PROBLEM CONFRONTATION OF THE FARMERS ON T-AMAN CULTIVATION IN THE SELECTED MONGA AFFECTED UPAZILA

BY

MD. JAHANGIR KABIR

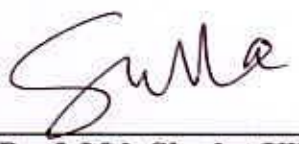
Reg. No. 04-01429

A thesis
Submitted to the Faculty of Agriculture
Sher-e-Bangla Agricultural University, Dhaka-1207,
in partial fulfillment of the requirements
for the degree of

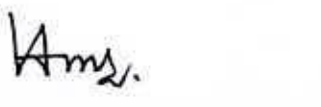
MASTER OF SCIENCE (MS)
IN
AGRICULTURAL EXTENSION AND INFORMATION SYSTEM

SEMESTER: JULY-DECEMBER, 2012

APPROVED BY:



Prof. Md. Shadat Ulla
Supervisor
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University
Dhaka



Prof. Dr. Md. Sekender Ali
Co-Supervisor
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University
Dhaka

Prof. Dr. Md. Sekender Ali
Chairman
Examination Committee
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University

DECEMBER, 2012

DEDICATED
TO
MY BELOVED PARENTS

DEPARTMENT OF AGRICULTURAL EXTENSION AND INFORMATION SYSTEM
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207

Memo No: SAU/

CERTIFICATE

This is to certify that the thesis entitled **"Problem Confrontation of the Farmers on T-aman Cultivation in the Selected Monga Affected Upazila"** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka-1207, in partial fulfillment of the requirements for the degree of **Master of Science in Agricultural Extension and Information System**, embodies the result of a piece of bona fide research work carried out by **Md. Jahangir Kabir**, Registration No. **04-01429** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

Dated:
Dhaka, Bangladesh

Prof. Md. Shadat Ulla
Supervisor
Department of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University
Sher-e-Bangla Nagar, Dhaka-1207

Sher-e-Bangla Agricultural University Library

ACKNOWLEDGEMENTS

All praises to Almightly Allah, the Great, Gracious, Mercifull, Whose blessings enabled the author to complete this research work successfully.

In particular, the author deems it a great pleasure to express his profound thankfulness to his respected parents, who entiled much hardship inspiring for prosecuting his studies, receiving proper education.

The author deems it a proud privilege to express his deep sence of gratitude, sincere appreciation and immense thanks to his supervisor Professor Md. Shadat Ulla, Vice-chancellor, Sher-e-Bangla Agricultural University, Dhaka, for his continuous guidance, cooperation, constructive criticism and helpful suggestions in carrying out the research work and preparation of this thesis, without his intense co-operation this work would not have been possible.

The author feels proud to express his deepest respect, sincere appreciation and immense indebtedness to his co-supervisor Prof. Dr. Md. Sekender Ali, Chairman, Department of Agricultural Extension and Information System, Sher-e-Bangla Agricultural University, Dhaka, for his scholastic and continuous guidance, constructive criticism and valuable suggestions during the entire period of course and research work and preparation of this thesis. The author also expresses his heartfelt thanks to all the teachers of the Department of Agricultural Extension and Information System, SAU, for their valuable teaching, suggestions and encouragement during the period of the study.

Special and thankful appreciation is also due to Mahmud, Tasmin Jannat and Sokhina Khanom for their fellow feelings and encouragement during the study period.

Last but not the least, the author express his immense indebtness, deppest sense of gratitude and profound gratefulness to his friends who had been a constant source of bleesings, inspiration and encouragement for his higher study.

The Author

TABLE OF CONTENTS

CHAPTER		Page
	ACKNOWLEDGEMENTS	**i**
	TABLE OF CONTENTS	**ii**
	LIST OF TABLES	**v**
	LIST OF FIGURES	**vi**
	LIST OF APPENDICES	**vi**
	LIST OF ABBREVIATIONS	**vii**
	ABSTRACT	**viii**
1.	**INTRODUCTION**	**01**
	1.1 General Background	01
	1.2 Statement of the Problem	04
	1.3 Specific Objectives of the Study	05
	1.4 Justification and Scope of the Study	05
	1.5 Assumption of the Study	06
	1.6 Limitation and Scope of the Study	07
	1.7 Definition of Terms	08
2.	**REVIEW OF LITERATURE**	**11**
	2.1 Problem confrontation by the farmers in different agricultural aspects	11
	2.2 Review of past studies on the relationship between the selected characteristics of the farmers and problems confrontation in their T-aman cultivation	16
	2.3 Conceptual Framework of the study	21

CHAPTER		Page
3.	**METHODOLOGY**	**23**
	3.1 Locale of the study	23
	3.2 Population and sample	23
	3.3 The Research instrument	26
	3.4 Measurement of variables	27
	3.4.1 Measurement of selected characteristics of the farmers	27
	3.4.2 Measurement of problem confrontation for T-aman cultivation	30
	3.5 Hypothesis of the study	31
	3.6 Data collection procedure	32
	3.7 Data processing	32
	3.8 Statistical analysis of data	33
4.	**RESULTS AND DISCUSSION**	**34**
	4.1 Characteristics of the farmers	34
	4.1.1 Age	34
	4.1.2 Educational level	35
	4.1.3 Family size	36
	4.1.4 Experience in T-aman cultivation	36
	4.1.5 T-aman cultivation area	37
	4.1.6 Annual family income	38
	4.1.7 Knowledge on T-aman cultivation	38
	4.1.8 Extension media contact	39
	4.1.9 Innovativeness	40

