TRAINING NEEDS OF FARMERS ON RICE PRODUCTION IN DHAMRAI UPAZILA UNDER DHAKA DISTRICT

BY

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A Thesis

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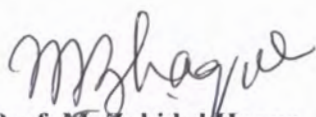in partial fulfillment of the requirements
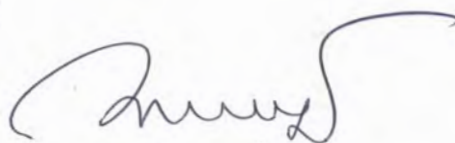
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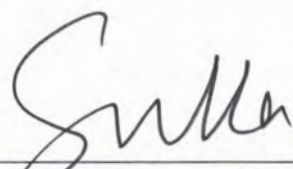
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CERTIFICATE

This is to certify that the thesis entitled *"TRAINING NEEDS OF THE FARMERS ON RICE PRODUCTION IN DHAMRAI UPAZILA UNDER DHAKA DISTRICT"* submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka in partial fulfillment of the requirements for the degree **of MASTER OF SCIENCE in AGRICULTURAL EXTENSION AND INFORMATION SYSTEM**, embodies the result of a piece of bona fide research work carried out by **MD. ASHRAFUL ALAM**, Registration No. **26263/00550** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that such help or source of information as has been availed of during the course of this investigation has been duly acknowledged by him.

Dated: Dcember, 2006
Place: Dhaka, Bangladesh

(Prof. M. Zahidul Haque)
Supervisor

Dedicated to ---
My departed father
Late Asgar Ali Mandol
&
My beloved mother
Mrs. Dell Afroza Banu

ACKNOWLEDGEMENT

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ABSTRACT

The study was conducted at Shailan village in Shombag union under Dhamrai Upazilaof Dhaka district. The objectives were to: (1) describe the socio-demographic characteristics of the farmers,(2) determine the training needs of the farmers on rice production emphasizing five selected aspects namely: seed technology, HYV of rice variety, fertilizer application, pest control measure and irrigation management, (3) explore the relationships between the selected characteristics of the respondents such as age, education, farm size, family size, family type, annual gross income, farming experience, extension contact, organizational participation and cosmopoliteness, knowledge on seed technology, knowledge on improved variety, knowledge on fertilizer application, knowledge on pest and diseases, knowledge on irrigation, training needs, interest in receiving training. In the study group nearly 62% farmers were middle aged (31-52 yrs.). Majority of the farmers (49%) had secondary level of education compared to other categories. About 43% respondents had medium size family (5-6) members. Most of the (64%) rice growers owned medium farm (1.01-3.50 ha). Majority number respondents (54%) had less farming experience. The annual gross income of half of the respondents ranged between Tk.90,010-220,000. Majority of the rice growers (49%) had low extension contact (4-6). A little over 36% rice growers had high organizational participation. In respect of cosmopoliteness, 61% had medium level exposure outside to their localities. In fact the rice growers expressed their training need for seed technology, HYV of rice variety, fertilizer application, plant protection measures and irrigation management. Sixty seven percent (67%) of the study group were highly in need of training on the above mentioned topics. Of the fifteen selected independent variables, age, education, farm experience, organizational participation and knowledge on fertilizer application had significant relationships with their training needs.

CHAPTER I

INTRODUCTION

1.1 Background of the study

Bangladesh is a densely populated (913 per sq. km) country. With her large and rapidly growing population, the demand for food is also increasing proportionately. The country has been facing a chronic food shortage for the last few years.

As far as area and production concerned rice is the most important food crop in Bangladesh. It covered 80 percent of the total area under food crops in 2005 and contributed to 47 percent of the total food crop production (BBS, 2005).

In Bangladesh, due to limited cultivable area, there is little scope of bringing more land under cultivation. As such, the only alternative way to increasing agricultural production is to use certain modern agricultural technologies which include better seed technology, better fertilizer application, better pest control measure and irrigation management . Knowledge and skills of the farmers in agricultural technologies are important factors for increased agricultural production. But, most of the farmers do not possess adequate knowledge about the methods of modern agriculture. Morrill (1968) reported that the farmers who are the backbone of the nation, are mostly illiterate and traditional, they are often skeptical towards new ideas and practices in agriculture. They often become frustrated with new practices in agriculture due to lack of proper understanding of the relevant factors. As a result they blame the innovations and resort to 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 (Bhuiyan, 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 programr leads to its successful execution. In fact the training program should be based on the actual needs of the trainees. But very little research has 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 foregoing discussion leads to assumption that farmers are needed to develop with adequate knowledge and skills through appropriate training program. This in return will help to have increased food production for the vast and fast growing population of Bangladesh. Implementation of such training program calls for an assessment of the needs and problems of the trainees. But in case of farmers, possibly seldom training need assessment has been done. Therefore the present study entitled "Training Needs of Farmers on Rice Production in Dhamrai Upazila under Dhaka District " has been undertaken to answer the following questions:

1. What are the existing socio-demographic characters of the rice growers?
2. Is there any knowledge deficiency among the farmers in different aspects of rice cultivation and consequently need for training?
3. What are those characteristics of the farmers which motivate them for more training in learning rice production technology?

1.3 Specific objectives

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

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

a)   Age

b)   Education

c)   Family size

d)   Family type

e)   Farm size

f)   Annual gross income

g)   Farming experience

h)   Extension contact

i)   Organizational participation

j)   Cosmo politeness

k)   Knowledge on seed technology

l)   Knowledge on improved variety

m)   Knowledge on fertilizer application

n)   Knowledge on pest and diseases   ·

o)   Knowledge on irrigation

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

a)   Seed technology;

b)   HYV of rice;

c)   Fertilizer application

d)   Pest control measures and

e)   Irrigation management.

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

4. To measure interest receiving training on some topics related to 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 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 Shailan village in Shombag union of Dhamrai Upazila.

2. Population for this study was kept confined within the heads of the farm families.

3. Relationships of the training need of the farmers could be examined with the various characteristics of the farmers. However, only nine characteristics were selected for investigation.

4. There are various aspects of the rice cultivation on which training need of the farmers could be study. This study, however, investigated the training need of the farmers in five selected aspects of rice cultivation, namely, seed technology, HYV of rice, fertilizer application, pest control measures, and irrigation management.

The finding of the study will be applicable, particularly at Shailan village in Shombag 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. 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 reliable.

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

The null hypothesis 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, and farm size, family size farming experience, annual income, contact with extension staff, organization participation and cosmopoliteness and their training needs in rice cultivation.

1.7 Definition of related terms

Certain terms used throughout the report are defined below for clarity and understanding.

Training needs in rice cultivation

It refers to one's need for gaining knowledge and skill regarding the different aspects of rice cultivation. Here the training need of the farmers was studied in five aspects, namely, seed technology, HYV of rice, fertilizer application, pest control measures and irrigation management.

Training need in seed technology

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

Training need in HYV of rice

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

Training need in fertilizer application

The term refers to one's need for gaining understanding and skill 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 need in plant protection measure

The refers to one's need for gaining understanding and skill about the different aspects of insect control, namely, name of insect and disease for rice, symptoms of attack, and nature of damage and control measures against each insect and disease pest.

Training need in irrigation

The term refers to one's need for gaining understanding and skill about the artificial application of water on rice fields, namely, advantages of supplementary in irrigation fields, irrigation management etc.

CHAPTER II
REVIEW OF LITERATURE

The present study is mainly concerned with the training need of the farmers in rice cultivation and its relationships with their selected characteristics. Little research work has been done relating to this problem in Bangladesh. Few researches works which available to the researcher, mainly dealt with the training need 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 research studies which dealt with the relationships of certain variables with the adoption of agricultural practices were available to the researcher. These researches, though not directly connected with the training need have been reviewed in this study with the consideration that the adoption of a particular practices 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 directly or indirectly 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 need of individuals. Studies connected with the relationships of the selected variables and the training need of individuals will be reviewed in the second section.

2.1 Review on study relating to Training Needs

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 country extension Agents of Oklahoma felt most urgent training need 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 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 Farmers 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 cultivation in Bhalia union of Mymensingh District revealed that the farmers in Transplanted Aman rice cultivation were in 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 respectively. Singh (1986) reported that the training course for agricultural extension workers should be dynamic and need based. The training course should aim at know-how, say-how, sow-how and do-how faculties. More tress be laid on practical training. The courses should have in built provision of benchmark test and post treatments evaluation tests. Chauhan 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 Rabi season.

Babu and Singh (1986) reported that training of young farmers essentially contributes to human resource 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 soil testing , irrigation , new implements, plant protection measures, mushroom cultivation, poultry, animal husbandry and credit information.

Ail 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 of training as 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 determining 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 had high overall training needs in agricultural subject matters (plant protection measure, fertilizer, seed, HYV of important crops and irrigation) compared to 44 percent having moderate training needs 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 house wives 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 of the female block supervisors FBSs and revealed that 46 percent of the FBSs felt medium necessity of training wile the rest demanded higher extent of training need in seven areas of their job responsibilities included: agricultural extension, motivation, leadership, homestead gardening and nutrition, backyard poultry development, food 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 expressed that 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-fifths (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 review 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 relationships of individuals' characteristics with their adoption and improved practices may throw some light on the relationship between individuals' characteristics and their training need. Such consideration prompted the researcher to review a few of such studies in this section.

2.2.1 Age and Training Need

Hossain (1971), Kashem(1977) found no relationship between the age of the grower and problem confrontation.

Sarker(1983) found that age of the farmers had a significant negative effect on their poultry problem confrontation.

Saha(1983) stated that age of farmers had no relationship with their poultry problem confrontation .

In Rashids(1975) study it was also found that there was no relationship between age has a negative effect on the problem confrontation.

Saha (1983) stated that age of farmers had no relationship with their poultry problem confrontation.

In Rashids (1975) study it was also found that there was no relationship between age of the farmers and their agricultural problem.

Singh and Gill (1985) reported that age of farmers had significant effect in fulfillment of training need in knowledge of farmers.

Ali and Anwar(1987) reported that age of farmers had significant relationship with cattle problem confrontation.

Suxena et al. (1990) found in their study that age of the respondents had no relationship with adoption of wheat technology.

Hossain (1991) pointed out that age of the farmers had a positive relationship with adoption of improved wheat practices.

Hossain and Crouch (1992) reported that age of farmers had a positive relationship with the adoption of improved farm practices.

Rahman (1993) indicated that there was no relationship between age of the farmers and adoption of improved farm practices.

Haque (1993) reported that age of the farmers had a negative relationship with their adoption of BR-14 during Boro season.

Mutaleb (1995) in his study that age of the farmers had no relationship with their adoption of improved potato technologies.

Findings of studies presented above indicate the relationship between age and adoption of improved practices is not definitely established. Some studies negative relationship, some positive relationship and some had no relationship between age and adoption of improved farm practices. Considering that the training need of the farmers might be negatively related to the adoption of improved farm practices, one might also expect no definite relationship between the age of farmers and their training need. 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 shown the importance of education on the behaviour of farmers through improved agricultural knowledge which ultimately increased the production of crop per unit

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

Shamsuzzoha (1969) undertook a study on cotton growers and found a significant relationship between education level and degree of adoption of demonstrated practices. He found that the farmers with high school education had significantly higher degree of adoption of demonstrated practices that the grades school and college educated farmers.

Krishna (1969) in his study in Karimnagar found that adoption of hybrid Maize by the farmers had no significant relationship with education.

Hossain (1971) in his study found that there was no relationship of the farmers with their adoption of improved practices.

Mannan (1972) reported that on the adoption of IR-20 in Comilla Kotwali Upazila had significant relationship with education of the farmers IR-20.

Sobhan (1975) in his study found that education of the farmers had no relationship with their adoption of winter vegetables cultivation.

Halim (1982) in his study on schooling Extension and Agricultural production obtained that increased per acre production of rice, jute and net income of the farm, but this positive trend between level of education and increased production tended to fall in those farmers where the operator received more than secondary level of education. He found significant regression between level of formal schooling of the farm operator and per acre production of jute and rice which also resulted in significant increase in net farm income.

Singh and Gill (1985) reported that education had a significant effect in fulfillment of need in knowledge of farmers.

Rahman (1986) indicated found that education had significant and positive relationship with the adoption of improved farm practices.

Ali et al. (1986) found that education had highly significant and positive relation with adoption of improved sugarcane production technologies.

Mustafi et al. (1987) reported that education did not have any significant effect on the adoption of Modern varieties of rice.

