)	14	15.55	51.44	11.13
Middle age (42-58)	52	57.77		
Old (>58)	24	26.66		

4.1.2 Education

Years of schooling of the farmers ranged from 0 to 13 years of schooling having an average of 5.74 and standard deviation of 3.65. On the basis of their level of education, the farmers were classified into four categories as illiterate (0), primary (1-5) and secondary (6-10) and higher secondary (>10) are presented in the Table 4.2. Data revealed that 33.33 percent of the farmers had the level of education between 6 to 10 years of schooling, where 12.22 percent of them having primary level of education, 46.66 percent of them having 1 to 5 and 7.77 percent higher secondary level of education. So, most of the respondents were in only primary level education. So, it might be a crucial factor for farmers training because less literate farmers may desire for receive more training to improve their production.

Table 4.2 Distribution of the farmers according to their education

Categories (Years of schooling)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Illiterate/ can sign only (0-0.5)	11	12.22	5.74	3.65
Primary level (1-5)	42	46.66		
Secondary level (6-10)	30	33.33		
Upper level (above 10)	7	07.77		

4.1.3 Family size

The household size of the respondents ranged from 2 to 8 members, with an average of 5.33 and standard deviation of 1.492. On the basis of their household size, the respondents were classified into three categories as small (up to 4), medium (5 to 6), and large (up to 8) size family are shown in Table 4.3. Data reveal that 50 percent of the respondents possessed medium size family, 26.66 percent small family and 23.33 percent had large family. It is assumed that the respondents having medium or large family can spent more time in rice cultivation after completion of household activities. About two-thirds of the farmers had medium to large family size indicates they might have more involvement in rice cultivation.

Table 4.3 Distribution of the farmers according to their family size

Categories (Scores)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Small	24	26.66	5.33	1.492
Medium	45	50.00		
Large	21	23.33		

4.1.4 Farm size

Among the farmers, the smallest farm size was found to be 0.04 hectare and the largest was 1.83 hectare. Average farm size was 0.62 hectare with a standard deviation of 0.35 hectare. On the basis of farm size, the respondents were classified into three categories following the classification recommended by the DAE (1999) and shown in Table 4.4.3 data indicated that the highest proportion (80 percent) of the farmers belonged to the small farm size category compared to 17.77 percent having medium farm size and only 2.22 percent having marginal farm size. It indicates that most of the respondents were in the small farm size category. It is a general trend in Bangladesh that farm size of the people is being decreased day by day to land fragmentation through generation to generation. Therefore, it is expected

that the farmers of the study might be seen to harvest more yields by using improved technologies and to receive more trainings to learn those technologies.

Table 4.4 Distribution of the farmers according to their farm size

Categories (hectares)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Marginal (0.02 - 0.2)	2	2.20	.62	.35
Small (0.2 – 1.0)	72	80.0		
Medium (1.0 – 3.0)	16	17.7		

4.1.5 Annual gross income

Annual income of the respondents ranged from TK 10 to TK. 200 thousand with an average of 63.90 and standard deviation of 32.862. On the basis of annual income, the respondents were divided into three categories as low (up to 73), medium (74-137), high (>137). The distribution of annual income was presented in Table 4.5. Data revealed that 21.1 percent having medium annual income, 78.9 percent having high family income and none of them had low annual income. Findings indicate that all of (>96percent) the farmers had lower to medium family income. Since most of the respondents had medium to large family size, more number of earning members in the family and small to medium farm size, the family income tended to lower to medium.

Table 4.5 Distribution of the farmers according to their annual gross income

Categories (Tk.)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Low (up to 73)	71	78.88	63.90	32.862
Medium (74-137)	16	17.77		
High (>137)	03	03.33		

4.1.6 Farming experience

The observed farming experience score of farmers ranged from 5 to 45. The average farming experience score of farmers was 22.30 with a standard deviation of 8.398. On the basis of farming experience, the respondents were divided into three categories as low (up to 18), medium (19 to 30), high (>30), which is presented in the Table 4.6. Farming experience of a farmer might be leading factor in case of training program. An experienced farmer suggests to the other farmers. On the other hand some time they show indifference in receiving training.

