

**USEFULNESS OF TEACHING METHODS TO THE FARMERS
RECOMMENDED UNDER REVISED EXTENSION APPROACH
OF THE DEPARTMENT OF AGRICULTURAL EXTENSION**

By

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A thesis

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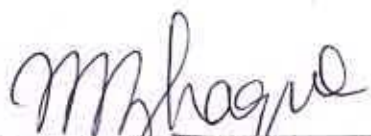
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CERTIFICATE

This is to certify that thesis entitled, "*Usefulness of Teaching Methods Used Under Revised Extension Approach of DAE*" Submitted to the Department of Agricultural Extension and Information System, Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka in partial fulfillment of the requirements for the degree of *Master of Science (M.S.) in Agricultural Extension and Information System*, embodies the result of a piece of bonafide research work carried out by *Mohammad Zamshed Alam* Registration No. 01846 under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

Dated:
Dhaka, Bangladesh


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DEDICATED
TO
MY BELOVED MOTHER
AND
THE DEPARTED SOUL
OF
MY FATHER

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ABSTRACT

The main purpose of this study was to have an understanding on the usefulness of teaching methods used under revised extension approach of DAE. The relationship between selected characteristics of the farmers (age, level of education, family size, farm size, agricultural knowledge, annual income, cosmopolitaness, innovativeness, organizational participation and attitude towards modern agricultural technology) and the usefulness of teaching methods was also explored. Beside this an attempt was made to compare the perceived usefulness of teaching methods by the farmers and Sub-assistant Agriculture Officer (SAAO).

Data were obtained from 100 farmers of four villages namely Soyedpur, Komolapur, Doyara, and Kamairbag of Kalirbazar Union of sadar upazila under Comilla district, with the help of interview schedule. Appropriate scales were developed in order to measure the concerned variables. Correlation co-efficient was computed to explain the relationship between the concern dependent and independent variables and individual sample t-test was computed to explore the comparison between the perceived usefulness of teaching methods by the farmers and SAAO.

The findings revealed that 52 percent of the respondents perceived medium usefulness 29 percent perceived high usefulness and only 19 percent perceived low usefulness of different teaching methods.

The findings also revealed that level of education, farm size, agricultural knowledge, annual income, cosmopolitaness, innovativeness, organizational participation and attitude towards modern agricultural technology had significant positive relationship with the usefulness of teaching methods. However, age and family size of the farmers had no significant relationship with the usefulness of teaching methods. A significant difference between the usefulness of teaching methods as perceived by the farmers and by the SAAO was also revealed by the study.





CHAPTER 1

INTRODUCTION

1.1 General Background

The Revised Extension Approach (REA) of the Department of Agricultural Extension (DAE) specifically embraces the department's mission which is committed to implementing the New Agricultural Extension Policy (NAEP). To justify this commitment DAE has a mission statement which reads, "To provide efficient and effective needs based extension services to all categories of farmers, to enable them to optimize their use of resources, in order to promote sustainable agricultural and socio-economic development". To achieve this mission, DAE is working to promoting the adoption of appropriate farming practices, through the use of appropriate extension teaching methods.

Effective agricultural extension can help farmers identify and overcome production, management and marketing problems by facilitating the exchange of technical information. In particular, extension can help farmers make better use of existing technology, introduce new technology and provide information to agricultural research agencies so that appropriate research programs can be undertaken. One of the principles of the Revised Extension Approach (REA) is "The use of a range of extension teaching methods" which includes (i) mass media, such as television, radio and newspapers and printed materials like poster, leaflet etc. (ii) folk media, such as songs, puppet shows and drama (iii) agricultural fair (iv) group extension events such as field days and group discussion meetings (v) formal farmer training classes & farmer field schools and (vi) individual extension events such as demonstration and farm & home visits.

Different extension teaching methods play different roles in the adoption process. For example, with innovation the department may wish to make farmers aware that the idea exists, so radio or television or poster might be the appropriate methods. To help farmers acquire specific skills about a new idea, learning by doing extension method such as method demonstration may be useful. Different extension activities have different costs, for example, the cost per farmer is lower where one Sub-Assistant

Agriculture Officer (SAAO) uses an extension method with a group of farmers rather than an individual farmer. Similarly different extension activities are appropriate for different types of farmer. For example, motivation tours are often easier to arrange with a group of male farmers, while group meeting in a homestead are often more appropriate for female farmers.

Extension activities can be mixed or integrated together to make the approach more effective. For example, demonstrations are accompanied by field days. Group discussion meeting can be accompanied by print media. Farmers who attend a demonstration plot might wish to visit a farmer in neighboring block who has been using the technology for some time. Innovations displayed in demonstrations could also be displayed at upazilla fairs. By mixing extension methods together, local campaigns can be planned to meet objectives.

The Department of Agricultural Extension (DAE) and some other government and non-government organizations are working in the field in transferring information/technology from a research system (source of technology) through an extension system (interpreter and dissemination of technology) to the client system (users of technology). In this regard, the extension agents follow a number of extension methods such as result or method demonstration, farm publications (leaflets, bulletins poster etc.), farm Radio broadcast and Television programme, progressive and contact farmers, local and opinion leader, Field tour, Field days etc. (Ray,2006)

In most of the cases the effectiveness of extension educational programmes depends to a large extent on the proper selection and use of communication media. Mass media shows better result to create awareness and increase knowledge and increase adoption with the audience of low knowledge, attitude and practice level (Adhikarya, 1994).

Effective communication requires a thorough knowledge of the linkages which affect decisions. Educators must utilize models which enhance the information-transfer capabilities of information flow (Fliegel, 1984). Further evidence is given by Lionberger and Gwin (1982), "the educator, to be effective, must know the social situation, physical conditions and infrastructure of the individual farmer." A host of

media and methods are used by extension educators to communicate with farmers. For example, print-based media provide the public with answers to a myriad of topics. Other media such as audio and videotapes are used to provide information without personally involving agents. Mass media such as radio, television, and newspapers are used to advertise events, anticipate client needs, and report agricultural business information (Fedele. 1985). Iams and Marion (1991) indicated that learning preferences of people depends on the subject matter they are learning.

For farmers of different agricultural zones to adopt a new agricultural technology, she/he must be aware of the technology, have valid and up-to-date information on the technology, the applicability of the technology to their farming system and receive the technical assistance necessary to adopt the technology (Asiabaka *et. al*, 2001). Institutional inefficiencies in the development and delivery of relevant information and assistance from national extension systems are often the major reason why farmers do not adopt farm innovations. Integration of local information and assistance from extension can facilitate the adoption process, but unless there is information and assistance from external sources, little change can be expected in farmer's adoption behavior (Njoku, 1990).

The characteristics of farm information sources such as availability, credibility, interest, usefulness and socio-economic characteristics of the farmer/extension agent have interacting influences in the frequency of use of information (Bel-Molokwu, 1997). Adoption decisions are dependent upon the degree of exposure to a piece of information and the more interest shown by a farmer on a topical issue the more her/his propensity to move through the mental stages that lead to adoption of the information. Obviously farmers of all socioeconomic backgrounds are more likely to use agricultural information if they perceive the information to be useful to them. The credibility of the information source will sometimes depend on the perceived intelligence, reliability and/or expertise of the communicator as well as the usefulness of the communication process which is generally know as teaching methods.

In the communication process extension teaching methods or channels of communication are the tools in the hands of extension workers in transferring new ideas. An extension worker has to deal with many rural people. One of the methods to

deal with them is farm and home of farmers' visits by the extension worker. A personal visit represents a best learning situation but it may not be always possible to visit all the farmers. The extension worker has therefore, to use other teaching methods for reaching the maximum number of people effectively (Supe, 1997).

All the teaching methods have significant role in different types of communication with the farmers to change their knowledge, skill and attitude. To change knowledge and attitude mass media like radio, television, leaflet might be more useful along with group and individual methods while to change skill learning by doing methods like method demonstrations may be more useful with other individual and group methods.

1.2 Statement of the Problem

The revised extension approach consists of five principles: decentralization, targeting, responsiveness to farmer needs, the use of a range of extension methods and working with groups. To implement these principles extension teaching methods are very much essential as this ensures the success of other principles. Since the inception of extension service the extension teaching methods are being used in Bangladesh. But since then no research work has been undertaken to evaluate the usefulness of these teaching methods.

The extension worker has to use different teaching methods more appropriately so that to make the communication meaningful. Research studies in extension education show that several methods are better than any one method. The extension worker, therefore, need not try to choose the best method but should use a combination of different methods (Supe, 1997). In view of the foregoing discussion the researcher undertook a study entitled "Usefulness of Teaching Methods to Farmers Recommended Under Revised Extension Approach of the Department of Agricultural Extension". In this study farm and home visit, result demonstration, method demonstration, field day, district and upazila fair, motivation tour, farmers rally, farmer field schools, group meeting, radio, newspaper, leaflet, flash card, poster, and folk song & drama etc. were considered as the teaching methods. The purpose of the study was to answer to the following research questions.

- i. What are the teaching methods recommended by DAE to change the farmers farming behaviour?

- ii. What are the opinions of the farmers about the usefulness of teaching methods recommended by DAE?
- iii. What relationship exists between the selected characteristics of the respondents and the usefulness of teaching methods recommended by DAE?

1.3 Objectives of the Study

The following specific objectives were formulated in order to give proper direction to the study.

1. To determine and describe the following characteristics of the farmers:
 - i) Age
 - ii) Education
 - iii) Family size
 - iv) Farm size
 - v) Agricultural knowledge
 - vi) Annual income
 - vii) Cosmopolitaness
 - viii) Innovativeness
 - ix) Organizational participation
 - x) Attitude towards modern agricultural technology
2. To identify and describe the usefulness of teaching methods as perceived by the farmers.
3. To compare the usefulness of teaching methods as perceived by the farmers and by SAAO (Sub-Assistant Agriculture Officer).
4. To explore the relationships between the usefulness of teaching methods and farmers selected characteristics.

1.4 Justification of the Study

In Bangladesh, the deficit of food grains is a chronic problem as the pressure of population is massive. To ensure adequate food supply, it is necessary to give thrust to increase food production using modern agricultural technologies. Agricultural intensification, to minimize food shortage and maximize self-sufficiency in food production is possible when adoption of modern innovation, cultivation technologies and their application skills create positive impact on the behaviour of ultimate users. To achieve this goal communication plays vital role. Framers need adequate information along with appropriate technologies to perform their farming activities

which can be ensured by the Department of Agricultural Extension (DAE) by using appropriate teaching methods.

Extension teaching methods are mainly concerned with the dissemination of useful and practical information relating to rural life and helping the rural people in the practical application of such knowledge to rural situation. Through the proper use of extension teaching methods extension worker can achieve this objective. So appropriate selection as well as proper use of teaching method is very essential to achieve the goal of food sufficiency. Before planning the strategy of extension teaching methods the extension worker should know the details of the methods and its usefulness in rural situation.

It is obviously true that farmers are the key elements of adoption of selected modern agricultural technologies. This adoption successfully occurs when appropriate teaching methods are applied. At present, there is a lack of adequate understanding about the usefulness of various extension teaching methods and characteristics of the farmers which influence their adoption of modern technologies. These facts indicate the need for an investigation to ascertain the usefulness of teaching methods as well as relationship of the characteristics of the farmers with the usefulness of extension teaching methods. Findings of this study, therefore, will be helpful to the planners and extension workers in using appropriate teaching methods for successful communication.

1.5 Assumptions and Limitations of the Study

1.5.1 Assumptions of the study

An assumption is the supposition that an apparent fact or principles is true in light of the available evidence (Goode and Hatt, 1952). An assumption is taken as a fact or belief to be true without proof. In this study, the researcher had the following assumptions in mind while carrying out this study.

1. The respondents included in the sample were competent to furnish proper responses to the items included in the interview schedule.

2. The researcher who also acted as the interviewer was well adjusted to the social environment of the study area. The researcher collected data with utmost care and can be treated as reliable.
3. The responses furnished by the respondents were reliable and they truly expressed their opinion on usefulness of teaching methods used by revised extension program of DAE.
4. The sample size was representative of the whole population of the study area.
5. The teaching methods included in the interview schedule were known to the farmers of the area concerned.

1.5.2 Limitations of the study

The present study was undertaken with a view to having an understanding on the usefulness of teaching methods used by revised extension approach of DAE of sadar Upazila under Comilla district. In order to manageable way, it became necessary to impose some limitations in regard to certain aspects of the study. Considering time, money and other necessary resources available to the researcher, the following limitations have been observed throughout the study:

1. The study was confined to four villages of sadar upazila under Comilla district.
2. The study focused on usefulness of teaching methods used by revised extension program of DAE which included individual, group and mass methods.
3. The general farmers who are belonging to the four selected villages under DAE coverage were considered for this study.
4. There are many attributers or characteristics of the farmers which are always vary but only ten (10) were selected for investigation in this study as stated in the objectives. This was done to complete the study within limited resources and time.
5. The researcher relied on the data furnished by the farmers from their memory during interview.
6. Population for the present study was kept confined within the heads of farm families in the study area, because they were the decision makers in their farming activities.
7. Facts and figures were collected by the investigator applied to the situation prevailing during the year 2006-2007.

The findings of the study will particularly be applicable to sadar upazila under Comilla district. However, the findings may also be generally applicable to other areas of Bangladesh where the socio-economy is not differing much with those of the study area. Thus, the findings are expected to be useful to the planners for appropriate selection of extension teaching methods for the farmers. The findings may also be helpful to the extension workers of different national building departments / organizations to improve their technique and strategy of action for effective teaching method for the rural people to improve rural economy. Finally, there is a great scope for investigation on usefulness of extension teaching methods, because little study has been conducted on this so far in Bangladesh.

1.6 Definition of the Terms

In order to avoid confusion and misunderstanding, certain terms used throughout the study are defined as follows:

Age: Age of a respondent was defined as the span of his life and was operationally measured by the number of years from his birth to the time of interview. In this study age refers the actual year of a respondent.

Education: Education refers to the development of desirable knowledge, skill and attitude in individual farmer through the experience of reading writing, observation and other related activities. It was measured in terms of years of formal schooling. In this study education refers the year of formal schooling of the respondents.

Annual income: Annual income refers to the total annual earnings of all the family members of a respondent from agriculture, livestock, fisheries and other accessible sources (business, service, daily working etc.) during a year.

In this study annual income refers the total earning of the respondent from different sources which includes (i) agricultural crop production (ii) livestock animals and fisheries (iii) non-agricultural sources.

Farm size: The term related to the hectareage of land owned by a farmer on which he carried his farming and family business, the area being estimated in terms of full

benefit to the farmer. A farmer was considered to have full benefit from cultivated area either owned by him or obtained by lease from others and half benefit from the area which was either taken or given others on barga basis.

In this study farm size includes the aggregation of the land possessed by a respondent from the following sources: (i) homestead area (ii) own land under own cultivation (iii) land given others as barga (iv) land taken barga from others (v) taken lease from others (vi) own pond (vii) fallow land.

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

In this study innovativeness refers adoption of the following technologies by a respondent after hearing about the respective technology: (i) Cultivation of High Yielding Variety (HYV) seed (ii) Cultivation of developed variety vegetables in homestead area (iii) Vaccination to livestock and poultry (iv) Use of drum seeder (v) Use of compost (vi) Use of bio-fertilizer to increase soil fertility (vii) Use of guty urea fertilizer (viii) Use of Japani Rice weeder (ix) Use of Integrated Pest Management in crop cultivation (x) Rice cum fish culture.

Integrated Pest Management (IPM): IPM is the selection, integration and implementation of pest control based on predicted economic, ecological and sociological consequences which includes pest control (i) by cultivation (ii) by cultivation of pest resistant variety (iii) by mechanical control (iv) by biological control and finally (v) by chemical control

Technology: Technology is a design of instrumental action that reduces the uncertainty in the cause-effect relationship involved in achieving a desired outcome (Rogers, 1995). In other words, technology refers to the combination of knowledge, inputs and manages mental practices, which are used together with productive resources to gain a desired output.

In this study technology refers different types of technologies used by the respondent in their farming activities.

Respondents: People who have answered questions by an interviewer for a social survey. They are the people from whom a social research worker usually gets most data required for his research.

In this study the respondents were farmers of Comilla sadar upazilla and Sub-assistant Agriculture Officer of Comilla district.

Variable: A general indication in statistical research of characteristic that occurs in a number of individuals, objects, groups etc. and that can take on various values, for example the age of an individual.

In this study two types of variables were used (i) independent variable and (ii) dependent variable which are specifically defined in the chapter two.

Adoption: Adoption is the implementation of a decision to continue the use of an innovation until the better one supersedes it. According to Rogers (1995) "Adoption is a decision to make full use of an innovation as the best course of action available". When an individual takes up a new idea as the best course of action and practices it, the phenomenon is known as adoption (Ray, 1991).

Agricultural knowledge: It is the extent of basic understanding of the growers in different aspects of agricultural subject matters i.e. crops, livestock, fisheries, agro-forestry, soil, seed, fertilizer, insects and diseases of crops, high yielding variety etc. It includes the basic understanding of the use of different agricultural inputs and practices.

