ATTITUDE OF THE PROFESSIONAL LEADERS (SUB-ASST. AGRICULTURE OFFICERS) TOWARDS RECOMMENDED DOSES OF CHEMICAL FERTILIZERS & PESTICIDES

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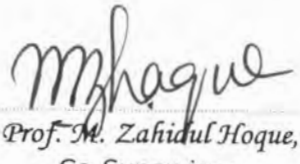

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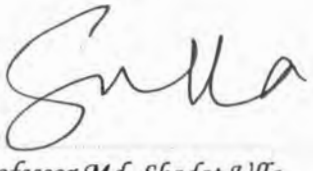

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CERTIFICATE

This is to certify that thesis entitled, *"ATTITUDE OF THE PROFESSIONAL LEADERS (SUB-ASST. AGRICULTURE OFFICERS) TOWARDS RECOMMENDED DOSES OF CHEMICAL FERTILIZERS AND PESTICIDES"* submitted to the faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka in partial fulfillment of the requirements for the degree of *MASTER OF SCIENCE IN AGRICULTURAL EXTENSION & INFORMATION SYSTEM* embodies the result of a piece of *bona-fide* research work carried out by *Md. Muradul Hasan* Registration no. 01844 under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

Place : Dhaka.
Dated : December'2006

.....
Prof. Md. Shadat Ulla
Supervisor


Dedicated to My
Beloved Parents

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Table of Contents

LIST OF TABLES

LIST OF FIGURES

APPENDICS

Attitude of the Professional Leaders (Sub-Asst. Agriculture Officer) towards recommended doses of chemical fertilizers and pesticides.

Abstract

Sub-Asst. Agriculture Officers (SAAO's) are front line extension worker. They are related with a particular profession and at the same time bears all the leadership, qualities and activities. So we can say them professional leaders.

The major focus of this study was to determine the attitude of the professional leaders (Sub-Asst. Agricultural Officers – SAAO's) towards recommended doses of chemical fertilizers and pesticides and to explore the relationships between the selected characteristics of the SAAO's.

Data for this study were collected from total eighty eight SAAO's. This population were covered all the three upazilas of Narayanganj district. The researcher collected data by himself through distribution of interview schedules to the SAAO's during 1st August to 31st September'2006. Coefficient of correlation (r) was computed in order to explore the relationships between the dependent and independent variables. However, descriptive statistics like mean, standard deviation, range, minimum, maximum values were computed to describe the dependent and independent variables.

The findings of this study revealed that 28 percent of SAAO's had highly favourable attitude towards recommended doses of chemical fertilizers and pesticides, while 48 percent had moderately favourable and the rest 24 percent had slightly favourable attitude towards recommended doses of chemical fertilizers and pesticides.

The correlation test showed that age, training experience, cosmopoliteness, media exposure and knowledge on chemical fertilizers, pesticides and irrigation water of the SAAO's had significant positive relationships with their attitude towards recommended doses of chemical fertilizers and pesticides. While income of the SAAO's had negative relationship with their attitude towards recommended doses of chemical fertilizers and pesticides.

CHAPTER 1
INTRODUCTION

Chapter 1

Introduction

1.1 General Background

Bangladesh is mainly an agricultural country . All out efforts are being made by the people of our country to increase agricultural production for feeding the rapidly increasing population. One of the efforts is the use of agrochemicals in agriculture. The farmers of this country are increasingly using these agrochemicals in their farming without considering its long run effect, either knowingly or unknowingly soils of Bangladesh are reducing its fertility to a longer extent due to over use of chemicals. Global worming is also contributed to some extent by the use of chemicals. Indiscriminate use of chemical fertilizers and pesticides are also polluting environment to a great extent and it is also a cause of national loss. The farmers are using them without considering recommended dose. As a result many unwanted problem arise in the field of agriculture. But land and water resource are not like the machine that could be placed. So, it is imperative to think agriculture as a perpetual occupation. Hence, it needs consideration of sustainability in agriculture. To maintain sustainability we must use them in a recommended way.

Now-a-days environment has drawn the attention of many nations throughout the world; because the global environment is changing more rapidly than any temperature in the known history and its difficulty to foresees all the changes that will occur in the next 21st century. Climate change, ozone layer loss, desertification, water pollution, deforestation, air pollution and so on are widely accepted as serious problems threatening earth's survival and existence.

The environment crisis happens from air, water, soil, noise, pollution and unforeseen natural hazards. Our atmosphere is under increasing pressure from greenhouse gases that changes the climate and from the chemical that reduce the ozone layer. land cleaning, burning, ploughing, leveling, fertilization, irrigation and pesticides spraying have caused the irregularities and deficiencies of the physical environment (Ibid).

Agriculture and environment has close relationship. Agriculture and environment interacts with each other in the way that the health of agriculture depends on the proper functioning of environmental process and the health of environment depends upon a respectful agriculture (Conway, 1990). Population boom of the world tended in many respects to increase production level for feeding the extra mouth. As a result, technological advancement has been occurring in one part and in another part all out efforts are being made for utilizing those technologies. Such available technologies are chemical fertilizers, pesticides and irrigation water.

The devastating ecological inmbalance is caused due to indiscriminate use of the pesticide. Synthetic pesticides were introduced in Bangladesh in 1956 is about 1000 tons and its use is peaked to about 7200 tons in 1992 (Karim 1994), due to frequent pest outbreaks.

Since the advent of Green Revolution of chemical fertilizers and pesticides have been widely and extensively used in Bangladesh agriculture. Shown in Fig. 1.1, Fig. 1.2

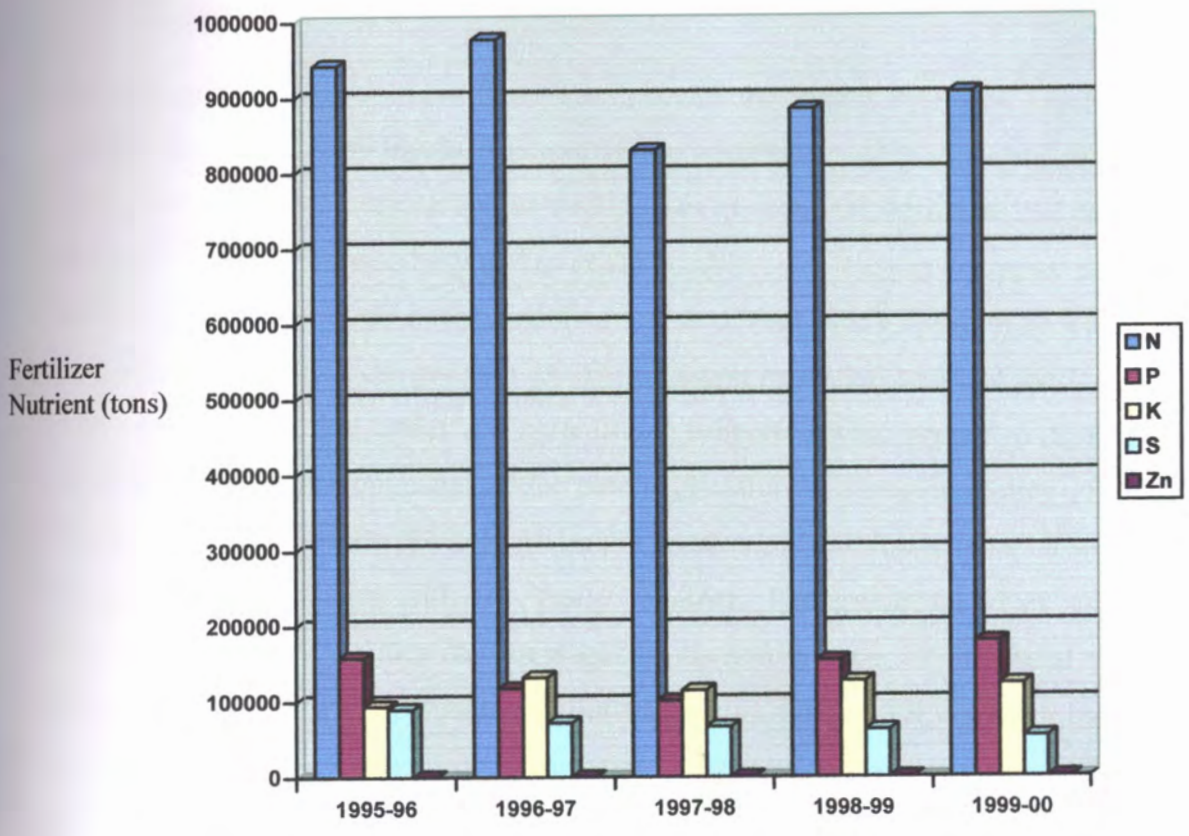

Figure: 1.1 Trends inorganing fertilizer nutrients use in Bangladesh
Source: Bangladesh Fertilizer Association (BBS)

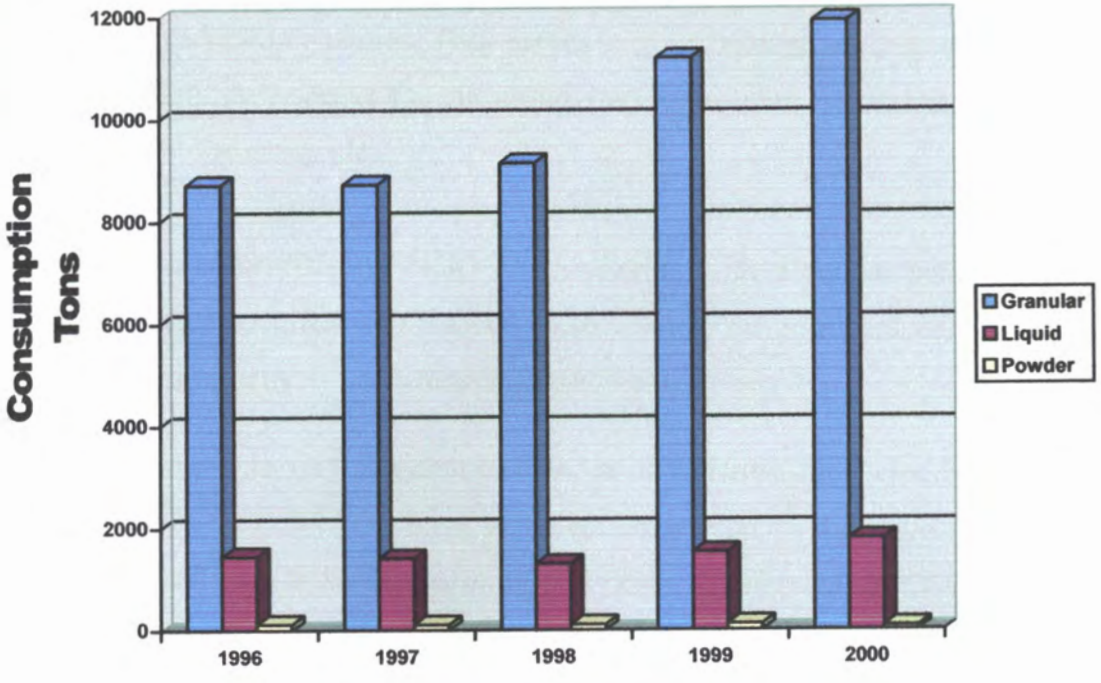

Figure: 1.2 Consumption of Pesticide
Source : Bangladesh Pesticide association. (BBS)

The Department of Agricultural Extension (DAE), the largest extension organization in Bangladesh is directly involved in motivation farmers for using modern agricultural technologies or we can say recommended doeses of chemical fertilizers and pesticide in order to improve productivity and increase production as well as saving us from the residual effect. The DAE introduced Training and Visit (T&V) system of extension work since 1978. Then the procedures of conducting extension work of the DAE has been partially modified under the agricultural support service project (ASSP). The ASSP is also being recognized under new Agricultural Extension Policy (NAEP). Under this programme the SAAO's (who are used to be front line extension workers) are supposed to contact with the group member. The group members are than expected to transmit the idea and messages to the non-member of the social system. But this "Trickle down" approach was not successful. So, the T&V system has been modified and as the existing groups are being utilized to deliver the messages. It also allows the transmission of problem solving information to the farmers and feed back information to the research workers. SAAO's are professional leaders, as they are related with a particular profession so they are professional on the other hand like leaders they bears leadership qualities. They serves as group executive, they assist the group in making plan, they speaks for the group, they coordinate the activity of the group, they represent the group idea.

In Bangladesh, at present different NGO's are working with a fundamental issue which is environmental degradation. SAAO's also need to be confident enough to deliver their messege effectively so as to be accepted by the group members.

Attitude of the SAAO's is very important factor in considering their credibility as professional leaders. Unless SAAO's have sufficient knowledge on the subject matter and have favorable attitude towards recommended doses of chemical fertilizers and pesticides, it would be impossible to motivate the group members or farmers towards desired technologies. However, very few research studies have so far been conducted in Bangladesh on this aspect. Considering the above facts, an attempt was made to undertake a research study on the attitude of the SAAO's working under the DAE towards recommended doses of chemical fertilizers and pesticides.

1.2 Statement of the Problem

Modern agriculture and environment are closely related with the use of Modern Agricultural Technologies, like chemical fertilizer, pesticide and irrigation water. Although these Modern Technologies are used for increasing production, but excess use of these technologies may create dangerous effect on environment. It is clear that non-judicial use of chemical fertilizers and pesticides damage natural resources like land, fisheries, beneficial insects, soil microbes etc. which are part and parcel of environment.

Farmers are the users of chemical fertilizers and pesticides and the SAAO's are the professional leaders and frontline workers of agricultural extension service whose jobs are to assist farmers in delivering appropriate extension messages.