Table 4.6 Distribution of the farmers according to their farming experience

Categories (Years)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Low (up to 18)	48	53.33	22.30	8.39
Medium (19 to 30)	26	28.88		
High (>30)	16	17.77		

4.1.7 Extension contact

The extension media contact scores of the respondents could range from 0 to 40 while the observed scores ranged from 4 to 30. The average was 14.67 with a standard deviation of 6.08. On the basis of extension media exposure scores the respondents were categorized into three groups as shown in Table 4.7. On the basis of scores, the respondents were divided into three categories as low (4 to 12), medium (13 to 21), high (>21), Table 4.7 shows that the highest proportion (53.33 percent) of the respondents had lowest extension contact where only 16 percent having higher extension contact.

Table 4.7 Distribution of the farmers according to their extension contact

Categories (Scores)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Low (4 to 12)	48	53.33	14.67	6.080
Medium (13 to 21)	26	28.88		
High (>21)	16	17.77		

4.1.8 Organizational participation

Organizational participation scores of the respondents could range from 0 to 40 while the observed scores ranged from 6 to 37. The average was 14.01 and standard deviation was 5.697. On the basis of their organizational participation score, the respondents were divided into three categories as low (up to 16), moderate (17 to 26) and high (>26) were presented in Table 4.8. Data furnished in Table 4.8 indicate that 77.77 percent of the farmers had low participation while 17.77 percent had moderate, 4.44 percent had high participation in different organizations. Here 77.77 percent of the farmers were found to have low involvement in organizations for short period; it implies that their mobility and participation in development activities is limited to a greater extent. However, which is not promising for adoption of improved farming practices for rice production.

Table 4.8 Distribution of the farmers according to their organizational participation

Categories (Scores)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Low (up to16)	70	77.77	14.01	5.697
Moderate(17 to 26)	16	17.77		
High (>26)	4	4.44		

4.1.9 Cosmopoliteness

Cosmopoliteness scores of the respondents ranged from 2 to 22 with an average of 11.68 and a standard deviation of 3.85 against the possible range of 0 to 40. On the basis of their cosmopoliteness, the farmers were classified into three categories low, medium and high. The distribution of the rice growers according to their cosmopoliteness is shown in Table 4.9

Table 4.9 Distribution of the farmers according to their cosmopoliteness

Categories (Scores)	Farmers (N=90)		Mean	Standard Deviation
	Number	Percent		
Low (up to10)	34	37.77	11.68	3.85
Medium (11 to 16)	44	48.88		
High (>16)	12	13.33		

4.1.10 Agricultural knowledge

Agricultural knowledge score of the respondent farmers ranged from 0 to 40. The mean and standard deviation of agricultural knowledge were 12.49 and 4.32 respectively. On the basis of agricultural knowledge scores, the respondents were classified into three categories namely, low knowledge, medium knowledge, sound knowledge. The distribution of the respondents according to agricultural knowledge is given below.

Table 4.10 Distribution of the farmers according to their agricultural knowledge

Categories (Scores)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Low knowledge(up to7)	10	11.11	12.49	4.32
Medium knowledge(8 to 14)	50	55.55		
Sound knowledge(>14)	30	33.33		

4.1.11 Training needs of farmers in rice cultivation

The training need of the farmers ranged from 6 to 32 against the possible range of 0 to 40. The average adoption was 22.68 with a standard deviation of 4.47. Based on the training needs scores, the farmers were classified into three categories low, medium and high. The distribution of the respondents according to their training needs is shown in Table 4.11.

Table 4.11 Distribution of the farmers according to their training needs

Categories (Scores)	Farmers (N=90)		Mean	Standard Deviation
	Number	percent		
Low (up to 22)	06	6.66	22.68	4.47
Medium (23-25)	51	45.9		
High (>30)	33	33.0		

Data contained in Table. 4.11 indicate that the highest proportion (45.9 percent) of the growers had low training needs as compared to 45.9 percent medium training needs and 33.0 percent high training needs respectively.