Saxena et al. (1990) found that education of the farmers had a positive relationship with adoption of rainfed wheat technology.

Hossain (1991) indicated that education of the farmers had a positive relationship with adoption of rainfed wheat technology

Hossain (1991) indicated that education of the farmers had positive relationship with adoption in improved wheat practices.

Sainturi (1992) reported that education of the farmers had a positive relationship with their adoption of rubber technology.

Ali (1993) identified that adoption of STP technology of sugarcane had positive relationship with the level of education of the farmers.

Mutableb (1995) reported that education of the farmers had positive relationships with their adoption of improved potato technology.

Most of the studies reviewed above indicate a positive relationship between education of the farmers and adoption of improved farm practices. Training need of the farmers is likely to have negative relationship between 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. However, Wilson (1963) opined that farmers with smaller families spent more time with mass media than those with larger families. Further he added that those who read and listened to the radio had smaller families and were older than the readers and non- listeners.

Khan (1972) found significant relationship between the family size of respondents and participation in Radio-Forum.

Rahman (1974) in a study on attitudes of farmers towards high yielding variety of rice and organizational effectiveness of Accelerated Rice production program (ARPP) in Bangladesh found that size of family of both ARPP scheme farmers and non scheme farmers had no significant relationship with their attitude toward HYV rice. However, analysis of data indicated negative trend in both the cases.

Ali at al. (1986) in their study found that adoption of improved sugarcane production techniques significantly increased with increased family size.

Mustafi et al. (1987) in their study found that number of family members had no significant effect on adoption of Modern varieties of rice in Bangladesh.

Hossain(1991) said that family size of the respondents had no relationship with their adoption of improved wheat practices.

Okoro and obibuaka (1992) found that family size of the farmers had positive relationship with their adoption of recommended management practices.

Haque (1993) reported that family size of the farmers had negative relationship with their adoption of improved practices of sugarcane.

Mutaleb (1995) revealed in his study that adoption of the improved potato technologies had positive relationship with family size of the respondents.

Findings of the studies presented above indicate that members of smaller families had more exposure to mass media and less pressure of work. As a result such families may adopt family size of the farmers 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.

Hossain (1971) reported about the positive relationship between farm size and adoption of improved farm practices.

Manna's (1972) study of adoption of IR-20 in two union of Comilla Kotwali Upazila did not indicate any relationship of farm size with the adoption of IR-20.

Sobhans (1975) study revealed that there was no significant relationship between farm size of the farmers and their adoption of winter vegetable cultivation.

Singh and Gill (1985) in their study found that size of holdings had significant relationship with Training Need Fulfillment of the farmers.

Rahman (1986) reported that size of farm had significant and positive relationship with adoption of improved practices in Transplanted aman rice.

Ali and Anwar (1987) reported that a study on cattle problem confrontation of the farmers in a union of Mymenshigh did not indicate any relationship of farm size with cattle problem confrontation.

Mustafi *et al.* (1987) in their study found that size of farm had significant and positive relationship with the adoption of Modern varieties of rice of Bangladesh.

Bavalatti and Sundaraswamy (1990) revealed in their study that farm size of the farmers had positive relationship with their adoption of wheat technology.

Hossain (1991) found that adoption of improved wheat practices had no relationship with farm size of the farmers.

Sainturi(1992) reported that farm size of the farmers had positive relationship with their adoption of rubber technology.

Basher (1993) revealed that adoption of sugarcane intercropping had no relationship with farmers' farm size.

Mutaleb (1995) showed that farm size of farmers had a positive relationship with adoption of improved potato technologies.

Many studies reviewed above indicate a positive relationship between farm size and adoption of improved farm practices. One may, therefore, expect a negative relationship between the training need of the farmers and their farm size.

2.2.5 Income and Training Need

Many studies have shown a positive relationship between income and adoption of improved agricultural practices.

Beal and Sibley (1967) in their combined study on the adoption of agricultural technology be the Indians of Guatemala did not find any significant relationship between value of principal crop score and the farm practices adoption acore .

Hossain (1971) in his study found a non significant relationship between income of the farmer and their adoption of improved farm practices.

Khan (1972) found that there was a positive relationship between income and participation in Radio-forum.

Rahman (1974) reported that income of the farmer was positively related with adoption of improved farm practices in transplanted aman rice cultivation in two village of Mymensingh district.

Halim (1982) from his study showed that net farm income of the farmers correlated with educational level of the farm operators and the per acre production of rice and jute.

Ali and Anwar (1987) reported that a study was undertaken to determine the extent of cattle problems faced by the farmers in four selected aspect of improved cattle management and to have an understanding of the relationships with the farmers' income. They found that income was positively related with cattle problem confrontation.

Hossain (1990) found that income of the farmers had no relationship with their adoption of improved wheat technology.

Bhatia and Singh (1991) revealed that income of the farmers had positive relationship with their adoption level of technology.

Rahman (1993) reported that adoption of improved farm practices had no relationship with the annual income of the farmers.

Mutaleb (1995) showed that annual income of the farmers had a positive relationship with the adoption of improved potato technology.

2.2.6 Extension Contact and Training Need

Sexena et al. (1990) found in their study that adoption of rainfed wheat technology was positively related with farmers extension contact.

Hossain (1991) showed that extension contact had possibility related with the adoption of improved wheat practices of the farmers.

Juliana et al. (1991) revealed that extension contact of the farmers positively related with the adoption of integrated pest management practices.

Basher (1993) reported that extension contact of the farmers had positively related with the adoption of sugarcane intercropping.

Rahman (1993) identified that extension contact of the farmers had positively related with adoption of improved farm practices.

Mutlab (1995) showed that extension contact of the farmers had positively related with their adoption of improved potato technology.

Findings of the studies indicate positive relationship of extension contact with adoption of agricultural innovations. 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.

2.2.7 Organizational Participation and Training Need

Hossain (1991) revealed that organizational participation of the farmers had positively related with the adoption of improved farm practices.

Basher (1993) found that organizational participation of the farmers had positively related with the adoption of sugarcane inter cropping.

Islam (1993) reported that organizational participation of the farmers had positively related with their adoption of improved potato practices.

Haque (1993) showed that organizational participation of the farmers had negative relationship with adoption of BR-14 during Boro season.

Mutaleb (1995) found that organizational participation of the farmers had no relationship with their adoption of improved potato technology.

Many of the studies revealed that organizational participation had a positive effect with the extent of adoption of improved practices. Organizational participation helps and individual to go into greater depth establishing contact with other people and change agents. It also broadens his knowledge and understanding through discussion meeting and exchange of ideas in various situations. Hence organizational participation has a salutary effect on favorable disposing individuals towards innovations.

2.2.8 Cosmopoliteness and Training Need

Haque (1993) found that cosmopoliteness of the farmers had positive relationship with adoption of BR-14 during Boro-season.

Islam (1994) revealed that cosmopolitness of the farmers had positive relationship with the adoption of aquaculture technology.

Rahman (1993) reported that cosmopoliteness of the farmers had positive relationship with the adoption of improved farm practice. Farmers with higher cosmopoliteness were likely to have better contact with change agents. Because of this contact. farmers become aware of different innovations and tend to develop attitudes to learn new methods and procedures.

INDEPENDENT VARIABLES	DEPENDENT VARIABLE

Selected characteristics of the farmers:

- Age
- Education
- Family size
- Family type
- Farm size
- Annual gross income
- Farming experience
- Extension contact
- Organizational participation
- Cosmopoliteness
- Knowledge on seed technology
- Knowledge on improved variety
- Knowledge on fertilizer application
- Knowledge on pest and diseases
- Knowledge on irrigation

Selected dependent variable:

Training needs of farmers in rice cultivation

Figure 2.1 The conceptual model of the study

CHAPTER III
METHODOLOGY

Methods and procedures used for collection and analysis of data are very important in any scientific investigation that's require a very careful consideration on the part of the researcher. Methodology should be such as would enable the researcher to collect valid and reliable data and to analyze the same properly to arrive at correct decision. Methods and procedures used in this piece of research will be discussed in this chapter.

3.1 Locale of the study

This study was conducted at Shailan village in Shombag union in Dhamrai Upazila of Dhaka District. This union was selected as the venue for collecting information. Dhamrai Upazila is not so far from Bangladesh agricultural Research Institute (BARI) Bangladesh Rice Research Institute (BRRI) and Central Extension Resources Development Institute (CERDI). For this reason the farmers of this area well exposed about various agricultural development and latest technologies. Now it is imperative 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.

3.2 Sampling design

One village was selected from selected unions. List of the farmers of that village were prepared. Population of farmers in the study area was about 500. From the entire population, 100 farmers were selected through systematic random sampling.

A reserve list of respondents was also prepared so that the farmers of the list could be used of for interviewing if the farmers included in the original sample

were not available during data collection period. Care was taken to include at least one farmer from each village under reserve list (Table 1).

Table 3.1: Population and sample of farmers in Shailan village of Shombag Union under Dhamrai Upazila

Union	Village	Population of farmers	No. of farmers included in sample	No. of farmers included in reserve list
Shombag	Shailan	500	100	10
Total		500	100	10

3.3 Selection of the study variables

In a social research, selection and measurement of variables is a significant task. Ezekiel 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 dependent variable and the other is the independent variable. An independent variable is that factor manipulated by the experiment in his attempt to 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 (Townsend, 1953).
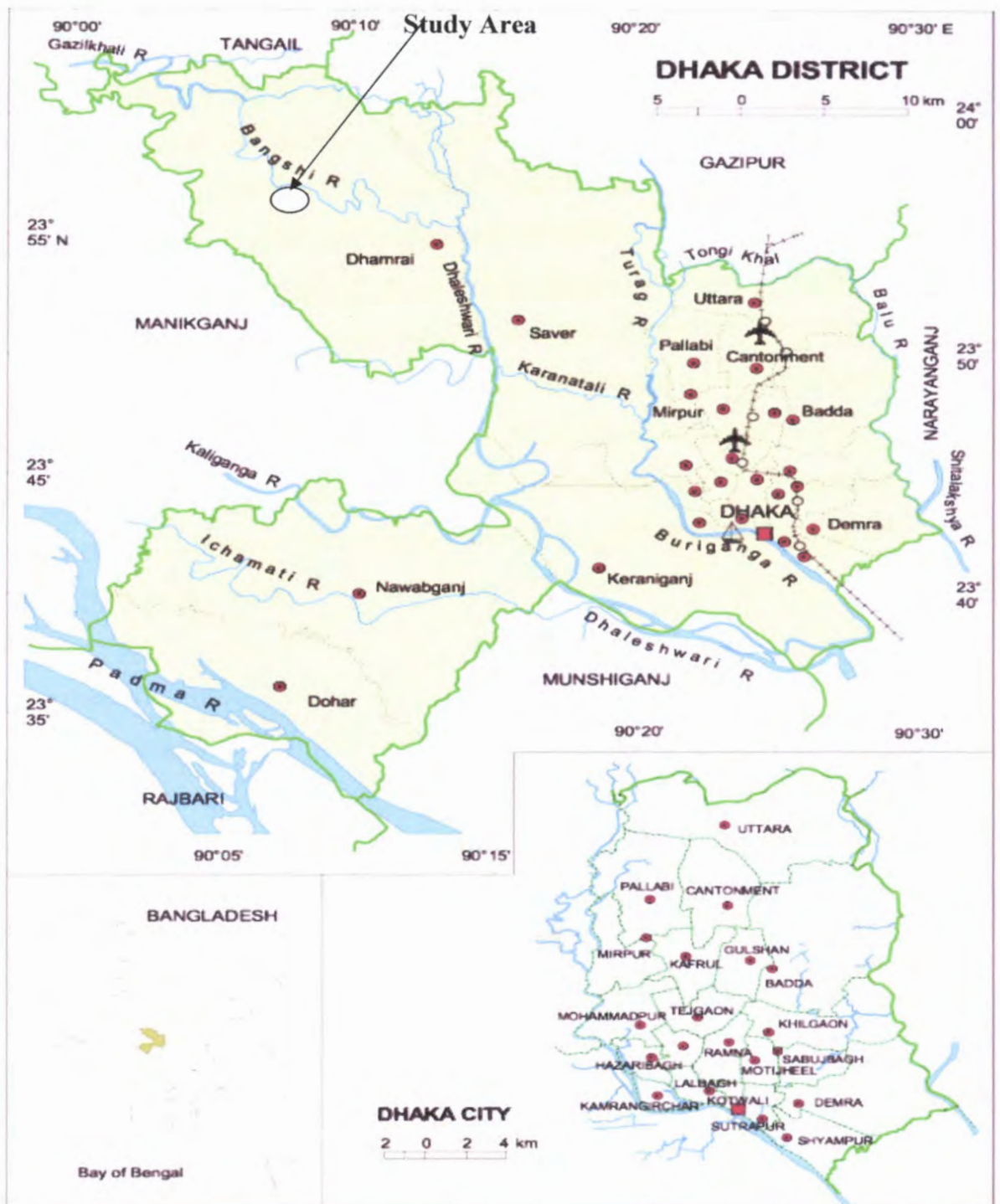
Figure 3.1: A map of Dhaka district showing the study area.