Attitude means one's feelings, beliefs, and tendencies towards an object and concept. It varies from person to person. Various characteristics of an individual are likely to have an influences on the formation of his attitude towards certain objects. The characteristics have relationship with respect to the attitude. Therefore describing and exploring the relationship of a set of individual characteristics of SAAO's with the attitude towards recommended doses of chemical fertilizers and pesticides was considers in conducting this study.

In view of the foregoing discussion, the researcher undertook a study entitled, "Attitude of the professional leaders (Sub-Asst. Agriculture officers) towards recommended doses of chemical fertilizers and pesticides. "This study attempted to answer the following questions:

-- "What are the characteristics of SAAO? "

-- "What are the extent of attitude towards the effect of recommended doses of chemical fertilizers and pesticides."

-- "Is there any relationship of their social status on their attitude towards recommended doses of chemical fertilizers and pesticides?"

1.3 Specific Objectives

1. To determine & describe some selected characteristics of the SAAO's of Narayanganj district. The selected Characteristics are

i. Age
ii. Level of education
iii. Tenure of service
iv. Family size
v. Annual income
vi. Training experience
vii. Cosmopoliteness
viii. Media exposure
ix. Knowledge on chemical fertilizers, pesticides and irrigation water.

2. To determine and describe the extent of attitude of SAAO's towards

i. Recommended doses of Chemical fertilizers and
ii. Recommended doses of Chemical Pesticides

3. To explore the relationship between the selected characteristics of the SAAO's with their extent of attitude towards recommended doses of chemical fertilizers and pesticides.

1.4 Justification of the Study

The size and density of the population in relation to land area and resource development have already caused a high degree of environmental degradation, reflected by deforestation, loss of wild life, destruction of wet land and inland fisheries soil depletion and inland salinity intrusion. The major cause behind this man made problem is lack of institutional capacity in integrated planning and environmental management.

Many Government and Non-Government organizations have been working in Bangladesh in the fields of agriculture and rural development. Sustainable agricultural growth and protection of environment are the issues of high priority today.

The findings of the study will, in particular, be applicable to the Narayanganj district. However, the findings may also be applicable to other areas of Bangladesh where physical, socio-economic, cultural and geographic conditions do not differ much from those of the study area. thus, the findings are expected to be useful to students, researchers, and extension workers and particularly for planners in formulating and designing plans and procedures for maintaining the natural balance. The findings may also be helpful to the field workers of different nation building departments to improve strategies of action for conserving friendly farm environment with the rural people. The findings will also add to the body of knowledge in the field of environmental damages due to use of recommended doses of chemical fertilizers and pesticides. Lastly, the researcher believes that the findings and recommendations of this study will definitely led to minimize the cost of production and simultaneously reduce the risk of environmental damages.

1.5 Limitation and Scope of the Study

The purpose of the study was to have an understanding of the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides. However, in order to make the study manageable and meaningful from the research point of view, it became necessary to impose certain limitations as noted below:

i. The study was confined to the upazilas of Narayanganj district namely, Sadar, Rupganj and Sonargaon.

ii. Various individual characteristics might have influence on the attitude of the SAAO's. However, nine individual characteristics were selected for investigation in this study.

iii. Attitude of the SAAO's could be measured directly by observation in the field but it would be very much costly and time consuming. In this

study, attitude of the SAAO's has been measured on the basis of their responses through some (twelve only) selected statements.

iv. Facts and figures collected by the researcher applied to the situation prevailing during the year 2006-2007.

The findings of the study will, in particular, be applicable to the SAAO's of Narayanganj district. The SAAO's of the study area are likely to have similarity with those of other areas of the country. However, the findings may be applicable to the other areas of Bangladesh where the physical, socio-economic, cultural and geographical conditions do not differ much from those of the study area. Therefore, the findings of this study might have implications for the SAAO's of other areas too. Very few research studies have so far been reported on the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides. Thus, the findings may be helpful to develop plans and procedures for the development of the SAAO's. Findings of this study will therefore be a piece contribution to the body of knowledge for the planners and workers of agriculture extension services.

1.6 Assumptions

An assumption is the supposition that an apparent fact or principle is true in the light of the available evidence (Good, 1945). The following assumptions were in the mind of the researcher during conducting the study.

1. The respondents of this study will be competent to furnish proper response to the queries of as stated in the interview schedule.
2. The researcher who acted as interviewer will be adjusted to the social environment of the study area ensuring collection of unbiased data.
3. The responses furnished by the respondents will be reliable.
4. The views and opinions furnished by the SAAO's included in the sample will be the representative views and opinions of all the SAAO's of the study area.
5. Environmental conditions and organizational procedures under which the SAAO's have been working will generally be similar throughout the study area.

1.7 Hypothesis

A hypothesis is " a proposition which can be put to a test to determine its validity. It may seem contrary to or in accord with common sense. It may prove to be correct or incorrect. In any event, however, it leads to an empirical test : (goode and hatt, 1952). The following major null hypotheses were constructed to examine the relationships of nine selected characteristics of the SAAO's with their attitude towards recommended doses of chemical fertilizers and pesticides. "There are no relationships between the SAAO's attitude towards recommended doses of chemical fertilizers and pesticides and their selected characteristics. : The selected characteristic were: age, level of education, tenure of sevice, family size, annual income, training experience, cosmopoliteness, media exposure and knowledge on chemical fertilizers, pesticides and irrigation water.

1.8 Definition of Terms

For clearity of understanding, certain terms frequently use throughout the study are defined and interpreted as follow:

1.8.1 Attitude

Attitude means one's feelings and actions towards an objects and concept. This variable was operationalized by developing an attitude scale, following Likert method of summated rating reflected a SAAO's belief, feelings and actions tendencies on recommended doses of chemical fertilizers and pesticides.

1.8.2 Professional Leader (Sub-Asst. Agriculture Officer –SAAO)

Front line extension workers of DAE known as Sub-Asst. Agriculture Officer or professional leader. They inspire the farmer in the rural area to increase agricultural production by using modern agricultural technologies. They communicate extension messages to the farmers and motivate them to adopt innovations. They work as leaders but related wih specific profession so they treated as professional leaders.

1.8.3 Agrochemical

It refers to the chemical i.e. chemical fertilizers and pesticides of different kinds, which are frequently used in agriculture. Agro-chemicals are considered important agricultural inputs for increased productivity.

1.8.4 Chemical Fertilizers

It may be defined as the materials of synthetic origin, which are added to soil to provide one or more plants nutrients. Urea, TSP, MP etc. the main chemical fertilizer which are frequently used in agriculture.

1.8.5 Pesticide

It refers to those products, which are used to save the crop plants from the damage of pest and diseases. Only insecticides and fungicides are considered as pesticides in this study. These are generally toxic materials, relatively non-specific for their target DDT, Dieldrin, aldrin are same examples of pesticides.

1.8.6 Knowledge

Literally, knowledge means knowing or what one knows about a subject, fact, persons etc. Knowledge refers to the amount of facts or information about an idea, objective or person, which a person knows.

1.8.7 Knowledge on chemical fertilizers, pesticides and irrigation water

It refers to the understanding of the SAAO's about different aspects of scientific use of Agro-chemicals, such as right time of use, recommended doses, right chemicals for right insects etc. and different methods of irrigation and also proper time of irrigation.

1.8.8 Age

Age of the SAAO's were defined as the period of time in actual years from his birth upto the time of interviewing.

1.8.9 Level of education

It refers to the development of desirable change in human behavior or in other words, it is the development of desirable knowledge, skill and attitude in an individual through reading, writing, observation and other related activities. Participation of an individual in formal education and other related activities. Participation of an individual in formal educational institutions helps to develop such desirable knowledge, skill and attitude in an individual through reading, observation, writing

and other related activities. Participation of an individual in formal educational institutions helps to develop such desirable change in behavior. Hence education was operationalized by the number of years schooling (i.e. height class passed) attended by the respondents.

1.8.10 Tenure of service

It referred to the years of works experience of SAAO's as an extension worker in an extension related agency till the time of data collection.

1.8.11 Family size

Family size SAAO's was defined as the number of individuals who live in the same residence and eat together. This includes the respondent himself/ herself, spouse, children and dependents if any.

1.8.12 Annual income

It referred to the earnings of SAAO's from service, farming business and other sources during a year. In fact, it was gross income and expressed in taka.

1.8.13 Training received

It referred to the number of days of training received by the individual in his service carrer, excluding the pre-service training and mendatory official training course, in different aspects of agriculture and rural development before the interview of this study.

1.8.14 Consmopoliteness

It referred to the degree or the frequency of movement of an individual respondent to outside places from his own working place.

1.8.15 Media exposure

It refers to the frequency of exposure of a SAAO to different individual sources, group sources and mass media of information.

CHAPTER 2
REVIEW OF LITERATURE

Chapter 2

Review of Literature

This chapter deals with three section. The first section deals with concepts of attitude, the second section present the relationships of selected characteristics of SAAO's with their attitude towards recommended doses of chemical fertilizers and pesticides and third section deals with conceptual frameworks of the study.

2.1 Concept of attitude

Attitude in social psychology is a predisposition to classify objects and events and to react to them with some degree or evaluative consistency. The concept of attitude arises from attempt to observed regularities in the behavior of individual persons. The quality of ones attitude is judged from the observable, evaluative responses he tends to make (Encyclopedia Britannica, 1968). Attitude has also been defined as a positive or negative feeling associated with a specific psychological object, the object may be any symbol, phrase, slogan, person institution, ideal or idea (Encyclopedia Britannica, 1968). Different persons have defined attitude in many different ways. Some of this are given bellow.

Thurstone (1928) defined an attitude as the effect for or against a psychological object. According to Morgan, et. al. (1929) attitude means ones felling towards person, ideas, institution, practices or facts. Warren (1934) referred to attitude as a specific mental disposition towards an incoming or arising experience, where by that experience is modified, or in other words it is a condition of readiness for a certain type of activity.

Drever (1968) has defined an attitude as a more or less stable set or disposition of opinion, interest or purpose, involving expectancy of certain kind of experience and readiness with appropriate kind of response.

Doob (1966) stated that attitude affects behavior since an implicit, drive producing response considered socially significant in the individual society. If this definition is broken down typographically into phrases and clauses, an attitude implies the following:

- It is an implicit response
- It is both anticipatory and mediating reference to patterns overt responses.
- It is evoked by a verity of stimulus pattern and as a result of previous learning or of gradients of generalization and discrimination.
- It is itself a cue and drive producing.
- It is considered socially significant in the individual's society.

According to Lapiere (1934) a social attitude is a behavior pattern, anticipatory set or tendency, predisposition to specific adjustment of designed social situations or more simply, a conditioned response to social stimuli.

Sherif and Sherif (1956) defined the term attitude as a relatively stable tendency to respond with a positive or negative affect to specific referent. Attitude was also defined as a predisposition to act in a certain way. It is a state of readiness influence a person to act in given manner (Barnad, 1965)

This study was concerned with the attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides. The search of available literature indicates that few researches have so far been conducted to investigate the relationship of different characteristics of SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides. However, considerable research has been conducted to investigate the relationship of different characteristics of SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides

2.2 Review of studies exploring relationships of the selected characteristics of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides.

2.2.1 Age and attitude towards recommended doses of chemical fertilizers and pesticides.

Hoque (2001) Found in his study that there was positive significant relationship between age of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides.

Habib (2000) found in his study that there was positive insignificant relationship between age of the SAAO's and their attitude towards the use of agrichemicals.

Islam et. al. (1998) conducted a survey to determine the awareness of farmers on environmental and obtained a negative correlation with the awareness on environmental pollution.

Hamid (1997) made a survey to determine the awareness of framers on environment. He found that the age of the farmers had negative relationship with their attitude towards agrochemicals.

Miah and Rahman (1995) studied to measure the awareness of farmers regarding their environment and to identify the reasons responsible for its degradation. They found insignificant relationship between age of the farmers and awareness regarding farm environment.

2.2.2 Level of Education and attitude towards recommended doses of chemical fertilizers and pesticides.

Hoque (2001) found in his study that there was positive significant relationship between education of the SAAO's and their attitude towards the effect of modern agriculture technologies on environment.

Habib (2000) found in his study that there was positive significant relationship between education of the SAAO's and their attitude towards the use of agrochemicals.

Hanif (2000) found in his study that there was a positive significant relationship between education of the respondents and their awareness on environmental pollution.

Sarker (1999) revealed that the level of education of the farmer had significant positive relationship with their perception on environmental degradation.

Hossain (1999) revealed that the level of education of the farmer had significant positive relationship with their perception on environmental degradation.

Miah and Rahman (1995) found that the level of education of the farmers had positive significant relationship with the awareness on farming environment.

2.2.3 Tenure of service and attitude towards recommended doses of chemical fertilizers and pesticides.

Haque (2001) found in his study that there was insignificant relationship between tenure of service of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides.

Habib (2000) found in his study that there was in significant relationship between tenure of service of the SAAO's and their attitude towards the use of agrochemicals.

Mahiuddin (2003) found in his study that there was significant relationship between tenure of service of the respondent and their attitude towards the use of pesticide.

2.2.4 Family size and attitude towards recommended doses of chemical fertilizers and pesticides.

Hoque (2001) found in his study that there was insignificant relationship between family size of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides.

Hanif (2000) found that in his study that there was a positive insignificant relationship between family size of the respondents and their awareness on environmental pollution.

Habib (2000) observed in his study that there was no significant relationship between family size of the sub-Assistant Agricultural Officer and attitude towards the use of agrochemicals.

Miah and Rahman (1995) found that family size of the farmers and awareness regarding farming environment were not significant.

2.2.5 Annual income and attitude towards recommended doses of chemical fertilizers and pesticides.

Hoque (2001) in his study observe that there was a insignificant relationship between the annual income of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides.

Habib (2000) in his study found that there was a insignificant relationship between the annual income of the SAAO's and their attitude towards the use of agro-chemical.

Hanif (2000) found in his study that there was a negative insignificant relationship between annual income of the respondents and their awareness on environmental pollution.