In this study agricultural knowledge refers the overall knowledge of a respondent on agriculture which was revealed by the researcher by asking them twenty questions from different aspect of agriculture.

Cosmopolitaness: It refers to the orientation or exposure or involvement of an individual respondent external to his own social system.

In this study cosmopolitaness refers the frequency of visit of a respondent to the following places: (i) neighboring villages (ii) neighboring unions (iii) own upazila Sadar (iv) other upazila Sadar (v) own district Sadar (vi) agricultural fair (vii) other

district Sadar (viii) research substation or regional agricultural research institute (ix) capital city.

Farm and home visit: Farm and home visit referred to the individual teaching method in which the extension worker communicate physically with the farmer's at home or farm to disseminate agricultural information.

In this study farm and home visit means visit of a farmers farm and home by Sub-Assistant Agriculture Officer (SAAO).

Result demonstration: Result demonstration is a group teaching method which refers to display the results of a technology or innovation to the farmer. It is conducted by a participating farmer on his/her farm or home under the guidance of an extension worker, to prove by evidence that the practice being demonstrated is superior to the one in existence (Sandhu, 19993). It is way of showing people the value of new practice (Leagans, 1961)

In this study result demonstration means the demonstration of a particular technology arranged in the study area by DAE.

Method demonstration: Method demonstration is a group teaching method where the way of doing certain activities is shown by the extension worker. It is practiced before a group of people to show how to carry out an entirely new practice or old practice in a better way (Leagans, 1961)

In this study method demonstration means the demonstration of teaching skill of a particular innovation arranged in the study area by DAE.

Field day: A field day is a group extension teaching method conducted at the site of any type of result demonstration. With single farmer result demonstrations, the field day is important to improve the cost effectiveness of the demonstration. Field day provide the opportunity for 20 or more farmers to visit s demonstration site, learn about what is being demonstrated, ask questions and encourage them to try new ideas themselves on their own land.



In this study field day means the group method conducted in the site of result demonstration by DAE in the study area.

District and upazila fairs: District and upazila fairs refer to a mass contact teaching method which is organized by district or upazila to create awareness about improved technologies to a large number of people within a short time and to stimulate general motivation for agricultural and rural development in the area.

In this study district and upazila fair means the district and upazila fair which was arranged in the district of Comilla.

Motivation tour: A motivation tour involves taking a group of up to 30 farmers from their village or block to another area. Motivation tours are usually arranged for a day. It expose farmers new technologies which are being used by farmers in another area, or are being developed at research stations, horticultural base nurseries or activities being implemented by other extension organizations such as NGOs.

In this study motivation tour means the tour arranged by DAE for the farmers of the study area to visit different places to motivate them various issues.

Farmers rally: Farmers rally is a large extension method which is used for introducing successful technologies usually involves a combination of activities centered on a main theme. Farmers rally become attractive by the use of folk song and drama.

In this study farmers rally means the rally conducted for the farmers in the study area by DAE.

Farmer field school: Farmer field school is a group extension method which is field oriented and participatory placing emphasis on learning by doing where training takes place over an extended period such as a cropping season and is a combination of classroom and field work.

In this study farmers field school means the school where group discussion is taken place to teach the farmers various agricultural practices.

Group meeting: Group meeting is the extension method which creates the opportunities for extension staff and farmers to come together to discuss and analyses issues and ideas. They are generally short not exceeding a couple of hours and involve no or low cost.

In this study group meeting means the group method conducted in the study area by DAE.

Farm radio: Farm radio is a audio type extension teaching method which is very effective in communicating a mass of people with agricultural information. It is useful for spreading general awareness and creating an interest in farming innovation. It is also helpful to getting timely warning about possible pest and diseases outbreak or urgent advice about action that could be taken.

In this study farm radio means the national and regional farm broadcast used by DAE to communicate various agricultural messages to the respondents.

Newspaper: Newspaper can be referred as a mass communication extension teaching method which carries accurate and informative agricultural information.

In this study newspaper means the printed mass media which was used by DAE to communicate various agricultural messages to the respondents.

Leaflet: Leaflet is a printed teaching method which provides notes on the subject matter of a lecture or demonstration or a topic of special or urgent interest. They are useful reference materials for people to keep.

In this study leaflet means the printed mass media which was used by DAE to communicate various agricultural messages to the respondents.

Flash cards: Flash cards are visual teaching aids which can be used to promote thought and generate discussion on a particular subject, particularly amongst small groups of farmers. They are usually very simple illustrations which have been drawn onto small pieces of card.

In this study flash cards means the visual teaching aid used by DAE in the study area to communicate various agricultural messages to a group of people.

Poster: Poster can be defined as a display type of visual aid which creates awareness among people about an idea, concept or method. It is usually a large piece of paper which displays a simple message for potentially large number of people. They can be used to advertise or publicize a forthcoming extension event or communicate simple technologies or information.

In this study poster refers as the visual aid which were used by SAAO or extension agents to change the attitude of the framers of the study area.

Folk songs, drama: these are the traditional form of entertainment and communication across Bangladesh. For extension programmes they present the opportunities to convey agricultural information in a culturally acceptable way, stimulate discussion about local issues among farmers and make extension events enjoyable.

In this study folk songs, drama means some arrangements of song, drama or any artistic presentation of any message by the extension agents to change farmers attitude.

CHAPTER 2

REVIEW OF LITERATURE

The study is mainly concerned with the usefulness of teaching methods used by revised extension approach of DAE. The subject of usefulness of teaching methods has potentials for scientific inquiry. The researcher made an elaborate search of available literature for this purpose. But no study has been found to be specifically undertaken in a systematic way in this direction. Therefore, an attempt has been made in this chapter to review some interlinked literature on this aspect. For the convenience of discussion, this chapter is divided into three sections, viz:

1. Reviews on general context.
2. Review of concerning relationships of the selected characteristics of the farmers with the usefulness of extension teaching methods and .
3. Conceptual framework of the study.

2.1 Reviews on general context

Paul and Spector (1963) conducted a study on three villages for experimental treatments viz., (i) radio programmes, (ii) Audio-visual methods, (iii) Audio-visual radio programmes. They inferred that these treatments varied in their impact according to nature of the innovation being communicated.

Latoria (1966) reported that demonstration is the most important media of communication at the interest stage. Mahajan (1966) found that lecture alone was not effective in teaching message on seed treatment, while the use of flash card along with lecturer was found superior to lecture alone but inferior to method demonstration.

Manker (1966) found that the most effective communication method in bringing about a change in knowledge, attitude and skill of farmers was personal contact-cum-method demonstration. Rao and Patel (1966) have reported the demonstration as most effective method at awareness and interest stage.

Rao and Rao (1970) found that film strip was superior to all other selected audio-visuals in helping farmers in acquiring and retaining knowledge of foliar spray of urea on wheat crop. Film strip combined with a talk was proved as the best media. Film strip, flannel graph, photographs and flash cards were found to be significantly superior to lecture. Taped lecturer was the least effective.

Singh *et al.* (1971) reported that film strip was superior than slides, photographs, flash cards, flannel graphs and film shows in imparting knowledge about improved methods of sugarcane cultivation.

Rogers and Shoemaker (1971) observed that a combination of media is the most effective way of reaching people with new ideas and persuading them to utilize the innovation. Somasundaram (1972) reported that mixed media approach in teaching learning process yield better gains and retention of knowledge.

Rao (1970), Gupta (1972) and Patil (1975) observed the significant impact of demonstration in the adoption of farm practices. Prema and Menon (1974), Pandey and Roy (1977) and Chopra (1980) revealed gain in knowledge through extension teaching methods.

Malhotra (1974) concluded that the younger women gained more knowledge than the older ones with different models of presentation viz. folk songs, tape recording and result demonstration.

Robert (1975) compared the lecture and lecture and slide tape method of instruction. He conferred that both the lecture and slide tape method of instructions were efficient in production mean gains, which method was more effective than other.

Sinha and Verma (1975) in an evaluation of farmers training reported that discussion method ranked first followed by question and answer. Usefulness and adequacy of time allotted to the teaching methods was also highlighted by trainees.

Kaur and Roy (1976) opined that teaching with the help of selected non-projected visual aids was more effective than the lecture method alone. He further concluded

that effectiveness of non-projected visual aids vary with topic variation in knowledge was also noticed in all the four treatments i.e. lecture, lecture and chart, lecture and flash card and lecture and flannel graph.

Nanjaiyan *et al.* (1976) concluded that visual aids like lecture plus chalk board, lecture plus flash card, lecture plus flannel graph had significant effect on knowledge gain about the improved practices in the cultivation of cotton crop. They further concluded that the flash card had excelled other methods and the order of priority was lecture plus flash card and lecture plus flannel graph.

Singh and Singh (1976) reported that for overall effectiveness, combination of field trip plus slide show and demonstration plus slide show may be considered the best. Subramanyan (1976) reported that talk with slides. Flannel graphs and discussion was an effective combination for the message on treatment of pulse seeds with rhizobium bacterial culture.

Subramanyan (1976) observed that combination of extension method (i) talk with slide show plus flannel graph plus exhibition plus demonstration plus discussion was found most effective followed by (ii) exhibition plus demonstration plus discussion (iii) talk plus flannel graph plus discussion and (iv) talk plus slide show plus discussion. He further reported that forgetting is higher when the interval of time is longer.

Pandey and Roy (1977) studied the effectiveness of seven alternative media formats. These were (i) print (ii) picture (iii) Sound (iv) print plus picture (v) print plus media (vi) picture plus sound (vii) print plus picture plus sound. They observed that different media combinations are likely to be differentially effective.

Parkash (1979) concluded that media combination were more effective than the single medium in increasing knowledge, level but the media combinations did not differ among themselves. All the three treatments i.e. exhibition, exhibition with flash cards and exhibition with slide show were similar, in influencing the attitude of the respondents whereas exhibition with slide show was distinctly superior to other treatments in influencing symbolic adoption.

Khanna (1980) compared the three modes of presentation viz., straight talk, discussion and drama. It was observed that there was no significant difference between gain knowledge of the respondents exposed to these three different modes.

Rothman (1980) attempted to determine the effectiveness of two medias i.e. group discussion plus lecture. The study revealed that lecture group did marginally significantly better in terms of knowledge gained.

Bhardwaj (1981) reported that printed materials followed by group discussion was found to be more effective medium for communication knowledge to the members of the 'charcha mandal' which the least effect was tape recorded message.

Manchanda and Hansra (1983) observed significant gain and retention of knowledge through selected methods viz., lecture method, printed material followed by group discussion method, film and slide tape presentation. They also reported that printed material was comparatively more effective than the lecture method for gain and retention of knowledge.

Siddarmaiah and Rajanna (1984) observed that in imparting any knowledge, the methods slide show and film show singly or in combination with radio, were superior to the use of radio alone, which is only an oral method. Further there was the two media combinations viz., radio-slide show and radio-film show or film singly except in case of comprehension knowledge. The most interesting findings was that slide show was found to be effective as the two media combination in increasing the respondent's knowledge.

Mehta (1985) found that lecture plus chart and lecture plus slip chart had same effect in imparting knowledge regarding clothing practices among rural women but it differed from lecture plus flash cards and also from lecture plus leaflets. Lecture plus flash cards was found to be more effective than other media combinations selected.

Nageraj and Reddy (1985) concluded that lecture method was effective in making farmers gain more knowledge and it was equally effective with respect to symbolic

adoption. It was, therefore, postulated that different training methods will change KAS of rural women to differential level.

Ania (1986) found in a study that extension officers (46%) were the most important information source; personal radio (29%) and television (27%) are considered as the most frequently used mass media by farmers for technological information.

Shamanta (1986) reported that mass communication channels involved different mass media such as radio, TV, magazine, newspapers etc. which enable a source of one or a few individuals to reach a large audience rapidly. These media are effective in the developed countries, while in the developing world their effectiveness is limited due to many factors. The modern media of communication like radio, TV, magazines, newspapers etc. are available mainly to urban people and elite society and the coverage of rural programme by mass media are also inadequate.

Mangat and Hansra (1987) reported that demonstration and discussion was found to be the most effective medium for gain in knowledge of specific facts, knowledge of methodology and knowledge of principles and generations. Film and discussion was inferred to be more effective for gain in knowledge of trends and sequences, classification and categories, criteria's theories and structures. It was further concluded that slide tape and discussion was more effective than lecture and discussion for gain in knowledge of specific facts, connections, trends and sequences, criteria and methodology. Both lecture and discussion and slide tape and discussion, were better than demonstration and discussion for gain in knowledge of theories and structures.

Dinampo (1989) conducted a study in Philippines to determine communication need and preferences. He observed that farmers were found to prefer an interpersonal media (extension agents) rather than mass media. Among mass media, first preference was radio followed by printed materials and audio visual sources.

Jondhle and Chole (1989) summarized that farmers perceived demonstration combined with lecture as the most effective followed by discussion alone which was

contrary to the observation that lecture plus discussion is more effective than discussion alone.

Hoque (1990) in his paper concluded that mass media can perform a better role in technology diffusion than other media. Therefore, planned efforts to introduce more of mass media strategies that are proven effective by experiments are highly recommended.

Wate and Rivera (1991) in their study examined the application of new technologies in agricultural information transfer process and explored future perspectives of new technologies as a force of change in developing countries. They found that print media, electronic media, radio, television, satellite computers and mobile audio-visual media were the important sources of spreading information.

Ayaz (1991) in a study in Pakistan found that radio solved the problems, which were inaccessible to other media and that of illiteracy of farmers. Therefore, radio needs to be used more extensively to disseminate agricultural information to farmers.

Kashem and Halim (1991) in a study concluded that interpersonal communication media such as friends, neighbors, seed, fertilizers and pesticides dealers are the most reliable and trustworthy sources of agricultural information to the farmers.

Khan and Paracha (1994) conducted a study in two villages of Pakistan, one innovative and other non-innovative among the farmers of cotton producing district, and reported that the main channels of communication were mass media and interpersonal communication. The mass media were centrally organized and included radio, television and newspapers.

Galindo (1994) in his study in Mexico on communication media used by farmers revealed that television and radio were the most widely used communication media, and talks, demonstrations training courses were the preferred media for receiving information.

Islam (1995) conducted that a study on women's participation in selected agricultural income generating activities and found mass media like radio, television, print materials etc. were some of the media which created awareness and interest among the farmers and their wives to accept improved technology by participating in agricultural income generating activities.

Islam (1996) concluded that the highest proportion of the respondents (44.55%) belonged to medium media exposure category and 38.18% belonged to low exposure and 17.27% belonged to high exposure group. He also found that among 15 media, radio ranked in 6, television 7, fair 8. Agricultural publications 15 and the rank 1 to 5 were for individual media.

Khan (1996) conducted a study on the use of information sources by the poor farmers and concluded that 75% of the respondents had medium use of various information sources like local leader, TV and radio for receiving agricultural information.

Ullah (1996) found that vegetable growers contacted with the block supervisor (67.70%) which was followed by radio (61.45%), neighbors (43.23%) friend and relatives (43.23%) and krishi katha was used to the lowest (6.67%) extent. The study revealed that individual contact was highly used by the respondents followed by mass media and group sources.

Mia *et al.* (1997) observed that 65% of the farmers used individual media while 18% and 17% of the farmers used group and mass media for receiving farm information.

Wabhitkar *et al.* (1998) reported that contact with extension agents and mass media exposure were found to be significantly related to adopt high yielding varieties specially in creating awareness.

Anisuzzaman (2003) found that radio seems to be a powerful media in the mass contact method. Progressive farmer and contact farmer frequently used communication media. TV, result demonstration and printed materials are also important media communicating agricultural information. But the least used media were newspaper and field tour.

Alam (2004) in his study observed that the highest extents of communication media were used by the farmers and found that TV (rank one) and it was followed by local leader (rank two), radio (rank three), result demonstration (rank four) and method demonstration (rank five) in receiving information on winter vegetables cultivation.

Mollah (2006) found that the highest extent of use of communication media by the farmers was found in contact with Sub-Assistant Agricultural Extension Officer was followed by television in relation to rice production technologies.

2.2 Relationship between selected characteristics of farmers and the usefulness of different teaching methods

2.2.1. Age and usefulness of teaching methods

Sarker (1996) concluded that age of the farmers had no significant relationship with effectiveness of agricultural information disseminated through agricultural radio programme.

Islam (1998) observed that there was no significant relationship between age of the farmers and their opinion on the effectiveness of Mati-O-Manush television program in disseminating agricultural information.

Anisuzzaman (2003) in his study conducted that age of the farmers had negative and significant relationship with the use of communication media.

Nuruzzaman (2003) found that age of the farmers had negative and significant relationship with their use of mass media in receiving agricultural information.

Alam (2004) found that age of the farmers had negative and significant relationship with their opinion of the farmers on effectiveness of printed materials in getting farm information.



Islam (2005) found that age of the farmers had no significant relationship with their use of printed materials by the farmers in receiving farm information.

2.2.2 Level education and usefulness of teaching methods

Kashem and Jones (1995) found in their study that education of the small farmers had significant positive correlation with their information sources.

Kumari (1988) from the study on communication effectiveness of six media showed that there was significant positive relation between education of women and attitude towards the message.