CHAPTER		Page
	4.2 Problem confrontation by the farmers in T-aman cultivation	40
	4.3 Relationship between problem confrontation by the farmers in T-aman cultivation with their selected characteristics	41
	4.4 Comparative severity among the problem confrontation by the farmers in T-aman cultivation	49
5.	**SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**	**51**
	5.1 Summary of Findings	51
	5.1.1 Characteristics of the farmers	51
	5.1.2 Problem confrontation by the farmers	52
	5.1.3 Relationship between the problem confrontation by the farmers in T-aman cultivation with their selected characteristics	53
	5.1.4 Comparative severity among the problem confrontation by the farmers in T-aman cultivation	53
	5.2 Conclusions	53
	5.3 Recommendations for policy implications	54
	5.3.1 Recommendation for further study	56
	BIBLIOGRAPHY	**57**
	APPENDICES	**66**

Library

LIST OF TABLES

	Title	Page
Table 1	List of most affected Monga areas of Gaibandha district in 2007	02
Table 3.1.	Distribution of the sample population and number of T-aman farmers in the reserve list	26
Table 4.1.	Distribution of the farmers according to their age	35
Table 4.2.	Distribution of the farmers according to their educational level	35
Table 4.3.	Distribution of the farmers according to their family size	36
Table 4.4.	Distribution of the farmers according to their experience in T-aman cultivation	37
Table 4.5.	Distribution of the farmers according to their T-aman cultivation area	37
Table 4.6.	Distribution of the farmers according to their annual family income	38
Table 4.7.	Distribution of the farmers according to their knowledge on T-aman cultivation	39
Table 4.8.	Distribution of the farmers according to their extension media contact	39
Table 4.9	Distribution of the farmers according to their innovativeness	40
Table 4.10	Distribution of the farmers according to their problem confrontation in T-aman cultivation	41
Table 4.11	Pearson's product moment co-efficient of correlation showing relationship between problem confrontation by the farmers in T-aman cultivation and their selected characteristics	42
Table 4.12	Rank order of 15 selected items of problem confrontation in T-aman cultivation according to descending order of PCI	50

LIST OF FIGURES

	Title	Page
Figure 1	The geographical perception of monga in Bangladesh	03
Figure 2.1	The conceptual framework of the study	22
Figure 3.1	Map of Gaibandha District showing Gobindaganj Upazilla	24
Figure 3.2	Map of Gobindaganj Upazilla Showing the Study Area Katabari and Rajahar villages	25

LIST OF APPENDICES

	Title	Page
Appendix-A	English version of the interview schedule	66
Appendix-B	Correlation Matrix	71

Library

LIST OF ABBREVIATIONS OF SYMBOLS AND TERMS

Abbreviation	Full Word
et al.	And others (at elli)
BBS	Bangladesh Bereau of Statistics
CV	Coefficient of Variation
d.f.	Degrees of Freedom
DAE	Department of Agricultural Extension
etc.	Etcetera
e.g.	Example
ha	Hectare
Tk.	Taka
i.e.	That is
Km	Kilometer
viz.	Namely
NGO	Non-Government Organization
%	Percent
PCI	Problem Confrontation Index
r	Pearson's Product Moment Correlation Co-efficient

ABSTRACT

The main focus of the present study was to determine the problem confrontation by the farmers in T-aman cultivation and to explore the relationships between the problem confrontation by the farmers and their selected characteristics. The study was conducted at Rajabirat and Katabari of Gobindaganj Upazila under Gaibandha District. Data were collected from 103 T-aman farmers who were proportionately randomly selected as the sample of the study from an update list of 1029 T-aman farmers that was prepared with the help of Sub-Assistant Agricultural Officers of the study area. The researcher himself collected data through personal contact with a well structured pretested interview schedule during the period from 01 to 30 October, 2012. The study revealed that highest proportion (72.8 percent) of the respondents had medium problem in T-aman cultivation, while the rest 27.2 percent of the respondents had high problem. Pearson's Product Moment Correlation co-efficient (r) was computed to explore the relationships between the problem confrontation by the farmers in T-aman cultivation and their nine selected characteristics. The correlation analysis indicated that educational level, knowledge on T-aman cultivation, extension media contact and innovativeness had significant negative relationships with the problem confrontation by the farmers in T-aman cultivation. Age, family size, experience in T-aman cultivation and T-aman cultivation area had non-significant relationships with the problems confrontation in T-aman cultivation. A Problem Confrontation Index (PCI) for the 15 selected problems in T-aman cultivation was developed to measure the severity among the problems of which possible range was "0" to 300. The Problem Confrontation Index indicated that the farmers confrontation highest problem in "high cost of production" and lowest problem in "lack of knowledge on rice seed production".

Sher-e-Bangla Agricultural University
Library
Accession No. 38685
Sign: Date: 2.12.14

CHAPTER 1

INTRODUCTION

1.1 General Background

Bangladesh is an agricultural country with 158.5 million populations and an area of 1, 47,570 sq. kilometers. About 80 percent of her population lives, directly or indirectly on agriculture that accounts for 18.4 percent of GDP (BBS, 2011). So, agricultural plays a vital role in employment, poverty alleviation, food security, standard of living and increase of earning.