Hamid (1997) found that the annual income of the farmers had significant positive relationship with the awareness on environmental pollution.

Iqbal (1963) in his study found that income of the farmers had significant relationship with their attitude towards improved farm practices

2.2.6 Training experience and attitude towards recommended doses of chemical fertilizers and pesticides

Hoque (2001) in his study found that training experience of the SAAO's had a significant positive relationship with their attitude towards recommended doses of chemical fertilizers and pesticides.

Habib (2000) observed in his study that training exposure of the SAAO's had significant positive relationship with their attitude towards agrochemicals.

Paul (2000) found that there was a positive significant relationship between agricultural training experience of the farmers and their attitude towards the use of urea super granule.

2.2.7 Cosmopoliteness and attitude towards recommended doses of chemical fertilizers and pesticides

Sutradhar (2002) found that in his study there was negative insignificant relationship between cosmopoliteness of the respondents and their awareness on the environmental degradation caused by the use of modern agricultural technologies.

Hoque (2001)observed in his study that there was a positive significant relationship between cosmopoliteness of the sub-asst agriculture officer and their attitude towards recommended doses of chemical fertilizers and pesticides.

Hanif (2000) found that in his study there was a insignificant relationship between cosmopoliteness of the respondents and their awareness on environmental pollution in case of FFS farmers.

Hossain (1999) found that cosmopoliteness of the farmers had no significant positive relationship with their perception on environmental degradation.

Islam et.al. (1998) found that cosmopoliteness of the farmers had no significant positive relationship with their perception on environmental degradation.

Hamid (1997) observed a positive relationship between cosmopoliteness of farmers and their awareness on environmental pollution.

Hoque (1993)observed a positive relationship between cosmopoliteness of farmers and their awareness on environmental pollution.

Islam (1993) found a significant relationship between cosmopoliteness of the farmers and their adoption of recommended doses of fertilizer and plant protection measures in cultivation.

Khan (1993) observed in his study on adoption of insecticides and related issues by the farmers a positive relationship between cosmopoliteness of the farmers and their adoption of insecticides was obtained.

2.2.8 Media exposure and attitude towards recommended doses of chemical fertilizers and pesticides

Hossain (2003) found that the communication exposure of the respondents had significant and positive relationship with their knowledge on modern Boro rice cultivation practices.

Farhad (2003) showed that contact with extension media of the respondents had significant and positive relationship with their knowledge in using IPM in vegetable cultivation.

Sana (2003) reported that media exposure of the farmers had a significant positive relationship with their knowledge of shrimp culture.

Sutradha (2002) found that the communication exposure of the respondents had significant and positive relationship with their awareness on environmental degradation.

Hossain (2000) concluded that media exposure of the farmers had a significant relationship with their knowledge on Binadhan-6.

Hossain (1999) observed in his study that media exposure of the farmers had no relationship with their perception of the adverse effect of agrochemicals.

Hamid (1995) observed a positive relationship between media exposure of the farmers and their awareness on environmental pollution.

Pal (1995) found in his study that the extension contact of the farmers had a significant positive relationship with their adoption of sugarcane cultivation practices.

Karim (1973). Kashem et.al (1990). Khan (1922). Pathak et. al (1992). Haque (1993). Islam (1993) and other found the similar results.

Raha (1989) found that extension contact of the farmers had a in significant relationship their irrigation problem.

2.2.9 Knowledge on Chemical fertilizers, pesticides and irrigation water and attitude towards the effect of m.a.t on environment.

Sutradhar (2002) found that there was a positive significant relationship between knowledge of the respondents and their awareness on the environmental degradation caused by the use of modern agricultural technologies.

Hoque (2001) in his study found that there was a positive significant relationship between knowledge of the SAAO's and their altitude towards recommended doses of chemical fertilizers and pesticides.

Hanif (2000) found that there was significant positive relationship between agricultural knowledge of the respondents with their awareness on environmental pollution.

Sarker (1999) found that the knowledge on the use of agro-chemicals had a significant positive relationship with their perception on environmental degradation.

Islam et. al (1998) found that agricultural knowledge had a significant relationship with awareness indicates that, a person having more agricultural knowledge was found to be more aware about the environment.

2.3 The conceptual Framework of the study

The conceptual framework was kept in mind while farming the structural arrangement for the dependent and independent variables. This study was concerned with dependent variable of SAAO's attitude towards recommended doses of chemical fertilizers and pesticides.

Based on the past literature and findings as well as main theme of the study, the researcher constructed a conceptual model which is self explanatory and is presented in figure 2.1

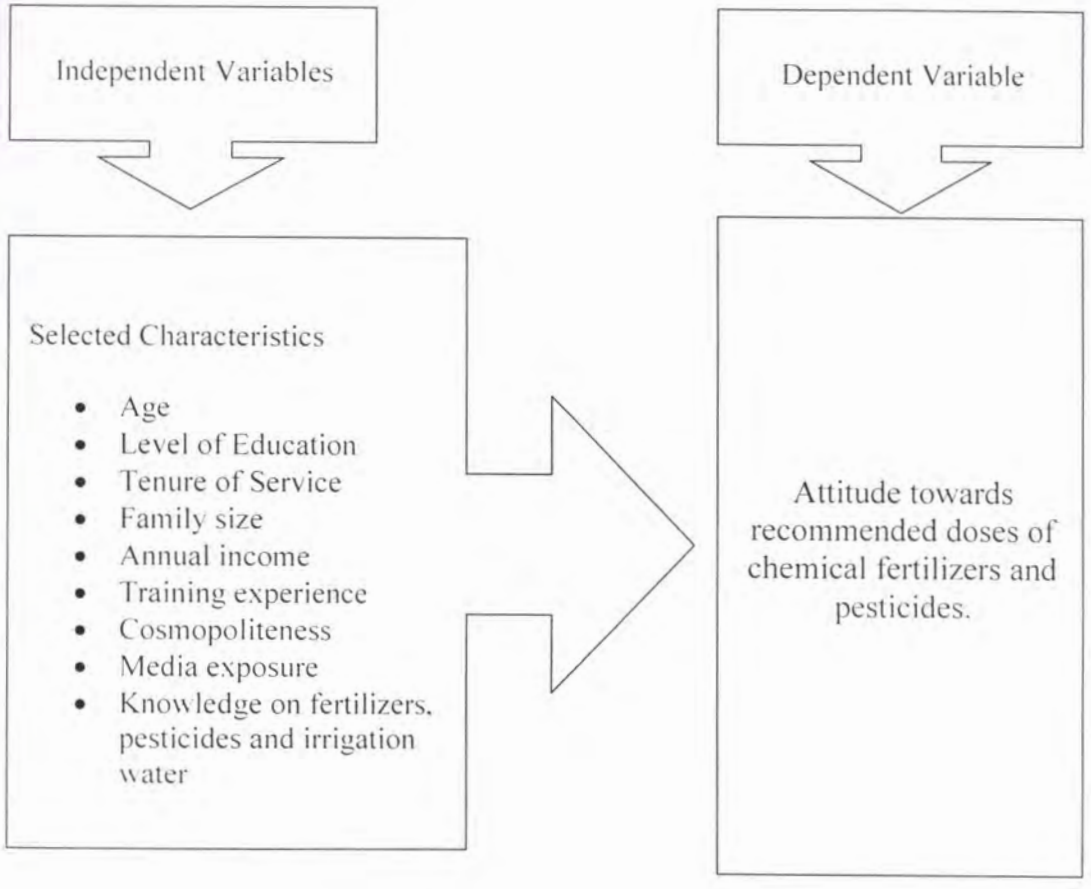

Fig. 2.1 Conceptual framework of the study

CHAPTER 3
METHODOLOGY

Chapter 3
Methodology

This chapter delineates the locale of the study followed by source of data, research design, data collecting instrument, collection of data, variable of the study, measurement of variables, categorization of data and statistical treatment. This chapter also spells out the method used to test the hypothesis.

3.1 Locale of the Study

This study was conducted in Narayanganj district. This district has 5 upazilas, namely, Narayanganj Sadar, Rupgonj, Sonargaon, Bandar and Araihazar. Among these upazilas three upazilas, namely, Sadar, Rupgonj and Sonargaon were randomly selected for this research work. A map of Narayanganj district showing the study area are shown in Figure 3.1

3.2 Population and Sample of the Study

The SAAO's who have been working in the selected three upazilas under Narayanganj district constituted the population of this study. However, data were collected from the whole population. Therefore, all the SAAO's constituted the sample of the study.

3.3 Design of the Study

The research design was both descriptive and interrelationship study in nature. It was designed to describe the relationship between the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides.

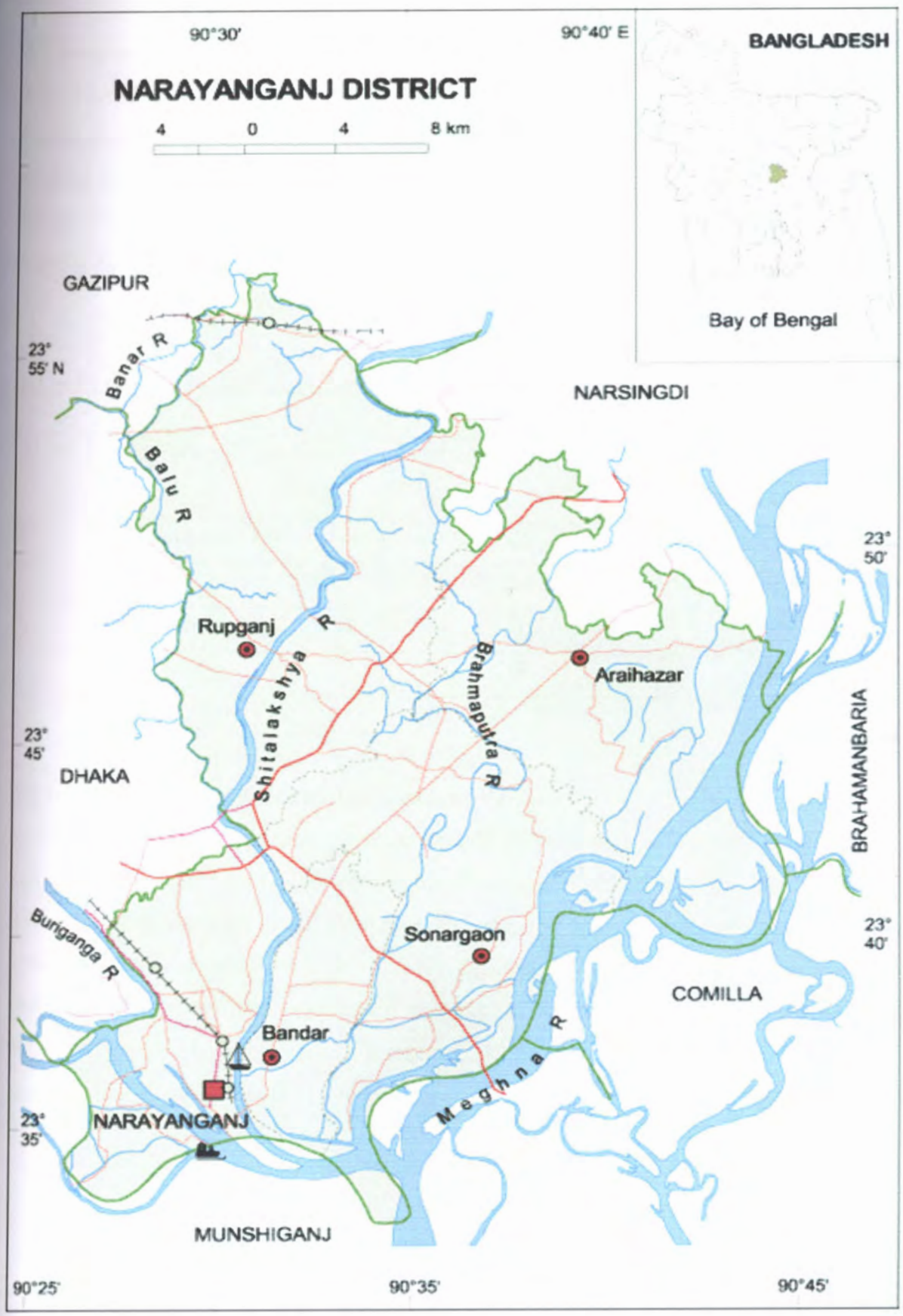

Fig: 3.1 Map of Narayangonj District showing locale of the study area.

3.4 Sampling Technique

The SAAO's who have been working in the selected three upazillas under Narayanganj district constituted the sample of this study. Eighty eight SAAO's were working in thieses upazila. So all of them selected as sample of the study. An updated list of all SAAO's in the selected three upazilas were prepared with the help of Upazila Agriculture Officer. Upazila wise distribution of SAAO's is shown in Table

Table 3.1 Distripution of total number and sample of SAAO's in the study Area

Sl.No.	Name of Upazila	Total number of SAAO's	Number of SAAO's Selected as sample
1.	Narayanganj Sadar	25	25
2.	Rupganj	33	33
3.	Snoargaon	30	30
	Total	88	88

3.5 Selection of Dependent and Independent Variables

In a descriptive social research the selection and measurement of variable constitutes and important task. In this connection, the investigator looked into the literature to widen his understanding about the nature and scope of the variables involved in the research studies. Ezekiel and fox (1959) defined a variable as any measurable characteristics, which an assumption varying or different values in successive individual cases. The hypothesis of a research, while constituted properly contains at least two important elements viz. independent and dependent variables.

3.5.1 Independent variables

An independent variable is that factor which is manipulated by the experimenter in his attempt to ascertain its relationship to an observed phenomenon (Townsend, 1953). The independent variables of this study were :

i. Age
ii. Level of education
iii. Tenure of service
iv. Family size
v. Annual income
vi. Training experience
vii. Cosmopoliteness.
viii. Media exposure
ix. Knowledge on chemical fertilizer, pesticide and irrigation water.