3.3 Selection of the study variables

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3.4 Instrumentation

Keeping the objectives of the study in mind, a semi-structures interview schedule was carefully designed to collect relevant data. The schedule contained both open-ended and closes-ended of questions. Simple and direct questions were included in the instrument. In order to determine the content validity of instrument, the researcher sought the considered opinions of advisory committee as well as other experts in the relevant field and the opinions/ comments received were incorporated accordingly. The research instrument included the following major information: (a) Respondent's nine characteristics, namely, age, education, farm size, family size, annual income, farming, experience, contact with extension staff, organizational precipitation and cosmopoliteness and (b) Respondent's training need in five selected aspects on rice cultivation, such as training need in seed technology, HYV of rice, fertilizer application, plant protection measure and irrigation management.

3.5 Pilot testing

Weirsma (1985) stated that a pilot study is a preliminary use of the instrument with a small number of individuals. Borg and Gall (1979) also indicated that researcher should do pilot test of the schedule with sample of individuals similar to the group one wishes to use in the research before using the interview schedule in the actual study. Fifteen instruments were given to the farmers similar to the sample population of the study for pilot testing. The pilot testing facilitates the researcher to examine the suitability of different questions and statement of the instrument. A part from elimination of faulty questions and statements, other necessary correction, alterations and adjustments were, then, made in the schedule on the basis of pilot test. The schedule was, then, copied in its final form.

3.6 Collection of data

Required data were collected from the randomly selected farmers at Shailan village of Shombag union under Dhamrai Upazila of Dhaka district by the investigator himself using the interview schedule.

Before going to the respondents for interview, they were duly informed earlier with the help to SAAO so that they might be available at their respective residence during the scheduled time. In order to remove any suspicion of the farmers towards the interview, all possible efforts were made to explain the purpose of the interview to the respondents.

At the time of interview, the respondents showed a little hesitancy in the beginning. This was mainly due to the reason that the interview schedule contained some questions on their personal and family affairs. However, when the purpose of the study was explained, the respondents became readily agreeable in furnishing responses to different questions in the schedule. Whenever any respondent faced difficulty in understanding particular question, the researcher took care to explain the same clearly.

No serious problem was faced the researcher in collecting data. Excellent co-operation was received from all the respondents at the time of interview. Four

farmers in the original sample were not available during the time of interview. Hence it was necessary to use the farmers from the reserve list for interview; Collection of data took thirty days from 1st July to 31st July, 2006.

Data obtained from the respondents were compiled, tabulated and analyzed in accordance with the objectives of the study. Qualitative data were converted to quantitative form by means of suitable scoring as required.

3.7 Measurement of variables

Different types of factors generally influence the farmers and their extent of needs in receiving training in agriculture. But it is hardly possible to deal with all the factors in a single study. It is therefore, necessary to limit the number of variables to make the research project a manageable one.

Consequently fifteen characteristics of the farmers were selected as independent variables. They were: age, education, farm size, family size, family type, annual gross income, farming experience, extension contact, organizational participation, cosmopoliteness, knowledge on seed technology, knowledge on improved variety, knowledge on fertilizer application, knowledge on pest and diseases, knowledge on irrigation, training needs, interest in receiving training. On the other hand training need of the farmers was the dependent variable.

3.7.1 Measurement of independent variables

In order to conduct the study in accordance with the objectives, was necessary to measure the selected independent variables. The procedures followed in measuring the variables are presented below

3.7.1.1 Age

Age of an individual referred to a period of time form his birth to the day of interview. The age was measured in terms of years on the basis of response of the farmers.

3.7.1.2 Education

Education was measured in terms of grades of formal education passed by an individual. If any individual received education out side the school, his education was also expressed in terms of grade of formal education by considering his knowledge. When the respondent was able to read but not write, he was given a score of one.

3.7.1.3 Farm size

It refered to indicate the cultivated area either owned by a farmer or cultivated on borga system, the area being estimated in terms of full benefit to the farmer. The full area of land taken on lease by a farmer was taken into consideration for computing his effective farm size. This was done in consideration that the farmer gets full benefit from such land. The farm size was measured in items of acres by using the following formula:

$$L_t = A_1 + 1/2 (A_2 + A_3) + A_4$$

L_t = Total land possessed.

A_1 = Own land under own cultivation.

A_2 = Land taken from others on borga.

A_3 = Own land given to others on borga.

A_4 = land taken from others on lease.

3.7.1.4 Family size

It included all members of a household like husband, wife, children and the members who were living together in the family. One score was assigned to each member of family and two for two members and so on and so forth.

3.7.1.5 Annual gross income

A respondent's income was measured in Taka on the basis of his total yearly earnings form agriculture and other sources during the 2006. The method of ascertaining income in agriculture involved two phases. Firstly, the yields of all the crops in the preceding year we noted. Secondly, all the yields were converted into cash income according to the prevalent rate. Earnings of the respondent and other members of his family from other sources (service, business, etc.) were also determined. Annual earnings from agriculture and other sources were added together to obtain the total income of respondent. Income was expressed in Taka.

3.7.1.6 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 monthly, bi-monthly and tri-monthly. Weight assigned to these responses was 3, 2 and 1 respectively. A respondent's extension contact score was obtained by adding the weights for his responses to all the three extension staff listed in the questionnaire.

3.7.1.7 Organizational participation

Organizational participation of a respondent was measured by the nature and duration of participation in different organization. The scale used for computing organizational participation is given below:

Organizational participation score $= \sum PXD$

Where, P = Participation score

D = Duration score

Participation score 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 of score was assigned in the following way:

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

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

3.7.1.8 Cosmopoliteness

Cosmopoliteness is defined as a person's orientation outside his social system. A social system has been defined as any social structure composed of social interactions and the cultural factors in which the members interact more with members than with non-members whim participating in the organization as an ongoing concern(Loomis and Beagles 1957). Cosmopoliteness of the respondent was measured on the basis of their visits to three different places. Cosmopoliteness score was computed by using the scale.

3.7.1.9 Knowledge on seed technology

For measuring knowledge about seed technology each respondent was asked eight questions. Those question covered different aspects of seed technology i.e. seed quality, germination percentage, seed rate, seed variety, seed treatment etc. knowledge on seed technology was measured on the basis of respondents acquiring marks. So, it was computed by using the scale. However for correct response to all questions a respondent could secure a total score of 15, which for wrong responses to all question one could score zero (0).

3.7.1.10 Knowledge on Improved rice variety

To measure knowledge on improved rice variety three evaluative questions were constructed. It was computed by assigned score. The range of score was zero to twenty four. According to obtaining score the respondents were classified into three categories poor (up to 10), medium (11-14) and high (15 and above).

3.7.1.11 Knowledge on fertilizer application

In measuring the knowledge on fertilizer application two questions were constructed through two tables. Possible score ranged from 0-74. On the basis of obtaining score the respondents were divided into three categories i.e. poor (up to 35), medium (36-50) and high (51 and above).

3.7.1.12 Knowledge on pest and diseases

It was also computed by using the scale. The range of that scale was zero (0) to twenty four. The respondents were given score on the basis of responding questions. The respondents were classified into three categories poor (up to 11), medium (12-17) and high (16 and above).

3.7.1.13 Knowledge on irrigation

For measuring knowledge about irrigation each respondent was asked seven questions. It was computed by using the scale. According to obtaining score the respondents were classified into three categories i.e. low (up to 10), medium (11-16) and high (16 and above).

3.7.2 Measurement of dependent variable

Training need of the farmers in rice cultivation constituted the dependent variable of this study. Training need in five selected aspects of rice cultivation, namely, seed technology, HYV of rice, fertilizer application, plant protection measure and irrigation management were investigated by the researcher. Hence a scale was prepared to ascertain the knowledge of the respondents in each of the five selected aspects and shown below.

Name of Training Area	Ranged Score
Seed technology	0-20
HYV of rice	0-24
Fertilizer application	0-74
Plant protection measure	0-24
Irrigation Management	0-21
Overall knowledge score	0-163

3.8 Data analysis

After collection of required, all the information, the data were transferred to coding sheet with numerical scores given to each question. Data analysis was done using a micro computer with an SPSS/PC+ package program. Non-parametric measuring scales such as nominal, ordinal; interval and ratio were also used for transforming data at different levels of measurement. Simple statistics like frequency counts, percentages, average and standard deviation were used in the interpretation of the descriptive data.

In order to find out the relationship between the selected socio-demographic characteristics of the respondents and their training need in five selected aspect on rice cultivation, a simple correlation analysis was done. Throughout the study five percent (0.05) level of probability was used as the basis for rejecting null hypotheses.

CHAPTER IV
RESULTS AND DISCUSSION

This chapter is divided into three sections, namely 4.1 Scio-demographic characteristics of the rice growing farmers; 4.2 Training needs of the rice growing farmers in each of the five selected aspects of rice cultivation as well as an overall training need of the farmers in the same and 4.3 Relationships between selected characteristics of the rice growing farmers and their training need in selected five aspects of rice cultivation.

4.1 Socio-demographic characteristics of the rice growing farmers

It was assumed that the training need of the rice growing farmers in rice cultivation will be inversely proportional to their knowledge in that regard. Knowledge of individuals is likely to be influenced by their various characteristics. Logically, the training need of the farmers will also be influenced by their characteristics. The researcher investigated the relationships of the training need of the farmers in rice cultivation with their fifteen selected characteristics. They were: age, education, farm size, family size, family type, annual gross income, farming experience, extension contact, organizational participation and cosmopoliteness, knowledge on seed technology, knowledge on improved variety, knowledge on fertilizer application, knowledge on pest and diseases, knowledge on irrigation, training needs, interest in receiving training. These characteristics of the farmers are described below:

4.1.1 Age

Age scores of the farmers ranged from 16 to 75 having an average of 41.02 with a standard deviation 11.21. On the basis of the age scores of the farmers, they were classified into three categories: "young" (16-30), "middle aged" (31-

Table 4.1 Farmers' personal characteristics profile

Sl. No.	Characteristics	Measure-ment	Possible range	Observed range	Categories	Number (N = 100)	Mean	Standard deviation
1	Age	Actual years	Unknown	16-75	Young (16-30) Middle aged (31-52) Old (53 and above)	21 62 17	41.02	11.21
2.	Education	Years of schooling	Unknown	0-16	Illiterate (0-0.5) Primary level (1-5) Secondary level (6-10) Upper secondary (above 10)	4 19 49 28	8.45	3.82
3.	Family size	Number of Members	Unknown	3-15	Small (2-4) Medium (5-6) Large (7 and above)	29 43 28	5.94	2.32
4.	Family type	Number of family unit residing together	1-3	1-3	Nuclear (1) Joint (2) Extended (3)	65 34 1	1.36	.50
5.	Farm size	Hectare	Unknown	0.30-6.00	Marginal (up to .50) Small (.51-1.00) Medium (1.01-3.50) Large (3.51 and above)	4 7 64 25	2.72	1.27
6.	Annual gross income	In Tk.1000	Unknown	36-490	Low (36.00-90.00) Medium (90.01-220.00) High (220.01 and above)	20 50 30	181.59	90.81
7.	Farming experience	Years of experience	Unknown	5-47	Less (5-19) Medium (20-34) High (35 and above)	54 38 8	20.26	8.78
8.	Extension contact	Scaling	0-9	0-9	Low (0-3) Medium (4-6) High (7 and above)	17 49 34	5.51	2.10
9.	Organizational participation	Position with duration	Unknown	0-18	Low (0-6) Medium (7-13) High (14 and above)	30 34 36	10.67	4.81
10.	Cosmopoliteness	Scaling	0-9	2-9	Low (up to 4) Medium (5-7) High (8 and above)	15 61 24	6.23	1.60
11.	Knowledge on seed technology	Scaling	0-15	4-13	Poor (up to 7) Medium (8-10) High (11 and above)	40 46 14	8.03	2.16
12.	Knowledge on improved rice variety	Scaling	0-24	7-18	Poor (up to 10) Medium (11-14) High (15 and above)	15 48 37	13.51	2.62
13.	Knowledge on fertilizer application	Scaling	0-74	16-64	Poor (up to 35) Medium (36-50) High (51 and above)	21 68 11	42.90	7.70
14.	Knowledge on pest & diseases	Scaling	0-24	4-24	Poor (up to 11) Medium (12-17) High (18 and above)	49 43 8	11.83	4.26
15.	Knowledge on irrigation	Scaling	0-21	4-20	Poor (up to 10) Medium (11-15) High (16 and above)	25 56 19	12.86	3.41
16.	Training needs	Scaling	0-24	5-21	Low (up to 10) Medium (11-16) High (17 and above)	11 22 67	16.51	3.90
17.	Interest in receiving training relating to rice production	Scaling	0-32	6-21	Low (up to 10) Medium (11-15) High (16 and above)	24 29 47	14.44	3.90

33

52) and "old" (53 and above). The highest proportion (62 percent) of the rice growers fell into "middle aged" category while 21 percent of them fell into "young" category and only 17 percent fell into "old" category. The distribution of the rice growers according to their age is shown in Table 4.2.