4.2 Relationship between the individual characteristics of the rice growers and their training needs in selected aspects of rice cultivation

Pearson's Product Moment Coefficient of Correlation (r) was computed in order to explore the relationships between the selected characteristics of farmers and their extent of training needs on rice cultivation. The coefficient of correlation (r) was used to test the null hypothesis regarding the relationship between two concerned variables. The null hypothesis was formulated as H_0 .

There is no relationship between the selected characteristics of the farmers and their training needs on rice cultivation. The relationship between the predicted and independent Variables has been presented in Table 4.12. However, the correlation matrix of predicted and independent Variables has been presented in Appendix-B in order to have a clear exploration of the inter-correlation and multi-co linearity among the variables.

4.2.1 Age and training needs of farmers

According to the computed ' r ' (-.277) value as shown in Table 4.12 there had a strong significant negative relationship between age and their extent of training needs on rice cultivation and followed a negative trend. Age of the farmers was an important factor for their training need. Hence, the concerned null hypothesis was rejected. When farmers' age increased, they showed little interest in receiving training. Farmers who had over 58, showed negative attitude on attain training.

Table 4.12: Relationship between the predicted and independent Variables

Dependent Variable	Independent Variables	“ r ” value with 88 df
Training needs of the farmers in rice cultivation	Age	-.277**
	Education	-.270**
	Family size	-.045 ^{NS}
	Farm size	-.121 ^{NS}
	Annual gross income	-.097 ^{NS}
	Farming experience	-.274**
	Extension contact	.288**
	Organizational participation	-.349**
	Cosmopolitaness	-.216*
	Agricultural knowledge	.282**

** Significant at 0.01 level of probability

* Significant at 0.05 level of probability

4.2.2 Education and training needs of farmers

According to the computed ‘r’ (-.270) value as shown in Table 4.5 the relationship between level of education of the farmers and their extent of training needs on rice cultivation was strong negative significant. Hence, the concerned null hypothesis was rejected. The findings indicated that there had a strong significant negative relationship and negative trend between years of schooling and their extent of training needs on rice cultivation. Educated farmers were indifferent in training program. They thought they had enough knowledge on cultivation methodology. They felt disgust to join the training program with illiterate farmers. So education level of the farmers kept an important role for their training need.

4.2.3 Family size and training needs of farmers

According to the computed 'r' (0.045) value as shown in Table 4.12 there was no relationship between household size and their extent of training needs on rice cultivation. Hence, the concerned null hypothesis was accepted. The findings indicated that there had no significant relationship between family size and their extent of training needs on rice cultivation. Family size of the farmers was not an important factor for their training need.

4.2.4 Farm size and training needs

According to the computed 'r'(-.121) value as shown in Table 4.12 there was no relationship between farm size and their extent of training needs on rice cultivation. Hence, the concerned null hypothesis was accepted. The findings indicated that there had no significant relationship between farm size and their extent of training needs on rice cultivation. Farm size of the farmers was not an important factor for their training need.

4.2.5 Annual income and training needs

According to the computed 'r' (-.097) value as shown in Table 4.12 there was no relationship between annual income and their extent of training needs on rice cultivation. Hence, the concerned null hypothesis was accepted. The findings indicate that annual income of the farmers had no significant relationship with their extent of training needs on rice cultivation.

4.2.6 Farming experience and training needs

The correlation of coefficient between farming experience of farmers and their training needs (-0.274) as shown in Table 4.12. The computed score led to the following observations. According to the computed ' r '(-.408) value as shown in Table 4.5 there had a strong significant negative relationship between farming experience and their extent of training needs on rice cultivation and followed a negative trend. Hence, the concerned null hypothesis was rejected. This finding indicates that farmers, who had more farming experience, had relatively lower level

of training need on rice cultivation and they showed indifference in receiving training.