3.5.2 Dependent variable

A dependent variable is that factor which appears, disapperars or varies as the experiment introduces, removes or varies the independent variables (Townsend, 1953) "Attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides" was considered as dependent variable in this study.

3.6 Development of the Instrument

In order to collect the valid and reliable information from the SAAO's an interview schedule was carefully designed keeping the objectives of study in mind. Simple and direct questions and different scales were used to obtain information. Direct questions were included to collect information like age, level of education, tenure of service, family size, annual income and training experience. Scales were used to measure cosmopoliteness and media exposure. An open form question was obtain information like knowledge about chemical fertilizer, pesticides and irrigation which was measured by rating scores. Five point Likert type scale was used for ascertaining the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides. The interview schedule was prepared in Bangle. However, an English version of the same in presented in "Appendix A".

3.7 Data Collection

Data for this study were collected through personal interview by the researcher himself from the sampled SAAO's in selected upazillas under Narayanganj district, during 1st August to 31st September 2006 Before starting the collection of data, the researcher met the respective upazilla agriculture officer, other officers and the SAAO's also. The researcher explained the purposes of the study and requested the respondents to provide actual information and necessary co-operation in collecting data. Most of the data were collected on the weekly conference day of the SAAO's at the respective upazilla office.

3.8 Compilation of Data

After completion of field survey all the data were compiled, tabulated and analyzed according to 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. The responses to the questions in the interview schedule were transferred to a master sheet to facilitate tabulation. Tabulation and cross tabulation was done on the basis of categories developed by the investigator himself.

3.9 Selection and Measurement of Variables

In scientific research, the selection and measurement of variables constitute a significant task. In this connection the researcher reviewed literature to widen his understanding about the nature and scope of the variables relevant in this piece of research. He also discussed with departmental teachers and concerned researchers of the related fields. Ultimately the researcher selected ten variables, of which nine were selected as independent and one was selected as dependent variables. This section contains procedures for measurement of both this study.

3.10.1 Independent variables

3.10.1.1 Age

The age of an individual is one of the most important factors to his personality make up (Smith and Zope, 1970) which may play an important role on awareness of environmental degradation. It was measured in terms of years on the basis of data of birth obtained as per SSC certificate.

3.10.1.2 Level of education

The level of education is generally considered as an index for social advancement of an individual or group. It improves one's knowledge, awareness, understanding and responsibility by reading newspaper, magazine, leaflets, and other printed materials. It was measured in terms of the highest grades passed by the respondents and was determined on the basis of response to item number 2 of the interview schedule. The weight of 11, 12, 13 and 14 were assigned for SSC, HSC, Diploma degree and Masters respectively.

3.10.1.3 Tenure of service

Tenure of service is an important characteristic by which one can gather different experiences by passing of time. It was measured by the number of years, which a respondent had worked as SAAO's. The total length of service was calculated based on the joining date of his/ her service to the time of interview.

3.10.1.4 Family size

The family size of a respondent was measured in terms of number of family members who eats in the same kitchen.

3.10.1.5 Annual Income

Annual income of a respondent means the annual gross income in taka from different sources. Income is a crucial factor for one's development as well as for his/ her knowledge. awareness and attitude on recommended doses of chemical fertilizers and pesticidesal degradation. Total earnings of a respondent from the different sources were added together to determine his/her annual income. However, a unit score of 1 (one) was taken for Tk. 1.000/- (taka one thousand) only.

3.10.1.6 Training exposure

The training exposure of a respondent was measured on the basis of his/her duration of participation (in days) in training session in different aspects from different organizations.

3.10.1.7 Cosmopoliteness

An individual develop a heterophilous link whom he/she visits a new place. The heterophilus links of low proximity play a crucial role in the flow of information about an innovation. Cosmopoliteness of a respondent was measured by computing a cosmopoliteness score based on his/ her frequency of visits of 6 different places external to his/ her social system. Each respondent was asket to indicate the number of his/her visits to those places. Weights were assigned to his/her responses according to the nature and extent of visits as follows.

Nature of visit	Scores assigned
Not at all	0
Rearly	1
Oftenly	2
Suddenly	3
Regularly	4

The scores obtained for visit to all the 6 categories of places were added together to obtain the cosmopoliteness score of a respondent. This scores of a respondent could range from 0 to 24. 0 indicating no cosmopoliteness and 24 indicating high cosmopoliteness.

3.10.1.8 Media Exposure

It reffers to the exposure or the extent of contract of a respondent with different information sources. It was assumed that the more the contact an individual had with different communication sources, the higher was his/her exposure. A communication media exposure score was computed for each respondent on the basis of his/her extant of contact with 12 selected media (question no. 8 in the interview schedule in appendix 'A'). The respondent indicate the nature of his/her contact by putting a tick against any of the following responses and scores were assigned to the responses as follows :

Extent of exposure (times)	Scores assigned
Not at all	0
Rearly	1
Oftenly	2
Suddenly	3
Regularly	4

Media exposure of a respondent was measured by adding up all the responses to all the selected 12 media. Thus media exposure of a respondent could ranged from 0-48.. while 0 indicating no media exposure and 48 indicating very high media exposure.

3.10.1.9 Knowledge on the effect of chemical fertilizers, pesticides and water

For measuring the knowledge on the effect of chemical fertilizers, pesticides and irrigation water of SAAO's, a knowledge score was computed. For this, he/she was asked 12 questions covering different aspects of using chemical fertilizers, pesticides and irrigation water. Each question had predetermined assigned scores as to that making a total score of 24. However, for correct responses to a question, a respondent could secure a full score of 2, while for wrong responses a question he/she could score zero (0). For partial correct response partial score were assigned accordingly. Thusa respondent could get a total score of 24 for correct answer to all the question and a score of zero (0) for wrong or no answer to all the questions. Therefore, knowledge on chemical fertilizers, pesticides and irrigation water could ranged from 0-24, while 0 indicating very low knowledge and 24 indicating very high knowledge.

3.10.2 Dependent variable

3.10.2.1 Attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides

For measuring the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides, a Likert-type scale with 12 statements (6 positives and 6 negatives) were used. These statements indicated the predisposition of SAAO's towards recommended doses of chemical fertilizers and pesticidesal degradation. A respondent was asked to indicate his extent of agreement or disagreement with each of the statement along a 5 point scale: strongly agree, agree, no opinion, disagree and strongly disagree. Weights were assigned to these responses as 4,3,2,1 and 0 respectively for positive statements and reverse scoring i.e. 0,1,2,3,4 respectively for negative statements. The attitude score of a respondent was determined by adding up the weights for responses against all the 12 statements. Thus the possible range of attitude of a respondent towards recommended doses of chemical fertilizers and pesticides could be 0-48, while 0 indicating very unfavourable attitude and 48 indicating very favourable attitude towards the recommended doses of chemical fertilizers and pesticides.

3.11 Categorization of Respondents

For describing the various independents and dependent variables, the respondents were classified into various categories. In developing categories, the researcher was guided by the nature of data and general consideration prevailing on the social system. The procedure and the effect of categorization of a particular variable was discussed while describing the variable in the subsequent sections of next chapter.

3.12 Statistical Treatment

The data collected for this study were compiled, tabulated and analyzed in accordance with the objectives of the study. The statistical measures such as ranges, mean, standard deviation, percentage, number, were used to describe both independent and dependent variables. Tables were also used in presenting data for clarity of understanding. To find out the relationships of selected characteristics of the respondents with each of their attitude toward recommended doses of chemical fertilizers and pesticides. Pearson product moment coefficient of correlation was used. Minimum Five percent (0.05) level of probability was used as the basis for rejecting any null hypothesis throughout the study.

CHAPTER 4
RESULTS & DISCUSSION

Chapter 4

Results and Discussion

In this chapter, findings are presented in three sections in accordance with the objectives of the study. The first section deals with the selected characteristics of the respondents, while the second section deals with the attitude towards recommended doses of chemical fertilizers and pesticides. Third and final section discusses the relationship between the selected characteristics of the respondent and their attitude towards recommended doses of chemical fertilizers and pesticidess.

Selected Characteristic s of the SAAO's

There are many interrelated and constituent attributes or traits that characterize an individual and form an integral part in the development of one's behavior and personality. It is the expressed behavior or the sum totality of individual characteristics and ways of behaving which determines his unique adjustment to his environment. It includes the individual behavior, appearance, beliefs, attitude, values, motives, emotional reactivity, expressing capacity, experience and individual mode of adjustment. It was, therefore, assumed that attitude of SAAO' s towards recommended doses of chemical fertilizers and pesticides will be there various personal as well as socio-economic characteristics, Such consideration led the researcher to select in the present study some personal, social, economical and psychological characteristics of SAAO's for determining their attitude towards recommended doses of chemical fertilizers and pesticides. The selected characteristics included age, level of education, tenure of service, family size, annual income, training experience, cosmopolite ness, media exposure, knowledge of chemical fertilizers, pesticides and irrigation water of SAAO's. The aforesaid characteristics of Block Supervisors are described in this section. However, the basic statistical values of the selected characteristics of the SAAO's have been presented at Appendix B.

4.1.1 Age

The age of the SAAO's ranged from 26 to 55 years, with an average of 43.72 and a standard deviation of 7.47. Based on their age, the SAAO's were classified into three categories, namely, 'young' (upto 26-37 years), middle aged (38-46 years) and old (above 46 years.) the distribution SAAO's according to their age is shown in table 4.1.

Table 4.1 distribution SAAO's according to their age

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
Young (26 to 37 years)	14	16	43.72	7.47
Middle aged (38 to 46 years)	37	42		
Old aged (above 46 years)	37	42		
Total	88	100		

Data presented in the Table 4.1 indicate that the proportions of middle and old aged categories were same and that was (42 percent) while only 16 percent of them were young.

It is evident from the table 4.1 that 84 percent of SAAO's were in middle to old aged group. This SAAO's are generally interested for new ideas or technologies and are aware to the environment. Such consideration indicates that the DAE should pay proper attention for the effective training and supervision of these SAAO's. Otherwise a considerable proportion of the SAAO's may remain backward in their intellectual development, particularly in respect of their knowledge, skills and attitude. If these group are given proper training attitude might be changed, because training broadness the mind and outlook of the people.

4.1.2 Education

The level of education of the SAAO's in this study ranged from SSC to Bachelor degree with agricultural diploma. All of the SAAO's had complete 3 year Diploma in Agriculture. The scores of the level of education of the SAAO's ranged from 11 to 13 the mean and standard deviation being 11.76 and .77 respectively. On the basis of their educational level, the distribution of the SAAO's is shown in Table 4.2

Table 4.2 Distribution of SAAO's according to their education

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
SSC with agricultural diploma	39	44	11.76	.773
HSC with agricultural diploma	31	35		
Bachelor Degree with agricultural diploma	18	21		
Total	88	100		

Data presented in the Table 4.2 indicate that majority of the SAAO's were found to have S.S.C to H.S.C with agricultural diploma level of education (44 and 35 percent respectively.) Only 21 percent were seen to have a graduation with agricultural diploma. None of the BS completed Master degree.

Education is a desirable quality of an individual. It helps an individual to read the written materials on agriculture, which in turn helps them to strengthen their technologies on environment. It also helps to become rational, conscious and collect useful information to solve their day to day problems including environmental problems and degradation of environment.

4.1.3 Tenure of service

The tenure of service as extension worker of the respondents ranged from 2 to 38 years with an average and standard deviation of 20.25 and 8.33 respectively. The respondents were classified into three categories on the basis of their tenure of service as shown in Table 4.3.

Table 4.3 Distribution of SAAO's according to tenure of service

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
Short <(mean -1sd) i.e. (2-12 years)	13	15	20.25	8.33
Moderate (mean +-1sd) i.e.(13-21 years)	30	34		
Long >(mean +1sd) i.e. (above 21 years)	45	51		
Total	88	100		

Data presented in the Table 4.3 indicate that majority (51 percent) of the were found to have long service length and only 15 percent SAAO's had short service length and 34 percent SAAO's had moderate service length.

4.1.4 Family size

The family size of the SAAO's under study ranged from 2 to 7 members, the average being 9.10 with standard deviation of 7.47. Based on their family size, the respondents were classified into three categories, which is shown in Table 4.4

Table 4.4 Distribution of SAAO's according to their family size

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
Small (2-4 members)	23	26	9.10	7.47
Medium (5-6 members)	33	38		
Large (above 6 members)	32	36		
Total	88	100		

Data contained in Table 4.4 reveal that 26 percent of the SAAO's belonged to the small family category, 38 percent of SAAO's belonged to the medium family category and 36 percent belonged to large family category. Thus 64 percent of the SAAO's had small to medium family size.

4.1.5 Annual income

Annual Income of the SAAO's varied from tk. 74.00 to 288.00 thousand with a mean of 145.07 and a standard deviation of 36.68. Based on their income, the SAAO's were classified into three categories is shown in Table 4.5

Table 4.5 Distribution of SAAO's according to their annual income

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
Low <(mean -1sd) i.e. (tk. 74-109)	11	13	145.07	36.686
Medium (mean ±1sd) i.e. (tk. 110-146)	33	37		
High >(mean +1sd) i.e. (above tk. 146)	44	50		
Total	88	100		

Half (50 percent) of the SAAO's had high annual income. A considerable proportion of SAAO's (37 percent) having medium income. The proportion of SAAO's having low income was 13 percent. Thus 50 percent of the SAAO's belonged ot the low to medium income categories. The SAAO's who had higher income generally were older in age and had long tenure of service.