Islam (1995) found that education of the farmers had positive and highly significant relationship with their use of communication media.

Sarker (1995) in his study concluded that education of the farmers had positive and significant relationship with their use of communication media.

Chakraborty (1992) showed that the education of the farmer had significant relation with their time spend in listening to radio. However, he found that there was no statistically significant relationship between their education and listening habit.

Sarker (1996) found in his study that education of the small farmers had significant positive relationship with the opinion of the farmers regarding effectiveness of agricultural information disseminated through agricultural radio programme.

Hossain (1996) observed a significant relationship between education of the TV viewer farmers and their usefulness of Television as an agricultural information media.

Islam (1998) in his study concluded that more the level of education of the farmers, the more will be their positive opinion the effectiveness of TV programme.

Nuruzzaman (2003) in his study observed that education of the farmers had significant positive relationship with their use of mass media.

2.2.3 Family size and usefulness of teaching methods

Islam (1998) observed that there was no significant relationship between family size of the farmers and their opinion on the effectiveness of Mati-O-Manush Television program in disseminating agricultural information.

Sarker (1996) concluded that family size of the farmers had no significant relationships with effectiveness of agricultural information disseminated through agricultural radio programme.

Hossain (1996) observed a significant relationship between family size of the TV viewer farmers and their usefulness of Television as an agricultural information media.

Anisuzzaman (2003) observed that family size of the farmers had no significant relationship with their communication media Radio, TV, Newspaper in adoption of improved rice production technology.

Nuruzzaman (2003) found that family size of the farmers had no relationship with their use of mass media in receiving agricultural information.

2.2.4 Farm size and usefulness of teaching methods

Bhuiyan (1988) found that the farm size of the farmers had positive and significant effect on the use of communication media.

Sarker (1995) in his study concluded that farm size of the respondents had a positive and significant relationship with their use of communication media.

Islam (1995) found that farm size of the farmers had a positive and significant relationship with their use of communication media.

Anisuzzaman (2003) found that the farm size of the respondents had no significant relationship with their use of communication media.

Nuruzzaman (2003) in his study conducted that farm size of the farmers had no significant relationship with the use of mass media.

2.2.5 Agricultural knowledge and usefulness of teaching methods

Kashem and Jones (1995) found in their study that agricultural knowledge of the small farmers rendered significant positive correlation with their contact with information sources.

Kashem and Halim (1991) showed that the use of communication media in adoption of modern rice technologies had significant positive correlation with agricultural knowledge.

Parveen (1995) found that mass media exposure of the respondents had a positive significant relation with their agricultural knowledge.

Sarker (1995) found a highly significant and positive relationship between agricultural knowledge of the farmers and their use of communication media.

Islam (1995) in his study observed that agricultural knowledge of the farmers had positive and highly significant relationship with their use of communication media.

Khan (1996) found that there was a highly significant and strongly positive relationship between agricultural knowledge of the farmers and their use of information sources.

Anisuzzaman (2003) found that the agricultural knowledge of the respondent had positive significant relationship with their use of communication media.

Nuruzzaman (2003) in his study observed that agricultural knowledge of the farmers had positive and significant relationship with their use of mass media.

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2.2.6 Annual income and usefulness of teaching methods

Islam (1998) observed that a significant relationship between annual family income of the farmers and their opinion on the effectiveness of Mati-O-Manush Television program in disseminating agricultural information.

Anisuzzaman (2003) observed that annual family income of the farmers had no significant relationship with their communication media Radio, TV, Newspaper in adoption of improved rice production technology

Nuruzzaman (2003) found that annual family income of the farmers had no relationship with their use of mass media in receiving agricultural information.

Alam (2004) found that annual family income of the farmers had positive and highly significant relationship with their opinion of the farmers on effectiveness of printed materials in getting farm information.

Islam (2005) found that annual family income of the farmers had no significant relationship with their use of printed materials by the farmers in receiving farm information.

2.2.7 Cosmopolitanism and usefulness of teaching methods

Latif (1974) found that the relationship between cosmopolitanism and communication exposure was positively significant.

Kadam and Sabale (1983) observed in a study that cosmopolitanism of the farmers were significantly associated with the extent of use of communication media.

Bhuiyan (1988) in a study observed that the relationship between cosmopolitanism and the use of communication and the use of communication media was not significant.

2.2.8 Innovativeness and usefulness of teaching methods

Hossain (1996) observed a significant relationship between innovativeness of the TV viewer farmers and their usefulness of television as an agricultural information media.

Islam (1998) in his study concluded that the innovativeness of the farmers had a positive relationship with the favorable opinion towards the information received from TV programme (Mati-O-Manush).

Anisuzzaman (2003) observed that innovativeness of the farmers had a positive and significant relationship with their communication media in adoption of improved rice production technology.

Nuruzzaman (2003) found that innovativeness of the farmers had a positive relationship with their use of mass media in receiving agricultural information.

Islam (2005) found that innovativeness of the farmers had positive and significant relationship with their use of printed materials by the farmers in receiving farm information.

2.2.9 Organizational participation and usefulness of teaching methods

Sarker (1996) concluded that organizational participation of the farmers had significant relationship with effectiveness of agricultural information disseminated through agricultural radio programme.

Bhuiyan (1988) in a study found that organizational participation of the farmers had no significant effect on the use of communication media.

Rahman (1991) found that organizational participation and credibility of Block of Block Supervisors showed insignificant relationship.

Islam (1995) in his study on wheat growers found that organizational participation of the farmers had positive significant relationship with their use of communication media.

Nuruzzaman (2003) found that organizational participation of the farmers had positive and significant relationship with their use of mass media.

Alam (2004) found that organizational participation of the farmers had no significant relationship with their opinion of the farmers on effectiveness of printed materials in getting farm information.

Islam (2005) found that organizational participation of the farmers had positive and highly significant relationship with their use of printed materials by the farmers in receiving farm information.

2.2.10 Attitude towards modern agricultural technologies and usefulness of teaching methods

Sarker (1996) concluded that attitude towards modern agricultural technology of the farmers had a positive relationships with effectiveness of agricultural information disseminated through radio.

Islam (1998) in his study concluded that the attitude towards modern agricultural technology of the farmers had a positive relationship with the favorable opinion towards the information received from TV programme (Mati-O-Manush).

Nuruzzaman (2003) in his study concluded that the attitude towards modern agricultural technologies of the farmers had no relationship with their use of mass media in receiving agricultural information.

Islam (2005) found that attitude towards modern agricultural technology of the farmers had no significant relationship with their use of printed materials by the farmers in receiving farm information.

2.3 Conceptual Framework of the Study

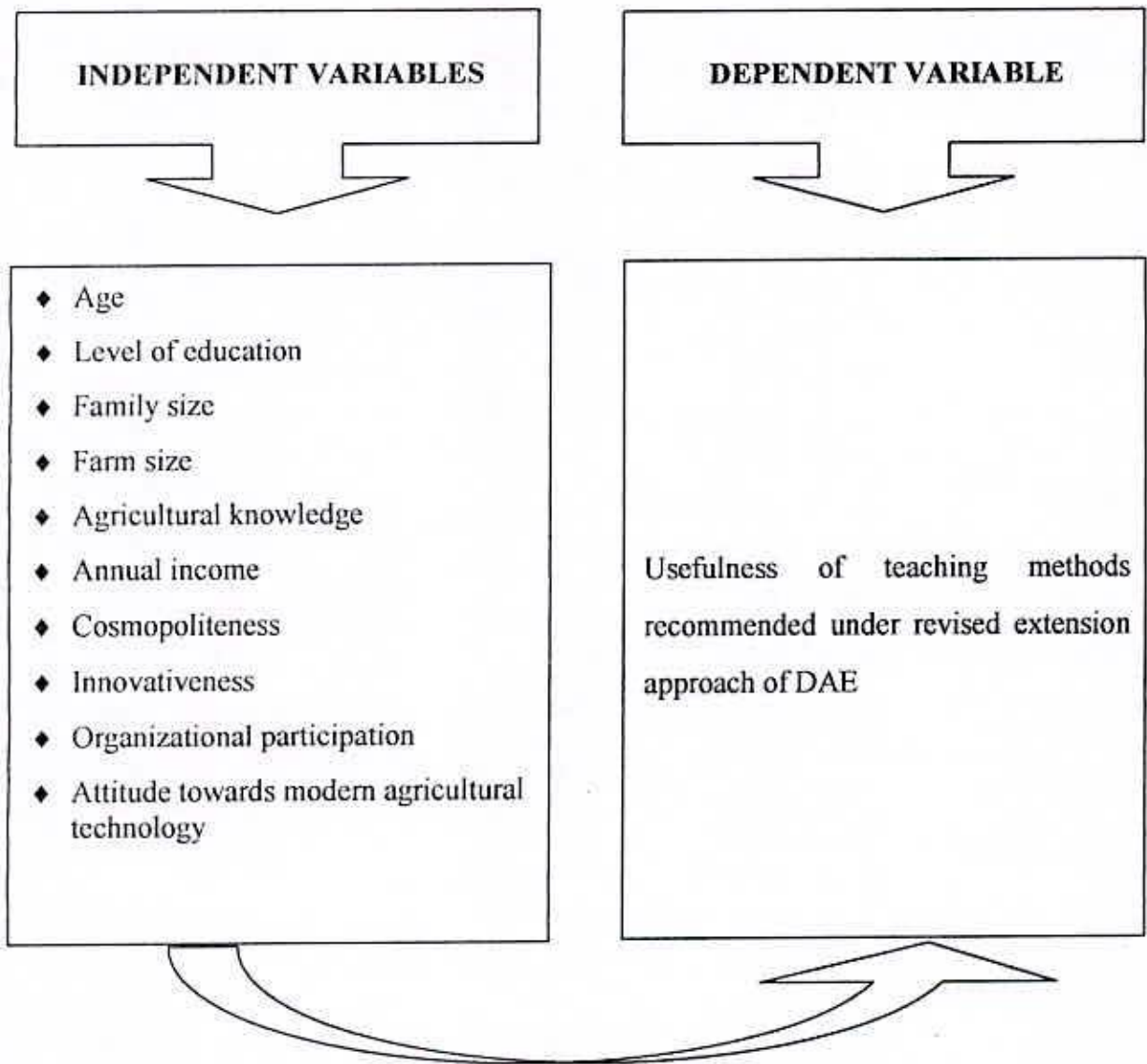


Figure 2.1 Conceptual framework of the study

CHAPTER 3

METHODOLOGY

In conducting a research study, methods and procedures are most important part. Proper methodology helps the researcher to collect relevant and reliable data and also helps to reach at a meaningful conclusion.

In this Chapter, the methods and procedures that were followed in conducting this research have been described.

3.1 Locale of the study

Four villages namely Soyedpur, Komolapur, Doyara, and Kamairbag of Kalirbazar Union of sadar upazila under Comilla district were purposively selected as the study area. The villages are situated in the west of the upazila Headquarters. Purposive sampling of the study area was done as because it is closed to researchers own area. A map of the research area has been presented in Fig. 3.1 & 3.2.

3.2 Population and Sampling Procedure

The household heads of the four purposively selected villages constituted the population of the study. The households were comprised of all farm size categories. The total numbers of household heads were 918. In the table 3.1 village wise population and randomly selected respondents had been shown. One hundred household heads at the rate of approximately 11 percent of the total population were randomly selected as respondents from the four villages. Including main list of the respondents a reserve list was prepared comprised of 9 persons at the rate of 1 percent who were supposed to be interviewed only when a respondent in the original list found unavailable during data collection. The distribution of selected farmers is shown in Table 3.1.

Table 3.1 Distribution of population and sample of the respondents in respective villages of Kaligong union of Sodor upazila under Comilla district

Name of the Upazila	Name of the union	Name of the Villages	Total farm family	Total no. of sample	Reserve list
Adorsho sodor	Kaligong	Soyedpur	342	37	03
		Komolapur	274	30	03
		Doyara	167	18	02
		Kamairbag	135	15	01
Total			918	100	09

To make comparison between farmers' opinion and Sub-assistant Agriculture Officers (SAAO) opinion regarding usefulness of different teaching methods fifty (50) SAAO were selected from Comilla sadar upazilla.