4.2.7 Extension contact and training needs

According to the computed 'r' (0.288) value as shown in Table 4.12 there was high significant positive relationship between extension contact and their extent of training needs on rice cultivation. Hence, the concerned null hypothesis was rejected. The findings indicated that there had strong significant relationship between extension contact and their extent of training needs on rice cultivation. Extension contact of the farmers was an important role for their training need. Farmers who had regular contact with the extension agent could know the recent innovation and technology very shortly. They made a positive aspect to the other farmers about training. So, they showed interest for training. Extension agent motivated and encouraged them for different training program.

4.2.8 Organizational participation and training needs

According to the computed 'r' (-0.349) value as shown in Table 4.12 the relationship between organizational participation and their extent of training needs on rice cultivation was strong significant and followed a negative trend. Hence, the concerned null hypothesis was rejected. So, findings indicated that organizational participation of the farmers had strong significant negative relationship with their extent of training needs on rice cultivation. When farmers involved in different organization they did not get enough time to attend training program. They engaged different social activities and passed their rest of time involving socioeconomic development.

4.2.9 Cosmopolitaness and training needs

According to the computed 'r' (-0.216) value as shown in Table 4.12 the relationship between cosmopolitaness and their extent of training needs was significant and followed a negative trend. Hence, the concerned null hypothesis was rejected. The findings indicated that cosmopolitaness of farmers had negative significant

relationship with their extent of training needs on rice cultivation. Cosmopolite farmers gained enough knowledge and they had little time to spend in training. They are always busy with their surroundings. They have good contact with extension agent, experienced farmer, GO's and NGO's and showed little interest in receiving training.

4.2.10 Agricultural knowledge and training needs

According to the computed 'r' (0.282) value as shown in Table 4.12 the relationship between agricultural knowledge and their extent of training needs was strong significant and positive trend. Hence, the concerned null hypothesis could be rejected. The findings indicated that agricultural knowledge of farmers had positive significant relationship with their extent of training needs on rice cultivation. If they had sound knowledge in agriculture they showed interest in receiving training spontaneously. They realized the importance of training in rice cultivation. So it may be an important factor in this aspect.

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The title of the study was “TRAINING NEEDS ON RICE PRODUCTION TECHNOLOGIES FOR THE FARMERS OF DHAMRAI UPAZILA UNDER DHAKA DISTRICT”. The major objectives of the study were (i) to assess the training needs on rice production technologies for the farmers of the study area (ii) to identify and describe the characteristics of the farmers that influence them to receive training on rice production technologies. The selected characteristics are: age, education, family size, farm size, annual income, farming experience, extension contact, organizational participation, cosmopolitaness, agricultural knowledge and (iii) to explore the relationship between the selected characteristics of the respondents and their training program.

Three village of Rowail unions at Durgapur Block under Dhamrai upazila of Dhaka district were the locale of the study. Data were collected by the researcher himself during the month of April by using a face to face interview schedule.

5.1 Summary of the findings

5.1.1 Selected characteristics of the farmers

Age: Age of the respondent farmers ranged from 24 to 75 years with a mean of 51.44 years and standard deviation of 11.13. Based on their age the rural farmers were classified in to three categories as young 15.55 percent, middle-aged 57.77 percent and old 26.66 percent. Based on the above discussion, middle aged farmers were in dominated number and strong influence in training received.

Education: The level of education of the respondent farmers ranged from 0 to 13, the average being 5.74 with a standard deviation of 3.65. Out of 90 respondents, 46.66 percent had primary level education and can sign only 12.22 percent, 33.33 percent had secondary level and remaining 7.77 percent had education of above secondary level. Based on the above discussion, 46.66 percent farmers had only primary level education but they were very engrossed in training program.

Family size: The number of family members of the respondent farmers ranged from 2 to 8. The mean was 5.33 and standard deviation was 1.49. The respondents were classified in to three categories small (up to 4), medium (5 to 6), large (>6) and large family size. Based on the above discussion 26.66 percent were small, 50 percent medium and 23.33 percent were large family. In this study area, 50 percent of the farmers had medium size family. That is a good sign for present Bangladesh.