Table 4.2. Distribution of the farmers according to their age

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Young (16-30)	21	21		
Middle aged (31-52)	62	62	41.02	11.21
Old (53 and above)	17	17		

The findings indicate that a large proportion (62%) of the farmers were middle aged compared to 21% and 17% being in the young and old category respectively.

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4.1.2 Education

The education scores of the farmers ranged from 0 to 16 having an average of 8.45 and the standard deviation was 3.82. On the basis of their educational scores, the rice growers were classified into four categories, namely "illiterate/can sign only" (0-0.5), "primary" (1-5), "secondary" (6-10) and "upper secondary" (11 and above). The distribution of the farmers according to their education is shown in Table 4.3.

Table 4.3. Distribution of the farmers according to their education

Categories	Farmers (N=100)		Mean	Standard Deviation
	Number	Percent		
Illiterate/can sign only(0-0.5)	4	4		
Primary level(1-5)	19	19		
Secondary level(6-10)	49	49	8.45	3.82
Upper secondary level (above 10)	28	28		

The majority (49 percent) of the rice growers had primary level of education compared to 4, 19 and 28 percent illiterate, secondary and upper secondary level of education respectively.

4.1.3 Family size

The family size scores of the rice growers ranged from 3 to 15. The average was 5.94 with a standard deviation of 2.32. On the basis of their family size scores, the farmers were classified into the following three categories: "small" (2-4), "medium" (5-6) and "large" (7 and above). Table 4.4 contains the distribution of the rice growers according to their family size.

Table 4.4. Distribution of farmers according to their family size

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Small (2-4)	29	29		
Medium (5-6)	43	43	5.94	2.32
Large (7 and above)	28	28		

The findings revealed that 43 percent of the rice growers had "medium" family compared to more different than 28 percent of them having "large" family. The proportion of "small" family was 29 percent.

4.1.4 Family type

The family size scores of the rice growers ranged from 1 to 3. The average was 1.36 with a standard deviation of 0.50. On the basis of their family type scores, the farmers were classified into the following three categories: "nuclear" (1), "joint" (2) and "extended" (3). Table 4.5 contains the distribution of the rice growers according to their family type.

Table 4.5. Distribution of farmers according to their family size

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Nuclear (1)	65	65		
Joint (2)	34	.34	1.36	0.50
Extended (3)	1	1		

The findings revealed that 65 percent of the rice growers had "nuclear" family compared to more different than 1 percent of them having "extended" family. The proportion of "joint" family was 34 percent only.

4.1.5 Farm size

The farm size of the respondents varied from 0.30 to 6.00. The average farm size was 2.72 hectares with a standard deviation of 1.27. The respondents were classified into the following four categories based on their farm size: "marginal" (up to 0.5), "small" (0.51 – 1.00), and "medium" (1.01 -3.50) and large (3.51 and above). The distribution of the farmers according to their farm size is shown in Table 4.6.

Table 4.6. Distribution of the farmers according to their farm size

Categories	Farmers (N =100)		Mean	Standard Deviation
	Number	Percent		
Marginal (up to 0.5)	4	4		
Small (0.51-1.00)	7	7	2.72	1.27
Medium (1.01-3.50)	64	64		
Large(3.51 and above)	25	25		

It was found that 64 percent of the farmers possessed medium farms compared to 4, 7 and 25 percent having marginal, small and large farms respectively.

3.1.6 Annual gross income

The observed annual gross income of the respondents ranged from 36-490 having the average of 181.59 and standard deviation was 90.81. Based on their income scores, the farmers were classified into three categories: "low" (up to 90.00), "medium" (90.01-220.00) and "high" (220.01 and above). The distribution of the rice growers according to their annual family income is shown in Table 4.7.

Table 4.7. Distribution of the farmers according to their annual gross income

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Low (up to 90.00)	20	20		
Medium (90.01-220.00)	50	50	181.59	90.81
High (220.01 and above)	30	30		

From Table 4.7, it was observed that the highest portion (50%) of the respondents had medium income while 20 percent respondents had low income and 30 percent had high income.

4.1.7 Farming experience

Farming experience scores of the respondents ranged from 5-47 with an average of 20.26 and a standard deviation of 8.78. Based on their farming experience scores, the respondents were classified into three groups: "less" (up to 19), "medium" (20-34), and "high" (35 and above). The distribution of the farmers is shown according to their classified groups in table 4.8.

Table 4.8. Distribution of the farmers according to their farming experience

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Less (up to 19)	54	54		
Medium (20-34)	38	38	20.26	8.78
High (35 and above)	8	8		

The majority (54 percent) of the farmers had less farming experience while 38 percent had medium farming experience and only 8 percent of the respondents had low farming experience.

4.1.8 Extension contact

The extension contact scores of the respondents ranged from 0-9 against the possible range of 0 to 9 with an average of 5.51 and a standard deviation of 2.10. Based on the observed extension contact scores, the respondents were classified into three categories: "low" (up to 3), "medium" (4-6) and "high" (7 and above). The distribution of the respondents according to their extension contact scores is shown in Table 4.9.

Table 4.9. Distribution of the farmers according to their extension contact

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Low (up to 3)	17	17		
Medium(4-6)	49	49	5.51	2.10
High (7 and above)	34	34		

Data presented in Table 4.9 show that the highest proportion (49 percent) of the rice growers belonged to medium extension contact as compared to 17 and 34 percent having low and high extension contact respectively.

4.1.9 Organizational participation

The organizational participation scores of the respondents ranged from 0 to 18. The average was 10.67 and the standard deviation was 4.81. Based on their organizational participation scores, the respondents were classified into three

categories: "low" (up to 6), "medium" (7-13) and "high" (14 and above). The distribution of the respondents according to their innovativeness is shown in Table 4.10.

Table 4.10. Distribution of the farmers according to their organizational participation

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Low (up to 6)	30	30		
Medium (7-13)	34	34	10.67	4.81
High (14 and above)	36	36		

Data contained in table. 4.10 indicate that the highest proportion (36 percent) of the rice growers had high organizational participation as compared to 30 and 34 percent having low and medium organizational participation respectively.

4.1.10 Cosmopoliteness

Cosmopoliteness scores of the respondents ranged from 2 to 9 with an average of 6.23 and a standard deviation of 1.60 against the possible range of 0 to 9. On the basis of their cosmopoliteness scores, the farmers were classified into three categories: "low" (up to 4), medium" (5-7) and "high" (8 and above). The distribution of the rice growers according to their cosmopoliteness is shown in Table 4.11.

Table 4.11. Distribution of the farmers according to their cosmopoliteness

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Low (up to 4)	15	15		
Medium (5-7)	61	61	6.23	1.60
High (8 and above)	24	24		

The majority (61 percent) of the farmers had medium cosmopoliteness compared to 15 and 24 percent having low and high cosmopoliteness respectively. Thus, most (61 percent) of the farmers had medium outward exposure in terms of cosmopoliteness.

4.1.11 Knowledge on seed technology

The computed knowledge on seed technology scores of the respondents ranged from 4 to 13 with an average of 8.03 and a standard deviation of 2.16 against the possible range of 0 to 15. On the basis of their knowledge on seed technology scores, the farmers were classified into three categories: "poor" (up to 7), "medium" (8-10) and "high" (11 and above). The distribution of the rice growers according to their knowledge on seed technology scores is shown in Table 4.12.

Table 4.12. Distribution of the farmers according to their knowledge on seed technology scores

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Poor (up to 6)	40	40		
Medium (7-10)	46	46	8.03	2.16
High (11and above)	14	14		

The majority (63 percent) of the farmers had medium knowledge on seed technology, while 23 and 14 percent of them had poor and high knowledge on seed technology.

4.1.12 Knowledge on improved rice variety

Knowledge on improved rice variety scores of the respondents ranged from 7 to 18 against the possible range of 0 to 24. The average and standard deviation were 13.51 and 2.62 respectively. Based on the observed knowledge on improved rice variety scores, the farmers were classified into the following three categories: "poor" (up to 10), "medium" (11 to 14) and "high" (15 and above). The distribution of the rice growers according to their knowledge on improved rice variety is shown in Table 4.13.

Table 4.13. Distribution of the farmers according to their knowledge on improved rice variety

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Low (up to 10)	15	15		
Medium (11-14)	48	48	13.51	2.62
High (15 and above)	37	37		

The highest proportion (48 percent) of the farmers had medium knowledge on improved rice variety compared to 15 percent having low knowledge and 25 percent having high knowledge on improved rice variety.

4.1.13 Knowledge on fertilizer application

Knowledge on fertilizer application scores of the respondents ranged from 16 to 64 against the possible range of 0 to 74. The average and standard deviation were 42.90 and 7.70 respectively. Based on the observed knowledge on fertilizer application scores, the farmers were classified into the following three categories: "poor" (up to 35), "medium" (35 to 50) and "high" (51 and above). The distribution of the rice growers according to their knowledge on fertilizer application scores is shown in Table 4.14.

Table 4.14. Distribution of the farmers according to their knowledge on fertilizer application

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Low (up to 35)	21	21		
Medium (35-50)	68	68	42.90	7.70
High (51and above)	11	11		

The highest proportion (68 percent) of the farmers had medium knowledge on improved rice variety compared to 21 percent having low knowledge and 11 percent having high knowledge on improved rice variety.

4.1.14 Knowledge on pest and diseases

Knowledge on pest and diseases scores of the respondents ranged from 4 to 24 against the possible range of 0 to 24. The average and standard deviation were 11.83 and 4.26 respectively. Based on the observed knowledge on pest and diseases scores, the farmers were classified into the following three categories: "poor" (up to 11), "medium" (12 to 17) and "high" (18 and above). The

distribution of the rice growers according to their knowledge on pest and diseases scores is shown in Table 4.15.

Table 4.15. Distribution of the farmers according to their knowledge on pest and diseases

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Poor (up to 11)	49	31		
Medium (12-17)	43	57	11.83	4.26
High (18 and above)	8	12		

The highest proportion (49 percent) of the farmers had poor knowledge on improved rice variety compared to 43 percent having medium knowledge and 8 percent having high knowledge on improved rice variety.

4.1.15 Knowledge on irrigation

Knowledge on irrigation scores of the respondents ranged from 4 to 20 against the possible range of 0 to 21. The average and standard deviation were 12.86 and 3.41 respectively. Based on the observed knowledge on irrigation scores, the farmers were classified into the following three categories: "poor" (up to 10), "medium" (11 to 15) and "high" (16 and above). The distribution of the rice growers according to their knowledge on irrigation scores is shown in Table 4.16.

Table 4.16. Distribution of the farmers according to their knowledge on irrigation

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Poor (up to 10)	25	25		
Medium (11-15)	56	56	12.86	3.41
High (16 and above)	19	19		

The highest proportion (56 percent) of the farmers had medium knowledge on improved rice variety compared to 25 percent having poor knowledge and 19 percent having high knowledge on irrigation.

4.2.1 Training needs of farmers in rice cultivation

The training needs of the farmers ranged from 5 to 21 against the possible range of 0 to 24. The average adoption was 16.51 with a standard deviation of 3.90. Based on the training needs scores, the farmers were classified into three categories: "low" (up to 12), medium" (13-19) and "high" (20 and above). The distribution of the respondents according to their training needs is shown in Table 4.17.