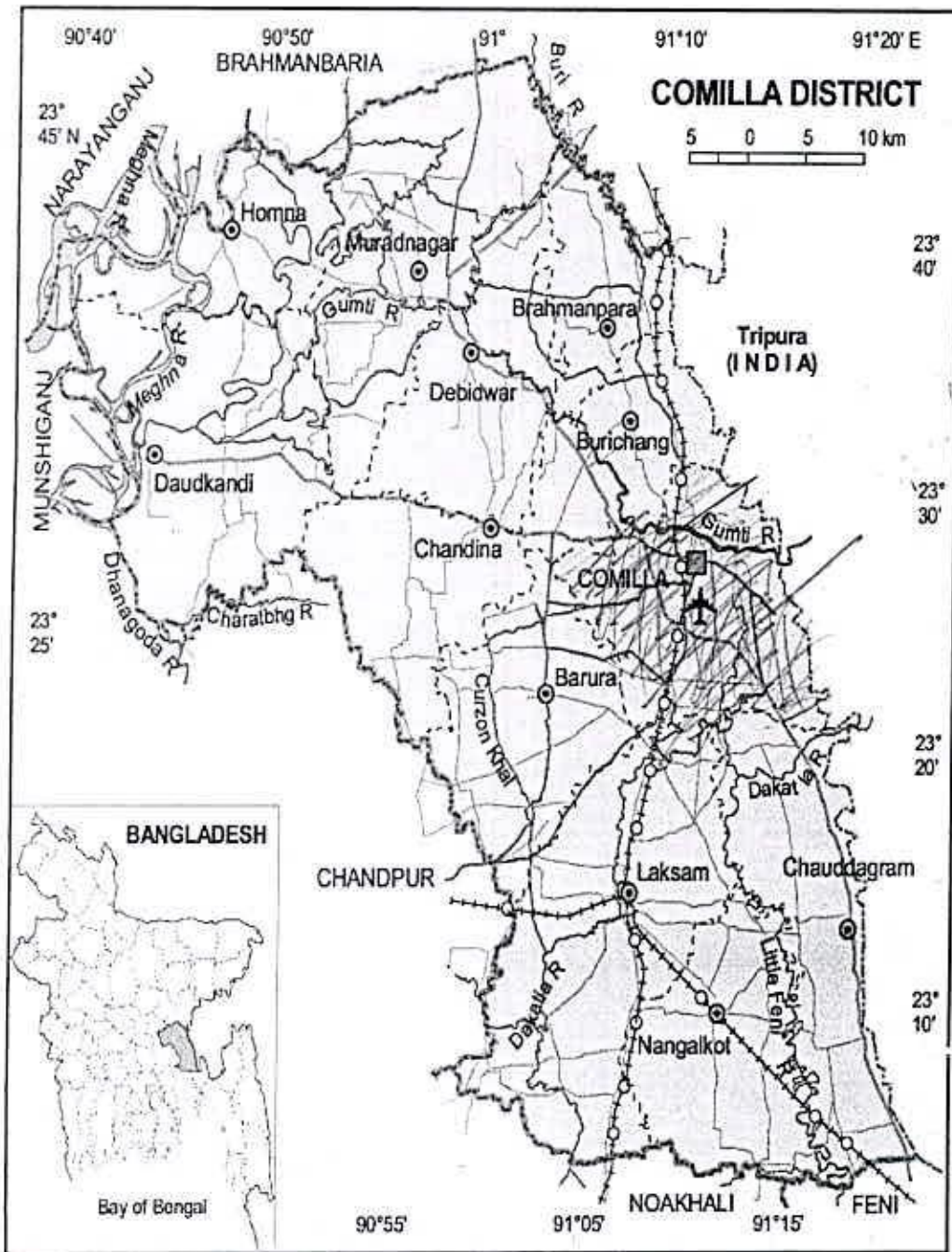


Fig. 3.1 Map of Comilla district showing Comilla sadar upazila

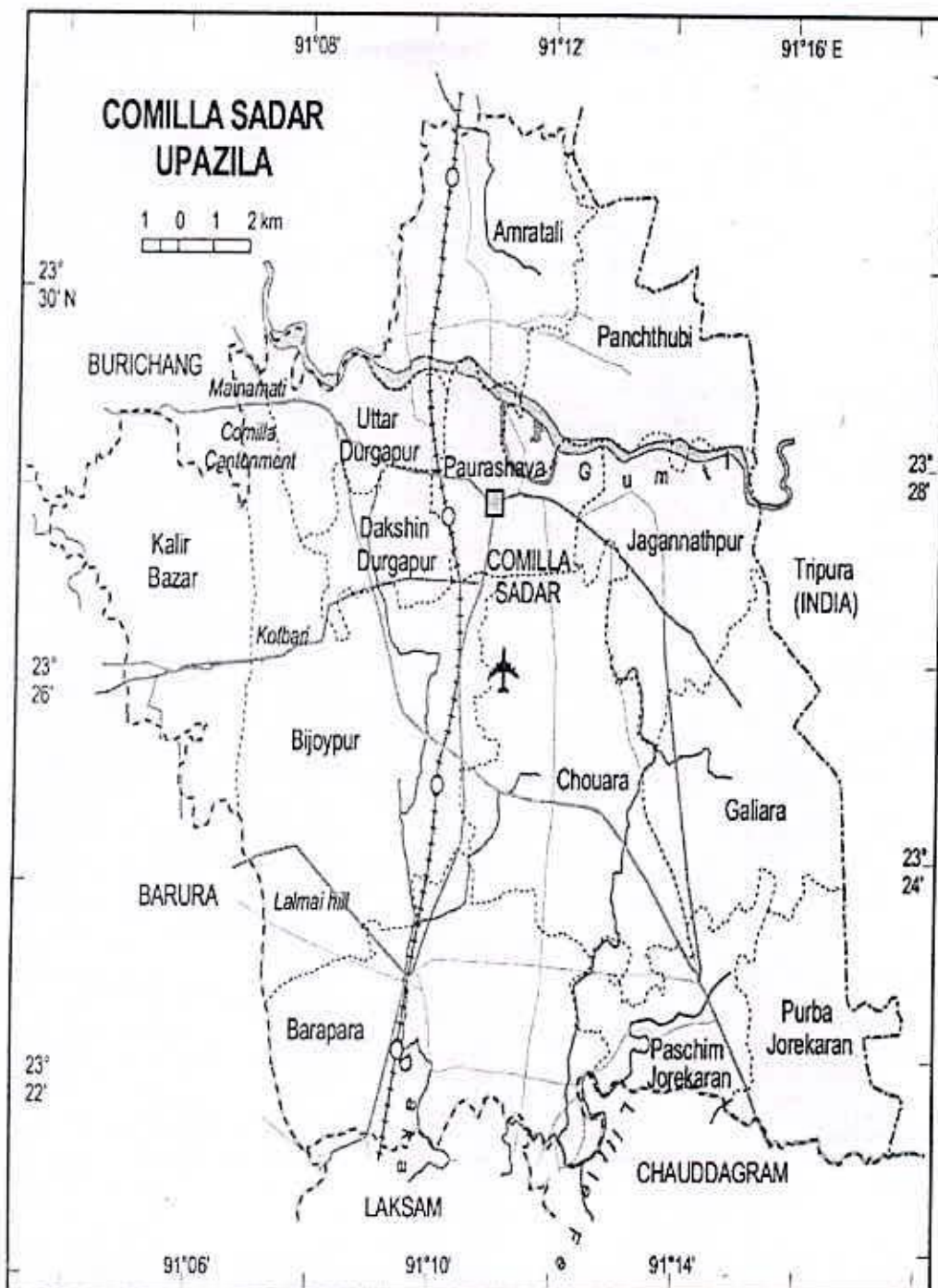


Fig. 3.2 Map of Comilla sadar upazila showing the study area

3.3 Instrument for data Collection

An interview schedule was prepared keeping in view the objectives of the study to collect information from the respondents. It was carefully designed and prepared consisting of both open and closed form of questions so that valid and reliable data could be ensured. The interview schedule was easy and simple understand and free from ambiguousness.

3.4 Pre-test of the Interview Schedule

In order to give the final shape the interview schedule was pre-tested with 10 farmers. Based on the pretest results necessary correction, modification, alternation and adjustment were made and then a final was printed out. An English version of the interview schedule has been presented at Appendix-I.

3.5 Collection of data

The researcher himself collected data during 28 July to 20 August 2007. In order to get reliable and relevant information the researcher sincerely made all possible efforts to describe the aim of the study to the respondents. Before interview with each interviewee, the interviewer tried his best to establish rapport with him so that he could furnish exact responses to the questions and statements with out hesitation. The questions were explained wherever necessary.

3.6 Variables and Their Measurement

In scientific research, selection and measurement of variables constitute an important task. The hypothesis of a research while constructed properly contains at least two important elements i.e. "a dependent variable" and "an independent variable." A dependent variable is that factor which appears, disappears or varies with the independent variables. An independent variable is the factor which is manipulated by the experimenters in its attempt to ascertain its relationship to an observed phenomenon.

3.6.1 Measurement of independent variables

An independent variable is one, which is manipulated by the researcher but not by other variables. Ten characteristics of farmers were selected as independent variables in this study. The procedures followed in measuring the independent variables are discussed below.

3.6.1.1 Age

Age was referred to the period of time of the respondents from his birth to the time of interview. The age of the respondents was measured by the actual years. A score of one (1) was assigned to each year of age.

3.6.1.2 Education

Education was defined as the extent of formal education received from the educational institute. A score of one (1) was assigned for each year of schooling in a formal institution. A score of zero (0) was given to the respondent who could not read and write. For example if a respondent of the study area studied up to class five he was given score of 5.

3.6.1.3 Family size

Family size of the respondents referred to the total members of the family including the respondent himself, his wife, children and other dependents who live, eat and perform role together in a family unit.

It was measured by the total number of the family members. One score was given for one member. If a family contained five members, the score of the family was 5.

3.6.1.4 Farm size

Farm size of the respondent referred to the total area of land on which his family carried out farming operation, the area being in terms of full benefit to his family. It was measured in hectares by using the following formula:

$$\text{Farm size (FS)} = A_1 + A_2 + A_3 + \frac{1}{2} (A_4 + A_5) + A_6 + A_7$$

Where,

A_1 = Homestead Area

A_2 = Own land under own cultivation

A_3 = Taken lease from others

A_4 = Taken barga from others

A_5 = Given to others as barga

A_6 = Pond

A_7 = Fallow land

3.6.1.5 Agricultural knowledge

Agricultural knowledge of a respondent was measured by asking 20 selected questions related to various components of agriculture, e.g. plants, soil, pesticides, fertilizers, etc. It was measured by giving score against each of the right or wrong answer to the questions. The total assigned score of all the questions was 40. A full score was assigned for each correct answer and partial score was assigned for each partial correct answer and 0 for the wrong answer. However, for correct responses to all the questions, a respondent could get a total score of 40, while for wrong responses to all the questions a respondent could get 0. As such, '0' indicates having no agricultural knowledge and '40' indicates very high agricultural knowledge.

3.6.1.6 Annual income

Annual income referred to the total earnings from agriculture and non agriculture sources (business, services, daily labour etc.) during the period of the study year. It was measured by the total earning of the total members of a farm family. One score was given for one thousand (1000) taka.

3.6.1.7 Cosmopolitaness

Cosmopolitaness was referred to the frequency of visit of a respondent to distant places from his own village. Purposively nine places were selected to measure cosmopolitaness of a respondent. Score computed for cosmopolitaness of a respondent on the basis of his nature of visit were as follows:

Table 3.2 Measurement of Cosmopolitaness of the respondents

Places of visit	Scoring system
1. Visit to neighboring villages	0 = No visit 1 = 1-4 times/ month 2 = 5-9 times/month 3 = 10 or more times/ month
2. Visit to neighboring unions	0 = No visit 1 = 1 times/month 2 = 2-3 times/month 3 = 4 or more times/months
3. Visit to own upazila Sadar	0 = No visit 1 = 1-4 times/year

	2 = 5-9 times/year 3 = 10 or more times/year
4. Visit to other upazila Sadar	0 = No visit 1 = 1 times/year 2 = 2-3 times/year 3 = 4 or more times/year
5. Travel to own district Sadar	0 = No visit 1 = 1-2 times/year 2 = 3-5 times/year 3 = 6 or more times/year
6. Visit to agricultural fair	0 = No visit 1 = 1times/4 years 2 = 2-3 times/4 years 3 = 4 or more times/4 years
7. Visit to their district Sadar	0 = No visit 1 = 1time/year 2 = 2 times/year 3 = 3 or more times/year
8. Visit to Research Substation or Regional Agricultural Research Institute	0 = No visit 1 = 1time/year 2 = 2 times/year 3 = 3 or more times/year
9. Visit to capital city	0 = No visit 1 = 1time/4 years 2 = 2-3 times/4 years 3 = 4 or more times/4 years

The scores obtained from visit to each of the 9 categories of places were added together to obtain cosmopolitanism score of a respondent. This score of a respondent could range from 0 to 27, where 0 indicating no cosmopolitanism and 27 indicating high cosmopolitanism.

3.6.1.8 Innovativeness

Innovativeness is the degree to which an individual adopts an innovation relatively earlier than other members in a social system (Rogers, 1995). In this study,

innovativeness of a respondent was measured on the basis of time required by an individual to adopt each of the technology in the following manner:

Period of Adoption	Assigned Score
Not at all	0
Within four years	1
Within three years	2
Within two years	3
Within one year	4

Innovativeness score of a respondent was obtained by adding his scores for adoption of all the 10 improved agricultural technologies. Innovativeness score of a respondent could range from 0 to 40, where, 0 indicating no innovativeness and 40 indicating very high innovativeness.

3.6.1.9 Organizational participation

Organizational participation of the respondent was measured on the basis of the nature of his involvement and duration of the respondent's participation in different organizations during the time of interview. Organizational participation score was computed by using the following formula:

$$\text{Organizational participation} = (A \times D)$$

Where,

A = Nature of involvement score

D = Duration score

Suppose, a respondent was involved in an organization as president for two years. He would be given 3 as president and 2 would be given for duration. His Organizational Participation score would be $3 \times 2 = 6$.



Nature of involvement	Scores assigned
No participation	0
Participation as ordinary member	1
Participation as executive committee member	2
Participation as officer of the executive committee	3

Duration score was computed by assigning score one (1) for each year of participation. Score obtained by a respondent for each of the organizations listed were then summed up to obtain organizational participation score.

3.6.1.10 Attitude towards modern agricultural technology

An attitude may be defined as predisposition to act towards an object in a certain manner. Attitude of a respondent was used to refer to his beliefs, feelings and action towards the various aspects of modern agricultural technology. It was measured by constituting 12 statements (six positive and six negative). A statement was considered positive if it possessed an idea favourable towards the modern agricultural technology. On the other hand, a statement was considered negative if it was unfavourable towards the modern agricultural technology. The respondents were asked to express their opinion in the form of 'strongly agree', 'agree', 'agree to some extent', 'disagree', 'strongly disagree'. A score of 4 was given to 'strongly agree', 3 to 'agree', 2 to 'undecided', 1 to 'disagree' and 0 to 'strongly disagree', if the statement was positive. A reverse scoring method was followed in case of statements considered negative. Attitude score of a respondent was determined by summing the scores obtained by him for all the items in the scale. The index scores of respondents could range from 0 to 48 where 0 indicating unfavorable and 48 for favourable attitude towards modern agricultural technologies.

3.6.2 Measurement of dependable variables

The dependable variable of the study was "Usefulness of Teaching Methods used Under Revised Extension Approach of DAE". It was measured in two ways (i) from the responses of the farmers and (ii) from the responses of the field level DAE extension workers i.e. Sub-Assistant Agricultural Officer (SAAO).

Each respondent was asked to indicate his opinion about usefulness of particular teaching method in increasing his/her knowledge, skill and attitude change along with a four point scale: very useful, useful, some extent useful and not useful and score assigned as 3, 2, 1 and 0. Finally, all the scores were added together. Usefulness score of each teaching method thus, could range from 0 to 9, where, 0 indicated no usefulness and 9 indicated very high usefulness of teaching method.

Having calculated the score of extent of usefulness of teaching methods for each of the 100 respondents, an effort was also made to compare the relative usefulness of those

teaching methods by developing a Teaching Method Usefulness Index (TMUI) for each method in knowledge, skill and attitude change by using the following formula:

$$TMUI = (N_1 \times 3) + (N_2 \times 2) + (N_3 \times 1) + (N_4 \times 0)$$

Where,

TMUI = Teaching method Usefulness Index

N_1 = Number of farmers responses teaching method as very useful

N_2 = Number of farmers responses teaching method as useful

N_3 = Number of farmers responses teaching method as some extent useful

N_4 = Number of farmers responses teaching method as not useful

Thus Teaching method Usefulness Index (TMUI) for any one of the selected teaching method could range from 0 to 300, where, 0 indicating not useful and 300 indicating very high useful. After obtaining the TMUI for each of the 15 teaching method, a ranked order was prepared.

Thereby an overall teaching method usefulness index (OTMUI) was also developed by using the following formula:

$$OTMUI = TMUI \text{ for knowledge change} + TMUI \text{ for skill change} + TMUI \text{ for attitude change}$$

Thus Overall Teaching Method Usefulness Index (OTMUI) for any one of the selected teaching method could range from 0 to 900, where, 0 indicating not useful and 900 indicating very high useful. After obtaining the OTMUI for each of the 15 teaching method a ranked order was prepared.

Similar OTMUI was also calculated with SAAO responses.

In this case Overall Teaching Method Usefulness Index (OTMUI) for any one of the selected teaching method could range from 0 to 450, where, 0 indicating not useful and 450 indicating very high useful. After obtaining the OTMUI for each of the 15 teaching method a ranked order was prepared.

3.7 Statement of Hypotheses

A set of hypotheses were formulated for empirical testing. The following null hypotheses were formulated to test the relationships of 10 independent variables with the usefulness of teaching methods used under revised extension approach of DAE.

“There is no relationship between the usefulness of teaching methods and each of the above mentioned independent variables of the study.”

3.8 Data Processing and Analysis

3.8.1 Compilation of data

After completion of field survey data from all the interview schedules were coded, compiled, tabulated and analyzed in accordance with the objectives of the study. In this process, all the responses in the interview schedule were given numerical coded values. Local units were converted into standard units and qualitative data were converted into quantitative ones by means of suitable scoring whenever necessary. The responses to the questions in the interview schedules were transferred to a master sheet to facilitate tabulation.

3.8.2 Categorization of data

For describing the different characteristics the respondents were classified into several categories. These categories were developed by considering the nature of distribution of data, general understanding, prevailing in the social system and possible observed scoring system. The procedure for categorization of data in respect to different variables was elaborately discussed in Chapter 4.

3.8.3 Statistical technique

The analysis was performed using SPSS (Statistical Package for Social Sciences) computer package. Descriptive analysis such as range, number, percentage, mean, standard deviation and rank order were used whenever necessary. Pearson's Product Moment Co-efficient of Correlation (r) was used in order to explore the relationship between the concerned variables. Individual sample T-test was used to make comparison among the response of SAAO and the farmers. Throughout the study, at least five-percent (0.05) level of probability was used as basis of rejecting a null hypothesis.



CHAPTER 4

RESULTS AND DISCUSSION

In this chapter, findings of the study and their logical interpretations have been presented in four sections according to the objectives of the study.

First section focused on the selected characteristics of the farmers. Second section deals with the identification and description of the usefulness of teaching methods used by DAE. Comparison among the usefulness of teaching methods as perceived by the farmers and by SAAO (Sub-Assistant Agriculture Officer) have been presented in third section and the fourth section deals with the relationships between the usefulness of teaching methods and farmers selected individual characteristics

4.1 Selected Characteristics of the farmers (Independent Variable)

In this section the findings of the farmers selected characteristics have been discussed. The selected characteristics are (i) age, (ii) level of education, (iii) family size, (iv) farm size, (v) agricultural knowledge (vi) annual income (vii) cosmopolitaness, (viii) innovativeness (viii) organizational participation and (x) attitude towards modern agricultural technologies.

Table 4.1 Salient features of the sample farmers selected characteristics

Selected characteristics	Possible range	Observed range	Categories	Number	Percent	Mean	SD
Age	-	20 - 70	Young (upto 35)	32	32	42.3 9	12.1 8
			Middle (36-50)	43	43		
			Old (>50)	25	25		
Level of education	-	0 - 14	Illiterate (0)	18	18	6.66	4.28
			Primary education (1-5)	25	25		
			Secondary education (6-10)	32	32		
			Above secondary (>10)	25	25		
Family size	-	2- 13	Small (2-4)	21	21	6.32	2.42
			Medium (5-7)	54	54		
			Large (8 and above)	25	25		
Farm size	-	0.22 – 2.20	Small (upto 0.50 ha)	25	25	0.90	0.42
			Medium (0.51 to 1.35 ha)	58	58		
			High (above 1.35 ha)	17	17		
Agricultural knowledge	0-40	18-36	Low (upto 24)	15	15	28.4 2	4.36
			Medium (25-30)	56	56		
			High (31 and above)	29	29		
Annual income	-	47-310	Low (upto 80)	27	27	126. 72	60.8 4
			Medium (> 80 to 180)	54	54		
			High (>180)	19	19		
Cosmopolitaness	0-27	8-24	Low (upto 10)	26	26	15.1 2	5.00
			Medium (11-18)	52	52		
			High (> 18)	22	22		
Innovativeness	0-40	05 - 28	Low (upto 8)	23	23	13.3 5	5.76
			Medium (9 to 20)	65	65		
			High (> 20)	12	12		
Organizational participation	-	0-27	No participation (0)	30	30	8.6	7.97
			Low (upto 10)	28	28		
			Medium (11-20)	29	29		
			High (21 and above)	13	13		
Attitude towards modern agricultural technology	0-48	32-48	Moderately favourable (upto 40)	44	44	39.3 8	4.0
			Highly favourable (41-48)	56	56		
Usefulness of teaching methods	0-135	33-97	Low (up to 45)	19	19	62.8 7	17.1 3
			Medium (46 – 75)	52	52		
			High (76 and above)	29	29		

4.1.1 Age

Age of the respondents ranged from 20 to 70 years. The average being 42.39 years with the standard deviation 12.18. Based on their age the farmers were classified into young, middle and old aged categories shown in Table 4.2

Table 4.2 Distribution of farmers according to their age

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Young (Up to 35)	32	32	42.39	12.18
Middle aged (36 to 50)	43	43		
Old (above 50)	25	25		
Total	100	100		

Data furnished in Table 4.2 indicate that the highest proportion (43 percent) of the respondent fell into the middle age category, while 32 and 25 percent belonged to young and old age categories respectively. However, data also revealed that 75 percent of the farmers in the study area were young to middle aged category.