Family farm size: The farm size of the respondent farmers ranged from 0.03 to 1.83 hectare with an average of .62 hectare and standard deviation 0.35. The respondents were classified in to three categories on the basis of their farm holding, the highest proportion (80 percent) of the farmers belonged to the small farm size category compared to 17.77 percent having medium farm size and only 2.22 percent having marginal farm size. It indicates that most of the respondents were in the small farm size category.

Annual income: Annual income of the respondents ranged from TK 10 to TK. 200 thousand with an average of 63.90 and standard deviation of 32.86. On the basis of annual income, the respondents were divided into three categories as low (up to 73), medium (74-137), high (>137). Data revealed that 17.77 percent having medium annual income, 78.88 percent having lower annual income and 3.33 percent of them had high annual income. Findings indicate that all of (>96 percent) the farmers had low to medium family income. Since most of the respondents had low family income.

Farming experience: The observed farming experience score of farmers ranged from 5 to 45. The average farming experience score of farmers were 22.30 with a standard deviation of 8.39. On the basis of farming experience, the respondents were divided into three categories as low (up to 18), medium (19 to 30), high (>30). In this study 54.44 percent farmers were medium level of experience.

Extension contact: The extension media contact scores of the respondents could range from 0 to 20 while the observed scores ranged from 4 to 30. The average was 14.67 with a standard deviation of 6.08. On the basis of extension media exposure scores the respondents were categorized into three groups. On the basis of scores, the respondents were divided into three categories as low 53.33 percent (4 to 12), medium 28.88 percent (13 to 21), high 17.77 percent (>21), From the above discussions shows that the highest proportion (53.33 percent) of the respondents had little extension contact and 28.88 percent having medium level of extension contact.

Organizational participation: Organizational participation scores of the respondents could range from 0 to 40 while the observed scores ranged from 6 to 37. The average was 14.01 and standard deviation was 5.69. On the basis of their organizational participation score, the respondents were divided into three categories as low (up to 16), moderate (17 to 26) and high (>26). From the above discussion, it indicates that 77.77 percent of the farmers had low participation while 17.77 percent had moderate, 4.44 percent had high participation in different organizations.

Cosmopolitaness : Cosmopolitaness scores of the respondents ranged from 2 to 22 with an average of 11.68 and a standard deviation of 3.85 against the possible range of 0 to 40. On the basis of their cosmopolitaness, the farmers were classified into three and categories low (37.77 percent), medium (48.88 percent) and high (13.33 percent).

Agricultural knowledge: Agricultural knowledge score of the respondent farmers ranged from 0 to 40. The mean and standard deviation of agricultural knowledge were 12.49 and 4.32 respectively. On the basis of agricultural knowledge scores, the

respondents were classified into three categories, namely low knowledge (11.11 percent), medium knowledge (55.55percent) and sound knowledge (33.33 percent).

Training needs of farmers in rice cultivation: The training need of the farmers ranged from 6 to 32 against the possible range of 0 to 40. The average was 22.68 with a standard deviation of 4.47. Based on the training needs scores, the farmers were classified into three categories low, medium and high. From the above discussions, it indicates that the highest proportion (45.9 percent) of the growers had medium training needs as compared to 6.6 percent low and 33.33 percent high respectively.

5.2 Relationship between the selected characteristics of the rice growers and their training needs in rice cultivation

Relationship between age and training needs

The findings imply that, there had a strong significant negative relationship between age and their extent of training needs on rice cultivation and followed a negative trend. Age of the farmers was an important factor for their training need. It is indicated that, when farmers age increases gradually training demand of farmers decreases proportionately.

Relationship between education and training needs

The findings indicated that, there had strong significant relationship between years of schooling and their extent of training needs on rice cultivation. Education of the farmers kept an important role for their training need. Some educated farmers showed hatred in training program. They thought they had enough knowledge on cultivation methodology. They felt disgusted to join the training program with illiterate farmers. As a result, they kept away from training program. So education level of the farmers kept an important role for their training need.