Rice is the staple food of Bangladesh. Bangladesh is not only a rice growing country but also a country of rice eating people (Annon. 1998). Rice cultivation is the primary employment activity in Bangladesh (IRRI, 1980). Due to rapid population growth and urbanization, the cultivable land is decreasing day by day. Cultivation of modern varieties (MV) of rice can increase the yield per unit area. In Bangladesh cropping intensity is very low and crop production are very much dependent on the traditional methods, about 80% of the agricultural land is used for rice cultivation (BBS, 2009). The annual grain production (310.32 tons) is not sufficient to meet the demand of 158.5 million people.

Rice is grown in three seasons namely Aus (mid March to mid August), Aman (mid June to November) and Boro (mid December to mid June). T-aman rice covers about 50.92% of the rice areas of Bangladesh (BBS, 2005) of which modern T. aman varieties cover 60% (BBS, 2005). Transplanted Aman is grown throughout Bangladesh and broadcast Aman is grown mostly in the south and southeastern part of the country. BR3 (Biplob), BR11 (Mukta), BR22 (Kiron), BR23 (Dishari), BR25 (Nayapajam), BRRI dhan31, BRRI dhan32, BRRI dhan33 are some popular and modern T-aman varieties of Bangladesh.

The Northern Region of Bangladesh is situated in the Tista and Jamuna basin, and contains many tributaries of these. Topography and climate make the area ecologically vulnerable to destabilizing variations including floods, river erosion,

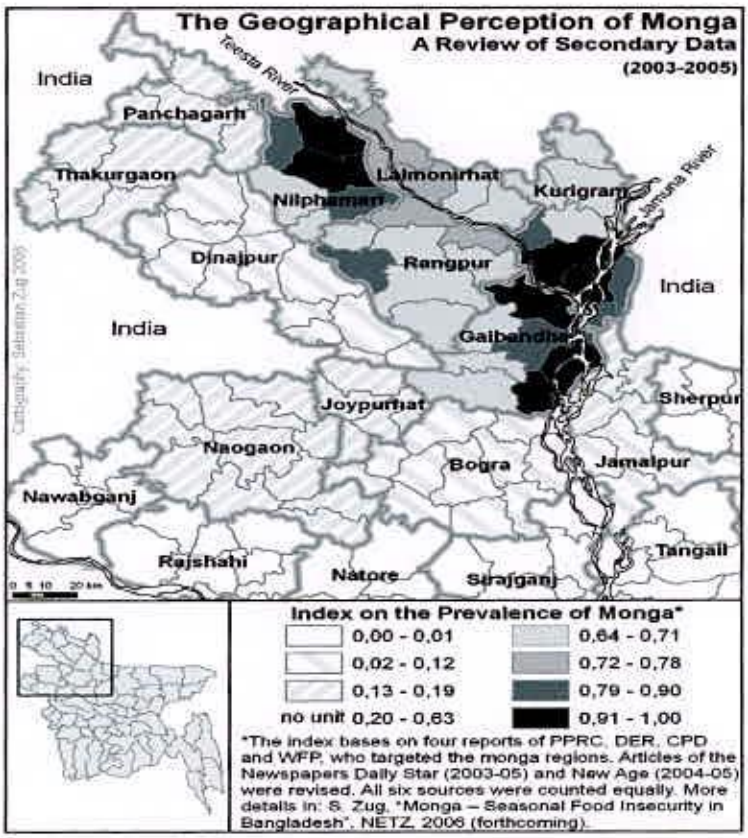
drought spells and cold waves, all of which occur more frequently and intensely than in other regions. Amongst these compelling conditions, the local economy shows little diversification and is heavily dependent on agriculture – which yields only one or sometimes two annual harvests, in contrast with three crops per year in more fertile and favorable parts of the country. In this setting, local employment is limited from September through December – in average years. As the landless and poorest survive on agricultural wage labor, their opportunities and ensuing incomes drop in this period, and they become trapped in what is called *Monga* – a cyclical phenomenon of poverty and hunger. The Table 1.1 shows the list of monga affected people of Gaibandha district in 2007 which occurred because of poor yield in Aman season.

Table 1. List of most affected Monga areas of Gaibandha District in 2007

Sl. No.	Upazila	No. of Unions & Pourashavas	No. of affected villages	No. of affected families	No. of affected population
01	Fulchari	07	82	30691	150386
02	Shaghata	10	135	59031	271544
03	Gaibandha	09	96	47679	228858
04	Sundarganj	15	186	86950	395623
05	Palashbari	06	107	36386	167376
06	Gobindaganj	12	243	76725	350320
07	Sadullahpur	10	150	57199	257396
Total	**07**	**69**	**999**	**394661**	**1821503**

Source: CARE, 2008

The geographical perception of Monga in Bangladesh has presented at the next page in Figure 1.1.



Source: Zug, 2006

Figure 1.1. The geographical perception of Monga in Bangladesh

Problem confrontation of the farmers may vary from one farmer to another to the influence of various factors. Behavior of an individual is greatly influenced by his characteristics. It is, therefore, likely that the agricultural problem confrontation of the farmers might be influenced by their personal, economic, social and psychological characteristics. An understanding of the agricultural problem confrontation of the farmers and its relationship with their various characteristics will be greatly helpful for planning and execution of programs for reducing monga in the northern part of Bangladesh. But little efforts have been made to undertake systematic investigation in this respect. These facts indicate the need for conducting a research study on T-aman problem confrontation of the farmers.