4.1.6 Training experience

In this study, the SAAO's attended training of varying duration, ranging 6 to 130 days. Average duration of training received by the SAAO's was 34.63 days, with a standard deviation of 34.45. The respondents were, on the basis of the duration of training received, classified in three categories as shown in Table 4.6

Table 4.6 Distribution of SAAO's according to their training experience

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
Short- duration <(mean -1sd) i.e. (up to 15 days)	48	55	34.63	34.45
Medium duration (mean ± 1sd) i.e. (16-60 days)	24	27		
Long duration >(mean +1sd) i.e. (above 60 days)	16	18		
Total	88	100		

More than half portion (55 percent) of the SAAO's had received short duration training while 27 percent SAAO's had received medium and only 18 percent SAAO's had received long duration training. Most of the training attended by SAAO's were either short or medium duration.

New technologies are developing day by day. Training held to gain knowledge about the developed technologies. So DAE should arranged medium duration training programme for the SAAO's.

4.1.7 Cosmopoliteness

Cosmopoliteness scores of the SAAO's ranged from 7 to 21 against the possible range of 0-24 with an average of 12.13 and a standard deviation of 3.88 Table 4.7 contains the distribution of the three categories of SAAO's according to their cosmopoliteness.

Table 4.7 Distribution of SAAO's according to their cosmopoliteness

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
Low <(mean -1sd) i.e. (7-9)	24	27	12.13	3.88
Moderate (mean ±1sd) i.e. (10-14)	40	46		
high >(mean +1sd) i.e. (above 14)	24	27		
Total	88	100		

In terms of cosmopoliteness, (27 percent) of the SAAO's had low cosmopolite A considerable proportion of SAAO's (46 percent) of them being moderately cosmopolite and also 27 percent of them were seen to be highly cosmopolite. However, further analysis of cosmopolite behaviour of the SAAO's indicate that the SAAO's who were more cosmopolite had a favourable attitude towards recommended doses of chemical fertilizers and pesticides (r=+0.954**)

Previous literature indicate that cosmopolite behaviour of a person effect their attitude therefore concern authority should take proper step to increase the cosmopoliteness among the SAAO.

4.1.8 Media Exposure

The computed media exposure scores of the SAAO's ranged from 19 to 48 against the possible range of 0-48 with an average of 34.30 and a standard deviation of 7.049. Table 4.9 contains the distribution of the SAAO's according to their media exposure.

Table 4.8 Distribution of SAAO's according to their media exposure.

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
Low <(mean -1sd) i.e. (up to 28)	23	26	34.30	7.049
Medium (mean ±1sd) i.e. (29 to 36)	25	28		
High >(mean +1sd) i.e. (above 36)	40	46		
Total	88	100		

The majority (46 percent) of the SAAO's had high exposure while 26 percent of them had low media exposure and 28 percent had medium media exposure. Thus 74 percent of the SAAO's had medium to high media exposure with different media.

4.1.9 Knowledge on the effect of chemical fertilizers, pesticides and irrigation water.

The scores of knowledge on the effect of chemical fertilizers, pesticides and irrigation water obtained by the SAAO's could range from 0 to 24, zero (0) indicting no

knowledge and 24 indicating very good knowledge. The computed knowledge scores of the SAAO's ranged from 9 to 21, the average being 15.88 with a standard deviation of 3.437. The distribution of the SAAO's according to their knowledge on the effect of chemical fertilizers, pesticides and irrigation water as shown in Table 4.9

Table 4.9 Distribution of SAAO's according to their knowledge on modern agriculture technologies

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
Fair knowledge <(mean -1sd) i.e. (9-12)	21	24	15.58	3.437
Good knowledge (mean ± 1sd) i.e (13-16)	42	48		
Very good knowledge >(mean +1sd) i.e. (above 16)	25	28		
Total	88	100		

Data contained in Table 9 expressed that a greater portion of SAAO's (48 percent) had good knowledge, 24 percent having fair knowledge, and a considerable portion of SAAO's having very good knowledge (28 percent) on recommended doses of chemical fertilizers and pesticides.

Knowledge helps to change attitude towards recommended doses of chemical fertilizers and pesticides. Knowledge helps to make proper decision in any aspect. This meant, more knowledgeable person had more favourable attitude. So, the authority should take necessary measures to improve their knowledge through different training, demonstration, visiting different research institution etc.

4.2 Attitude towards recommended doses of chemical fertilizers and pesticides

Attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides was measured by computing an attitude score, which range from 0 to 48. However, the observed score ranged from 29 to 47 with an average of 38.36 and a standard deviation of 5.29. The distribution of SAAO's according to their attitude towards recommended doses of chemical fertilizers and pesticides is presented in Table 4.10

Table 4.10 Distribution of SAAO's according to their attitude towards recommended doses of chemical fertilizers and pesticides.

Categories	SAAO's		Mean	Standard Deviation
	Number	Percent		
Slightly favourahle attitude <(mean - 1sd) i.e. (29-33)	25	28	38.36	5.292
Moderate favourable attitude (mean ± 1sd) i.e (34-39)	42	48		
Highly favourable attitude >(mean +1sd) i.e. (above 39)	21	24		
Total	88	100		

Data presented in Table 4.10 indicate that near about half portion (48 percent) of respondents were found to have moderately favourable attitude toward the effect of modern agricultureal technologies on environment. Twenty eight (28) percent SAAO's were found to have slightly favourable attitude and a considerable protion (24 percent) were found to have highly favourable attitude towards recommended doses of chemical fertilizers and pesticides.

Attitude means one's feelings, beliefs and tendencies towards an object and concept. It varies from person to person. Various characteristics of an individual are likely to have an influences in the formation of his attitude towards certain object. So authority shuld take necessary measures to from favourable attitude towards recommeded doses of chemical fertilizers and pesticides.

4.3 Relationships between the Dependent and independent Variables

As mentioned earlier, the 9 selected characteristics of the SAAO's were the independent variables of the study. The variable were age, level of education, tenure of service, family size, annual income, training experience, cosmopoliteness media exposure and knowledge on chemical fertilizers, pesticides and irrigation water
The dependent variable was attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides.

The purpose of this section is to examine the relationship of each of the independent variables with dependent variable. Pearson's product moment co-efficient of correlation (r) was used to test of null hypothesis concerning relationship between any two variables concerned. Five percent (0.05) level of probability were used as the basis for rejection of any null hypothesis.

Summary results of the test of co-efficient of correlation between the dependent and the independent variables are shown in Table 4.11. However, the detailed interrelations between the selected characteristics (i.e independent variables) and dependent variable have been presented in Appendix C.

Table 4.11 Correlation between dependent and independent variables (N=88)

Dependent Variable	Characteristics of the SAAO's	Co-efficient of Co-relation	Tabulated value at	
			0.05 level	0.01 level
attitude towards recommended doses of chemical fertilizers and pesticides	1. Age	0.579**	0.210	0.273
	2. Level of education	0.133NS		
	3. Tenure of service	0.102 NS		
	4. Family size	0.062 NS		
	5. Annual income	- 0.014 NS		
	6. Training experience	0.809**		
	7. Cosmopolteness	0.659**		
	8. Media Exposure	0.261*		
	9. Knowledge on chemical fertilizers, pesticides and irrigation water	0.963**		

NS : Not significant

*Significant at 5 percent level with 86 df

**Significant at 1 percent level with 86 df

4.3.1 Relationships between the selected characteristics of the SAAO's and the attitude towards recommended doses of chemical fertilizers and pesticides.

4.3.1.1 Age and attitude towards recommended doses of chemical fertilizers and pesticides.

The following null hypothesis was formulated to test the relationship between age of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides:

> "There was no relationship between the age of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides"

The coefficient of correlation between the concerned variables was found to be -0.579**.

This led to the following observations regarding the relationship between two variables under consideration:

Firstly, the relation ship showed a positive trend. Secondly a significant relationship found to exist, thirdly, the computed value or r +0.579** was significant at 0.01 percent level of probability with 86 degrees of freedom.

In the light of the above observations, the researcher could reject the null hypothesis with the decision that age of the SAAO's had a significant positive relationship with the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides. This indicates that older SAAO's had favourable attitude towards recommended doses of chemical fertilizers and pesticides than younger SAAO's. The older SAAO's has gain more experience thorough out the service period by taking various training. This experience may have influenced on their attitude towards recommended doses of chemical fertilizers and pesticides.

Hoque (2001) and Habib (2000) found in their studies that there were positive significant relationship on this matter. So those findings support the result of this study.

4.3.1.2 Education and attitude towards recommended doses of chemical fertilizers and pesticides.

In order to ascertain the relationship between educational level of the SAAO's and their attitudes towards recommended doses of chemical fertilizers and pesticides, the following null hypothesis was formulated:

> "There was no relationship between educational level of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides"

The following observations were recorded regarding the relationship between the two variables on the basis of the coefficient of correlation.

Firstly, the relationship showed a positive trend. Secondly, insignificant relationship found to exist. Thirdly, the computed value of 'r' (0.113) was found to be smaller than the table value at 0.05 percent level of probability.

Based on the above findings, the null hypothesis could not be rejected and hence the investigator concluded that educational level of the SAAO's had no significant relationship with their attitude towards recommended doses of chemical fertilizers and pesticides. However, though the relationship was not statistically significant, the trend of relationship was positive. It means that education helps individuals gain knowledge and skills in different subject matters and develop positive attitudes, which ultimately increase their power of observation and decision making.

4.3.1.3 Tenure of service and attitude towards recommended doses of chemical fertilizers and pesticides

The relationship between tenure of service and attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides was examined by testing the null hypothesis.

"There was no relationship between tenure of service of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides."

The calculated coefficient of correlation (r = 0.102) between the concerned variables led to the following decision :

The researcher failed to reject the null hypothesis with a decision that tenure of service had no significant relationship with attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides. The relationship shows a positive trend.

Houque (2001) and Habib (2000) found in their studies that there were insignificant relationship on this issue. So , they observed the similar findings in their studies.

4.3.1.4 Family size and attitude towards recommended doses of chemical fertilizers and pesticides

As the coefficient of correlation for family size of the SAAO's (r=0.062) was insignificant at 0.05 level of probability with 86 degrees of freedom and therefore, the concerned hypothesis.

"There was no relationship between family size of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides."

was not rejected. It was, therefore, concluded that the family size of the SAAO's had no significant relationship with their attitude towards recommended doses of chemical fertilizers and pesticides. This means, the SAAO's who had comparatively large family had not favourable attitude towards recommended doses of chemical fertilizers and pesticides.

Hoque(2001), Habib(2000) and Hanif(2000) found in their studies that there were insignificant relationship on this aspect. So their findings support this study.

4.3.1.5 Annual income and attitude towards recommended doses of chemical fertilizers and pesticides

As the coefficient of correlation for annual income of the SAAO ($r = -0.014$) was insignificant at 0.05 level of probability with 86 degrees of freedom and therefore the concerned hypothesis

> "There was no relationship between the annual income of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides" was not rejected.

Firstly the relationship showed a negative trend. Secondly no relationship was found to exist . Thirdly the computed value of $r = -0.014$ was smaller then the table value.

The researcher could not reject the concerned null hypothesis with a decision that annual income of the SAAO's had not significant relationship with their attitude toward recommended doses of chemical fertilizers and pesticides. This meant that the SAAO's who had higher income, had no favourable attitude towards recommended doses of chemical fertilizers and pesticides. The reason behind might be that the SAAO's with more income have more social status and prestige in the society. They like to mix with the various people of the society. In our social system maximum people are traditional. They have the traditional values and norms. So this contact may influence their attitude which in turn effect their attitude towards recommended doses of chemical fertilizers and pesticides.

Hoque (2001), Habib (2000) and Hanif (2000) also found the similar results in their studies.

4.3.1.6 Training experience and attitude towards recommended doses of chemical fertilizers and pesticides

In order to investigate the relationship between training experience of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides, the following null hypothesis was formulated:

> "There was no relationship between the training experience of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides."

The observed coefficient of the concerned variables was found to be $r = +0.809^{**}$ which led to the following observations:

Firstly, the relationship exhibited a positive trend. Secondly, a significant relationship was found to exist. Thirdly, the calculated value of $r = +0.809^{**}$ was significant at 0.01 level of probability with 86 degrees of freedom.

On the basis of the above findings, the investigator could reject the concerned hypothesis with a decision that training experience of the SAAO's had significant positive relationship on the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides. This indicates that the more training received by the SAAO's the more favourable was their attitude towards the effect of modern agriculture technologies on environment. The reasons behind that they could gather more knowledge about modern agricultural technologies and their effect on environment and guide others in this respect.

Hoque (2001), Habib (2000) and Paul (2000) also found the similar results in their studies.

4.3.1.7 Cosmopoliteness and attitude towards recommended doses of chemical fertilizers and pesticides

The association ship of cosmopoliteness of the SAAO's their attitude towards modern agricultural technologies on environment was explored by the following null hypothesis :

> "There was no relationship between the cosmopoliteness of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides."

Observed coefficient of correlation between the concerned variables (r=+0.659**) led to the following observations:

Firstly, the relationship exhibited a positive trend. Secondly, a significant relationship was found to exist. Thirdly the calculated value of r=+0.659** was significant at 0.01 level of probability with 86 degrees of freedom.

Based of the findings, the concerned null hypothesis was rejected and hence, the researcher concluded that the cosmopoliteness of the SAAO's had significant relationship with their attitudes towards recommended doses of chemical fertilizers and pesticides. This meant that SAAO's who were more cosmopolite possessed favourable attitude towards recommended doses of chemical fertilizers and pesticides.

Hoque (2001), Hanif (2000) and Hossain (1999) found in their studies that there were significant and insignificant relationship on this aspect. The findings of Hoque and Hanif support the result of this study on the other hand Hossain contradicts with this result.

4.3.1.8 Media exposure and attitude towards recommended doses of chemical fertilizers and pesticides

The relationship between media exposure of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides, the following null hypothesis was formulated:

"There was no relationship between media exposure of the SAAO's and their attitude towards recommended doses of chemical fertilizers and pesticides."