Relationship between family size and training needs

The findings indicated that, there had no significant relationship between family size and their extent of training needs on rice cultivation. Family size of the farmers was not an important factor for their training need.

Relationship between farm size and training needs

The findings indicated that, there had no significant relationship between farm size and their extent of training needs on rice cultivation. Farm size of the farmers was not an important factor for their training need.

Relationship between annual gross income and training needs

The findings indicated that, annual gross income of the farmers had no significant relationship with their extent of training needs on rice cultivation.

Relationship between farming experience and training needs

The findings indicated that, there had a strong significant relationship between farming experience and their extent of training needs on rice cultivation and followed a negative trend. This finding indicates that farmers, who had more farming experience, had relatively lower level of training need on rice cultivation. It indicates that experienced farmers showed little interest in training received rather than medium experienced farmers.

Relationship between extension contact and training needs

The findings indicated that there had strong positive significant relationship between extension contact and their extent of training needs on rice cultivation. Extension contact of the farmers kept an important dimension for their training need. Farmers who had regular contact with the extension agent could know the recent innovation and technology very shortly. They made a positive aspect to the other farmers about training. Extension agent motivated and encouraged them for different training program. As a result, they also showed interest for training.

Relationship between organizational participation and training needs

The findings indicated that organizational participation of the farmers had strong significant negative relationship with their extent of training needs on rice cultivation. When farmers involved in different organization they did not get enough time to attend training program. They engaged different social activities and passed their rest of time involving socioeconomic development.

Relationship between cosmopolitanism and training needs

The findings indicated that cosmopolitanism of farmers had negative significant relationship with their extent of training needs on rice cultivation. So it had a negative role on training needs.

Relationship between agricultural knowledge and training needs

The findings indicated that agricultural knowledge of farmers had strong positive significant relationship with their extent of training needs on rice cultivation. If farmers had sound knowledge in agriculture they showed interest in receiving training.

5.3 Conclusions

Conclusions drawn on the basis of the following are presented below:

1. In this study, it is observed that the old farmers were seriously in need of motivation to build up the interest of training on cultivation practices. Because when farmers age increases gradually training demand of farmers decreases proportionately. So it may be concluded that old farmers should be motivated to build up interest in training need.
2. From the study it is observed that higher the level of education, farming experience, organizational participation and cosmopolitaness, lower was the inquisitiveness of farmers receiving higher level of training in rice cultivation. On the other hand, extension contact and agricultural knowledge plays a positive role in this study.
3. So it may be concluded that higher is the education level ,lower will be the training need and training is required among those farmers who have no education or lower level of education. Under this situation relevant workers should work very closely with people to increase their level of formal education.
4. In this study, higher the level of experience of farmers, lower was the interest of receiving training. They thought they had enough knowledge on farming and advanced technology. This phenomenon takes them away from the recent innovation and moving to laggards. So it is concluded that those farmers who have lower experience they should be engaged in training program.
5. From the study it is found that increasing knowledge on agriculture boost up the demand of training. Because knowledge helps to wake up the curiosity of surroundings. Therefore, farmers encourage receiving training in different matters for improving their production.
6. It is found from the study, nearly 33 to 46 percent of the farmers were in need of medium to high level practical training in rice production technology like seed preservation, land preparation, seedling management, intercultural operation etc. It is further understood that there is a scope of increase their frequency of training.

5.4 Recommendations

Bangladesh is a developing country. Here dominated percent of the farmers are poor and have primary level of education only. They have little advanced knowledge in crop production technology especially on rice production. Moreover, Bangladesh has already attained the admirable level of success in food security. For more production it needs to consider the vulnerable factors of that sector. From the conclusion following recommendations has been done:

1. As age is negatively related with training need of the farmers, therefore, the authority should encourage or give priority in middle and old aged farmers.
2. Education showed negative relationship in the study, so that the training authorities should be attention in selecting participants from the farmers who possess the lower level of education.
3. Farmers with lower farm experience have been found to have higher training needs in comparison to those having higher farm experience. Lack of knowledge in different cultivation methods caused farmers to become low in farm experience. It is, therefore, necessary to locate the farmers with low cosmopolitaness and to involve them in training program.
4. Extension contact of the farmers increases the training need. So, The DAE (Dept. of Agricultural Extension) should organize training program for the farmers who have low extension contact with extension agent.
5. Knowledge of the farmers increases the desire of training. So different GO's and NGO's should take initiative to increase farmers knowledge in different way like Farmers Field School (FFS), group discussion, demonstration etc.