1.2 Statement of the Problem

In years with particular negative weather conditions – drought, cold spells or floods, the period of seasonal unemployment expands to more than four months, for example when early floods in August – September destroy part of the recently sown *Aman* rice crop. And whenever unexpected rainfall leads to swollen rivers and increased erosion or flooding, the implications are destroyed the transplanted aman of the poorer farmers. These entire adverse situations accelerate the monga because farmers confronted a lot of problems in their T-aman cultivation.

Considering the above facts in view, it is necessary to undertake a research study entitled "**Problem Confrontation of the Farmers on T-aman Cultivation in the Selected Monga Affected Upazila**". In light of above discussion and the background information, the present study has been undertaken with the following research questions:

1. What are the farmers' characteristics that are related to problem confrontation of the monga affected farmers on T-aman cultivation?

2. What are the extents of problems confronted by the farmers in T-aman cultivation?

3. Are there any relationships between the problems confronted by the monga affected farmers for T-aman cultivation and their selected characteristics?

1.3 Specific Objectives of the Study

The following specific objectives were formulated for giving proper direction to the study:

1. To determine and describe the following selected characteristics of the monga affected T-aman farmers:
   (i) Age
   (ii) Educational level
   (iii) Family size
   (iv) Experience in T-aman cultivation
   (v) T-aman cultivation area
   (vi) Annual family income
   (vii) Knowledge on T-aman cultivation
   (viii) Extension media contact
   (ix) Innovativeness

2. To determine the extent of problems confronted by the monga affected farmers in T-aman cultivation

3. To explore the relationship between the problems confronted by the monga affected farmers in T-aman cultivation and their selected characteristics

4. To compare the severity of the problems in T-aman cultivation

1.4 Justification and Scope of the Study:

The northern region of Bangladesh comprising several districts in Rangpur division suffers every year from a seasonal famine or shortage of staple food items, which is locally termed **"Monga"**. The most affected areas are the districts of Gaibandha, Nilphamari, Kurigram, Rangpur, and Lalmonirhat. Monga usually occurs twice a year; the greater Monga (boro Monga) occurs during the lean season preceding the aman harvest of paddy in the Bangla months of Ashwin and Kartik (mid-September to mid-November) and the smaller Monga (choto Monga)

occurs during the lean season preceding the boro harvest of paddy in the Bangla months between Chaitra and Jaistha (mid-March to mid-June) (Rahman and Hossain, 2006). The 'monga region' is economically weaker than other regions. Paddy is the major staple cereal of the people of this region; and Monga occurs due to a combination of factors, (a) dependency of the population primarily on agriculture and agricultural laborer, (b) growth of only one to two crops of paddy per year (versus three in most other regions of Bangladesh) and (c) lastly, lower yield in Aman season due to different problematic situations confronted by the farmers. Because of the absence of their main food item rice, the poorest households during Monga are pushed into distressed conditions. The farmers in the northern part of the country are confrontation a lot of constrains i.e.; Drought, irritating rainfall (no rain when necessary and rain when not necessary), lack of early variety of T-aman to cope and mitigate the monga, unavailability of seeds etc. (Sarkar and Haque, 2001). However, no study has been conducted on the problems of the farmers in T-aman cultivation which causes poor yield in that area and as well as causes monga. So, if the major problems could be sort out and proper steps would be taken, the food insecurity of that region will be mitigated.

1.5 Assumptions of the Study

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

i. The respondents selected for the study were capable to provide proper responses to the questions included in the instrument.

ii. The responses furnished by the respondents were reliable. They expressed the truth about their convictions and awareness.

iii. Views and opinions furnished by the respondents included in the sample were the representative views and opinions of the whole population of the study area.

iv. The researcher who acted as interviewer was well adjusted to the social and cultural environment of the study area. Hence the respondents furnished their correct opinions without hesitation.

v. The environmental conditions of the farmers were deemed more or less similar throughout the study area.

vi. The nature of problems gave a representative feature in the context of the other rural areas of Bangladesh.

1.6 Limitations of the Study

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

1. The study was confined two villages namely Rajabirat and Katabari of Gobindaganj Upazila under Gaibandha district.
2. There were many farmers in the study area, but only the farmers who were involved in T-aman cultivation were considered for this study.
3. Characteristics of the farmers were many and varied but only nine characteristics were selected for investigation in this study.
4. There are many problems which may arise in agricultural activities. But, only some selected problems have been taken into consideration.
5. During data collection the researcher had to depend on data furnished by the respondents. As none of the farmers kept records of their farming activities, they furnished information to the different questions by recall.
6. Conceptually, problems of the farmers were determined from their statements.

7. Problems of the farmer could be measured in various ways. However in this study these were measured by using some specific point rating scale.
8. The present study highlights a new dimension of research in the field of agricultural extension in Bangladesh and so the researcher could not provide sufficient evidence in equipping his study report with relevant literature reviews.

1.7 Definition of Key Term

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

Problem: A state of difficulty that needs to be resolved. A matter or situation regarded as unwelcome or harmful and needing to be dealt with and overcome.