Young and middle aged people are generally more receptive to new idea and practices. In a rural setting like Bangladesh, they are usually the decision maker in farming affairs.

4.1.2 Level of education

Education of the respondents was measured by following the procedure as discussed earlier in Chapter 3. The education score ranged from 0 to 14 with an average of 6.66 and the standard deviation of 4.28. Based on their education scores, the farmers were classified into illiterate, primary level, secondary level and above secondary level categories shown in Table 4.3.

Table 4.3 Distribution of farmers according to their level of education

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Illiterate (0)	18	18	6.66	4.28
Primary level (1-5)	25	25		
Secondary level (6-10)	32	32		
Above secondary (above10)	25	25		
Total	100	100		

Data presented in Table 4.3 indicate that the highest proportion (32 percent) of farmers had secondary education, where equal proportion (25 percent) of respondents fell under primary and above secondary level. Only 18 percent of the respondents were found to be illiterate.

From the data it is seen that the level of education of the study area is comparatively higher than the national average education level. As the study area is located between Comilla town and Bangladesh Academy for Rural Development (BARD) it can be assumed that they had more scope and awareness for education.

4.1.3 Family size

The family size of the farmers ranged from 2 to 13 with an average of 6.32 and standard deviation 2.42. On the basis of their family size, the farmers were classified into small, medium and large categories shown in Table 4.4.

Table 4.4 Distribution of farmers according to their family size

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Small (2 - 4)	21	21	6:32	2.42
Medium (5 - 7)	54	55		
Large (8 and above)	25	24		
Total	100	100		

Data presented in Table 4.4 reveal that the highest proportion (54 percent) of farmers fell under the medium category compared to 25 percent large family and the remaining 21 percent with small family. Data indicate that the average family size (6.32) of the respondents in the study area was a little higher than national average of 5.6 (Bangladesh Bureau of Statistics-BBS, 2004).

4.1.4 Farm size

The farm size of the respondents ranged from 0.22 to 2.20 hectares with an average of 0.90 hectares and the standard deviation of 0.42. Based on their farm size scores, the farmers were classified into small, medium and large categories shown in Table 4.5.

Table 4.5 Distribution of farmers according to their farm size

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Small (up to 0.5ha.)	25	25	.90	0.42
Medium (above 0.5 to 1.35ha.)	58	58		
Large (above 1.35 ha)	17	17		
Total	100	100		

Data presented in Table 4.5 indicate that the highest proportion (58 percent) of the farmers belonged to medium size category compared to 25 percent small farm size and 17 percent large farm size category. Data also revealed that majority (83 percent) of the farmers had small to medium farm.

4.1.5 Agricultural knowledge

Agricultural knowledge score of the respondents ranged from 18 to 36 with an average of 28.42 and the standard deviation of 4.36. The respondents were classified into low knowledge, medium knowledge and high knowledge categories on the basis of their agricultural knowledge score which is shown in the table 4.6.

Table 4.6 Distribution of farmers according to their agricultural knowledge

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Low knowledge (up to 24)	15	15	28.42	4.36
Medium knowledge (25 to 30)	56	56		
High knowledge (above 30)	29	29		
Total	100	100		

Data presented in Table 4.6 indicate that majority of the respondents (56 percent) had medium agricultural knowledge, 29 percent of the farmers had high agricultural knowledge and 15 percent of respondents had low agricultural knowledge. Data also revealed that majority (85 percent) of the farmers had medium to high agricultural knowledge.

From the observation of agricultural knowledge score of the respondents it can be concluded that farmers of the study area possess comparatively higher agricultural knowledge. As the study area is comparatively progressive area with better communication facilities as well as good literacy rate farmers are supposed to be possessed high agricultural knowledge.

4.1.6 Annual income

The annual income of the respondents ranged from 47 to 310 thousand taka with an average of 126.72 and the standard deviation of 60.84. On the basis of the annual income, the respondents were classified into low, medium and high categories shown in Table 4.7.

Table 4.7 Distribution of farmers according to their annual income (In 1000 Tk)

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Low (up to 80)	27	27	126.72	60.84
Medium (above 80 to 180)	54	54		
High (above 180)	19	19		
Total	100	100		

The data in the Table showed that 54 percent of the farmers had medium annual income while 27 percent of the respondents had low annual income and 19 percent had high annual income.

It indicates that the average annual income of the study area is higher than the average per capita (470 US dollar, BBS, 2004) income of Bangladesh. There might be reason that the respondents in the study area were not only engaged in agriculture but also earn from other sources, such as service, business, remittance from abroad etc. Higher annual income of the respondents allows them to invest more in farming operations.

4.1.7 Cosmopolitaness

The cosmopolitaness score of the respondents ranged from 8 to 24 with an average of 15.12 and the standard deviation 5.0. Based on the cosmopolitaness scores, the farmers were classified into low, medium and high categories shown in Table 4.8

Table 4.8 Distribution of farmers according to their cosmopolitaness

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Low (up to 10)	26	26	15.12	5.0
Medium (11 to 18)	52	52		
High (above 18)	22	22		
Total	100	100		

Data presented in Table 4.8 indicate that the highest proportion (52 percent) of the farmers had medium cosmopolitaness, 26 percent of the farmers were low cosmopolite and 22 percent of the respondents had high cosmopolitaness. It appears that near about two-thirds (74 percent) of the farmers were medium to high cosmopolite. It is therefore, likely that cosmopolitaness might have favorable effect on their perceived usefulness of teaching methods in receiving farm information.

4.1.8 Innovativeness

The innovativeness score of the respondents ranged from 05 to 28 against the possible range of 0 to 40. The average innovativeness score was 13.35 and the standard deviation was 5.76. Based on the innovativeness scores, the respondents were

classified into low, moderate and high innovativeness categories shown in Table 4.9.

Table 4.9 Distribution of farmers according to their innovativeness

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Low (up to 8)	23	23	13.35	5.76
Moderate (9 to 20)	65	65		
High (above 20)	12	12		
Total	100	100		

Analysis of data revealed that majority (65 percent) of the respondents had medium innovativeness while 23 percent were low and only 12 percent were high innovative. Thus in respect of innovativeness the overwhelming majority (77 percent) of the respondents were medium to high innovative. This fact indicates that the farmers of the study area were mention worthy innovative.

The study area is in between Comilla town and BARD where communication is well and farmers are comparatively more educated with moderate financial strength. So the farmers residing near Comilla town are very much aware of technological knowledge and they had great chance to be innovative than the remote area.

4.1.9 Organizational participation

The organizational participation score of the respondents ranged from 0 to 27 with an average of 8.6 and the standard deviation of 7.97. Based on the organizational participation scores, the respondents were classified into no participation, low participation, medium participation and high participation categories shown in Table 4.10.

Table 4.10 Distribution of farmers according to their organizational participation

Categories	Farmers		Mean	Standard deviation
	Number	Percent		
No participation (0)	30	30	8.6	7.97
Low participation (1 to10)	28	28		
Medium participation (11 to20)	29	29		
High participation (above 20)	13	13		
Total	100	100		

Data presented in Table 4.10 indicate that the highest proportion (30 percent) of the farmers had no organizational participation where, 29 percent of the farmers had medium and 28 percent of the respondents had low participation in different organizations. Only 13 percent respondents had high organizational participation. It appears that a little less than three-fourths (70 percent) of the farmers had low to high participation in the different organizations, i.e. the respondents of the study area prefer to involve in some organizations.

More participation in organizational activities could create coordination capability and capacity to adopt improved production technology. The farmers with more organizational participation scores are expected to be perceived more usefulness of different teaching methods in receiving farm information.

4.1.10 Attitude towards modern agricultural technology

Attitude towards modern agricultural technology score of the farmers ranged from 32 to 48 against the possible range of 0 to 48. The farmers were classified into moderately favourable and highly favourable categories based on their obtained scores considering mean and standard deviation 39.38 and 4.0 respectively. The categories and the distribution of the farmers are shown in 4.11.

Table 4.11 Distribution of farmers according to their attitude towards modern agricultural technology

Categories	Farmers		Mean	Standard deviation
	Number	Percent		
Moderately favourable (up to 40)	44	44	39.38	4.0
Highly favourable (above 40)	56	56		
Total	100	100		

The data presented in Table 4.11 showed that a higher proportion of the respondents (56percent) having highly favourable attitude and 44 percent moderately favourable attitude towards modern agricultural technology. It implies that all the (100 percent) farmers were aware of modern technology. It might be due to their high education, economic solvency, cosmopolitaness and communication facilities.

4.2 Identification and description of the usefulness of teaching methods used under revised extension approach of DAE

Usefulness of teaching methods used under revised extension approach of DAE was the main focus of this study. Fifteen teaching methods were identified for this study to understand their usefulness. The salient features of the usefulness of teaching methods as perceived by the farmers and by the Sub-assistant Agriculture Officer (SAAO) have been presented in this section.

4.2.1 Information received by the farmers from different teaching methods last year

Farmers received various information's last year through different teaching methods. These information's are summarized here:

4.2.1.1 Crop related information

Farmers received following crop related information's through different teaching methods last year:

- i. Information about improved variety of rice BR-29, Hera and Jagoron.
- ii. Information about preparation of high yielding variety amon seed bed.

- iii. Motivation for increasing high yielding variety rice cultivation.
- iv. Information about different insects in the rice field and how to control them.
- v. Information about appropriate and safe way of pesticide application in the crop field.

4.2.1.2 Vegetable related information

Farmers received following vegetable related information through different teaching methods last year:

- i. Motivation to increase vegetables cultivation and their nutritional value.
- ii. Information about improved variety of vegetable seed.
- iii. Motivation to increase cultivation of high yielding variety vegetables.
- iv. Information about pest management in vegetables.
- v. Information about appropriate time of vegetables harvesting and market price.
- vi. Information about seed bed preparation for vegetable cultivation and appropriate age of seedling.

4.2.1.3 Technology related information

Farmers received following technology related information's through different teaching methods last year:

- i. Information and motivation to use dram seeder and its using technique.
- ii. Information about guti urea.
- iii. Information about leaf colour chart (LCC).
- iv. Information about compost preparation.
- v. Information about farm yard manure.
- vi. Information about vegetative propagation of different vegetable.
- vii. Information about improved seed storage technology.
- viii. Information about proper tree plantation technique.

- ix. information about improved production technologies.
- x. Information about integrated pest management (IPM) and motivation to increase use of IPM.
- xi. Insect control with out using insecticide.

4.2.1.4 Home-stead management related information

farmers received following home-stead related information's through different teaching methods last year:

- i. Motivation to increase fruit tree and tree plantation in the homestead area.
- ii. Information about tree plantation.
- iii. Information about fruit and medicinal plants to increase their plantation in the homestead area as well as other fellow land.
- iv. Information about mixed fruit gardening.
- v. Information about the balance application of fertilizer to the fruiting tree.

4.2.1.5 Other information

farmers received the following information through different teaching methods last year:

- i. Information and motivation for soil test.
- ii. Motivation to use balance fertilizer.
- iii. Information about organic fertilizer.
- iv. Information and motivation to increase spices crop production.
- v. Information about different disease and insects and their protection technique.
- vi. Information about the schedule of irrigation pump and electricity.
- vii. information about how to control rats from the crop field.
- viii. Information about appropriate time of crop harvesting and yield measurement.
- ix. Information about seed storage.



- x. Appropriate technique of seedling planting.

4.2.2 Usefulness of teaching methods as perceived by the farmers

The observed scores of usefulness of teaching methods as perceived by the farmers ranged from 33 to 97 against the possible scores being 0-135. The average score was 62.87 with a standard deviation of 17.13. On the basis of perceived usefulness of teaching methods, the farmers were classified into low, medium and high usefulness categories shown in the table 4.12.

Table 4.12 Distribution of farmers according to their perceived usefulness of different teaching methods

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Low (up to 45)	19	19	62.87	17.13
Medium (46 to 75)	52	52		
High (above 75)	29	29		
Total	100	100		

Data presented in the Table 4.12 indicate that the highest proportion (52 percent) of the farmers perceived medium usefulness of different teaching methods as compared to 19 percent perceived low and 29 percent perceived high usefulness of different teaching methods. This means that the majority (81 percent) of the farmers perceived medium to high usefulness of teaching methods.

The study area is comparatively a progressive farmers' area. It might be due to their communication ability and other socio-economic facilities. Their educational and economic level is comparatively higher than the remote area which leads them to acquire more knowledge and awareness about their farming activities. The farmers of the study area were very much aware about new technologies so that they kept close contact with the extension personnel from their own interest. It might be cause for their comparatively higher perceived usefulness of teaching methods.

4.2.3 Comparative usefulness of teaching methods in changing farmer's knowledge

For having the better understanding regarding comparative usefulness of teaching methods in changing farmer's knowledge a Teaching Method Usefulness Index

(TMUI) of each of 15 selected teaching methods were computed. The formula for determining TMUI has been shown in Chapter 3. The computed TMUI of the farmers in changing their knowledge for 15 teaching methods ranged from 41 to 266 which were arranged in rank order according to their TMUI as shown in Table 4.13.

Table 4.13 Rank order of 15 selected teaching methods according to their usefulness in changing farmers' knowledge

Sl. No.	Teaching methods	Extent of usefulness				TMUI	Rank Order
		Very useful (3)	Useful (2)	Some extent useful (1)	Not useful (0)		
1	Farm and home visit	71	24	5	0	266	1
2	Method demonstration	51	32	17	0	234	2
3	Group meeting	54	29	11	6	231	3
4	Result demonstration	47	35	18	0	229	4
5	Field day	16	30	51	3	159	5
6	Farmer field school	13	18	53	16	128	6
7	Radio	8	22	45	25	113	7
8	District and upazil fair	9	12	58	21	109	8
9	Folk song, drama etc.	7	13	35	45	82	9
10	Farmers rally	5	11	44	40	81	10
11	Motivation tour	2	7	48	43	68	11
12	Newspaper	3	5	47	45	66	12
13	leaflet	5	7	33	55	62	13
14	Poster	3	9	28	60	55	14
15	Flash cards	0	12	17	71	41	15

(TMUI) = Teaching method Usefulness Index

N = 100

Data presented in the Table 4.13 indicated that Teaching Method Usefulness Index (TMUI) scores ranged from 41 to 266 against the possible range of 0 to 300. According to TMUI farm and home visit ranked first followed by method demonstration, group meeting, result demonstration, field day, farmer field school,

radio, district and upazilla fair, folk song, drama etc., farmers rally, motivation tour, newspaper, leaflet, poster, flash cards.

4.2.4 Comparative usefulness of teaching methods in changing farmers' skill

For having the better understanding regarding comparative usefulness of teaching methods in changing farmers' skill a teaching method usefulness index (TMUI) of each of 15 selected teaching methods were computed. The formula for determining TMUI has been shown in Chapter 3. The computed TMUI of the farmers in changing their skill for 15 teaching methods ranged from 39 to 251 which were arranged in rank order according to their TMUI as shown in Table 4.13.

Table 4.14 Rank order of 15 selected teaching methods according to their usefulness in changing farmer's skill

Sl. No.	Teaching methods	Extent of usefulness				TMUI	Rank Order
		Very useful (3)	Useful (2)	Some extent useful (1)	Not useful (0)		
1	Method demonstration	55	41	04	0	251	1
2	Farm and home visit	53	39	08	0	245	2
3	Result demonstration	42	47	07	4	227	3
4	Group meeting	36	47	05	12	207	4
5	Farmer field school	13	43	40	04	165	5
6	Field day	16	22	61	01	153	6
7	District and upazilla fair	12	25	55	08	141	7
8	Farmers rally	9	21	45	25	114	8
9	Motivation tour	7	16	39	38	92	9
10	Radio	04	14	47	35	87	10
11	Poster	07	17	27	49	82	11
12	leaflet	05	11	38	46	75	12
13	Newspaper	02	05	54	39	68	13
14	Flash cards	00	13	28	59	54	14
15	Folk song, drama etc.	00	06	27	67	39	15

(TMUI) = Teaching method Usefulness Index

N = 100

Data presented in the Table 4.14 indicated that Teaching Method Usefulness Index (TMUI) scores ranged from 39 to 251 against the possible range of 0 to 300. According to TMUI method demonstration ranked first followed by Farm and home visit, Result demonstration, group meeting, farmer field school, Field day, District and upazila fair, Farmers rally, motivation tour., radio, Poster, leaflet, Newspaper, Flash cards, Folk song, drama etc.