The coefficient of correlation between the concerned variable was found to be r = +0.261*

This led to the following observations regarding the relationship between two variables under consideration.

Firstly, the relationship showed a positive trend. Secondly, a significant relationship found to exist. Thirdly, the computed value of r= +0.261* was significant at 0.05 percent level of probability with 86 degrees of freedom.

Based on the above findings, the null hypothesis could be rejected and hence, the researcher concluded that media exposure of the SAAO's had a significant positive relationship with attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides. This indicates that the higher media exposure of the SAAO's helps to form favourable attitude toward recommended doses of chemical fertilizers and pesticides.

Hossain (2003), Farhad (2003) and Sana (2003) found in their studies that there were positive significant relationship on this aspect. So, their findings support this study.

4.3.1.9 Knowledge and attitude towards recommended doses of chemical fertilizers and pesticides.

To establish the association between knowledge of the SAAO's on chemical fertilizers, pesticides and irrigation water and their attitude towards recommended doses of chemical fertilizers and pesticides, the following null hypothesis was put forwarded.

"There was no relationship between knowledge on chemical fertilizers, pesticides and irrigation water and attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides."

Observed coefficient of correlation between the concerned variables (r=+0.963**) led to the following observations:

Firstly, the relationship exhibited a positive trend. Secondly a significant relationship was found to exist. Thirdly, the calculated value of r=+0.963** was significant at 0.01 level of probability with 86 degrees of freedom.

It was, therefore, concluded that knowledge of the SAAO's on chemical fertilizers, pesticides and irrigation water had a significant positive relationship with their attitude towards recommended doses of chemical fertilizers and pesticides. It is obvious that SAAO's with more knowledge on agricultural practices like fertilizers, pesticides and irrigation water helps to make proper decision in using these technologies without harming the natural environment. This meant, more knowledgeable SAAO's had more favourable attitude towards recommended doses of chemical fertilizers and pesticides

Hoque (2001), Hanif (2000) and Sarker (1999) also found the similar results in their studies.

CHAPTER 5
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

CHAPTER-5

SUMMARY,

CONCLUSIONS AND RECOMMENDATION

5.1 Summary

5.1.1 Introduction

Bangladesh is an agricultural country. All out efforts are being made by the people of our country to increase agricultural production for feeding the rapidly increasing population. One of the efforts is the use of agrochemical in agriculture. The farmers of this country are increasingly using these agrochemicals in their farming without considering its long run effect, either knowingly or unknowingly. As a result many unwanted problem arise in the field of agriculture. Hence it needs consideration of sustainability in agriculture. To maintain sustainability we must use them in a recommended way.

Global environment is changing more rapidly than any temperature in the known history. Climate change, ozone layer loss, desertification, water pollution, deforestation, air pollution and so on are widely accepted as serious problems threatening earths survival and existences.

The environment crises happens from air, water, oil, noise, pollution and unforeseen natural hazards. Our atmosphere is under increasing pressure from greenhouse gases that changes the climate and from the chemical that reduce the ozone layer and land cleaning burning, plaguing leveling, fertilization, irrigation and pesticides spraying have caused the irregularities and deficiencies of the physical environment (Ibid).

Agriculture and environment has close relationship. Health of agriculture depends on the proper functioning of environmental process and the health of environment depends upon a respectful agriculture (Conway, 1990). For feeding the increasing population technological advancement has been occurring, such available technologies are chemical fertilizers, pesticides and irrigation water.

Department of Agricultural Extension (DAE) the largest extension organization in Bangladesh is directly involved in motivation farmers for using recommended doses of chemical fertilizers and pesticides to increase production. The DAE has introduced the training and visit (T&V) system of extension work since 1978. Then the procedures of conducting extension work of DAE has been partially modified under the agricultural support service project (ASSP). The ASSP is also being recognized under New Agriculture Extension Policy (NAEP). Under this programme the Sub Asst agriculture officers (who are used to be professional leader as well as front line extension worker) are supposed to contact with the group members in their weekly/fortnightly meeting a set out and known by each and everybody of the group members. The usually delivers his extension messages to the group member in order to overcome the difficulties in the previous T&V system of extension approach. The group member are then expected to transmit the idea and messages to the non-member of the social system.

In Bangladesh, at present different NGO's are working with a fundamental issue which is environmental degradation. SAAO's also need to be confident enough to deliver their message effectively so as to be accepted by the group members.

Attitude of the SAAO's is very important factor in considering their credibility as professional leaders as well as professional workers. Attitude of SAAO's serves as a driving force for constant efforts on certain perceived actions. Unless SAAO's have sufficient knowledge on the subject matter and have favourable attitude towards recommended doses of chemical fertilizers and pesticides, it would be impossible to motivate the group members towards desired technologies. However, very few research studies have so far been conducted in Bangladesh on this aspect. Considering the above facts, an attempt has conducted in Bangladesh on this aspect. Considering the above facts, an attempt has been made to undertake a research study on the attitude of the SAAO's working under the DAE towards recommended doses of chemical fertilizers and pesticides.

5.1.2 Specific Objectives

The study was undertaken with the following objectives :

1. To determine & describe some selected characteristics of the SAAO's of Narayanganj district. The selected Characteristics are

i. Age
ii. Level of education
iii. Tenure of service
iv. Family size
v. Annual income
vi. Training experience
vii. Cosmopoliteness
viii. Media exposure
ix. Knowledge on chemical fertilizers, pesticides and irrigation water.

2. To determine and describe the extent of attitude of SAAO's towards

i. Recommended doses of Chemical fertilizers and
ii. Recommended doses of Chemical Pesticides.

3. To explore the relationship between the selected characteristics of the SAAO's with their extent of attitude towards recommended doses of chemical fertilizers and pesticides.

5.1.3 Hypothesis

The summarized form of the null hypothesis was as follows:

" There is no relationships between the SAAO's attitude towards recommended doses of chemical fertilizers and pesticides and their selected characteristics."

5.1.4 Methodology

The study was conducted in three randomly selected upazilas, namely Narayanganj Sadar, Ropganj and Sonargaon, under Narayanganj district. Therefore, the SAAO's of those three upazilas constituted the sample of this study. However, data were collected from the sample. For this purpose all SAAO's of the three upazilas were selected as sample.

A personal interview schedule was used as the data gathering instrument. Direct questions and different scale were used to obtain relevant information. Data were collected by the researcher himself through direct interview process. The duration of data collection was from 1st August to 31st September 2006.

Each of the selected characteristics of the SAAO's was considered as an independent variable while attitude towards recommended doses of chemical fertilizers and pesticides of SAAO's was the dependent variables of the study. Appropriate scale was used to operationalize the dependent and independent variables, whatever needed.

Data were analyzed by descriptive statistics e.g. frequency counts, percentages, means, standard deviations and ranks. To test the hypothesis, "pearson product moment correlation coefficient" was employed. Five-percent level of significance was used as the basis for rejecting a null hypothesis.

5.1.5 Findings

The major findings of the study are summarized below:

5.1.5.1 Independent variables - Individual characteristics of SAAO's

Age

It was found that 16.42 and 42 percent of SAAO's were young, middle-aged, and old respectively. The mean age of the respondents was 43.72 years with a range of 26 to 55 years. Eighty-four (84) percent of SAAO's belonged to middle to old aged categories.

Level of education

The educational level of the SAAO's ranged from SSC to Bachelor Degree with agricultural diploma with a mean score of 11.76. The percentages of the SAAO's having the SSC, HSC and Bachelor degree with agricultural diploma were 44, 35 and 21 percent respectively. There were no SAAO's having master degree with agricultural diploma.

Tenure of service

The tenure of service as extension worker of the SAAO's ranged from 2 to 38 years with an average of 20.25 years. The highest proportion (51 percent) of the SAAO's had long tenure of service, while 15 and 34 percent SAAO's were observed for short and moderate tenure of service holders.

Family Size

The family size of the SAAO's ranged from 2 to 7 members with a mean 9.10, 36 percent had large family. The proportions of SAAO's having small and medium families were 26 and 38 percent respectively.

Annual Income

Annual Income of the SAAO's ranged from 74.00 to 288.00 thousand with a mean of 148.07. The proportion of the SAAO's having low, medium and high income were 13, 37 and 50 percent respectively.

Training Experience

The SAAO's attended training of varying duration ranging from 6 to 130 days with a mean of 31.63. The height proportion (55 percent) of SAAO's had received low duration training and rest of 27 and 18 percent SAAO's attended medium and long term training respectively.

Cosmopoliteness

It was observed that the cosmopoliteness scores ranged from 7 to 21 days with an average score of 12.13 and 27, 46 and 27 percent for low, moderate and high cosmopoliteness respectively.

Media exposure

Media exposure of the SAAO's ranged from 19 to 48 with an average 34.30. The proportion of the SAAO's having low, medium and high media exposure were 26.28 and 46 percent respectively.

Knowledge on Fertilizers, Pesticide and Irrigation water

Knowledge on Fertilizers, Pesticide and Irrigation water scores ranged from 0 to 24 with an average score 15.58. Near about half portion (48 percent) of the SAAO's had good knowledge compared to 28 percent having very good knowledge and 24 percent having fair knowledge.

5.1.5.2 Dependent variable

Attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides

The scores on the attitude of the SAAO's towards the effect of modern agricultural technologies ranged from 0 to 48 with an average score 38.36. The proportion of the SAAO's having slightly, moderately and highly favourable attitude towards recommended doses of chemical fertilizers and pesticides were 28, 48 and 24 percent respectively.

5.1.6 Results of hypothesis testing

The results obtained on testing the all hypothesis are briefly discussed below:

i. Attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides was positively significant to each of their age, training experience, cosmopoliteness, media exposure and knowledge on chemical fertilizers, pesticides and irrigation water. Besides level of education tenure of service and family size of the SAAO's had also positive but not significant relationships with their attitude towards the effects of the modern agricultural technologies on environment.

ii. However, annual income of the SAAO's showed insignificant negative relationship with the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides.

5.2 Conclusions

Based on the findings of the study, the following major conclusion may be drawn:

1. The findings of the study reveled that majority (48%) of the respondent had moderately favourable attitude while 28% had slightly favourable attitude and 24% had highly favourable attitude towards recommended doses of chemical fertilizers and pesticides. This means that 72% of the respondent had moderate to highly favourable attitude towards recommended doses of chemical fertilizers and pesticides.

2. Age of the SAAO's showed a significant positive relationship with the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides. This indicate that aged SAAO's had more favourable attitude towards recommended doses of chemical fertilizers and pesticides than younger SAAO's.

3. Training experience of the SAAO's had significant positive relationship with the attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides. This implied that the more the training exposure of the SAAO's had more knowledge on recommended doses of chemical fertilizers and pesticides

4. Cosmopoliteness of SAAO's had significant positive relationship with their attitude towards recommended doses of chemical fertilizers and pesticides. This might be the reason that a cosmopolite SAAO's was supposed to visit many places outside his own social system and consequently comes in contact with different things, personnel, organizations, ideas and practices. This broadens his outlook and develops a positive attitude towards recommended doses of chemical fertilizers and pesticides.

5. Media exposure of SAAO's had significant positive relationship with their attitude towards recommended doses of chemical fertilizers and pesticides. This indicate that media exposure provides opportunities for the SAAO's to receive information through the use of various interpersonal, group print and other mass media channels which increased their knowledge and develop positive attitude towards recommended doses of chemical fertilizers and pesticides.

6. Knowledge on chemical fertilizers, pesticides and irrigation water of the SAAO's had a significant positive relationship with the attitude towards recommended doses of chemical fertilizers and pesticides. This might be because, knowledge on different practices like fertilizers, pesticides, irrigation water etc. helps the SAAO's to make proper decision in using these technologies without harming the natural environment.

5.3 Recommendations

Based on findings and conclusions, the following recommendations are made:

5.3.1 Recommendation for policy implication

01. Training experience of the SAAO's had significant positive relationship with their attitude towards recommended doses of chemical fertilizers and pesticides. In this circumstances, arrangements may be made for more training on IPM, irrigation practices, environment etc. There showed long gap in training experience must be minimized in order to bring equality. Medium duration training with live specimens, slides, documentary film etc. should be introduced. Creating functional relationship with GO and NGO's would be very helpful to develop overall attitude towards recommended doses of chemical fertilizers and pesticides

02. It was found that cosmopoliteness of the SAAO's had positive trend with their attitude towards recommended doses of chemical fertilizers and pesticides. The SAAO's who make frequent visits to outside places are expected to be more informed about the effects of recommended doses of chemical fertilizers and pesticides. Considering this it may be recommended that DAE should take necessary steps to increase the opportunities of the SAAO's to visit eco-friendly agricultural farms and so on. More extension contact both by GOs and NGOs should be increased.

03. Frequent use of the media exposure could bring satisfactory outcome in persuading SAAO's towards environmentally friendly agricultural technologies. Among the media exposure, SAAO's personal contact with high officials, result demonstration publications etc. are relatively more suitable in Bangladesh. Television

should include for more information on the hazards of agrochemicals and the number of farm publications should be increased keeping in view its quality of product, design and price within the reach of its customers.

04. Considering the effect of chemical fertilizers, pesticides on the environment, it is necessary to develop alternate soil fertility management technique, using healthy seed and IPM practices instead of using chemical farming. DAE should make an effort to increase the knowledge level of SAAO's for developing favourable attitude towards recommended doses of chemical fertilizers and pesticides.

05. Knowledge on chemical fertilizers, pesticides and irrigation water had significant positive relationship with their attitude towards recommended doses of chemical fertilizers and pesticides. Knowledge help to broaden mind, which helps to take appropriate decision. In order to increase the knowledge level of SAAO's frequent use of the different media exposure like demonstration and meeting, personal contact with high officials, television with national programs, farm publication, leaflet, booklet etc. could bring satisfactory outcome.