Farmers: The persons who were involved in farming activities are called farmers. They participated in different farm and community level activities like crops, livestock, fisheries, other farming activities etc.

Assumption: An assumption is "The supposition that an apparent fact or principle is true in the light of the available evidence" (Goode and Hatt, 1952).

Hypothesis: Defined by Goode and Hatt (1952), a proposition this can be put to "a test to determine its validity". It may be true or false, it may seem contrary to or in accord with common sense. However, it leads to an empirical test.

Null hypothesis: The hypothesis which we pick for statistical test is null hypothesis (Ho). In this study the null hypothesis is stated that there is no relationship between the concerned variables.

Age: It refers to the time from the date of birth to the date of interview counted of respondent.

Educational level: Empirically it was defined to the development of desirable changes in knowledge, skill and attitudes in an individual through reading, writing, walking, observation and other selected activities. It was measured on the basis of classes a farmer has passed from a formal educational institution.

Family size: Family size of a youth family was defined as the number of individuals in his family including himself, his wife, children and other dependent members.

T-aman cultivation area: The term related to the hectare of land of a farmer on which he carried his T-aman cultivation, the area being estimated in terms of full or partial benefit to the farmer.

Library

Experience in T-aman cultivation: The term expressed in years a farmer has been cultivating T-aman.

Annual family income: It refers to the gross income in thousand taka gained annually from crop, livestock, fisheries and various sources (service, landed property, business etc.) by the farmer or his parents and other members of the respondent.

Extension media contact: Extension media contact referred to the channel through which various information are diffused among the farmers who become informed about different aspects of agricultural activities.

Innovativeness: Innovativeness is the degree to which an individual is relatively earlier in adopting innovations, new ideas, practices and things than the other members of a social system (Rogers, 1995). This was comprehended by the

quickness of accepting innovations by an individual in relation to others and was measured on the basis of time dimension.

Knowledge on T-aman Cultivation: It is the extent of basic understanding of the farmers in different aspects of T-aman cultivation like soil, seed, fertilizer, insects and diseases, high yielding variety etc. It includes the basic understanding of the use of different inputs and practices for T-aman cultivation.

Problem confrontation in T-aman cultivation: Problem confrontation in T-aman cultivation refers to different problems confronted by the farmers in cultivating T-aman.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this study was to have an understanding of problems confrontation of the farmers on their T-aman cultivation and exploring the relationship with their selected characteristics. An effort was made to review the findings of past researches in this respect. Accordingly, the researcher made an exhaustive search of past studies that could be made available. But unfortunately very few of these studies were related to the study of problems confrontation of the farmers in their T-aman cultivation. This chapter comprises of three sections as follows:

2.1 Problems confrontation of the farmers in different agricultural aspects

Akanda (1993) conducted a research to find out problem confrontation of the farmers in cultivating Mukta (BR11) rice in transplanted aman season. The problem confrontation of the farmers was measured in three aspects of Mukta rice cultivation viz. (a) using quality seed (b) using recommended fertilizers (c) taking plant protection measures. The findings revealed that, (a) in using quality seed majority of the farmers (72.38 percent) had medium problem confrontation compared to 22.86 percent having low problem confrontation and only 4 percent high problem confrontation, (b) in using recommended fertilizers the highest portion (88.57 percent) of the farmers belong to medium problem confrontation category, compared to 29.52 percent having low and only one percent high problem confrontation and (c) in taking plant protection measures the highest portion of the farmers (80.95 percent) had high problem confrontation, while 16.19 percent had medium and only 2.66 percent low problem confrontation.

Marothia (1983) conducted a research to find out the problems in the adoption of paddy technologies in two villages in Raipur Block, Madhaya Pradesh, India. The

findings revealed that the majority of farmers still adopt a partial package of recommendations, mainly due to the high cost of inputs, financial limitations and risk of crop failure. Inadequate supportive input-facilities were found to be responsible for the slow adoption a paddy technology.

Salam (2003) in his study identified problems in adopting environmentally friendly farming practices. Top six identified problems according to their rank order were: (i) low production due to limited use of fertilizer (ii) lack of organic matter in soil, (iii) lack of Govt. support for environmentally friendly farming practices, (iv) lack of capital and natural resources for integrated farming practices, (v) lack of knowledge on integrated farm management and (vi) unavailability of pest resistant varieties of crops.

Chander and Singh (2003) in their study identified four aspects of problems in adoption of IMP practices viz. technological problems, economical problems, services, supply and marketing problems and transfer of technology problems. They also opined that economical problems confrontation of the farmers at "most serious" level.

Uddin (2004) in his study identified five aspect of problems in commercial cultivation of vegetables viz. seed problems, disease and insect infestation problems, field management problems, marketing of vegetable problems and extension work problems. Among these aspects of problems he revealed disease and pest infestation problems severely confrontation of the farmers.

Arya and Shah (1984) conducted a study in the mid-Himalayan region of Uttar Pradesh of India to find out the existing and potential level of food production and the main problems on the adoption of new technology for rainfed agriculture. The main findings were (i) small and skewedly distributed holdings; (ii) fragmented

and scattered holdings; (iii) shortage of labour; (iv) lack of availability of inputs and funds; (v) lack of education, extension and training especially for women.

Faroque (1997) found that female rural youth in Bhaluka (Mymensingh) lacked cash for buying seeds, seedling and fisheries and deprived of necessary knowledge in improved vegetable cultivation. He further added that the majority of female rural youth confrontation very high (74%) problems.