4.2.5 Comparative usefulness of teaching methods in changing farmers' attitude

For having the better understanding regarding comparative usefulness of teaching methods in changing farmers' attitude a teaching method usefulness index (TMUI) of each of 15 selected teaching methods were computed. The formula for determining TMUI has been shown in Chapter 3. The computed TMUI of the farmers in changing their attitude for 15 teaching methods ranged from 62 to 231 which were arranged in rank order according to their TMUI as shown in Table 4.15.

Table 4.15 Rank order of 15 selected teaching methods according to their usefulness in changing farmers' attitude

Sl. No.	Teaching methods	Extent of usefulness				TMUI	Rank Order
		Very useful (3)	Useful (2)	Some extent useful (1)	Not useful (0)		
1	Method demonstration	41	49	10	0	231	1
2	Result demonstration	34	51	15	0	219	2
3	Farm and home visit	28	46	26	0	202	3
4	Farmer field school	24	37	30	09	176	4
5	Field day	9	36	51	04	150	5
6	District and upazil fair	5	35	54	06	139	6
7	Group meeting	05	18	61	16	112	7
8	Farmers rally	0	15	75	10	105	8
9	Motivation tour	0	12	63	25	87	9
10	Radio	03	22	28	47	81	10
11	Newspaper	02	16	38	44	76	11
12	Folk song, drama etc.	04	13	36	47	74	12
13	Poster	05	09	34	52	67	13
14	leaflet	00	11	43	46	65	14
15	Flash cards	00	07	48	45	62	15

(TMUI) = Teaching method Usefulness Index

N = 100

Data presented in the Table 4.15 indicated that Teaching Method Usefulness Index (TMUI) scores ranged from 62 to 231 against the possible range of 0 to 300. According to TMUI method demonstration ranked first followed by Result demonstration, Farm and home visit, Field day, District and upazila fair, Group meeting, Farmers rally, Motivation tour, radio, Newspaper, Folk song, drama etc., Poster, leaflet, Flash cards.

4.2.6 Overall usefulness of teaching methods in changing farmers' behaviour

For having the better understanding regarding overall usefulness of teaching methods in changing farmers' behaviour (knowledge, attitude and skill) an overall teaching method usefulness index (OTMUI) of each of 15 selected teaching methods were

computed. The formula for determining OTMUI has been shown in Chapter 3. The computed OTMUI of the farmers in changing their behaviour for 15 teaching methods ranged from 157 to 716 which were arranged in rank order according to their OTMUI as shown in Table 4.16.

Table 4.16 Rank order of 15 selected teaching methods according to their usefulness in changing farmers' behaviour

Sl. No.	Teaching methods	Extent of usefulness				TMUI	Rank Order
		Very useful (3)	Useful (2)	Some extent useful (1)	Not useful (0)		
1	Method demonstration	147	122	31	0	716	1
2	Farm and home visit	152	109	39	0	713	2
3	Result demonstration	123	133	40	4	675	3
4	Group meeting	95	94	77	34	550	4
5	Farmer field school	50	98	123	29	469	5
6	Field day	41	88	163	8	462	6
7	District and upazilla fair	26	72	167	35	389	7
8	Farmers rally	14	47	164	75	300	8
9	Radio	15	58	120	107	281	9
10	Motivation tour	9	35	150	106	247	10
11	Newspaper	7	26	139	128	212	11
12	Poster	15	35	89	161	204	12
13	leaflet	10	29	114	147	202	13
14	Folk song, drama etc.	11	32	98	159	195	14
15	Flash cards	0	32	93	175	157	15

Data presented in the Table 4.16 indicated that Overall Teaching Method Usefulness Index (OTMUI) scores ranged from 157 to 716 against the possible range of 0 to 900. According to OTMUI method demonstration ranked first followed by Farm and home visit, result demonstration, group meeting, farmer field school, field day, District and upazila fair, farmers rally, radio., motivation tour, Newspaper, poster, leaflet., folk song, flash cards.

4.2.7 Overall usefulness of teaching methods as perceived by Sub-Assistant Agriculture Officer (SAAO)

To understand the usefulness of teaching methods as perceived by the Sub-assistant Agriculture Officer (SAAO) an Overall Teaching Method Usefulness Index (OTMUI) of each of 15 selected teaching methods were computed. The formula for determining OTMUI has been shown in Chapter 3. The computed OTMUI of the SAAO for 15 teaching methods ranged from 91 to 409 which were arranged in rank order according to their OTMUI as shown in Table 4.17.

Table 4.17 Rank order of 15 selected teaching methods according to their usefulness as perceived by SAAO

Sl. No.	Teaching methods	Extent of usefulness				TMUI	Rank Order
		Very useful (3)	Useful (2)	Some extent useful (1)	Not useful (0)		
1	Result demonstration	111	37	2	0	409	1
2	Farm and home visit	105	35	10	0	395	2
3	Group meeting	87	52	11	0	376	3
4	Method demonstration	82	53	15	0	367	4
5	Field day	52	75	14	9	320	5
6	District and upazila fair	36	57	54	3	276	6
7	Motivation tour	30	64	43	13	261	7
8	Farmer field school	37	39	61	13	250	8
9	Farmers rally	27	46	71	06	244	9
10	leaflet	19	34	90	7	215	10
11	Poster	17	31	92	10	205	11
12	Radio	17	23	82	28	179	12
13	Newspaper	14	18	72	46	150	13
14	Folk song, drama etc.	3	13	78	56	113	14
15	Flash cards	2	7	71	70	91	15

Data presented in the Table 4.17 indicated that Overall Teaching Method Usefulness Index (OTMUI) scores ranged from 91 to 409 against the possible range of 0 to 450. According to OTMUI result demonstration ranked first followed by Farm and home visit, group meeting, method demonstration, field day, district and upazila fair,

motivation tour, farmer field school, farmers rally, leaflet, poster, radio, newspaper, folk song, drama etc., flash cards.

4.3 Comparison between the usefulness of teaching methods as perceived by the farmers and by SAAO (Sub-assistant Agriculture Officer)

To compare the usefulness of teaching methods as perceived by the farmers and by SAAO (Sub-Assistant Agriculture Officer) was one of the objectives of this study. It was examined by testing the following null hypothesis: "There is no significant difference of the usefulness of teaching methods as perceived by the farmers and by SAAO (Sub-Assistant Agriculture Officer)". To explore this comparison independent sample t-test statistical technique was used. The null hypothesis was rejected when the calculated "t" value was greater than the table value of "t" at 0.05 level of probability. A summary of the comparison has been presented in Table 4.18.

Table 4.18 Computed value of "t" between the comparison of usefulness of teaching methods as perceived by the farmers and by the SAAO

Variable-1	Variable-2	Observed value of "t"	Table value of "t"	
			at 5% level	at 1% level
Usefulness of teaching methods as perceived by the farmers	Usefulness of teaching methods as perceived by the SAAO	3.35**	1.645	2.326

** Comparison is significant at 0.01 level of probability with 148 df

The observed value of "t" between the comparisons of usefulness of teaching methods as perceived by the farmers and by the SAAO was found to be 3.35 as shown in Table 4.18. The following observations were made regarding the comparison between these two variables:

A significant relationship was found between the variables.

The computed value of "t" (3.35) was larger than the tabulated value ($t = 2.326$) with 148 degrees of freedom at 0.01 level of probability. Hence, the relationship was statistically highly significant.



Based on the findings, the null hypothesis was therefore rejected. Hence, it may be concluded that there was significant difference of the usefulness of teaching methods as perceived by the farmers and by SAAO (Sub-Assistant Agriculture Officer).

Farmers are usually less educated than the SAAO's. Beside that SAAO get practical experience from different training program to use different teaching methods effectively. So their perception about the usefulness of teaching methods is comparatively higher. On the other hand farmers get farm information from the SAAO's through different teaching methods. If the SAAO use the teaching methods effectively to communicate various issues with the farmers then farmers' perception about different teaching methods will be positive. So difference in educational qualification, training exposure as well as lack of effective communication between farmers and SAAO might be the reason behind the significant difference between the perception of farmers and SAAO's regarding usefulness of teaching methods.

4.3.1 Categorization of SAAO's on the basis of their perceived usefulness of teaching methods

The observed scores of usefulness of teaching methods as perceived by the Sub-assistant Agriculture Officers ranged from 41 to 112 against the possible scores being 0-135. The average score was 73.52 with a standard deviation of 19.22. On the basis of perceived usefulness of teaching methods, the Sub-assistant Agriculture Officers were classified into low, medium and high usefulness categories shown in the table 4.19.

Table 4.19 Distribution of Sub-assistant Agriculture Officer according to their perceived usefulness of different teaching methods

Category	Farmers		Mean	Standard deviation
	Number	Percent		
Low (up to 55)	10	20	73.52	19.22
Medium (56 to 95)	31	62		
High (above 95)	9	18		
Total	50	100		

Data presented in the Table 4.19 indicate that the highest proportion (62 percent) of the SAAO's perceived medium usefulness of different teaching methods as compared to 20 percent perceived low and 18 percent perceived high usefulness of different

teaching methods. This means that the majority (80 percent) of the Sub-assistant Agriculture Officers perceived medium to high usefulness of teaching methods.

4.4 Relationship between Independent and Dependent Variables

As mentioned earlier, the ten selected characteristics of the farmers were the independent variables of the study. The variables were age, education, family size, farm size, agricultural knowledge, annual income, cosmopolitaness, innovativeness, organizational participation and attitude towards modern agricultural technologies. Each of the characteristics of the farmers constituted independent variable while usefulness of teaching methods used under DAE revised extension program was the dependent variable in this study.

To explore the relationships between the selected characteristics of the respondents and their perceived usefulness of teaching methods, Pearson's product-moment correlation co-efficient "r" had been used. The relationship between the variables has been described in a separate sub-section (each deals with one independent and one dependent variable). Significant relationships as determined by co-efficient of correlation test "r" have been examined. The null hypotheses formulated for this study have already been described in chapter 3. A null hypothesis was rejected when the observed "r" value was greater than the table value of "r" at 0.05 level of probability. The number of possible correlations between the ten (10) independent variables and one dependent variable were ten (10). Among the correlations eight (8) of them were positively significant and two (2) were non-significant. A summary of the ten (10) correlations have been presented in Table 4.20.

Table 4.20 Computed co-efficient of correlation (r) between farmers selected characteristics and their perceived usefulness of different teaching methods (N=100)

Dependent variable	Independent variables	Computed value of "r"	Table value of "r"	
			at 5% level	at 1% level
Usefulness of teaching methods	Age	-0.092 ^{NS}	± .196	± .256
	Level of education	0.748**		
	Family size	-0.171 ^{NS}		
	Farm size	0.206*		
	Agricultural knowledge	0.693**		
	Annual income	0.233*		
	Cosmopolitaness	0.480**		
	Innovativeness	0.327**		
	Organizational participation	0.465**		
Attitude towards modern agricultural technologies	0.547**			

*Correlation is significant at 0.05 level of probability with 98 df

** Correlation is significant at 0.01 level of probability with 98 df

NS = Not significant

4.4.1 Age and usefulness of teaching methods

The relationship between age of the respondents and the usefulness of teaching methods was examined by testing the following null hypothesis: There is no relationship between age of the farmers and the usefulness of teaching methods used under revised extension program of DAE.

The observed value of the coefficient of correlation between age of the respondents and the usefulness of teaching methods was found to be $-.092$ as shown in Table 4.20. The following observations were made regarding the relationship between these two variables:

The relationship showed a negative trend.

An insignificant relationship was found between the variables.

The computed value of " r " ($-.092$) was smaller than the tabulated value ($r = \pm 0.196$) with 98 degrees of freedom at 0.05 level of probability. Hence, the relationship was statistically insignificant.

Based on the findings, the null hypothesis was therefore accepted. Hence, it may be concluded that age of the respondents was not related with the usefulness of teaching methods used under revised extension program of DAE. That means DAE personnel should emphasis all categories of age group of farmers during their extension contact.

4.4.2 Level of education and usefulness of teaching methods

The relationship between level of education of the respondent and the usefulness of teaching methods was examined by testing the following null hypothesis: There is no relationship between level of education of the farmers and the usefulness of teaching methods used under revised extension program of DAE.

Computed value of the co-efficient of correlation " r " between the concerned variables was found to be $.748$ as shown in Table 4.20. This led to the following observations regarding the relationship between the two variables.

The relationship showed a positive trend.

A significant relationship was found between two concerned variables.

The computed value of " r " ($.748$) was larger than the tabulated value ($r = \pm 0.256$) with 98 degrees of freedom at 0.01 level of probability. Hence, the relationship was statistically highly significant.

On the basis of above finding, the null hypothesis was, therefore, rejected. Thus it may be concluded that level of education of farmers had a highly significant positive relationship with the usefulness of teaching methods used under revised extension program of DAE. The findings indicated that with the increased level of education of

the farmers, there was a corresponding increase in their perceived usefulness of teaching methods.

4.4.3 Family size and usefulness of teaching methods

Relationship between the family size of the farmers and the usefulness of teaching methods used under revised extension program of DAE was examined by testing the following null hypothesis: 'There is no relationship between family size of the farmers and the usefulness of teaching methods used under revised extension program of DAE.

Computed value of coefficient of correlation between the concerned variables was found to be -0.171 as shown in Table 4.20. This led to the following observation regarding the relationship between the concerned variables.

The relationship showed a negative trend.

An insignificant relationship between the concerned variables was found.

The computed value of "r" (-0.171) was smaller than the tabulated value ($r = \pm 0.196$) with 98 degrees of freedom at 0.05 level of probability. Hence, the relationship was statistically insignificant.

Based on the findings the null hypothesis was therefore, accepted. Thus, it may be concluded that family size of the farmers was not related with the usefulness of teaching methods used under revised extension program of DAE.

4.4.4 Farm size and usefulness of teaching methods

The relationship between farm size of the farmers and the usefulness of teaching methods used under revised extension program of DAE was examined by testing the following null hypothesis: 'There is no relationship between farm size of the farmers and the usefulness of teaching methods used under revised extension program of DAE.'

Computed value of "r" between the concerned variables was found to be $.206$ which was shown in Table 4.20. The following observations were made regarding the

relationship between the concerned variables under consideration on the basis of "r" value:

The relationship showed a positive trend.

A significant relationship between the concerned variables was found.

The computed value of "r" (.206) was found to be larger than the tabulated value ($r = \pm 0.196$) with 98 degrees of freedom at 0.05 level of probability. Hence, the relationship was statistically significant.

On the basis of the above findings, the null hypothesis was, therefore, rejected. Thus, it may be concluded that farm size of the farmers had a positive significant relationship with the usefulness of teaching methods used under revised extension approach of DAE. This implies that the farmers with large farm size were more likely to gain more usefulness from the teaching methods used under revised extension approach of DAE. It might be happened that the farmer who possess large farm have a chance to get more production and possess more financial solvency, more communication facilities, cosmopolitaness etc which can be result of getting more usefulness from different teaching methods.

4.4.5 Agricultural knowledge and usefulness of teaching methods

The relationship between agricultural knowledge of the farmers and the usefulness of teaching methods used under revised extension program of DAE was examined by testing the following null hypothesis: 'There is no relationship between agricultural knowledge of the farmers and the usefulness of teaching methods used under revised extension program of DAE'.

The computed value of the coefficient of correlation between the concerned variables were found to be 0.693 which is shown in table 4.20.

The following observations were made regarding the relationship between the concerned variables:

The relationship showed a positive trend.

A significant relationship between the concerned variables was found.

The computed value of "r" (0.693) was found to be larger than the tabulated value ($r = \pm 0.256$) with 98 degrees of freedom at 0.01 level of probability. Hence, the relationship was statistically highly significant.

Based on the above findings, the null hypothesis was therefore rejected. Thus, it may be concluded that agricultural knowledge of the farmers had strong significant relationship with the usefulness of teaching methods used under revised extension program of DAE. If some one possesses high agricultural knowledge he might possess more consciousness about his farming activities which may lead to effective communication with DAE personnel. Ultimately they will find more usefulness from various teaching methods.

4.4.6 Annual income and usefulness of teaching methods

The relationship between annual income of the farmers and the usefulness of teaching methods used under revised extension program of DAE was examined by testing the following null hypothesis: 'There is no relationship between annual income of the farmers and the usefulness of teaching methods used under revised extension program of DAE'.

The computed value of the coefficient of correlation between the concerned variables was found to be 0.233 which is shown in table 4.20. The following observations were made regarding the relationship between the concerned variables:

The relationship showed a positive trend.

An significant relationship between the concerned variables was found.

The computed value of "r" (0.233) was found to be larger than the tabulated value ($r = \pm 0.196$) with 98 degrees of freedom at 0.05 level of probability. Hence, the relationship was statistically significant.

Based on the above findings, the null hypothesis was therefore rejected. Thus, it may be concluded that annual income of the farmers had significant relationship with the usefulness of teaching methods used under revised extension program of DAE.

As financial solvency leads to possess other potential personal characteristics such as education, communication exposure, farm size, cosmopolitaness etc. of a farmer which helps them to get more usefulness from various teaching methods.