Table 4.17. Distribution of the farmers according to their training needs

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Low (up to 10)	11	11		
Medium (11-16)	22	22	16.51	3.90
High (17 and above)	67	67		

Data contained in table. 4.17 indicate that the highest proportion (67 percent) of the growers had high training needs as compared to 11 percent low training needs and 22 percent medium training needs respectively.

The training needs of the respondents were classified into three categories as shown in Figure 4.1.
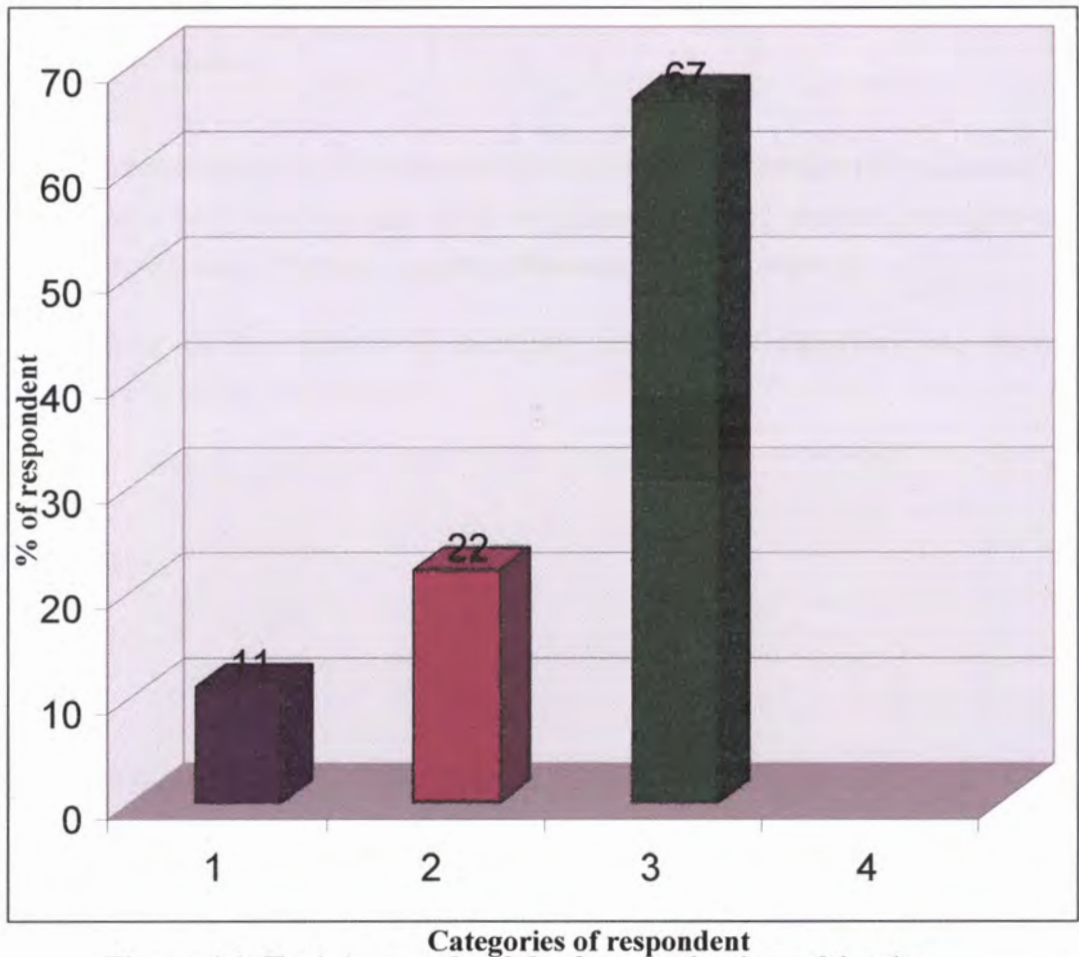
Categories of respondent
Figure 4.1. Training needs of the farmers in rice cultivation.

4.2.2 Interest of farmers in receiving training in rice cultivation

The interest in receiving training scores of the farmers ranged from 6 to 21 against the possible range of 0 to 32. The average adoption was 14.44 with a standard deviation of 3.90. Based on the interest in receiving training scores, the farmers were classified into three categories: "low" (up to 10), medium" (11-15) and "high" (16 and above). The distribution of the respondents according to their interest in receiving training is shown in Table 4.18.

Table 4.18. **Distribution of the farmers according to their interest in receiving training**

Categories	Farmers (N = 100)		Mean	Standard Deviation
	Number	Percent		
Low (up to 10)	24	24		
Medium (11-15)	29	29	14.44	3.90
High (16 and above)	47	47		

Data contained in table. 4.18 indicate that the highest proportion (47 percent) of the growers had high training needs as compared to 24 percent having low training needs and 29 percent medium training needs respectively.

The interest of the farmers in receiving training was classified into three categories as shown in Figure 4.2.
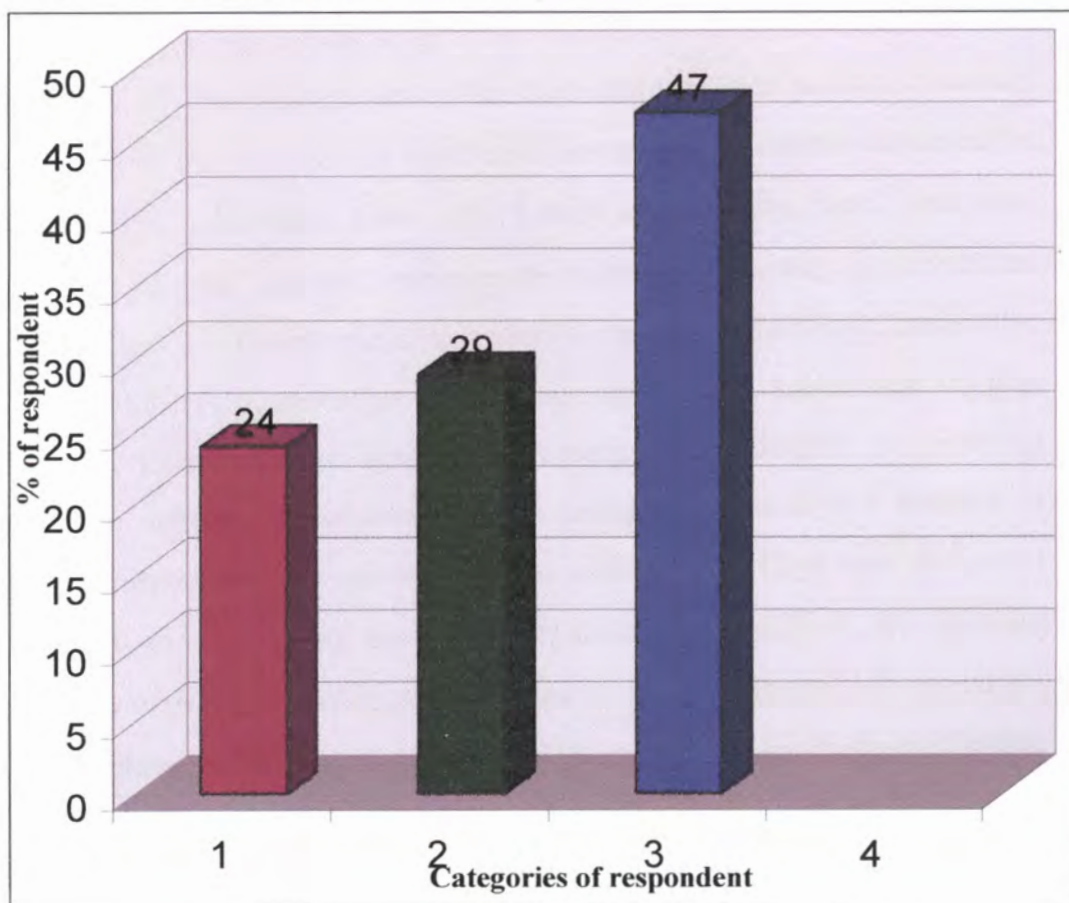
Figure 4.2. Interest of the farmers in receiving training in rice cultivation.

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For increasing the production of rice and achieving self sufficiency in staple food grain, the farmers need to have adequate knowledge regarding the different aspects of its cultivation. So they need training on seed technology, HYV of rice, fertilizer application, plant protection measure and irrigation management. The findings of this study, however, indicated that almost all (67%) of the farmers had high training need in rice cultivation. These facts lead to the conclusion that increasing the production of rice for solution of food problem will ever remain a far cry if arrangements are not made for proper training of the farmers in different aspects of rice cultivation.

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

The purpose of this section was to examine the relationships of fifteen selected characteristics of the rice growers with their training needs. The following characteristics of the respondents were considered as independent variables for this study - age, education, farm size, family size, family type, farm size, annual gross income, farming experience, extension contact, organizational participation and cosmopoliteness, knowledge on seed technology, knowledge on improved variety, knowledge on fertilizer application, knowledge on pest and diseases, knowledge on irrigation, training needs, interest in receiving training. The dependent variable was the training needs of the farmers in selected five aspects of rice cultivation. The relationships have been presented in Table 4.3 and are being described separately for each of the fifteenth characteristic with their training needs. Based on the coefficients of correlation, each of the characteristics with Davis (1971) convention has described below separately.

Davis convention about correlation coefficient

Coefficient	Description
0.70 or Higher	Very strong association
0.50 to 0.69	Substantial association
0.30 to 49	Moderate association
0.10 to 0.29	Low association
0.01 to 0.09	Negligible association

Source: Davis J.A. (1971). Elementary Survey analysis Englewood Cliffs, NJ:
Prentice-Hall

Table 4.19. Co-efficient of correlation of the selected characteristics of the respondents and their training needs in rice cultivation

Independent variables	Computed value of 'r'	Dependent variable	Table value of 'r' of 98 degrees of freedom	
			0.05%	0.01%
Age	-0.216*	Training needs of the farmers in rice cultivation	± 0.196	± 0.256
Education	0.238*			
Family size	0.041^{NS}			
Family type	0.158 ^{NS}			
Farm size	0.116 ^{NS}			
Annual gross income	0.162 ^{NS}			
Farming experience	-0.205*			
Extension contact	0.015 ^{NS}			
Organizational participation	0.212*			
Cosmopoliteness	0.136 ^{NS}			
Knowledge on seed technology	0.161 ^{NS}			
Knowledge on improved variety	0.137 ^{NS}			
Knowledge on fertilizer application	0.199*			
Knowledge on pest and disease	-0.008 ^{NS}			
Knowledge on irrigation	0.016 ^{NS}			

^{NS} = Non significant , * = Significant at 0.05 level of probability

4.3.1 Relationship between age of the rice growers and their training needs in rice cultivation

The relationship between age of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between age of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = -0.216 which led to the following observations.

➤ Firstly, the relationship showed a negative trend.
➤ Secondly, moderate relationship was fond to exist between the two variables.
➤ The computed value of 'r' (0.216) was larger than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.
➤ Hence, the concerned null hypothesis was rejected.
➤ The correlation co-efficient between the two concerned variables was significant.

The findings imply that the age of the rice growers had negatively significant relationship with their training needs. Nevertheless, older farmers had negative relationship into the training needs.

4.3.2 Relationship between education of the rice growers and their training needs in rice cultivation

The relationship between education of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between education of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.238 which led to the following observations.

➤ Firstly, the relationship showed a positive trend.

➤ Secondly, moderate relationship was fond to exist between the two variables.

➤ The computed value of 'r' (0.238) was larger than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.

➤ Hence, the concerned null hypothesis was rejected.

➤ The correlation co-efficient between the two concerned variables was significant.

The findings imply that the education of the rice growers had positively significant relationship with their training needs. In other words, the higher level of education of farmers, the greater was the urge for high training on rice cultivation technology.

4.3.3 Relationship between family size of the rice growers and their training needs in rice cultivation

The relationship between family size of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between family size of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.041 which led to the following observations:

➤ Firstly, the relationship showed a positive trend.

➤ Secondly, a negligible relationship was fond to exist between the two variables.

- The computed value of 'r' (0.041) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.
- Hence, the concerned null hypothesis was accepted.
- The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the family size of the rice growers had no significant relationship with their training needs. It can be concluded that family size had no influence on the training needs of the farmers in rice cultivation.

4.3.4 Relationship between family type of the rice growers and their training needs in rice cultivation

The relationship between family type of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between family type of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.158 which led to the following observations.