Ismail (2001) conducted a study on farm youth of haor area of Mohangonj upazila. Study revealed that six top problems in rank order were (1) no arrangement of loan for the farm youth for fishery cultivation, (ii) lack of government programmes in agriculture for the farm youth, (iii) absence of loan giving agencies for establishing agricultural farm, (iv) general people face problem for fishery due to government leasing of Jalmohal, lack of government programmes for establishing poultry farm, (vi) lack of agricultural loan for the farm youth.

Pramanik (2001) made an extensive, study on the twenty-four problems of farm youth in Mymensingh villages relating to different problems in crop cultivation. Out of twenty-four problems tile top four problems in rank order were: (i) local NGO take high rate of interest against a loan, (ii) lack of agricultural machinery and tools, (iii) lack of cash and (iv) financial inability to, arrange improved seeds, fertilizers and irrigation.

Agnew *et al.* (2002) found that the adoption of Harvesting Based Practice (HBP) (specifically, lower pour rite and lower extractor fan speed balanced against harvest time) can provide an extra $100/ha to the industry. Several barriers to adoption of HBP have slowed progress. These include low sugar prices, wet

weather, orange rust disease, system of harvester payment, insufficient cane quality feedback mechanisms and physical, time and safety upon harvesting.

Halim (2003) conducted a study on problems confrontation of the farmers in adopting crop diversification. The top five problems identified of this study according to their rank order were (i) lack of storage facilities for products and seeds. (ii) high price of inputs, (iii) non-availability of credit for other crops, (iv) lack of sufficient training programme in different aspects of crop diversification and (v) most of the lands are in low lying areas and not suitable for CDP crops.

Shehrawant and Sharma (1994) found that the Indian rural youths were suffering serious economic problems and difficulty in obtaining loans from banks and other agencies. They further added that the youth confrontation uncertainty about the access of field corps, less price of produced crops.

Library

Kumar *et al.* (1995) showed that the economics of improved management practices, extent of adoption of seven improved management activities by crop, and investigates major problems to adoption. The sample consisted of 25 farmers from all adopted village for technology transfer and 25 farmers from non-adopted villages. Adoption of improved management practices, though cost intensive, provided higher yield and income levels than traditional farming practices. The level of adoption of improved management practices was higher in the adopted village than the non-adopted village. High input prices and low market prices for output were the major problems experienced by farmers in both adopted and non-adopted villages.

Rahman (1995) in his study, identified farmers' confrontation problems in cotton cultivation. Non-availability of quality seed in time, unfavourable and high cost of fertilizer and insecticides, lack of operating capital, not getting fair weight and

reasonable price according to grade, affects of cattle in cotton field, lack of technical knowledge, lack of storage facility, stealing from field at maturity stage, and late buying of raw cotton by Cotton Development Board wait identified as major problems of cotton farmers in Mymensingh district.

Raha *et al.* (1986) identified some common problems of cotton cultivation as perceived by the farmers in Bangladesh. Those were: lack of suitable land, lack of irrigation facilities, shortage of labour, shortage of cash money, lack of technical knowledge, lower price of cotton, and non-availability of seed, insecticides and fertilizers. production technology were all irregular and insufficient electricity supply, small size of holding for green manuring, intercrops not convenient due to weeds, high cost of farm fuel, scare irrigation facilities, absence of location specific recommendations for earthing up, lack of drought resistant varieties and lack of technical knowledge about plant protection and chemical fertilizers.

Ramachandran and Sripal (1990) identified different problems in adoption of dry land technology for rainfed cotton in Kainaraj district, Tamilnadu, India. They found that farmers' confrontation problems were insufficient rainfall, susceptibility of pest and diseases, lack of experience, presence of modern plants, chemicals not available in time, lack of knowledge, insufficient livestock, risk due to failure of monsoon, high cost etc.

Freeman and Breth (1994) conducted a study on issues in African Rural Development Study showed several problems in farming practices such as intensified land use, fallow periods decline and crop cultivation spreads into marginal or ecologically fragile lands. In the absence of appropriate resource management technologies, these practices inevitably lead, to degradation of the

resource base with important implications for soil productivity, household food security and rural poverty.

Gumisiriza *et al.* (1994) showed several problems, (traditional fanning practices, unavailability or lack of improved cultivars, information and technology transfer, rusts and foliar disease ineffective communication between research stations and research priorities in Uganda).

2.2 Review of past studies on the relationship between the selected characteristics of the farmers and problems confrontation in their T-aman cultivation

2.2.1 Age and problems confrontation

Bhuiyan (2002) in his study found a positive and significant relationship between age of the farmers and their problem in banana cultivation. A similar finding was obtained by Haque (1995) and Rahman (1996) in their respective study.

Rashid (2003) found that age of the rural youth had significant negative relationship with problem confrontation in selected agricultural production activities.

Hossain (1985) in a study on landless labourers in Bhabakhali union of Mymensingh district found that there was no relationship between age of the landless labourers and their problem confrontation. Similar findings were obtained by Rahman (1995), Ali (1999), Rashid (1999), Pramanik (2001), Ahmed (2002), Hossain (2002), Salam (2003) and Halim (2003) in their respective studies.

Mansur (1989) found that age of the farmers had no significant relationship with the feeds and feeding problem confrontation.