4.4.7 Cosmopolitaness and usefulness of teaching methods

The relationship between cosmopolitaness of the respondents and the usefulness of teaching methods used under revised extension program of DAE was examined by testing the following null hypothesis: There is no relationship between

cosmopolitanism of the respondents and the usefulness of teaching methods used under revised extension program of DAE.

Computed value of "r" was found to be 0.480 as shown in Table 4.20. The following observations were made on the basis of "r" value:

The relationship showed a positive trend.

A significant relationship between the concerned variables was found.

The computed value of "r" (0.480) was found to be larger than the tabulated value ($r = \pm 0.256$) with 98 degrees of freedom at 0.01 level of probability. Hence, the relationship was statistically highly significant.

Based on the above findings, the null hypothesis was, therefore, rejected. Thus, it may be concluded that cosmopolitanism of the farmers had a positive significant relationship with the usefulness of teaching methods used under revised extension program of DAE. Cosmopolitanism of the farmers help to acquire various information and knowledge related to farm operations. These information and knowledge drive the farmers to achieve maximum benefit from different extension methods.

4.4.8 Innovativeness and usefulness of teaching methods

The relationship between innovativeness of the farmers and the usefulness of teaching methods used under revised extension program of DAE was examined by testing the following null hypothesis: There is no relationship between innovativeness of the farmers and the usefulness of teaching methods used under revised extension program of DAE.

The computed value of "r" between the concerned variables was found to be 0.327 as shown in Table 4.20. The following observations were made regarding the relationship between the concerned variables under consideration on the basis of "r" value:

The relationship showed a positive trend.

A significant relationship between the concerned variable was found.



The computed value of "r" (0.327) was found to be larger than the tabulated value ($r = \pm 0.256$) with 98 degrees of freedom at 0.01 level of probability. Hence, the relationship was statistically highly significant.

Based, on the above findings, the null hypothesis was, therefore, rejected. Thus, it may be concluded that innovativeness of the farmers had a positive significant relationship with the usefulness of teaching methods used under revised extension program of DAE.

The farmers who are innovative are likely to be more progressive than others which lead them to operate their farming activities with more scientifically. This scientific farming necessitates them to keep frequent communication with extension workers and thus they might get more usefulness from different teaching methods.

4.4.9 Organizational participation and usefulness of teaching methods

The relationship between organizational participation of the farmers and the usefulness of teaching methods used under revised extension program of DAE was examined by testing the following null hypothesis: There is no relationship between organizational participation of the farmers and the usefulness of teaching methods used under revised extension program of DAE.

Computed value of "r" was found to be 0.465 as shown in Table 4.20. The following observations were made regarding the relationship between the concerned variables on the basis of "r" value:

The relationship showed a positive trend.

A significant relationship between the concerned variable was found.

The computed value of "r" (0.465) was found to be larger than the tabulated value ($r = \pm 0.256$) with 98 degrees of freedom at 0.01 level of probability. Hence, the relationship was statistically highly significant.

Based on the above findings, the null hypothesis was, therefore, rejected. Thus, it may be concluded that organizational participation of the farmers had a positive significant relationship with the usefulness of teaching methods used under revised extension program of DAE. This indicates that organizational participation provides opportunity

to increase their knowledge on various issues which helps them to get maximum benefit from different extension method through interpersonal discussion.

4.4.10 Attitude towards modern agricultural technologies and usefulness of teaching methods

The relationship between attitude of the farmers towards modern agricultural technologies and the usefulness of teaching methods used under revised extension program of DAE was examined by testing the following null hypothesis: There is no relationship between attitude of the farmers towards modern agricultural technologies and the usefulness of teaching methods used under revised extension program of DAE.

Computed value of "r" was found to be 0.547 as shown in Table 4.20. The following observations were made based on the "r" value:

The relationship showed a positive trend.

A significant relationship between the concerned variables was found.

The computed value of "r" (0.547) was found to be larger than the tabulated value ($r = \pm 0.256$) with 98 degrees of freedom of 0.01 level of probability. Hence, the relationship was statistically highly significant.

Based on the above finding, the null hypothesis was, therefore, rejected. Thus, it may be concluded that attitude of the farmers towards modern agricultural technologies had a strong significant relationship with the usefulness of teaching methods used under revised extension program of DAE.

Farmers whom attitude is positive towards modern technologies are likely to be possessed more potential personal qualities like education, innovativeness, cosmopolitaness, organizational participation, training etc which leads them to get more usefulness from different extension teaching methods.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The research work was undertaken to study the usefulness of teaching methods used under revised extension approach of DAE. Summary, conclusions and recommendations of this study are presented in this chapter. In presenting the summary major findings from different chapters are discussed in brief.

5.1.1 Introduction

Revised Extension Approach (REA) of the Department of Agricultural Extension (DAE) specifically embraces the department's mission, "To provide efficient and effective needs based extension services to all categories of farmers, to enable them to optimize their use of resources, in order to promote sustainable agricultural and socio-economic development". To achieve this mission, DAE is committed to promoting the adoption of appropriate farming practices, through the use of appropriate extension teaching methods.

It is true that farmers are the key elements of adoption of selected modern agricultural technologies. This adoption successfully occurs when appropriate teaching methods are used by the extension workers. At present, there is a lack of adequate understanding about the usefulness of various extension teaching methods. These facts indicate the need for an investigation to ascertain the usefulness of teaching methods as well as relationship of the characteristics of the farmers with the usefulness of extension teaching methods.

5.1.2 Specific objectives of the study

The specific objectives of the study were:

1. To determine and describe the ten selected characteristics of the farmers.
2. To identify and describe the usefulness of teaching methods as perceived by the farmers.
3. To compare the usefulness of teaching methods as perceived by the farmers and by SAAO (Sub-Assistant Agriculture Officer).
4. To explore the relationships between the usefulness of teaching methods and

farmers selected individual characteristics.

5.1.3 Methodology

Four villages namely Soyedpur, Komolapur, Doyara, and Kamairbag of Kalirbazar Union of sadar upazila under Comilla district were purposively selected as the study area. The household heads of these four selected villages constituted the population of the study. The sample size was 100 altogether. The sample was selected at random from 918 farmers taking approximately 11 percent from the total population. An interview schedule was prepared keeping in view the objectives of the study to collect information from the respondents. In order to give the final shape the interview schedule was pre-tested with 10 farmers. The researcher himself collected data during 28 July to 20 August 2007. Data obtained from the farmers were coded, compiled, tabulated and analyzed in accordance with the objective of the study.

The independent variables of this study were ten selected characteristics of the farmers. These are: age, level of education, family size, farm size, agricultural knowledge, annual income, cosmopolitaness, innovativeness, organizational participation, attitude towards modern agricultural technologies and the dependent variable was usefulness of teaching methods used under revised extension approach of DAE.

All these variables were measured by computing appropriate score, various statistical measures such as range, mean, percentage, standard deviation. Co-efficient of correlation was computed to explore the relationship between any independent and dependent variables. Independent sample t-test was computed to explore the comparison between the opinion of farmers' and SAAO's. At least five percent (0.5) level of probability was used to reject any null hypothesis.

5.1.4 Findings

5.1.4.1 Independent variables

The major findings in respect of ten (10) selected characteristics of the farmers are summarized below:

Age

Age of the respondents ranged from 20 to 70 years and mean was found 42.39 years with the standard deviation of 12.18. Highest proportion (43 percent) of the farmers

were middle aged (36-50 years). 32 percent were young aged (up to 35 years) and 25 percent were old aged (above 50 years).

Level of education

Level education of the respondents were ranged from 0 to 14 and they are categorized as illiterate, primary level, secondary level and above secondary level educated with their corresponding percentage of 18, 25, 22 and 25 respectively. The average education level was 6.66 and standard deviation 4.28.

Family size

Family size of the respondents ranged from 2 to 13 with the average of 6.32 and standard deviation 2.42. Maximum families were medium (5-7) with the proportion of 54 percent of the farmers. 21 percent belonged to the small size (2-4) family and 25 percent had large size family (8 and above).

Farm size

Farm size of the respondents ranged from 0.22 to 2.20 hectares with the mean 0.90 and standard deviation 0.42. The majority of the farmers (58 percent) belonged to medium size category. Where as 25 percent were small and only 17 percent were in large categories.

Agricultural knowledge

Agricultural knowledge of the respondents ranged from 18 to 36 with an average of 28.42 and the standard deviation of 4.36. Most of the respondents (56 percent) had medium agricultural knowledge, 15 percent belonged to low and 29 percent belonged to high agricultural knowledge category.

Annual income

The annual income of the respondents ranged from 47 to 310 thousand taka with an average of 126.72 and the standard deviation of 60.84. Most of the respondents (54 percent) had medium annual income, 27 percent belonged to low and 19 percent had high annual income category.

Cosmopolitaness

Cosmopolitaness of the respondents ranged from 8 to 24 with an average of 15.12 and the standard deviation 5.0. Most of the respondents (52 percent) had medium cosmopolitaness, 26 percent had low and 22 percent had high cosmopolitaness.

Innovativeness

Innovativeness scores of the respondents ranged from 05 to 28 with an average innovativeness score of 13.35 and the standard deviation 5.76. Most of the farmers (65 percent) had moderate innovativeness, 23 percent had less and only 12 percent had high innovativeness.

Organizational participation

Organizational participation of the respondents ranged from 0 to 27 with an average of 8.6 and the standard deviation of 7.97. 29 percent of the farmers had medium participation, 28 percent had low participation, only 13 percent had high participation and 30 percent had no participation.

Attitude towards modern agricultural technologies

The score of attitude towards modern agricultural technologies of the farmers ranged from 32 to 48 against the possible range of 0 to 48. Higher proportion of the respondents (56percent) had highly favourable attitude and 44 percent had moderately favourable attitude towards modern agricultural technology.

Identification and description of the usefulness of teaching methods used under revised extension approach of DAE

Usefulness of teaching methods used under revised extension approach of DAE was the main focus of this study. Fifteen teaching methods were identified for this study to understand their usefulness. The salient features of the usefulness of teaching methods as perceived by the farmers and by the Sub-assistant Agriculture Officer (SAAO) have been presented in this section.

Information received by the farmers from different teaching methods last year

Farmers received various information's last year through different teaching methods. These information's are summarized as crop related information, vegetable related

information, technology related information, home-stead management related information and other information:

Usefulness of teaching methods as perceived by the farmers

The observed scores of usefulness of teaching methods as perceived by the farmers ranged from 33 to 97. The average score was 62.87 with a standard deviation of 17.13. Most of the respondents (52 percent) perceived medium usefulness of different teaching methods as compared to 19 percent perceived low and 29 percent perceived high usefulness of different teaching methods.

Comparative usefulness of teaching methods in changing farmer's knowledge

To have a better understanding of comparative usefulness of teaching methods in changing farmer's knowledge a Teaching method Usefulness Index (TMUI) for each of 15 selected teaching methods were computed. The computed TMUI of the farmers in changing their knowledge for 15 teaching methods ranged from 41 to 266 which were arranged in rank order. According to TMUI farm and home visit ranked first followed by method demonstration, group meeting, result demonstration, field day, farmer field school, radio, district and upazilla fair, folk song, drama etc., farmers rally, motivation tour, newspaper, leaflet, poster, flash cards.

Comparative usefulness of teaching methods in changing farmers' skill

To have a better understanding of comparative usefulness of teaching methods in changing farmers' skill a teaching method usefulness index (TMUI) for each of 15 selected teaching methods were computed. The computed TMUI of the farmers in changing their skill for 15 teaching methods ranged from 39 to 251 which were arranged in rank order. According to TMUI method demonstration ranked first followed by Farm and home visit, Result demonstration, group meeting, farmer field school, Field day, District and upazila fair, Farmers rally, motivation tour., radio, Poster, leaflet, Newspaper, Flash cards, Folk song, drama etc.

Comparative usefulness of teaching methods in changing farmers' attitude

To have a better understanding regarding comparative usefulness of teaching methods in changing farmers' attitude a teaching method usefulness index (TMUI) for each of 15 selected teaching methods were computed. The computed TMUI of the farmers in

changing their attitude for 15 teaching methods ranged from 62 to 231 which were arranged in rank order. According to TMUI method demonstration ranked first followed by Result demonstration, Farm and home visit, Field day, District and upazila fair, Group meeting, Farmers rally, Motivation tour, radio, Newspaper, Folk song, drama etc., Poster, leaflet, Flash cards.

Overall usefulness of teaching methods in changing farmers' behaviour

To have a better understanding regarding overall usefulness of teaching methods in changing farmers' behaviour (knowledge, attitude and skill) an overall teaching method usefulness index (OTMUI) for each of 15 selected teaching methods were computed. The computed OTMUI of the farmers in changing their behaviour for 15 teaching methods ranged from 157 to 716 which were arranged in rank order. According to OTMUI method demonstration ranked first followed by Farm and home visit, result demonstration, group meeting, farmer field school, field day, District and upazila fair, farmers rally, radio., motivation tour, Newspaper, poster, leaflet., folk song, flash cards.

Overall usefulness of teaching methods as perceived by Sub-Assistant Agriculture Officer (SAAO)

To understand the usefulness of teaching methods as perceived by the Sub-assistant Agriculture Officer (SAAO) an overall teaching method usefulness index (OTMUI) for each of 15 selected teaching methods were computed. The computed OTMUI of the SAAO for 15 teaching methods ranged from 91 to 409 which were arranged in rank order. According to OTMUI result demonstration ranked first followed by Farm and home visit, group meeting, method demonstration, field day, district and upazila fair, motivation tour, farmer field school, farmers rally, leaflet, poster, radio, newspaper, folk song, drama etc., and flash cards.

Comparison between the usefulness of teaching methods as perceived by the farmers and by SAAO (Sub-assistant Agriculture Officer)

Comparison between the usefulness of teaching methods as perceived by the farmers and by SAAO was done by independent sample t-test statistical technique. A

significant relationship was found between the variables. Hence, it may be concluded that there was significant difference of the usefulness of teaching methods as perceived by the farmers and by SAAO (Sub-Assistant Agriculture Officer).

Categorization of SAAO's on the basis of their perceived usefulness of teaching methods

The observed scores of usefulness of teaching methods as perceived by the Sub-assistant Agriculture Officers ranged from 41 to 112. The average score was 73.52 with a standard deviation of 19.22. Highest proportion (62 percent) of the SAAO's perceived medium usefulness of different teaching methods as compared to 20 percent perceived low and 18 percent perceived high usefulness of different teaching methods.

5.1.5 Relationship between the selected characteristics of the farmers and the usefulness of teaching methods used under revised extension approach of DAE

To explore the relationship of the selected ten characteristics of the farmers with the usefulness of teaching methods used under revised extension approach of DAE ten null hypotheses were formulated. For testing the hypotheses, co-efficient of correlation (r) was used. One and five percent level of significance was the basis for rejecting a null hypothesis. The results of hypotheses testing are presented below in brief:

Correlation analysis indicates that only age and family size showed no significant relationship with the usefulness of teaching methods used under revised extension approach of DAE. Hence, the null hypotheses concerning these variables were accepted.

Level of education, farm size, agricultural knowledge, annual income, cosmopolitaness, innovativeness, organization participation and attitude towards modern agricultural technologies were found to have significant relationship with the usefulness of teaching methods used under revised extension approach of DAE. Hence, the concerned null hypotheses were rejected.

5.2 Conclusions

"A conclusion present the statements based on major findings of the study and these statements mostly confirm to the objectives of the research in the shortest form. It presents the direct answers of the research objectives, or it relates to the hypothesis" (Labon and Scheffer, 1990).

Considering the objectives of the study and the above guidelines for writing a conclusion of a research report, the specific conclusion of the present study may be drawn as follows:

The findings of the study revealed that the highest proportion (52 percent) of the farmers perceived medium usefulness of different teaching methods as compared to 19 percent perceived low and 29 percent perceived high usefulness of different teaching methods. This means that the majority (81 percent) of the farmers perceived medium to high usefulness of teaching methods.

In view of the above facts, it may be concluded that the farmers of the study area were very much aware about new technologies so that they kept close contact with the extension personnel on their own interest. It might be the cause for their comparatively higher perceived usefulness of teaching methods.

Age and family size of the respondents were found to have insignificant relationship with the usefulness of teaching methods used under revised extension approach of DAE. It may, therefore, be concluded that the farmers irrespective of categories of ages and family size need extension contact with the extension workers in order to increase the perceived usefulness of teaching methods.

Level of education of the farmers had positive and highly significant relationship with the usefulness of teaching methods which lead to the conclusion that more the level of education of the farmers the more will be their perceived usefulness of teaching methods.

Farm size of the respondents had a positive and significant relationship with the usefulness of teaching methods in receiving farm information. This indicates that with the increase of farm size of farmers their perceived usefulness of teaching methods is also increased.

The farmers having more agricultural knowledge received more agricultural information. Knowledge is power. It helps an individual to increase his understanding and awareness on different aspects of agricultural information. A positive relationship between agricultural knowledge of the farmers and the usefulness of teaching methods leads to the conclusion that increase in agricultural knowledge enhances their perceived usefulness of teaching methods and vice-versa.