- Firstly, the relationship showed a positive trend.
- Secondly, a negligible relationship was fond to exist between the two variables.
- The computed value of 'r' (0.158) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.
- Hence, the concerned null hypothesis was accepted.
- The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the family size of the rice growers had no significant relationship with their training needs. It implied that family type had no influence on the training needs of the farmers in rice cultivation.

4.3.5 Relationship between farm size of the rice growers and their training needs in rice cultivation

The relationship between farm size of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between farm size of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.116 which led to the following observations.

➤ Firstly, the relationship showed a positive trend.
➤ Secondly, a negligible relationship was fond to exist between the two variables
➤ The computed value of 'r' (0.116) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.
➤ Hence, the concerned null hypothesis was accepted.
➤ The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the family size of the rice growers had no significant relationship with their training needs. It can be assumed that farm size had no impact on the training needs of the farmers in rice cultivation.

4.3.6 Relationship between annual gross income of the rice growers and their training needs in rice cultivation

The relationship between annual gross income of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between annual gross income of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.162 which led to the following observations.

➤ Firstly, the relationship showed a positive trend.

➤ Secondly, a negligible relationship was fond to exist between the two variables.

➤ The computed value of 'r' (0.162) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.

➤ Hence, the concerned null hypothesis was accepted.

➤ The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the annual gross income of the rice growers had no significant relationship with their training needs. It can be assumed that annual gross income had no influence on the training needs of the farmers in rice cultivation.

4.3.7 Relationship between farming experience of the rice growers and their training needs in rice cultivation

The relationship between farming experience of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between farming experience of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = -0.205 which led to the following observations.

➢ Firstly, the relationship showed a negative trend.

➢ Secondly, a moderate relationship was fond to exist between the two variables.

➢ The computed value of 'r' (0.205) was greater than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.

➢ Hence, the concerned null hypothesis was rejected.

➢ The correlation co-efficient between the two concerned variables was significant.

The findings imply that the farming experience of the rice growers had negatively significant relationship with their training needs. Experience increases farmers' practical knowledge on improved methods of farming and thus they need less training.

4.3.8 Relationship between extension contact of the rice growers and their training needs in rice cultivation

The relationship between extension contact of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between extension contact of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.015 which led to the following observations.

➢ Firstly, the relationship showed a positive trend.

➢ Secondly, a negligible relationship was found to exist between the two variables.

- The computed value of 'r' (0.015) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.
- Hence. the concerned null hypothesis was accepted.
- The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the extension contact of the rice growers had no significant relationship with their training needs. It indicated that extension contact had no influence on training needs of the farmers in rice cultivation.

4.3.9 Relationship between organizational participation of the rice growers and their training needs in rice cultivation

The relationship between organizational participation of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between organizational participation of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.212 which led to the following observations.

- Firstly, the relationship showed a positive trend.
- Secondly, a moderate relationship was found to exist between the two variables.
- The computed value of 'r' (0.212) was greater than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.
- Hence, the concerned null hypothesis was rejected.
- The correlation co-efficient between the two concerned variables was significant.

The findings imply that the extension contact of the rice growers had significant relationship with their training needs. It indicated that organizational

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participation had influence on training needs of the farmers in rice cultivation. Reasons were not assured.

4.3.10 Relationship between cosmopoliteness of the rice growers and their training needs in rice cultivation

The relationship between cosmopoliteness of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between cosmopoliteness of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.136 which led to the following observations.

➤ Firstly, the relationship showed a positive trend.

➤ Secondly, a negligible relationship was found to exist between the two variables.

➤ The computed value of 'r' (0.136) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.

➤ Hence, the concerned null hypothesis was accepted.

➤ The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the cosmopoliteness of the rice growers had significant relationship with their training needs. It implied that cosmopoliteness had no influence on training needs of the farmers in rice cultivation.

4.3.11 Relationship between knowledge on seed technology of the rice growers and their training needs in rice cultivation

The relationship between knowledge on seed technology of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between knowledge on seed technology of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.161 which led to the following observations:

➤ Firstly, the relationship showed a positive trend.

➤ Secondly, a negligible relationship was found to exist between the two variables.

➤ The computed value of 'r' (0.161) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.

➤ Hence, the concerned null hypothesis was accepted.

➤ The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the knowledge on seed technology of the rice growers had no significant relationship with their training needs. It implied that knowledge on seed technology had no influence on training needs of the farmers in rice cultivation.

4.3.12 Relationship between knowledge on improved variety of the rice growers and their training needs in rice cultivation

The relationship between knowledge on improved variety of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between knowledge on improved variety of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.137 which led to the following observations:

➤ Firstly, the relationship showed a positive trend.

➤ Secondly, a negligible relationship was found to exist between the two variables.

> The computed value of 'r' (0.137) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.

> Hence, the concerned null hypothesis was accepted.

> The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the knowledge on improved variety of the rice growers had no significant relationship with their training needs. It can be concluded that knowledge on improved variety had no influence on training needs of the farmers in rice cultivation.

4.3.13 Relationship between knowledge on fertilizer application of the rice growers and their training needs in rice cultivation

The relationship between knowledge on fertilizer application of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between knowledge on fertilizer application of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.199 which led to the following observations:

> Firstly, the relationship showed a positive trend.

> Secondly, a moderate relationship was found to exist between the two variables.

> The computed value of 'r' (0.199) was greater than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.

> Hence, the concerned null hypothesis was rejected.

> The correlation co-efficient between the two concerned variables was significant.

The findings imply that the knowledge on fertilizer application of the rice growers had significant relationship with their training needs. It can be concluded that knowledge on fertilizer application had no influence on training needs of the farmers in rice cultivation.

4.3.14 Relationship between knowledge on pest and diseases of the rice growers and their training needs in rice cultivation

The relationship between knowledge on pest and diseases of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between knowledge on pest and diseases of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2, the co-efficient of correlation between the concerned variables was computed and found to be 'r' = -0.008 which led to the following observations:

➢ Firstly, the relationship showed a negative trend.

➢ Secondly, a negligible relationship was found to exist between the two variables.

➢ The computed value of 'r' (0.008) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.

➢ Hence, the concerned null hypothesis was accepted.

➢ The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the knowledge on pest and diseases of the rice growers had no significant relationship with their training needs. It can be assumed that knowledge on pest and diseases had no influence on training needs of the farmers in rice cultivation.

4.3.15 Relationship between knowledge on irrigation of the rice growers and their training needs in rice cultivation

The relationship between knowledge on irrigation of the rice growers and their training needs in rice cultivation was examined by testing the following null hypothesis: "There is no relationship between knowledge on irrigation of the rice growers and their training needs in rice cultivation".

As shown in the Table 4.3.2. the co-efficient of correlation between the concerned variables was computed and found to be 'r' = 0.016 which led to the following observations:

➤ Firstly. the relationship showed a positive trend.

➤ Secondly. a negligible relationship was found to exist between the two variables.

➤ The computed value of 'r' (0.016) was smaller than the table value (r = 0.196) with 98 degrees of freedom at 0.05 level of probability.

➤ Hence. the concerned null hypothesis was accepted.

➤ The correlation co-efficient between the two concerned variables was not significant.

The findings imply that the knowledge on irrigation of the rice growers had no significant relationship with their training needs. It can be assumed that knowledge on irrigation had no influence on training needs of the farmers in rice cultivation.

CHAPTER V
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The study was undertaken at Shailan village in Shombag union under Dhamrai Upazila of Dhaka district aimed at : (1) to determine the socio-demographic characteristics of the farmers. (2) to determine the extent of training needs of the farmers in five selected aspects of rice cultivation (like seed technology, HYV of rice. fertilizer application, pest control measure and irrigation management). (3) find out the relationship between demographic and socio-economic characteristics of the respondent such as age , education , farm size, family size, farming experience, annual income, contact with extension staff, organizational participation and cosmopoliteness and their training needs in rice cultivation.

Out of 500 population a total number of 100 rice growers Shailan village in Shombag union under Dhamrai Upazila of Dhaka District.

5. 1 Summary of the findings
5.1.1 Selected characteristics of the farmers
Age
Age of the farmers ranged from 16 to 75 years having an average of 41.02 with a standard deviation 11.21. The highest proportion (62 percent) of the rice growers fell in the "middle aged" category while 21 percent of them fell in the "young" category and only 17 percent fell in the "old" category.

Education
The education scores of the farmers ranged from 0 to 16 having an average of 8.45 and the standard deviation was 3.82. The majority (49 percent) of the rice growers had primary level of education compared to 4, 19 and 28 percent illiterate, secondary and upper secondary level of education respectively.

Family size

The family size scores of the rice growers ranged from 3 to 15. The average was 5.94 with a standard deviation of 2.32. The findings revealed that 43 percent of the rice growers had "medium" family compared to more different than 28 percent of them having "large" family. The proportion of "small" family was 29 percent.

Family type

The family size scores of the rice growers ranged from 1 to 3. The average was 1.36 with a standard deviation of 0.50. The findings revealed that 65 percent of the rice growers had "nuclear" family compared to more different than 1 percent of them having "extended" family. The proportion of "joint" family was 34 percent.

Farm size

The farm size of the respondents varied from 0.30 to 6.00. The average farm size was 2.72 hectares with a standard deviation of 1.27. It was found that 64 percent of the farmers possessed medium farms compared to 4, 7 and 25 percent having marginal, small and large farms respectively.

Annual gross income

The observed annual gross income of the respondents ranged from 36-490 having the average of 181.59 and standard deviation was 90.81. From the above Table, it was observed that the highest portion (50%) of the respondents had medium income while 20 percent respondents had low income and 30 percent had high income.

Farming experience

Farming experience scores of the respondents ranged from 5-47 with an average of 20.26 and a standard deviation of 8.78. The majority (54 percent) of the farmers had less farming experience while 38 percent had medium farming experience and only 8 percent of the respondents had low farming experience.

Extension contact

The extension contact scores of the respondents ranged from 0-9 against the possible range of 0 to 9 with an average of 5.51 and a standard deviation of 2.10. Data presented in Table 4.8 show that the highest proportion (49 percent) of the rice growers belonged to medium extension contact as compared to 17 and 34 percent having low and high extension contact respectively.

Organizational participation

The organizational participation scores of the respondents ranged from 0 to 18. The average was 10.67 and the standard deviation was 4.81. Data contained in table. 4.10 indicate that the highest proportion (36 percent) of the rice growers had high organizational participation as compared to 30 and 34 percent having low and medium organizational participation respectively.

Cosmopoliteness

Cosmopoliteness scores of the respondents ranged from 2 to 9 with an average of 6.23 and a standard deviation of 1.60 against the possible range of 0 to 9. The majority (61 percent) of the farmers had medium cosmopoliteness compared to 15 and 24 percent having low and high cosmopoliteness respectively.

Knowledge on seed technology

The computed knowledge on seed technology scores of the respondents ranged from 4 to 13 with an average of 8.03 and a standard deviation of 2.16 against the possible range of 0 to 15. The majority (63 percent) of the farmers had medium knowledge on seed technology, while 23 and 14 percent of them had poor and high knowledge on seed technology.

Knowledge on improved rice variety

Knowledge on improved rice variety scores of the respondents ranged from 7 to 18 against the possible range of 0 to 24. The average and standard deviation were 13.51 and 2.62 respectively. The highest proportion (48 percent) of the

farmers had medium knowledge on improved rice variety compared to 15 percent having low knowledge and 25 percent having high knowledge on improved rice variety.

Knowledge on fertilizer application

Knowledge on fertilizer application scores of the respondents ranged from 16 to 64 against the possible range of 0 to 74. The average and standard deviation were 42.90 and 7.70 respectively. The highest proportion (68 percent) of the farmers had medium knowledge on improved rice variety compared to 21 percent having low knowledge and 11 percent having high knowledge on improved rice variety.

Knowledge on pest and diseases

Knowledge on pest and diseases scores of the respondents ranged from 4 to 24 against the possible range of 0 to 24. The average and standard deviation were 11.83 and 4.26 respectively. The highest proportion (49 percent) of the farmers had poor knowledge on improved rice variety compared to 43 percent having medium knowledge and 8 percent having high knowledge on improved rice variety.

Knowledge on irrigation score

Knowledge on irrigation scores of the respondents ranged from 4 to 20 against the possible range of 0 to 21. The average and standard deviation were 12.86 and 3.41 respectively. The highest proportion (56 percent) of the farmers had medium knowledge on improved rice variety compared to 25 percent having poor knowledge and 19 percent having high knowledge on irrigation.