5.3.2 Recommendations for further study

This study was conducted on the attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides. In order to have a deeper insight into the various aspects of the attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides, further studies need to be conducted covering the following aspects:

i. It is suggested that similar study of this nature may be conducted in other parts of the country to draw generalizations at macro level.

ii. The present study was concerned with attitude of SAAO's towards the recommended doses of chemical fertilizers, pesticides. More studies like impact of deforestation, effect of excess use of polythin on environment, agro-forestry, industrial sewerage, air pollution etc. may also be conducted to get pertinent information regarding other factors of environmental pollution.

iii. The present research explored the relationship of nine selected characteristics of the SAAO's like age, level of education, tenure of service, family size, annual income, training experience, cosmopoliteness media exposure and knowledge on fertilizers, pesticides and irrigation water. In addition to that there are other factors which may also influence in developing greater degree of awareness and favourable attitude of the SAAO's towards recommended doses of chemical fertilizers and pesticides. Further study may consider the other left out factors.

iv. Further research is necessary to find out the effective ways and means which would contribute in developing awareness and attitude of SAAO's towards recommended doses of chemical fertilizers and pesticides, reasons of using and not suing it, problems and suggestions regarding their use and other important issues.

v. The present study has been carried out at SAAO's level to determine their attitude towards recommended doses of chemical fertilizers and pesticides. Similar studies can be conducted with other personnel of DAE, other extension agencies, farmer group etc. in order to have a more comprehensive idea on this issue.

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APPENDICES

Appendix-'A'

Interview Schedule

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

An interview schedule on "Attitude of the professional leaders (Sub-Asst. Agriculture Officer-(S.A.A.O.)) towards Recommended doses of chemical fertilizers and pesticides.

(This interview schedule is entitled for a research study)

Serial no. :

Name of the respondent :

Block :

Upazilla :

Zilla :

(Please reply the following information and questions)

1. Age : Please mention your present age ---------- years.
(According to S.S.C certificate)

2. Level of education : What is your level of education according to the following :
   a. SSC and Agricultural diploma
   b. HSC and Agricultural diploma
   c. Bachelor degree or Agricultural diploma
   d. Masters degree and Agricultural diploma

3. Tenure of service
   For how many years you are working as S.A.A.O? ..... Years.

4. Family size
   The total member of your family member is ..... .

5. Annual Income
   Please mention your annual income from the following different sources.

a.	From service	Tk.....
b.	From business	Tk.....
c.	From Agricultural Source	Tk.....
d.	From borga/ mortgage/ lease	Tk.....
e.	From house rent	Tk.....
f.	From the bank interest	Tk.....
g.	From any other source	Tk.....
	Total Income	Tk.....

6. Training Experience

Please mention the training courses you have attended so far :

Subject	Place	Duration (Day)	Organization
a.			
b.			
c.			
d.			
e.			

7. Cosmopoliteness

Please indicate the extant of your visit to the following places

Place of Visit	Extent of Visit (Time)				
	Regularly (4)	Suddenly (3)	Oftenly (2)	Rearly (1)	Not at all
a. Own district sadar	>6 times/ month ( )	5-6 times/ month ( )	3-4 times/ month ( )	1-2 times/ month ( )	0 time/ month ( )
b. Other district sadar	>3 times/ month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )
c. DAE head office	>3 times/ month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )
d. Capital city	>3 times/ month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )
e. Agril research institute/ Govt. Farm	>3 times/ month ( )	3 times/ month ( )	2 times/ month ( )	1 time/ month ( )	0 time/ month ( )
f. Other country (if any)	>3 times/job life ( )	3 times/job life ( )	2 times/ job life ( )	1 time/ job life ( )	0 time/ job life ( )

8. Media Exposure

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

Media	Extent of Visit (Time)				
	Regularly (4)	Suddenly (3)	Oftenly (2)	Rearly (1)	Not at all (0)
Individual Contact					
a. NGO worker	>6 times/ month ( )	5-6 times/ month ( )	3-4 times/ month ( )	1-2 times/ months ( )	0 time/ months ( )
b. high Officials	>6 times/ year ( )	5-6 times/ year ( )	3-4 times/ year ( )	1-2 times/ year ( )	0 time/ year ( )
c. Fertilizer/ Pesticide delear	4 times/ month ( )	3 times/ month ( )	2 times/ month ( )	1 times/ months ( )	0 time/ months ( )
Group Contact					
a. Group discussion	12 times/ year ( )	9 times/ year ( )	6 times/ year ( )	3 times/ year ( )	0 time/ year ( )
b. Result demonstration meeting	3 times/ year ( )	2 times/ year ( )	1 times/ year ( )	0 times/ year ( )	0 time/ year ( )
c. Method demonstration	2 times/ year ( )	1 times/ year ( )	1 times/ year ( )	0 times/ year ( )	0 time/ year ( )
d. Field day	2 times/ year ( )	1 times/ year ( )	1 times/ year ( )	1 times/ year ( )	0 time/ year ( )
Mass Media					
a. Radio	5 hours listen/week ( )	4-5 hours listen/week ( )	3-4 hours listen/week ( )	1-2 hours listen/week ( )	0 hours listen/week ( )
b. Television	5 hours seen/week ( )	4-5 hours seen/week ( )	3-4 hours seen/week ( )	1-2 hours seen/week ( )	0 hours seen/week ( )
c. Newspaper	7 days reading/week ( )	5-6 days reading/week ( )	3-4 days reading/week ( )	1-2 days reading/week ( )	0 days reading/week ( )
d. Fair/ Exhibition	Attending/ year	Attending/ alternate year	Attending/ 2 years later	Attending 3 years later	Attending/ Never
e. Agril Research finding (Leaflet boklet)	>3 times/ year ( )	3 times/ year ( )	2 times/ year ( )	1 times/ year ( )	0 time/ year ( )

9. Knowledge on chemical fertilizer, portside and irrigation water answer the following question please.

	Question	Full Marks	Marks Obtained
	Fertilizer		
a.	What is the ratio of the NPK fertilizer to be used in the rice field i.4-4-4 ii)4-3-2iii) 4-2-2	2	
b.	Mention the percentage of nitrogen in urea fertilizer i) 50 ii) 60 iii) 46 iv) 42	2	
c.	What are the main component of form yard measure i) Cow dung + Poultry liter ii) Plants + Water hyacinth + garbage iii) slurries + domestic refuses iv) No one		
d.	What is bio-fertilizer? It is used in which crops i) Rhizobium bacteria mined with peat soil. iii) It is used in gram, lentil, mungbean, soyabean and groundnuts. as a result it produce more nitrogen bearing modules which helps to increase yield 20% 40%	2	2
	Pesticide		
e.	How you keep you safe at the time of using pesticides. i) Use apron, musk, gloves at the time of spray ii) Use infavour of wind. iii) Use appropriate water to make suspension iv) All of these v) No one of these	2	
f.	Give the name of two banded pesticides which still used by the farmer i. Diasinon 14G, ii) Ghloradne 40 wp		
g.	What are the bad effect of pesticides in crop i) It destroy beneficial insects and increase pest population ii) It increase cost iii) It creats different health heagards iv) Bad effect on environment v) All of these	2	
h.	Is there any particular time for irrigation in crop field. i) Yes ii) No	2	
I.	What are the bad effect using ences irrigation in crop field? i) It resist root inisiation. ii) It resist to optake essential elements. iii) Uptakalela nitrogen decreased. iv) Beneficial bio element decreased. v) All of these	2	
j.	Irrigation system are mainly i) 2 ii) 3 iii) 4 iv) 5 types	2	
h.	Mention two appropriate methods of irrigation i) Open flood system ii) Controlled Irrigation – Border, Check basis. iii) Farrow system		

10. Attitude towards recommended doses of chemical fertilizers and pesticides

Please indicate you opinion on the following statements.

	Statement	Strongly agree	Agree	No Opinion	Disagree	Strongly disagree
(+)	1. I believe that application of balanced does of chemical fertilizers increase crop production. So, It is essential for each and every farmer to use balanced dose of chemical fertilizers.					
(-)	2. I believe that the use of recommended doses of chemical fertilizer in crop Production is less profitable in relation to the cost involved.					
(+)	3. I believe that the use of recommended doses chemical fertilizers in crop production is one of the important ways to increase farm income.					
(+)	4. I trust that the application of chemical fertilizer of recommended dose is the easiest way to increase crop yield.					
(-)	5. I believe that every farmer should refrain from the use of recommended doses of chemical fertilizer because,due to the use of chemical fertilizers crops become dependent on fertilizer gradually.					
(-)	6. It is a truth that use of chemical fertilizer totally spoils the land.					
(+)	7. I believe that instead of totally stopping the use of chemical pesticide it may be used in service cases only.					
(-)	8. I trust that pest infestation of crops can not be solved by using proper pesticide in proper does in proper time.					

	Statement	Strongly agree	Agree	No Opinion	Disagree	Strongly disagree
(+)	9. I believe that recommended doses chemical pesticides may be used if pest-infestation goes beyond the economics level					
(-)	10. I think that use of chemical pesticides is a luxury, so only big farmers should use chemical pesticides in their farms.					
(-)	11. I believe that use of chemical pesticide is harmful for environment, so it should be banned immediately by ordinance.					
(+)	12. I believe that the use of chemical pesticides of recommended dose is more profitable in crop protection in relation to the cost involved.					

Thank you for your cooperation

Date :

Signature of the Respondent

Appendix "B"

Summary profile of the characteristics of SAAO's.

Characteristics with categories	SAAO		Mean	Standard deviation
	Number	Percent		
1. Age				
Young (26-37 years)	14	16		
Middle aged (38-46 years)	37	42	43.72	7.47
Old aged (above 46 years)	37	42		
2. Education				
SSC with agricultural diploma	39	44		
HSC with agricultural diploma	31	35	11.76	.773
Degree with agricultural diploma	18	21		
3. Tenure of service				
Short <(mean-1sd) i.e (2-12 years)	13	15		
Moderate (mean ± 1sd) i.e (13-21 years)	30	34	20.25	8.33
Long > (mean +1sd) i.e (above 21 years)	45	51		
4. Family size				
Small (2-4 members)	23	26		
Medium (5-6 members)	33	38	9.10	7.47
Large above 6 members)	32	36		
5. Annual income				
Low <(mean-1sd) i.e (tk. 74-109)	11	13		
Medium (mean ± 1sd) i.e (tk. 110-146)	33	37	145.07	36.69
High > (mean +1sd) i.e (Above tk. 146)	44	50		
6. Training experience				
Short duration <(mean-1sd) i.e (up to 15 days)	48	55		
Medium duration (mean ± 1sd) (16-60)	24	27	31.63	34.45
Long duration > (mean +1sd) (above 60 days)	16	18		
7. Cosmopoliteness				
Low <(mean-1sd) i.e (7-9)	24	27		
Medium (mean ± 1sd) i.e (10-14)	40	46	12.13	3.88
High > (mean +1sd) i.e (above 14)	24	27		
8. Media exposure				
Low <(mean-1sd) i.e (upto 28)	23	26		
Medium (mean ± 1sd) i.e (29 to 36)	25	28	34.30	7.049
High > (mean +1sd) i.e (above 36)	40	46		
9. Knowledge				
Fair knowledge <(mean-1sd) i.e (9-12)	21	24		
Good knowledge (mean ± 1sd) i.e (13-16)	42	48	15.58	3.437
Very Good knowledge > (mean +1sd) i.e (above 16)	25	28		

Correlation Matrix:

	Attitude	Age	Education	Tenure of service	Family size	Income	Training experience	Cosmopoliteness	Media exposure	Knowledge
Attitude	1									
Age	0.579**	1								
Education	0.113	-0.416**	1							
Tenure of service	0.102	0.988**	-0.435	1						
Family size	0.062	0.068	0.021	0.084	1					
Income	-0.014	0.003	-0.055	0.028	0.16	1				
Training experience	0.809**	0.644**	-0.402**	0.680**	0.072	0.036	1			
Cosmopoliteness	0.659**	0.223*	-0.360**	0.859**	0.07	0.052	0.912**	1		
Media exposure	0.261*	0.963**	-0.347**	0.859**	0.05	0.029	0.712**	0.912**	1	
Knowledge	0.963**	0.933**	-0.413**	0.941**	0.069	0.017	0.779**	0.933**	0.963**	1

** Correlation Is Significant At the 0.01 Level
* Correlation Is Significant At the 0.05 Level

৫। বাৎসরিক আয়

বিভিন্ন উৎস থেকে আপনার বাৎসরিক আয় কত?