2.2.2 Educational level and problems confrontation

Hasan (2005) in his study found that there was no relationship between education of the farmers and their problem confrontation in crop production activities.

Hoque (2001) found a significant negative relationship between education and problem confrontation of the FFS farmers in practicing IPM.

Haque (1995) in his study on problem confrontation of the farmers of Mohila Bittaheen Samabaya Samittee working under the Bangladesh Rural Development Board found a significant negative relationship between education of members and their problem confrontation. Similar findings were obtained by Mansur (1989). Rahman (1995), Rahman (1996), Faroque (1997), Pramanik (2001).

2.2.3 Family size and problems confrontation

Hasan (2005) in his study found that there was no relationship between family size of the farmers and their problem confrontation in crop production activities.

Uddin (2004) found that family size of the farmers was negatively related with their constraints. Alam (2003) found similar result in his study.

Karmakar (2004) observed statistically insignificant relationship between family size and their constraints in adopting aquaculture technologies.

Rashid (2003) found that family size of the rural youth had no relationship with problem confrontation in selected agricultural production activities.

Hoque (2001) revealed that significant positive relationship between family size and problem confrontation of the FFS farmers in practicing IPM.

Bhuyian (2002) and Salam (2003) found similar result in their respective studies.

Rahman (1995) found that family size of the farmer's had a significant negative relationship with their problem confrontation in cotton cultivation. Similar findings were obtained by Islam (1987), Mansur (1989), Rahman (1996), Faroque (1997), Ismail (2001), Ahmed (2002) and Halim (2003) in their respective studies.

Hossain (2002) found that borga family size of the landless labourers, had a significant relationship with their problem confrontation. Problem confrontation was higher in borga farming than no borga farming category.

2.2.4 Experience in T-aman cultivation and problems confrontation

The researcher could not find any literature involving relationship between experience in T-aman cultivation and problems confrontation of the farmers.

2.2.5 T-aman cultivation area and problems confrontation

Hasan (2005) in his study found that there was no relationship between farm size of the farmers and their problem confrontation in crop production activities.

Uddin (2004) found that farm size of the farmers was negatively related with their constraints. Alam (2003) found similar result in his study.

Hoque (2001) revealed that significant positive relationship between farm size and problem confrontation of the FFS farmers in practicing IPM.

2.2.6 Annual family income and problems confrontation

Hoque (2001) found in his study that annual family income of FFS farmers had a positive significant effect on their problem confrontation.

Mansur (1989)'in his study found that the relationship between income of the farmers and their problem confrontation in feeds and feeding cattle was significant but showed a negative trend.

Rahman (1995) found in his study that annual family income of the farmers had a significant negative effect on their problem confrontation in pineapple cultivation. Karim (1996) found in his study that annual family income of the farmers had a significant negative effect on their problem confrontation in kakrol cultivation.

Saha (1983) found in his study a negative relationship between income of the farmers and their poultry problem confrontation.

2.2.7 Knowledge on T-aman cultivation and problems confrontation

Mansur (1989) found in his study that there was a substantial significant negative relationship between knowledge in feeds and feeding cattles of the farmer and their problem confrontation in feeds and feeding. Similar findings were obtained by Sarker (1983), Rahman (1996), Hoque (2001), Hossain (2002) and Ahmed (2002) in their respective studies.

Raha (1989) in a study on poultry problem confrontation reported that the relationship between poultry knowledge and poultry problem confrontation was negative. He reported from his study that farmer's knowledge in irrigation of modern boro rice had no significant relationship with their irrigation problem confrontation. Anwar (1994), Karim (1996), Rashid (1999), Ismail (2001), Salam (2003), and Rashid (2003) found similar findings in their respective studies.

The study of Ali (1999) revealed that knowledge of the rural youth had significant positive relationship with their anticipated problem confrontation in self employment by undertaking selected income generating activities.

2.2.8 Extension media contact and problems confrontation

Hasan (2005) in his study found that there was no relationship between extension contact of the farmers and their problem confrontation in crop production activities.

Rahman (1995) in his study conducted that extension contact of the farmer had significant negative relationship with their problem confrontation in cotton cultivation. Similar findings were obtained by Rahman (1996), Faroque (1997), Pramanik (2001), Hossain (2002), Bhuiyan (2002), Ahmed (2002), Salam (2003) and Halim (2003) their respective studies.

The study of Ismail (2001) revealed that there was no significant relationship between farm youths' extension contact and their agricultural problem confrontation. Similar findings were obtained by Raha (1989) and Hoque (2001) in their respective studies.

2.2.9 Innovativeness and problems confrontation

Rahman (1995) in his study found that innovativeness of the farmers had no significant relationship with their problem confrontation in cotton cultivation. Similar findings were obtained by Rashid (1999) in their respective studies.

Salam (2003) in his study found that innovativeness of the farmers had significant negative relationship with their problem confrontation in adopting environmentally friendly farming practices.

Mansur (1989) showed that innovativeness of the farmers had a significant negative relationship with their problem confrontation in feeds and feeding cattle. Similar findings were obtained by Ali (1978), Saha (1983), Sarker (1983), Ismail

(2001), Pramanik (2001), Hossain (2002) and Halim (2003) in their respective studies.