5.1.2 Training needs of farmers in rice cultivation

The training needs of the farmers ranged from 5 to 21 against the possible range of 0 to 24. The average adoption was 16.51 with a standard deviation of 3.90. Data contained in table. 4.2 indicate that the highest proportion (67

percent) of the growers had high training needs as compared to 11 percent low training needs and 22 percent medium training needs respectively.

5.1.3 Interest in receiving training

The interest in receiving training scores of the farmers ranged from 6 to 21 against the possible range of 0 to 32. The average adoption was 14.44 with a standard deviation of 3.90. Data contained in table. 4.2 indicate that the highest proportion (47 percent) of the growers had high training needs as compared to 24 percent having low training needs and 29 percent medium training needs respectively.

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

Relationship between age and training needs

The findings imply that the age of the rice growers had negatively significant relationship with their training needs.

Relationship between education and training needs

The findings imply that the education of the rice growers had positively significant relationship with their training needs.

Relationship between family size and training needs

The findings imply that the family size of the rice growers had no significant relationship with their training needs.

Relationship between family type and training needs

The findings imply that the family size of the rice growers had no significant relationship with their training needs.

Relationship between farm size and training needs

The findings imply that the family size of the rice growers had no significant relationship with their training needs. It can be assumed that farm size had no impact on the training needs of the farmers in rice cultivation.

Relationship between annual gross income and training needs

The findings imply that the annual gross income of the rice growers had no significant relationship with their training needs.

Relationship between farming experience and training needs

The findings imply that the farming experience of the rice growers had negatively significant relationship with their training needs.

Relationship between extension contact and training needs

The findings imply that the extension contact of the rice growers had no significant relationship with their training needs. It indicated that extension contact had no influence on training needs of the farmers in rice cultivation.

Relationship between organizational participation and training needs

The findings imply that the extension contact of the rice growers had significant relationship with their training needs.

Relationship between cosmopoliteness and training needs

The findings imply that the cosmopoliteness of the rice growers had significant relationship with their training needs.

Relationship between knowledge on seed technology and training needs

The findings imply that the knowledge on seed technology of the rice growers had no significant relationship with their training needs.

Relationship between knowledge on improved variety and training needs

The findings imply that the knowledge on improved variety of the rice growers had no significant relationship with their training needs

Relationship between knowledge on fertilizer application and training needs

The findings imply that the knowledge on fertilizer application of the rice growers had significant relationship with their training needs.

Relationship between knowledge on pest and diseases and training needs

The findings imply that the knowledge on pest and diseases of the rice growers had no significant relationship with their training needs. It can be assumed that knowledge on pest and diseases had no influence on training needs of the farmers in rice cultivation.

Relationship between knowledge on irrigation and training needs

The findings imply that the knowledge on irrigation of the rice growers had no significant relationship with their training needs.

5.3 Conclusions

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

1. Nearly 67% farmers were in need of high level practical training in seed technology, HYV seed variety, fertilizer application, plant protection measures and irrigation management. It is further understood that the present training system need to be improved in terms of quality.

2. The young and middle aged farmers were seriously in need of training on cultivation practices.

3. The higher the level of education, organizational participation and knowledge on fertilizer application of farmers, the greater was the inquisitiveness of farmers receiving high level training in rice cultivation.

4. A considerable number (23%) of farmers had either primary level education or no schooling. Under this situation workers should work very closely with

people to increase their level of formal education as it has an influence on training needs of the farmers in rice cultivation.

5.4 Recommendations

On the basis of findings some recommendation were put forward. Recommendations have been divided into two parts – (i) recommendations for policy implication and (ii) recommendations for further research.

5.4.1 Recommendations for policy implementation

1. The agricultural Extension Service need to arrange training of a reasonable duration in rice cultivation involving as many farmers as possible who will in turn arrange training for their fellow or neighboring farmers. The philosophy is "let farmers be the teacher of other farmers".

2. Young and middle aged farmers should be encouraged in receiving training.

3. Attention should be given to the farmers with no schooling or primary level education in receiving training in rice cultivation.

4. The DAE should organize training program for the farmers with low extension contact and low level income.

5. 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 cosmopoliteness and to involve them in training program.

6. The DAE should arrange program for the farmers to have more organizational participation through motivational tour to research station.

5.4.2 Recommendations for further researcher

1. The training need of the farmers in five 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 cultural practices and harvesting procedures, 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 need 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 Shailan village in Shonbag union under Dhamrai Upazila of 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.

REFERENCES

Akanda, M. R. (1978). Training Need of the farmers in Transplannted Aman Rice Cultivation: In Bhabakhali Union of Mymensingh Districts. M.Sc. (Ag. Ext.Ed.). Thesis, Bangladesh Agricultural University, Mymensingh.

Ali, M. M. and A. Hossain. (1989) .Extent of Training Received and Training Need of the Teachers in the Faculty of Agriculture. Bangladesh. *Jouranl of Training and Development*: 2(1).

Ali, M. A.and A. B. M. N.Anwar. (1987). Cattle Problem of the farmers in a Union of Mymensing, *Bangladesh Journal of Extension Education:* 1(2).

Ali, M. K., S.A. Chowdhury; M. A. Kader and M. D. Goni. (1986). Factores Influencing Adoption of improved Sugarcane Production Techniques Among The Growers of a Sugarmill Zone. *Bangladesh Journal of Extension Education*: 1(2).

Ali, M. K. (1993). Farmers Response to Spaced Transplanting Technology of Sugarcane, Unpublished M.S.Thesis, Department of Agricultural Extension Education, Institute of Postgraduate Studies in Agriculture,Salna, Gazipurr.

Babu, A. R. and R. P. Singh. (1986). Training Your Farm Man power of Extension Education. *Indian Journal of Extension Education*. 22(3&4): 33-39.

Bajaj, D. R. (1963). Determining the needs of the Agricultural Country Agents of Lklanoma as a Basis for planning their Inservice Training Programs. Review of Extension Research. U.S.D.A., Federal Extension Service, October.

Basher, M. K. (1993). Adoption of Inter-cropping in Sugarcane Cultivation . Unpublished M.Sc. (Ag.Ext. Ed.) Thesis, Bangladesh Agricultural University, Mymensingh.

Bavalatti, V. G. and B. Sundaraswamy. (1990) Adoption of Dryland Farming Practices by the Farmers of Bijapur District. *Indian Journal of Extension Education*. **26**(3&4): 67-69.

BBS. (1994). Statistical Year Book of Bangladesh, 1994. Bangladesh Bureau of Statistic's Government of the people's Republic of Bangladesh.

Beal, G. M. and D. N. Sibley. (1967). Adoption of Agricultural of Agricultural Technology by the Indian of Cunatemala, a Summary. Rural Sociology Report 62, Department of Rural Sociology and anthropology, Iowa State University , Ames. Iowa.

Bhatia, B. S. and R. Singh. (1991). Agricultural Engineering Technologies in Panjab. *Indian Journal of Extension Education*. **27**(3&4): 28-34.

Bhuiyan, A. K. M. A. H. (1984). A Qualitative Evaluation of Two Integrated Pest Management Training Programs in Nueva Ecija Province, Philippines. Unpublished M.S. Thesis, University of the Philippines at Loss Banos, Laguna, Philippines.

Ghauhan, K. N. K. and K. D. Kokate. (1986). Training Stratey for Farmers of Arid zone, Aperceptual Study. *Indian Journal of Extension Education*. **22** (3&4): 43-45.

Davis, J. A. (1971). Elementary Survey Analysis Engle Wood Clifts, NJ: Prince Hall.

Dubey, V. K. D., S. B. Singh and S. K. Bhanja. (1977). In service Needs of Stockmen as Perceived by them and their Supervisors. *Indian Journal of Extension Education*. **XIII:** 55-62.

Exckiei, M. and Fox. K.A. (1969). Methods of correlation and regression analysis. third Education. John willey and Sons, Inc. New York.

Haider, M. R. A. Halim, M. M. Islam and M. A. Hossain. (1990). Training Needs of the Contact Farmer's Under Training and Visit System. *Bangladesh Journal of Training and Development.* 3(1): 29-34.

Halim, A. (1968). An Analysis of Training Needs of the Union Agriculture Assistants of Mymensingh Sadar North Subdivision. Unpublished M.Sc. (Ag.Ext.Ed.) Thesis. East Pakistan Agricultural University, Mymensingh.

Halim, A. (1982). Schooling, Extension and Agricultural Production. *Bangladesh Journal of Agriculture.* 6(4).

Haque, M. M. (1993). Adoption of Improved Practices in Sugarcane cultivation by the Sugarcane Growers of Sreepur Upazila of Gazipur district. Unpublished. M.Sc. (Ag.Ext.Ed.) Thesis, Bangladesh Agricultural University, Mymensingh.

Hossäin, M. A. (1971). Adoption of Improved Farm Practices by the Transplanted Aman Rice Growers in Gouripur Union of Mymensingh District. M.Sc. (Ag.Ext.Ed.) Thesis, East Pakistan Agricultural University, Mymensingh.

Hossain, M. A. (1991). Adoption of Behavior of Contact Wheat Grower sadar Upazila of Jamalpur District. Published M.Sc.(Ag.Ext.Ed.) MS Thesis. Dept. of Agricultural Extension Education, BAU, Mymensingh.

Hossain, S. M. A. and Crouch, B. R (1992). Patterns and determinanats of Adoption of farm Practices: Some Evidence from Bangladesh. Agricultural Systems. *Journal of Agriculture.* 3:1-15.

Hussain, M. S., M. S. Alam, and M. Z. Abdin. (1990). Dissemination of Information and Training Needs for Farm Housewifves in Banglasdesh. *Bangladesh Journal of Training and Development.* 3(1): 15-21.

Islam, M. M. (1993). Adoption of Improved Practices in Potato cultivation by the Potato Farmers of Sonatola Union under Bogra district. Unpublished M.Sc.(Ag.Ext.Ed.) Thesis, Bangladesh Agricultural University, Mymensingh.

Islam, S. M. N. (1994). Factors Associated with the Adoption of Aquaculture Technology Through Trickle down system of Extension I n Selected Upazilas of Rajshahi Division. Unpublished M.S.Thesis, Department of Agricultural Extension Education, Institute of Postgraduate Studies in Agriculture, Salna, Gazipur.

Jha, P. N. and H. N Jane. (1977). In service Training Hierachy of Village level workers in the New Strategy of Agriculture Production. *Indian Journal of Extension Education.* XIII.

Judge, H. V. (1967). Training Required for Practical Extension at the Farers Level (Mimeographed), A paper presented at CENTO conference on Agril. Ankara, Turkey.

Kashem, M. A. (1977). A Study on the Landless Labours of Barahata Union Under Rangpur District, Unpublished M.Sc. (Ag.Ext.Ed.) thesis, BAU, Mymensingh.

Khan, M. A. (1972). The Impact of Farm Radio Forums on the Diffusion of Innovation in Lahore and Gufrat District of West Pakistan. M.S. Thesis, Faculty of Agricultural Science, BUB, Beirut, Lebanon.

Krishna, P. V. (1969). Hybrid Maize in Karimnagar. Economic Political Weekly, Bombay. 4: 8.

Leagans, J. P. (1963). Developing Professional Leaders in Extension Education. Corneel Extension Bulletin 1105, State College of Agriculture, New York.

Mannan, M. A. (1972). Adoption of IR-20. Bangladesh Academy for Rural Development Comilla.

Miah, M. A. and M. A. Hossain. (1990). Training Need of the Female Block Supervisors. Bangladesh Journal of Training and development. 4(1).

Mian, S. (1974). An Analysis of Training Needs of Managers and Model farmers under Upazila Irrigation Program in Mymensingh Sadar subdivision, Unpublished M. Sc. (Ag .Ext. Ed.) Thesis, Bangladesh Agricultural University, Mymensingh.

Morril, G. I. (1968). Good Teaching and Trainng as Factors Infiuencing the Success of Agricultural Extension Work: In East Pakistan, (Mimeographed), A paper read at Agricultural Officers' Seminar, Dhaka.

Mustafi, B. A. A, M. M. Islam and M. M. rahman. (1987). Factors Affecting Adoption of Modern Varieties of Rice in Bangladesh, A Discriminate Analysis. Bangladesh Journal of Extension Education. 7(1).

Muttaleb, M. A. (1995). Relationship of selected Characteristic of Potato Growes with their Adoption of Improved Potato Technologies. Unpublished M. Sc. (Ag. Ext. Ed.) Thesis, Bangladesh Agricultural · University, Mymensingh.

Nazeeh, A. H. (1963). An Analysis of the Expressed Training Needs of County Agricultural Extension Agents in Kansas, An Abstract of Master's Thesis Kansas State University, Manhattan, Kansas.