5.5 Recommendations for further studies

1. The training need of the farmers in eight areas of rice cultivation has been investigated in this study. There is need for further research to ascertain the farmers' training need in other areas of rice cultivation, such as system of rice intensification (SRI), alternate wetting and drying, storage etc.
2. This investigation has dealt with the training needs of the farmers in rice cultivation. It is also necessary to undertake research for ascertaining the training need of the farmers regarding the cultivation of other crops such a jute, sugarcane, vegetable etc.
3. Finding of the study indicated that the level of training needs of the farmers in rice cultivation was very high. In addition to the characteristics of the farmers, other environmental factors might also be responsible for the very high training need. Research is necessary to have an understanding of such factors.
4. This study was conducted in at Rowail union at three villages under Dhaka district. Findings of this study needs verification by undertaking similar research in other parts of the country.
5. Extension contact has been found to be effective for increasing the knowledge of the farmers about rice cultivation. It is, therefore, necessary to find out methods and procedures for effective use of the different media of extension information.

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APPENDIX-A

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An interview schedule for the study entitled

**TRAINING NEEDS ON RICE PRODUCTION TECHNOLOGIES FOR
THE FARMERS OF DHAMRAI UPAZILA UNDER DHAKA
DISTRICT**

Sample No.:

Name of the respondent:.....

Husband's/Fathers name:.....

Village:.....

Union :.....

Upazila : **Dhamrai**

District: **Dhaka**

1. Age

How old are you?years

2. Educational qualification

(a) I cannot read or write -----

(b) I can sign only -----

(c) I read up to class -----

(d) Others (specify) -----

3. Family size

Total: members in my family

4. Farm size

Sl. No.	Type of land ownership	Area	
		Local unit	Hectare
a.	Own land under own cultivation		
b.	Land taken from others barga		
c.	Land given to others on barga		
d.	Land taken from others on lease		
e.	Homestead area		
	Total		

6 Annual Gross Income (year, 2015)

Please furnish your family members' annual income from different sources

Sl. No.	Sources of income(TK.)		Amount of income(TK.)
1.	Agriculture	Rice Production	
		Others	
2.	Livestock		
3.	Poultry		
4.	Fish Culture		
5.	Business		
6.	Service		
7.	Labour		
	Total		

6. Farming experience Years

7. Extension Contact

Please mention your nature of extension contact:

Sl. no	Extension Personnel	Nature of Extension Contact				
		Regularly 4	Often 3	Occasionally 2	Rarely 1	Not at all 0
		>8 times/ year	6-8 times/ year	3-5 times/year	1-2 times/ year	0 time/ year
i	Sub Assistant Agricultural Officer(SAAO)					
ii	Agricultural Extension Officer(AEO)					
iii	Upazila Agricultural Officer(UAO)					
iv	Local leader					
v	Experienced farmer					

8. Organizational participation

Please mention your Organizational participation with the following sources:

Sl. No	Organization	No participation 0	Ordinary member 1	Executive member 2	President /Secretary 3	Duration (Year)
i.	Farmers Field School Club					
ii.	IPM club					
iii.	Farmers Co-operative society					
iv.	Mosque /Temple Committee					
v.	NGO Society					

vi.	Madrasha Committee					
vii.	School committee					

9. Cosmopolitaness:

Please indicate how frequently you visit the following places with a specific period:

Place of visit	Nature of visit			
	Regularly ≥ 7 times/month	Occasionally 4-6 times/month	Rarely (1) 1-3 times/month	Not at all(0) 0 times/month
i. Visit of market /familiar home outside of your	≥ 7 times/month	4-6 times/month	1-3 times/month	0 times/month
ii. Visit of relatives/friends	≥ 5 times/month	3-4 times/month	1-2 times/month	0 times/month
iii. Visit to upazilla sadar	≥ 5 times/month	3-4 times/month	1-2 times/month	0 times/month
iv. Visit to other upazilla sadar	≥ 5 times/year	3-4 times/year	1-2 times/year	0 times/year
v. Visit to upazilla	≥ 4 times/year	2-3 times/year	Once/year	0 times/year
vi. Visit to upazilla/district	≥ 5 times/year	3-4 times/year	1-2 times/year	0 times/year
vii. Visit to IPM practice demonstration plots	≥ 5 times/year	3-4 times/year	1-2 times/year	0 times/year
viii. Attend to result demonstration plots	≥ 3 times/year	2 times/year	1 times/year	0 times/year
ix. Attend in meeting organized by	≥ 5 times/year	3-4 times/year	1-2 times/year	0 times/year
x. Visit to IPM related workshop	≥ 5 times/year	3-4 times/year	1-2 times/year	0 times/year

10. Agricultural Knowledge

Please furnish answers to the following questions on seed technology

Sl. No	Questions	Score assigned	Score obtained
1.	Mention two high yielding variety (HYV) of Rice	2	
2.	Mention two harmful insects of Rice	2	
3.	Mention two harmful weeds of Rice	2	
4.	Mention two stored grain pests	2	
5.	Name two rice varieties of Boro season	2	
6.	Name two important disease of Rice	2	
7.	Name two rice varieties of Aman season	2	
8.	Mention two critical stage of rice seedling for water	2	
9.	Name two IPM practices on Rice field	2	
10.	Name two vegetables which can grow round the year	2	
11.	Mention two major problems for vegetables cultivation	2	
12.	Mention two qualities of good seeds	2	
13.	Name two summer vegetables	2	
14.	Name two medicinal plants	2	
15.	Name two winter vegetables	2	
16.	Mention the name of two fertilizers in your local Bazer	2	
17.	Mention the name of two insecticides in your local Bazer	2	

18.	Mention two agricultural TV program with channel	2	
19.	Mention two agricultural radio program with channel	2	
20.	Name two agricultural magazines	2	

11. Training needs of farmers in Rice cultivation

Please answer the following question about training on Rice production

Sl. No.	Area of training	No. of training received Y	Duration (Score)	Expected or desired no of training X	Duration (Score)
01	Seed selection				
02	Land preparation				
03	Seed preservation & seedling management				
04	Sowing and transplanting				
05	Intercultural operation				
06	IPM practice & management				
07	HYV of rice				
08	Advanced equipment use				
	Total				

Training need (T.N) = \sum No. of training received (X) - \sum Expected or desired no of training(Y)

$$= \sum X - \sum Y$$

Appendix-B

Correlations matrix for the dependent and independent variables

	Age	Education	Family size	Farm Size	Gross Income	Farm experience	Extension contact	Org. participation	Cosmopolitaness	Agri. knowledge	Training needs of farmers
Age	1										
Education	.033	1									
Family size	.567**	.010	1								
Farm Size	-.011	.075	.107	1							
Annual gross Income	-.085	.034	-.120	-.020	1						
Farming experience	.854**	.089	.460**	-.091	-.066	1					
Extension contact	-.163	-.103	-.066	-.014	.003	-.092	1				
Organizational participation	-.054	.053	-.093	-.091	-.013	-.087	-.049	1			
Cosmopolitaness	.061	.028	-.005	-.104	-.027	.073	-.084	.098	1		
Agricultural knowledge	-.001	.064	.117	.196	.065	-.042	.210*	-.174	.074	1	
Training needs of farmers	-.277**	-.270**	.045	-.121	-.097	-.274**	.288**	-.349**	-.216*	.282**	1

** . Correlation is significant at the 0.01 level NS - Correlation is not significant

* Correlation is significant at the 0.05 level