ক) চাকুরী থেকে আয় ----------

খ) ব্যবসা থেকে আয় ----------

গ) কৃষিখাত থেকে আয় ----------

ঘ) বর্গা/মর্টগেজ/লীজ থেকে আয় ----------

ঙ) বাড়ী ভাড়া থেকে আয় ----------

চ) ব্যাংক ইন্টাররেষ্ট থেকে আয় ----------

ছ) অন্যান্য উৎস থেকে আয় ----------

মোট আয় = ---------- টাকা

৬) প্রশিক্ষনগত অভিজ্ঞতা

আপনি কি কি প্রশিক্ষণ কোর্সে অংশ গ্রহণ করেছেন (নিম্নের ছক অনুযায়ী উত্তর দিন)।

বিষয়	স্থান	কতদিন ব্যাপী	সংস্থা
ক)			
খ)			
গ)			
ঘ)			
ঙ)			

৭) Cosmopolitieness

নিম্নোক্ত স্থান সমূহে আপনার যাতায়াতের মাত্রা উল্লেখ করুন (নিম্নের ছক অনুযায়ী উত্তর দিন)।

পরিদর্শন স্থান	পরিদর্শন কাল (সময়)				
	নিয়মিত (৪)	ঘনঘন (৩)	মাঝে মধ্যে (২)	খুবকম/কদাচিৎ(১)	মোটেই না (০)
ক) নিজ জেলা সদর	> ৬ বার/মাস ( )	৫-৬বার/মাস ( )	৩-৪বার/মাস ( )	১-২বার/ মাস ( )	০ বার/মাস ( )
খ) অন্য জেলা সদর	> ৩ বার/মাস ( )	৩বার/মাস ( )	২বার/মাস ( )	১বার /মাস ( )	০ বার/মাস ( )
গ) ডিএই সদর দপ্তর	> ৩ বার/মাস ( )	৩বার/মাস ( )	২বার/মাস ( )	১বার /মাস ( )	০ বার/মাস ( )
ঘ) রাজধানী শহর	> ৩ বার/মাস ( )	৩বার/মাস ( )	২বার/মাস ( )	১বার/ মাস ( )	০ বার/মাস ( )
ঙ) কৃষি গবেষণা প্রতিষ্ঠান সমূহ/ সরকারী খামার	> ৩ বার/মাস ( )	৩বার/মাস ( )	২বার/মাস ( )	১বার /মাস ( )	০ বার/মাস ( )
চ) অন্য দেশ (যদি থাকে)	> ৩ বার/চাকুরীজীবনে ( )	৩বার/ চাকুরীজীবনে ( )	২বার/ চাকুরীজীবনে ( )	১বার/ চাকুরীজীবনে ( )	০ বার/ চাকুরীজীবনে ( )

৮। সম্প্রসারণ যোগাযোগ

অনুগ্রহ পূর্বক নিম্নোক্ত মাধ্যগুলির সাথে আপনার যোগাযোগের বর্ণনা দিন

মাধ্যম/Media	Extent of exposure (times)				
	নিয়মিত ৪	ঘনঘন ৩	মাঝে মধ্যে ২	খুব কম/কাদচিৎ ১	মোটেই নয় ০
ব্যক্তিগত যোগাযোগ					
ক) NGO কর্মী	> ৬বার/মাস ( )	৫-৬বার/মাস ( )	৩-৪বার/মাস ( )	১-২বার/মাস ( )	০বার/মাস ( )
খ) উচ্চপদস্থ কর্মকর্তা	> ৬বার/বছর ( )	৫-৬বার/বছর ( )	৩-৪বার/বছর ( )	১-২বার/বছর ( )	০বার/বছর ( )
গ) সার/ কীটনাশক ডিলার	৪ বার/মাস ( )	৩ বার/মাস ( )	২ বার/মাস ( )	১ বার/মাস ( )	০বার/মাস ( )
দলীয় যোগাযোগ					
ক) দলীয় আলোচনা	১২বার/বছর ( )	৯ বার/বছর ( )	৬ বার/বছর ( )	৩ বার/বছর ( )	০বার/বছর ( )
খ) ফলাফল প্রদর্শণী মিটিং	৩বার/বছর ( )	২ বার/বছর ( )	১ বার/বছর ( )	< ১ বার/বছর ( )	০বার/বছর ( )
গ) পদ্ধতি প্রদর্শণী মিটিং	২ বার/বছর ( )	১ বার/বছর ( )	< ১ বার/বছর ( )	১ বার/বছর ( )	০বার/বছর ( )
ঘ) মাঠ দিবস	২ বার/বছর ( )	১ বার/বছর ( )	১ বার/বছর ( )	১ বার/২-৩ বছর ( )	০বার/বছর ( )
গণ যোগাযোগ					
ক) রেডিও	৫ ঘন্টা শ্রবন / সপ্তাহ ( )	৪-৫ ঘন্টা শ্রবন /সপ্তাহ ( )	৩-৪ ঘন্টা শ্রবন /সপ্তাহ ( )	১-২ ঘন্টা শ্রবন /সপ্তাহ ( )	০ ঘন্টা শ্রবন /সপ্তাহ ( )
খ) টেলিভিশন	৫ ঘন্টা দর্শন/ সপ্তাহ ( )	৪-৫ ঘন্টা দর্শন/ সপ্তাহ ( )	৩-৪- ঘন্টা দর্শন/ সপ্তাহ ( )	১-২ ঘন্টা দর্শন/ সপ্তাহ ( )	০ ঘন্টা দর্শন/ সপ্তাহ ( )
গ) সংবাদপত্র	৭ দিন পাঠ/সপ্তাহ ( )	৫-৬ দিন পাঠ/সপ্তাহ ( )	৩-৪ দিন পাঠ/সপ্তাহ ( )	১-২ দিন পাঠ/সপ্তাহ ( )	০ দিন পাঠ/সপ্তাহ ( )
ঘ) মেলা/এক্সিবিশন	অংশ গ্রহণ/ বছর ( )	অংশ গ্রহণ/ ১ বছর পর পর ( )	অংশ গ্রহণ/ ২বছর পর পর ( )	অংশ গ্রহণ/ ৩ বছর পর পর ( )	অংশ গ্রহণ/ কখন ও না ( )
ঙ) কৃষি গবেষণা পাঠ (লিফলেট বুকলেট)	> ৩ বার/ বছর ( )	৩ বার/বছর ( )	২ বার/বছর ( )	১ বার/বছর ( )	০ বার/বছর ( )

৯। রাসায়নিক সার, বালাই নাশক এবং সেচের পানি সম্পর্কিত জ্ঞান

নিম্ন বর্নিত প্রশ্ন সমূহের উত্তর দিন

প্রশ্ন	পূর্নমান	প্রাপ্তমান
সার		
ক) ধান উৎপাদনে নাইট্রোজেন, ফসফরাস এবং পটাশিয়ামের আনুপাতিক হার কি? i) ৪-৪-৪, ii) ৪-৩-২ iii) ৪-২-২-	২	
খ) ইউরিয়া সারে নাইট্রোজোনের পরিমান শতকরা কত ভাগ i) ৫০ ii) ৬০ iii) ৪৬ iv) ৪২	২	
গ) খামার জাত সার তৈরীর প্রধান উপাদান কোনটি। i) গোবর + পোলট্রি লিটার/মুরগির বিষ্টা ii) লতা পাতা + কচুরীপানা + আবর্জনা iii) পয়ঃ দ্রব্য + বসতবাটি বর্জ্য iv) উপরের কোনটি নয়	২	
ঘ) জীবনু সার কি কোন কোন ফসলে ইহা ব্যবহার করা হয় i) রাইজোবিয়াম ব্যাকটেরিয়া পীট মাটির সাথে মিশিয়ে জীবনু সার তৈরী করা হয়। ii) এই সার ছোলা, মসুর, মুগ, সয়াবীন এবং চীনা বাদামে ব্যবহার করা হয়। এতে উক্ত ফসলের শিকড়ে নাইট্রোজেন গুটির সংখ্যা বাড়ে। ফলে ফলন শতকরা ২০-৪০ ভাগ বেশী পাওয়া যায়	২	
বালাই নাশক		
ঙ) জমিতে বালাইনাশক ব্যবহারের সময় কিভাবে নিজেকে কিভাবে নিরাপদ রাখবেন i) ব্যবহারের পূর্বে এপ্রোন, মাস্ক, গ্লাবস ব্যবহার করা ii) বাতাসের অনুকূলে ব্যবহার করা iii) দ্রবন তৈরীতে সঠিক পরিমান পানি ব্যবহার করা iv) উপরের সবগুলোই v) উপরের কোনটিই নয়	২	
চ) সরকার কর্তৃক নিষিদ্ধ দুটো বালাইনাশকের নাম বলুন যা কৃষকগন এখনও ব্যবহার করছেন i) ডায়াজিনন ১৪ জি ii) ক্লোরডেন ৪০ ডাব্লিউ পি iii) হেপ্টাক্লোর ৪০ ডাব্লিউ পি	২	
ছ) একটি প্রাকৃতিক বালাইনাশক এবং তার ব্যবহার বলুন • নিমবিসিডিন - নিম জাতীয় বিষ • পানি সঙ্গে মিশিয়ে দ্রবন তৈরী করে স্প্রে মেশিনের সাহায্যে ছিটিয়ে ব্যবহার করতে হয়	২	
জ) ফসলে বালাইনাশক ব্যবহারের ক্ষতিকর দিকগুলো কিকি? i) ইহা উপকারী অনুজীব সমূহ ধ্বংস করে এবং পেষ্টের পপুলেশন বৃদ্ধি করে ii) ইহা ব্যবহারে ফসলের উপকরণ খরচ বৃদ্ধি পায় iii) ইহা বিভিন্ন প্রকার স্বাস্থ্য সমস্যা সৃষ্টি করে iv) ইহা পরিবেশের উপর ক্ষতিকর প্রভাব বিস্তার করে v) উপরের সবগুলোই	২	
সেচ		
ঝ) জমিতে সেচ দেয়ার কোন নির্দিষ্ট সময় আছে কি? i) হ্যাঁ ii) না	২	

প্রশ্ন	সেচ	পূর্নমান	প্রাপ্তমান
ঞ)	জমিতে অতিরিক্ত পানি ব্যবহারের কুফল কি? i) গাছের শিকড়ের বৃদ্ধি বাধাগ্রস্থ হয় i) গাছের প্রয়োজনীয় পুষ্টি উপাদান শোষন ব্যহত করে ii) আহরন যোগ্য নাইট্রোজেন এর পরিমাণ হ্রাস করে iii) উপকারী অনুজীবের কার্যক্ষমতা হ্রাস করে iv) উপরের সবগুলোই	২	
ট)	সেচ পদ্ধতি প্রধানত কত প্রকার? i) ২ ii) ৩ iii) ৪ iv) ৫	২	
ঠ)	জমিতে সেচ দেয়ার দুটো কার্যকরী ব্যবস্থার নাম বলুন i) মুক্ত প্লাবন পদ্ধতি ii) নিয়ন্ত্রিত প্লাবন পদ্ধতি - বর্ডার পদ্ধতি, চেক বেসিন পদ্ধতি, ফোটা ফোটা পদ্ধতি iii) খাদ বা ফারো পদ্ধতি	২	
	মোট =	২৪	

১০। রাসায়নিক সার এবং বলাইনাশক এর ক্ষতিকর দিক এবং ব্যবহার সম্বন্ধে S.A.A.O দের মনোভাব (নিম্নে ছক অনুযায়ী মতামত দিন)

বিবরণ	মনোভাব				
	দৃঢ় মনোভাব	সাধারণ মনোভাব	নীরব	অস্মত	দৃঢ়ভাবে অসম্মত
(+) ১) আমি বিশ্বাস করি সুষম মাত্রায় রাসায়নিক সার প্রয়োগের মাধ্যমে ফসলের উৎপাদন বৃদ্ধি পায়। কাজেই প্রত্যেক কৃষকেরই সুষম মাত্রায় রাসায়নিক সার ব্যবহার করা উচিত।					
(-) ২) আমি বিশ্বাস করি যে ফসল উৎপাদনের ক্ষেত্রে সুষম মাত্রায় রাসায়নিক সার এর ব্যবহার কম লাভজনক যেহেতু দাম বেশী।					
(+) ৩) আমি মনে করি খামারের আয় বাড়ানোর একটি গুরুত্বপূর্ণ মাধ্যম হলো ফসল উৎপাদনে সুষম মাত্রায় রাসায়নিক সার ব্যবহার করা।					
(+) ৪) আমি বিশ্বাস করি ফসলে উৎপাদন বাড়ানোর সবচেয়ে সহজতর উপায় হচ্ছে সুষম মাত্রায় রাসায়নিক সার ব্যবহার করা।					
(-) ৫) আমি মনে করি সকল কৃষকেরই রাসায়নিক সার ব্যবহার থেকে বিরত থাকা উচিত কারণ এতে ফসল ধীরে ধীরে রাসায়নিক সারের প্রতি নির্ভরশীল হয়ে পড়ে।					
(-) ৬) ইহা সত্য যে সুষম রাসায়নিক সার মাটির গুনাক্ষকে সম্পূর্ণ ধ্বংস করে দেয়।					
(+) ৭) আমি বিশ্বাস করি রাসায়নিক বলাইনাশক এর ব্যবহার সম্পূর্ণ বন্ধ না করে, জমিতে মরাত্মক পোকামাকড় আক্রমন এর ক্ষেত্রে ব্যবহার করা উচিত।					
(-) ৮) আমি মনে করি ফসলে পোকামাকড়ের আক্রমন সময়মত, সুষম মাত্রায় কীটনাশক ব্যবহার করে দমন করা সম্ভব নয়।					
(+) ৯) আমি বিশ্বাস করি ফসলে সুষম মাত্রায় রাসায়নিক কীটনাশক শুধুমাত্র তখনই ব্যবহার করা উচিত যখন পোকার আক্রমন খুব মারাত্মক আকার ধারণ করে।					
(-) ১০) আমি বিশ্বাস করি রাসায়নিক বালাইনাশক ব্যবহার একটি বিলাসিতা, কাজেই শুধুমাত্র বড় কৃষকেরই তাদের কৃষি খামারে রাসায়নিক বালাই নাশক ব্যবহার করতে পারেন।					
(-) ১১) আমি বিশ্বাস করি রাসায়নিক বলাইনাশক পরিবেশেরে জন্য ক্ষতিকর, কাজেই আইন করে এর ব্যবহার নিষিদ্ধ করা উচিত।					
(+) ১২) আমি বিশ্বাস করি যে, ফসল উৎপাদনের ক্ষেত্রে সঠিক মাত্রায় রাসায়নিক বালাই নাশক এর ব্যবহার বেশী লাভজনক উৎপাদন খরচের তুলনায়।					

সহযোগীতার জন্য আপনাকে অনেক ধন্যবাদ

স্বাক্ষাৎগ্রহণকারীর স্বাক্ষর ও তাং