Okoro, F. U. and Obibuaka, L. U. (1992). factors Influencing the Adoption of Improved Oil palm Management Practices among small land holders in IMO state, Nigeria. *Bangladesh Journal of Extension Education.* 7 (1&2): 45-52.

Rahman, M. (1974). Attitude of the Farmers Towards High Yielding Variety of Rice and Organizational effectiveness of ARPP. Unpublished M. Sc. (Ag. Ext. Ed.) Thesis, Bangladesh Agricultural University, Mymensingh.

Rahman, M. M. (1993). An investigation into Characteristic of the farmers related to adoption of improved farm practices of Boro rice Cultivation. unpublished M.S. Thesis. Department of Agricultural Extension Education, Institute of Postgraduate Studies in Agriculture, Salna, Gazipur .

Rahman, M. M. (1993). An investigation into Characteristics s of the farmers related to adoption of improved farm practices of Boro rice Cultivation. Unpublished M. S. Thesis. Department of Agricultural Extension, Institute of Postgraduate Studies in Agriculture, Salna, Gazipur.

Rahman, M. M. (1986). Correlation of Adoption of Improved Practices in Transplanted Aman Rice. *Bangladesh Journal of Extension Education.* **1**(2): 37-42.

Rashid, M. H. (1975). Agricultural Problems of the Farmers in Madhupur of Tangail District.Unpublished M.Sc. (Ag.Ext.Ed) Thesis, Bangladesh Agricultural University, Mymensingh.

Saha, B. K. (1983). Farmer Problem Confrontation in Respect of Breeding of Poultry Through Cockerel Exchange Program and their Related Aspect in Dewhala Union of Phulbaria Upazila Under Mymensingh District. Unpublished M.Sc. (Ag.Ext.Ed.) Thesis, Bangladesh Agricultural University, Mymenshingh.

Sainturi, M. (1992). Communications Support , Resources, and Structure of smallholder Rubber Technology in Taluk Kuantan Unit,Rain Province, Indonesia, College of Laguna (Philippines).

Saker. G. C. (1983). Relationship of the Selected Characteristics of the Poultry Farmers in Taridis Union of Mymensingh District with their Popultry Problem confrontation. Unpublished M.Sc. (Ag. Ext. Ed.) Thesis, Bangladesh University, Mymensingh.

Saxena, K. K., N. C Jain. and S. C. Pandya. (1990). Transfer of Rainfed Wheat Technology and its Adoption by the farmers in Malwa Region. *Indian Journal of Extension Education.* **26**(3&4): 70-73.

Shasuzzoha, A. N. M. (1969). Influence of Result Demonstration of the Adoption Improved Practices in Cotton Production in a six Area in Texas. M.S. Thesis, Texas A&M University.

Sibon, R. E. (1976). Increasing Employee productivity A Division of American Management Associations. New York, USA.

Singh. B. (1986). Role of Practical Training in Agriculture Extension. *Indian Journal of Extension Education.* **XXI**(3&4): 20-25.

Singh, N. P. and S. S. Gill. (1985) . Relationship of Training Needs Fulfillment with Personal Characteristics of the Farmers. *Indian Journal of Extension Education.* (3&4): 45-47.

Sobhan, M. A. (1975). Adoption of Winter vegetables Cultivated by the Farmers in Bailor Union of Mymensingh district. Unpublished M.Sc. Ag.Ext.Ed.) Thesis. Bangladesh Agricultural University, Mymensingh.

Townsend, J. N. (1953). Introduction of Experimental Methods. International Student Edition, Mc. Grow-Hill Book Company, Inc., New York.

Wilson, R. (1963) Rural Families and Mass Media Tennessee University, Knoxville, *Tennessee Journal of Co-operative Extension.* 1(1): 3-4.

APPENDIX – A

Correlation Matrix of the Dependent and Independent Variables (N=100)

VARIABLES	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	Y1	Y2
1	1																
X2	.336**	1															
X3	.074	.060	1														
X4	.092	.172	-.059	1													
X5	.059	.088	.350**	-.081	1												
X6	.056	.087	.220*	-.082	.790**	1											
X7	.348**	.102	-.085	-.177	-.048	-.047	1										
X8	.259**	.262**	.104	.073	.251*	.301**	.166	1									
X9	.291**	.584**	-.106	.158	.074	.170	.078	.237*	1								
X10	-.070	.074	-.034	-.116	-.029	-.001	.005	.064	-.048	1							
X11	-.071	.309**	-.098	-.103	-.094	-.027	.153	.137	.051	.339**	1						
X12	-.017	.117	.098	-.148	.153	.156	-.056	-.085	.105	.116	.353**	1					
X13	.008	.200*	.014	-.168	.207*	.261**	.017	.093	.194	.171	.282**	.361**	1				
X14	.124	.221*	.079	-.023	.225*	.300**	.044	.770**	.204*	.092	.157	.003	.111	1			
X15	.057	.178	-.009	-.047	.037	.030	.257**	.087	.193	.062	.334**	.149	.263**	.106	1		
Y1	-.216*	.238*	.041	.158	.116	.162	-.205*	.015	.212*	.136	.161	.137	.199*	-.008	.016	1	
Y2	.188	.101	.067	-.056	.393**	.568**	.083	.193	.254*	.058	.042	.068	.075	.176	.027	.082	1

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

X1=AGE
X2= EDUCATION
X3=FAMILY SIZE
X4= FAMILY TYPE
X5= FARM SIZE
X6=ANNUAL INCOME
X7= FARMING EXPERIENCE
X8= EXTENSION CONTACT
X9= ORGANIZATIONAL PARTICIPATION

X10=COSMOPOLITENESS
X11= KNOWLEDGE ON SEED TECHNOLOGY
X12= KNOWLEDGE ON IMPROVED VARIETY
X13= KNOWLEDGE ON FERTILIZER APPLICATION
X14= KNOWLEDGE ON PEST AND DISEASE
X15= KNOWLEDGE ON IRRIGATION
Y1 = TRAINING NEEDS
Y2= INTEREST IN RECEIVING TRAINING

APPENDIX-B

DEPARTMENT OF AGRICULTURAL EXTENSION
AND INFORMTION SYSTEM
SHER-E-BANGLA AGRICULTURAL UNIVERSITY
DHAKA-1207
INTERVIEW SCHEDULE
ON
TRAINING NEEDS OF FARMERS ON RICE RODUCTION IN
DHAMRAI UPAZILA UNDER DHAKA DISTRICT

Respondent's Sl. No_____

Farmers Name: _____

Village: _____ Upazila: _____ Dist: _____

1. Age

How old are you? ----------------years

2. Education

What is your educational attainment?

   a) Don't know how to read and write.

   b) Don't know reading and writing but can sign.

   c) I passed --------------- class.

3. Farm size

Type land ownership	Area in Decimal
a) Own land under own cultivation	
b) Land taken from others on borga	
c) Land given to others on borga	
d) Land taken from others on lease	
e) Others (Please specify)	
Total (a +1/2 b + 1/2 c + d + e)	

79

4. Family size (in number):

a) Adult male (18 years & above) _____

b) Adult female (18 years & above) _____

c) Minor (between 5 years to 17 years) _____

d) Infants (less than 5 years) _____

e) Total (a + b + c + d) _____

5. Family type

(a) Nuclear _____

(b) Joint _____

(c) Extended _____

6. Annual Gross Income (during April, 1995 to March, 1996)

Source of income	Amount in taka
From crop production	
From vegetable production	
Poultry/Fish production	
Service	
Business	
Others(please specify)	
Total	

7. Farming experience _____ years

8. Extension Contact

a) Do you know BS of your Block? _____ Yes _____ No

   If yes, how often BS meet you?

   _____ weekly _____ Fortnightly _____ Monthly

b) Do you know SMO of your Upazila ?_____ Yes _____No

   If yes , how often SMO meet your ?

   _____ Weekly _____ Fortnightly _____ Monthly

c) Do you know TAO of your Upazila ? _____ Yes _____No

   If yes, how often TAO meet you ?

   _____Fortnightly _____ Monthly _____Quarterly

9. Organizational Participation

Please mention the organizations you are associated.

Name of Organization	Not at all	General member with duration	Executive member with duration	Officer with duration
Union council				
Co-operative society				
NGO (specify the name)				
School committee				
Madrasha committee				
Bazar committee				
Others				

10. Cosmopoliteness

How often you visit the place outside your village for various purposes.

Place of visit	Always	Occasionally	Rarely	Never
Visit outside your village	15-30 days/month	8-14 days/month	1-7 days/month	
Visit to Thane head quarter	11 or more days / month	6-10 days/month	1-5 days/month	
Visit to city town	5 or more days/month	3-4 days/month	1-2 days/month	

11. Knowledge on seed technology

Please furnish answers to the following questions on seed technology.

Sl.no.	Questions	Score assigned	Score obtained
1.	What are the qualities of good seed ?	5	
2.	What is the desirable germination percentage of rice ? 60-70/ 70/80/ 90/100	1	
3.	What amount of rice seed you generally use to transplant one bigha of land. LIV_____ HYV_____	2 (1−1)	
4.	How much area can be transplanted by the rice seedling grown in one khata? LIV_____ HYV_____	2 (1−1)	
5.	What is the desirable age for transplanting aman seedling ? Seedling. LIV 20-25/ 25-30/ 30-35/ 35-40/ 40-45/ days HYV20-25/26-30/30-35/ 35-40/ 40-45 days	2 (1−1)	
6.	Please indicate the seed rate/acre on rice (broadcast) Aus_____ Deepwater Aman _____	2 (1−1)	
7.	What do your mean by seed sorting?	1	
8.	What do you mean by seed treatment? Name of two seed treatment chemicals and its uses.	5 (1+2+2)	

12. Knowledge on HYV variety

Please name for improved varieties of Rice and its important characteristics.

Sl. No.	Crops	Varieties	Characteristics	Total score	Score obtain
1.	HYV Boro	1. ---------- 2............. 3. ---------- 4.	....	8(4+4)	
2.	HYV Aus	1. ---------- 2............. 3. ---------- 4.	....	8(4+4)	
3.	HYV Aman	1. ---------- 2............. 3. ---------- 4.	....	8(4+4)	

13. Knowledge on fertilizer application

(a) Please mention the important functions and deficiency symptoms of the following fertilizers in Rice production.

Name of fertilizer and manure	Functions	Deficiency symptoms	Total score	Score obtain
Urea			10	
TSP			10	
MP			10	
Gypsum (Sulpher)			10	
Cowdung			10	
Total			50	

b) Please indicate the recommended dose of fertilizers for cultivation of Rice/bigha.

Sl. No.	Rice	Urea	TSP	MP	Gypsum	Total score	Total score
1..	HYV Boro					4	
2.	HYV Aus					4	
3.	HYV Aman					4	
4.	Local Boro					4	
5.	Local Aus					4	
6.	Local Aman					4	

14. Knowledge on pest and disease

(a) Please name 4 harmful insects of rice with their nature of damage and name respective insecticides for their

Name of crops	name of insect	nature of damage	Name of insecticide	Total score	Score obtain
Rice				3	
				3	
				3	
				3	

(b) Please name 4 disease of rice with their important symptoms and related pesticide.

Name of disease	Symptoms of disease	Name of Pesticide	Total score	Score obtain
1.			3	
2.			3	
3.			3	
4.			3	
			12	

15. Knowledge on irrigation

Please furnish answers to the following questions on irrigation.

Sl. No.	Questions	Answers	Total score	Score obtain
1.	State the functions of water for crop production		3	
2.	How you will ascertain in need of water for the crops		3	
3.	Described the amount of water used for Boro rice cultivation in different stages of growth		3	
4.	What type of water is good for crop cultivation river water/under ground water		3	
5.	How you will reduced the iron and other harmful		3	
6. .	Indicate the command area of land that can be covered by a deep tube well for irrigation		3	
7.	Indicate the time of Urea application before irrigation/after irrigation		3	
	Total		21	

16. Training needs of farmers in rice cultivation

Mention the extent of training needs on the following topics

Topics	Very much	Much	To some extent	Little	Not at all
HYV seeds of rice					
Seeds preservation					
Seeding management					
Fertilizer Management					
Pest management					
Irrigation					

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17. Interest of farmers in receiving training in rice cultivation

Mention the topics on which you are interested to get training according to following scale:

Topics	Very much	much	To some extent	Little	Not at all

Thanks for your help and giving me your time.

Name of the interviewer

Date: ....