Annual income of the respondents had a positive and significant relationship with the usefulness of teaching methods in receiving farm information. This indicates that with the increase of annual income of farmers their perceived usefulness of teaching methods is also increases.

Cosmopolite people come in contact with new people and new ideas through traveling outside their own social system. Cosmopolitaness, therefore, helps an individual to come in contact new ideas and information. In this study cosmopolitaness of the respondents had a positive and highly significant relationship with the usefulness of teaching methods. This implies that with the increase of cosmopolitaness of the farmers, their perceived usefulness of teaching methods is also increased.

Innovativeness of the farmers is of course a desirable quality. An innovative farmer is also progressive in mind and can take risk in adopting an innovation. The innovativeness of the farmers was found to be highly correlated with the usefulness of teaching methods. This means that more the innovativeness of the farmers the more is their perceived usefulness of teaching methods.

Organization participation of the respondents had a positive and significant relationship with the usefulness of teaching methods in receiving farm information. This indicates that with the increase of organizational participation of farmers their perceived usefulness of teaching methods is also increased.

Attitude towards modern agricultural technology of the farmers had a highly significant positive relationship with the usefulness of teaching methods. The findings lead to the conclusion that the more the favorable attitude of the respondents towards modern agricultural technology the more is their perceived usefulness of teaching methods in receiving farm information.

5.3 Recommendations

5.3.1 Recommendations for policy implication

Based on the findings and conclusions of the study the following recommendations are made:

As age and family size of the farmers had no significant relationship with the usefulness of teaching methods used under revised extension approach of DAE, therefore it may be recommended that the extension workers should work with the farmers of all age and farm size categories to increase their perceived usefulness of teaching methods.

Education helps an individual to realize the present and future needs at the personal, social and national levels. Level of education of the farmers helps in increasing their perception of different teaching methods. Hence, to increase farmers' perceived usefulness of teaching methods educational programme such as non-formal education, adult education, and mass education etc. should be undertaken by the DAE and other relevant government and non-government departments.

In this study farm size had found positive and significant relationship with the usefulness of teaching methods. So it may be recommended that extension workers should utilize all categories of farm owners putting special emphasis on the small and medium category of farm owners to ensure the usefulness of teaching methods.

Necessary initiative should be taken by the concerned authority to increase agricultural knowledge of the farmers as well as to make favorable attitude towards modern agricultural technologies as they have significant relationship with the usefulness of teaching methods.

Cosmopolitaness of the farmers had a positive and significant relationship with the usefulness of teaching methods. It is, therefore, recommended that extension workers and others concerned authorities should motivate and explain the farmers about the importance of cosmopolitaness which will lead them to perceive more usefulness of teaching methods.

It is recommended that agricultural extension services should carefully identify the growers with high innovativeness for using them as local leader and demonstration of new ideas and practices which will help the farmers to achieve more usefulness from different teaching methods.

Organizational participation of an individual ensures cooperation with others for solution of various problems. It is, therefore, recommended that steps should be taken for large scale expansion of organizational participation of the farmers which will create opportunity for them to discuss various issues about their farming activities and it will lead them to perceive more usefulness of teaching methods.

5.3.2 Recommendations for further study

A small and limited research work has been conducted which can not provide unique and universal information related to the actual impact of improving socio-economic status of the rural farmers. Further studies should be undertaken on related matters. On the basis of scope and limitations of the present study and observation made by the researcher, the following recommendations are made for further study.

The present study was conducted in Sadar upazila under Comilla district. It is recommended that similar studies should be conducted in other parts of the country.

Research was limited with ten characteristics of the farmers, but there are many other characteristics which can influence the usefulness of teaching methods. So, considering other characteristics; similar research may be conducted.

In the present study age and family size had no significant relationship with the usefulness of teaching methods but it needs further verification.

Research should also be undertaken to identify the factors hindering in getting maximum usefulness of teaching methods used under revised extension approach of DAE.

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APPENDIX-I

(An English version of the interview schedule)

**Department of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207**

**An interview schedule for the study
“Usefulness of Teaching Methods to the Farmers Recommended Under Revised Extension
Approach of the Department of Agricultural Extension”**

Name of the respondent : ----- Sl. No. -----
 Father's Name : ----- Date : -----
 Village : Upazila :
 Union : District :

Please answer the following questions

1. Age

What is your age? ----- years.

2. Level of Education

- a) Can not read and write: -----
 b) I passed ----- class

3. Family Size

How many members are there in your family (including yourself)?

- a) Male -----
 b) Female -----
 Total -----



4. Farm Size

Please mention the area of your land possession.

Sl No.	Types of land use	Land area	
		Local unit	Hectare
1.	Homestead area		
2.	Own land under own cultivation		
3.	Land given to others as barga		
4.	Land taken barga from others		
5.	Taken lease from others		
6.	Own pond		
7.	Fallow land		
	Total		

5. Agricultural Knowledge

Please answer to the following question

Sl. No.	Questions	Weight	Obtained
1	Name two modern variety of rice		
2	Name two harmful insects of rice		
3	Name two weeds of rice field		
4	Name two pulse crops		
5	Name two modern potato variety		
6	Name two local equipments using rice threshing		
7	State two quality of good seed		
8	Name two crops using as green manure		
9	Name two organic fertilizers		
10	Name two winter vegetables		
11	Name two summer vegetable		
12	Name tow year round fruits		
13	Name two harmful vegetables insects		
14	Name two pesticides using to control vegetables pest		
15	Name two modern varieties of cock/hen		
16	Name two pesticides using to control rice pests		
17	Name the elements of IPM		
18	Name two insects using to biological control of pest		
19	Name two important diseases of poultry and livestock		
20	Name two oilseed crops		
	Total		

6. Annual income

Please give your annual income of last year according to the following source

Sl. No	Source of income	Total annual income (Tk.)
a)	From agricultural crop production	

i.	Field crops (rice, wheat, jute, etc.)	
ii.	Vegetables (potato, lalshak, brinjal, tomato, etc.)	
iii.	Fruits (mango, jackfruits, black berry, litchi, etc.)	
iv.	Spices crop (coriander, chilli, onion and ginger, etc.)	
b)	From livestock animals and fisheries	
i.	Duck	
ii.	Hen	
iii.	Cattle	
iv.	Goat	
v.	Milk	
vi.	Fish	
c)	From non-agricultural sources	
i.	Service	
ii.	Business	
iii.	Daily labour, etc.	
	Total	

7. Cosmopolitaness

Please indicate how frequently you visit the following places within a specific period.

Sl No	Place of visit	Frequency of visit			
		Regularly	Often	Rarely	Never
1.	Neighboring villages	10 or more times/ month	5-9 times /month	1-4 times/ month	No visit
2.	Neighboring unions	4 or more times/month	2-3 times /month	1 time /month	No visit
3.	Own upazila Sadar	10 or more times/year	5-9 times/year	1-4 times /year	No visit
4.	Other upazila Sadar	4 or more times/year	2-3 times/year	1 times / year	No visit
5.	Own district Sadar	6 or more times/year	3-5 times/year	1-2 times/ year	No visit
6.	Agricultural fair	4 or more times/4 years	2-3 times/ 4 years	1 time/ 4 years	No visit
7.	Other district Sadar	3 or more times/year	2 times/year	1 time/ year	No visit
8.	Research	3 or more	2 times/year	1 time/year	No visit

	Substation or Regional Agricultural Research Institute	times/ year			
9.	Capital city	4 or more times/4 years	2-3 times/ 4 years	1 time/ 4 years	No visit

8. Innovativeness

Please furnish your information about the extent of use of the following technologies

Sl. No.	Name of technology	Time of adoption				
		Not at all	1 st year	2 nd year	3 rd year	4 th year
1)	Cultivation of HYV (High Yielding Variety) seed					
2)	Cultivation of developed variety vegetables in homestead area					
3)	Vaccination to livestock and poultry					
4)	Use of drum seeder					
5)	Use of compost					
6)	Use of bio-fertilizer to increase soil fertility					
7)	Use of guty urea fertilizer					
8)	Use of Japani Rice weeder					
9)	Use of Integrated Pest Management in crop cultivation					
10)	Rice cum fish culture					

9. Organizational Participation

Please mention your involvement with the following organizations during the last five years.

Sl. No	Name of the organization	Not participated	Nature of involved and duration (Year)		
			As ordinary member	As executive committee member	As officer of the executive committee
1.	Union council				
2.	Farmers co-operative society				
3.	Youth club				

4.	School committee				
5.	College Governing body				
6.	Madrasha committee				
7.	Mosque/Temple committee				
8.	Village development samity				
9.	Market development committee				
10.	Irrigation committee				
11.	Krishi mela committee				
12.	NGO samity				
13.	BRDB microcredit samity				
14.	Others (if any)				

10. Attitude towards modern agricultural technology

Please indicate your agreement with the following statement

Sl. No.	Statement	Extent of agreement/ disagreement				
		Strongly agreed	Agreed	Undecided	Disagreed	Strongly disagreed
1(+)	Chemicals fertilizers are necessary for increase in agricultural production.					
2(+)	Integrated Pest Management (IPM) is better than other management.					
3(+)	Urea fertilizer should not be used continuously because it reduce the fertility of soil gradually.					
4(-)	Country plough is more effective than power tiller.					
5(+)	Use of Leaf Colour Chart (LCC) is effective for urea use in the field.					
6(-)	To increase rice production it is not necessary to transplanting seedlings in line with proper spacing.					
7(-)	Soil fertility is not degraded by the modern ploughing implements.					
8(-)	Chemical control is the only way of controlling insects and pests.					

9(-)	It is not necessary to use improve variety to get more rice production.					
10(+)	It is necessary to aggregate plant and animal to balance environment.					
11(+)	Organic Manure [Compost, Farm Yard Manure (FYM), Green Manure] improved soil quality.					
12(-)	Disease do not cause any harm for crop production.					

11. How do you receive agricultural information?

Sl No.	Teaching methods	remark
1)	Farm and home visit	
2)	Result demonstration	
3)	Method demonstration	
4)	Field day	
5)	District and upazil fair	
6)	Motivation tour	
7)	Farmers rally	
8)	Farmer field school	
9)	Group meeting	
10)	Radio	
11)	Newspaper	
12)	leaflet	
13)	Flash cards	
14)	Poster	
15)	Folk song, drama etc.	

12. What kind of information have you received so far since last year from the following sources?

Sl.No.	Teaching methods	Kind of inforamtion
1)	Farm and home visit	
2)	Result demonstration	
3)	Method demonstration	
4)	Field day	
5)	District and upazil fair	
6)	Motivation tour	

7)	Farmers rally	
8)	Farmer field school	
9)	Group meeting	
10)	Radio	
11)	Newspaper	
12)	leaflet	
13)	Flash cards	
14)	Poster	
15)	Folk song, drama etc.	

13. For increasing your knowledge how much useful are the following teaching methods?

Sl.No.	Teaching methods	Degree of usefulness			
		Very useful	Useful	Some extent useful	Not useful
Sl.No.	Teaching methods				
1)	Farm and home visit				
2)	Result demonstration				
3)	Method demonstration				
4)	Field day				
5)	District and upazil fair				
6)	Motivation tour				
7)	Farmers rally				
8)	Farmer field school				
9)	Group meeting				
10)	Radio				
11)	Newspaper				
12)	leaflet				
13)	Flash cards				
14)	Poster				
15)	Folk song, drama etc.				

14. For increasing your skill how much useful are the following teaching methods?

Sl.No.	Teaching methods	Degree of usefulness			
		Very useful	Useful	Some extent useful	Not useful
Sl.No.	Teaching methods				
1)	Farm and home visit				
2)	Result demonstration				
3)	Method demonstration				
4)	Field day				

5)	District and upazil fair				
6)	Motivation tour				
7)	Farmers rally				
8)	Farmer field school				
9)	Group meeting				
10)	Radio				
11)	Newspaper				
12)	leaflet				
13)	Flash cards				
14)	Poster				
15)	Folk song, drama etc.				

15. To change your attitude how much useful are the following teaching methods?

Sl.No.	Teaching methods	Degree of usefulness			
		Very useful	Useful	Some extent useful	Not useful
Sl.No.	Teaching methods				
1)	Farm and home visit				
2)	Result demonstration				
3)	Method demonstration				
4)	Field day				
5)	District and upazil fair				
6)	Motivation tour				
7)	Farmers rally				
8)	Farmer field school				
9)	Group meeting				
10)	Radio				
11)	Newspaper				
12)	leaflet				
13)	Flash cards				
14)	Poster				
15)	Folk song, drama etc.				

Thank you for your co-operation and interviewing.

Signature of the interviewer

Date :-----

APPENDIX-II

(An English version of the interview schedule)

Department of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207

An interview schedule(used for the SAAO) for the study
“Usefulness of Teaching Methods to the Farmers Recommended Under Revised
Extension Approach of the Department of Agricultural Extension”

Name of the respondent : ----- Sl. No. -----

Upazila :

District :

Please answer the following questions

1. How do you disseminate agricultural information?

Sl No.	Teaching methods	remark
1)	Farm and home visit	
2)	Result demonstration	
3)	Method demonstration	
4)	Field day	
5)	District and upazila fair	
6)	Motivation tour	
7)	Farmers rally	
8)	Farmer field school	
9)	Group meeting	
10)	Radio	
11)	Newspaper	
12)	leaflet	
13)	Flash cards	
14)	Poster	
15)	Folk song, drama etc.	

2. What kind of information have you disseminated so far since last year from the following sources?

Sl.No.	Teaching methods	Kind of information
1)	Farm and home visit	
2)	Result demonstration	
3)	Method demonstration	

4)	Field day	
5)	District and upazila fair	
6)	Motivation tour	
7)	Farmers rally	
8)	Farmer field school	
9)	Group meeting	
10)	Radio	
11)	Newspaper	
12)	leaflet	
13)	Flash cards	
14)	Poster	
15)	Folk song, drama etc.	

3. For increasing knowledge how much useful are the following teaching methods?

Sl.No.	Teaching methods	Degree of usefulness			
		Very useful	Useful	Some extent useful	Not useful
Sl.No.	Teaching methods				
1)	Farm and home visit				
2)	Result demonstration				
3)	Method demonstration				
4)	Field day				
5)	District and upazila fair				
6)	Motivation tour				
7)	Farmers rally				
8)	Farmer field school				
9)	Group meeting				
10)	Radio				
11)	Newspaper				
12)	leaflet				
13)	Flash cards				
14)	Poster				
15)	Folk song, drama etc.				

4. For increasing skill how much useful are the following teaching methods?

Sl.No.	Teaching methods	Degree of usefulness			
		Very useful	Useful	Some extent useful	Not useful
Sl.No.	Teaching methods				

1)	Farm and home visit				
2)	Result demonstration				
3)	Method demonstration				
4)	Field day				
5)	District and upazila fair				
6)	Motivation tour				
7)	Farmers rally				
8)	Farmer field school				
9)	Group meeting				
10)	Radio				
11)	Newspaper				
12)	leaflet				
13)	Flash cards				
14)	Poster				
15)	Folk song, drama etc.				

5. To change attitude how much useful are the following teaching methods?

Sl.No.	Teaching methods	Degree of usefulness			
		Very useful	Useful	Some extent useful	Not useful
Sl.No.	Teaching methods				
1)	Farm and home visit				
2)	Result demonstration				
3)	Method demonstration				
4)	Field day				
5)	District and upazila fair				
6)	Motivation tour				
7)	Farmers rally				
8)	Farmer field school				
9)	Group meeting				
10)	Radio				
11)	Newspaper				
12)	leaflet				
13)	Flash cards				
14)	Poster				
15)	Folk song, drama etc.				

Thank you for your co-operation and interviewing.

Signature of the interviewer

Date :-----

APENDIX-III

Correlation Matrix of the dependent and Independent variables (N = 100)

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1										
X2	-.127	1									
X3	.736**	-.152	1								
X4	.211*	.168	.241*	1							
X5	-.111	.842**	-.143	.228*	1						
X6	.203*	.179	.221*	.881**	.225*	1					
X7	.068	.457**	.028	.141	.555**	.210*	1				
X8	.052	.304**	.012	.527**	.217*	.589**	.283**	1			
X9	.309**	.453**	.224*	.443**	.365**	.398**	.301**	.462**	1		
X10	.103	.657**	.018	.275**	.571**	.245*	.345**	.337**	.498**	1	
X11	-.092	.748**	-.171	.206*	.693**	.233*	.480**	.327**	.465**	.547**	1

** Correlation is significant at 0.01 percent level of significant at 98 degree of freedom

* Correlation is significant at 0.05 percent level of significant at 98 degree of freedom

LEGAND

X1= Age

X7= Cosmopolitaness

X2= Level of education

X8= Innovativeness

X3= Family size

X9= Organizational participation

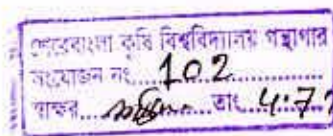
X4= Farm size

X10= Attitude towards modern agricultural technology

X5= Agricultural knowledge

X11= Usefulness of teaching methods

X6= Annual income



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Sign: [Signature] Date: 26/01/14