2.3 Conceptual Framework of the study

This study is concerned with the farmers' problems confrontation in T-aman cultivation. Thus, problems confrontation of the farmers was the main focus of the study and nine selected characteristics of the farmers were considered for the study. Problems confrontation on T-aman cultivation of an individual may be affected through interacting forces of many characteristics of the farmers. It is not possible to deal with all characteristics in a single study. It was therefore, necessary to limit the characteristics, which include: age, educational level, family size, experience in T-aman cultivation, T-aman cultivation area, annual family income, knowledge on T-aman cultivation, extension media contact and innovativeness.

Agricultural University Library

Again, in order to have a clear understanding of the nature of farmers' problem, the dependent variable was considered from the view of several numbers of dimensions of problems. These dimensions included: (1) Lack of quality seed, (2) High cost of seed, (3) Lack of suitable land for seedbed, (4) Seedling unavailability, (5) Disease infestation and insect attack in T-aman cultivation, (6) Lack of necessary technical advice from extension worker, (7) Insufficient rainfall during transplantation results over-aged of seedlings, (8) High cost of production, (9) Weed infestation, (10) Lack of skilled labor, (11) Lack of irrigation facility, (12) Lack of knowledge on rice seed production, (13) Adulterated fertilizers and pesticides, (14) Flood problem and (15) Drought problem. Considering the above discussion, a conceptual framework has been developed for this study, which is diagrammatically presented in the following Figure 2.1.

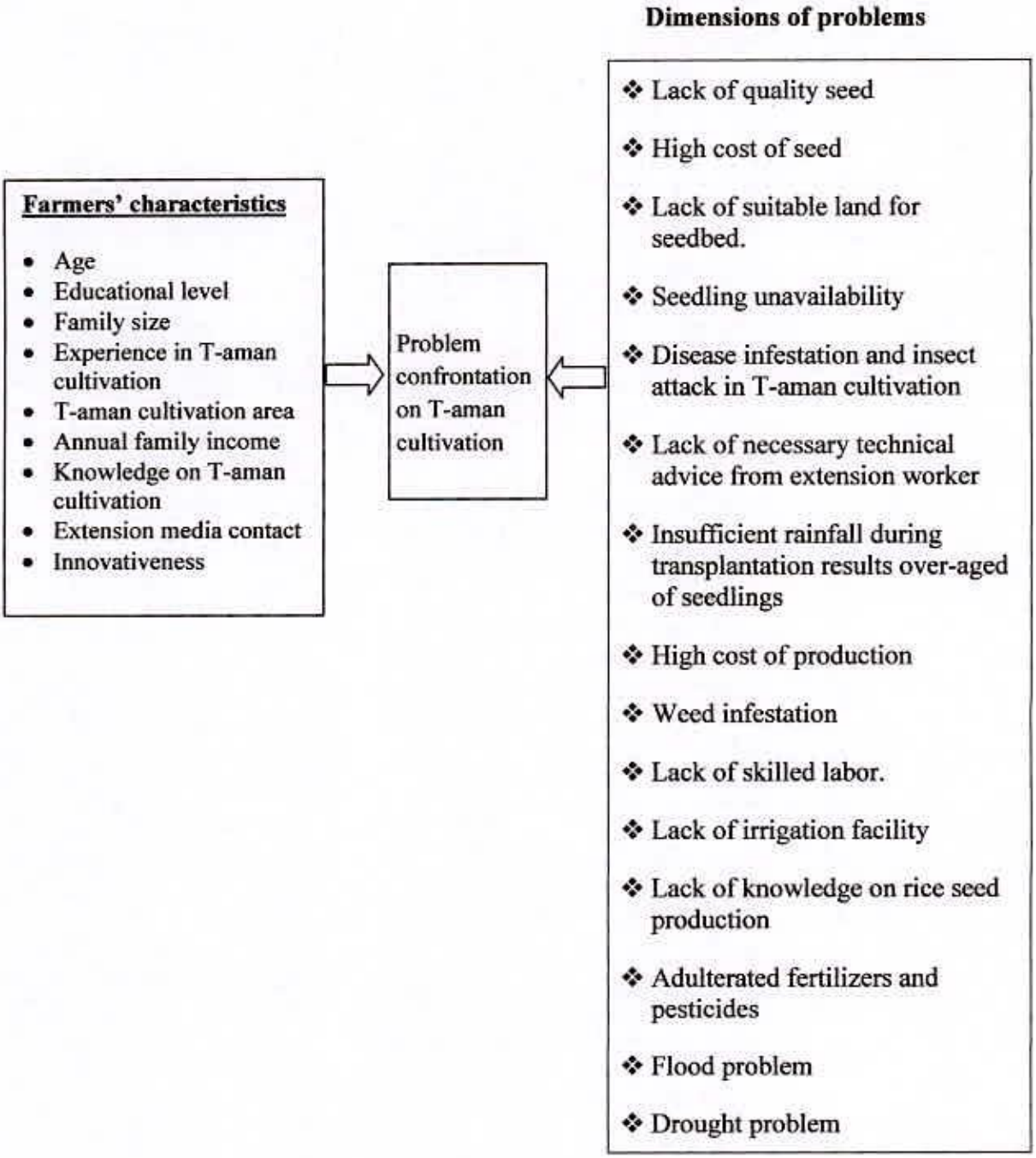


Figure 2.1 Conceptual framework of the study

CHAPTER 3

METHODOLOGY

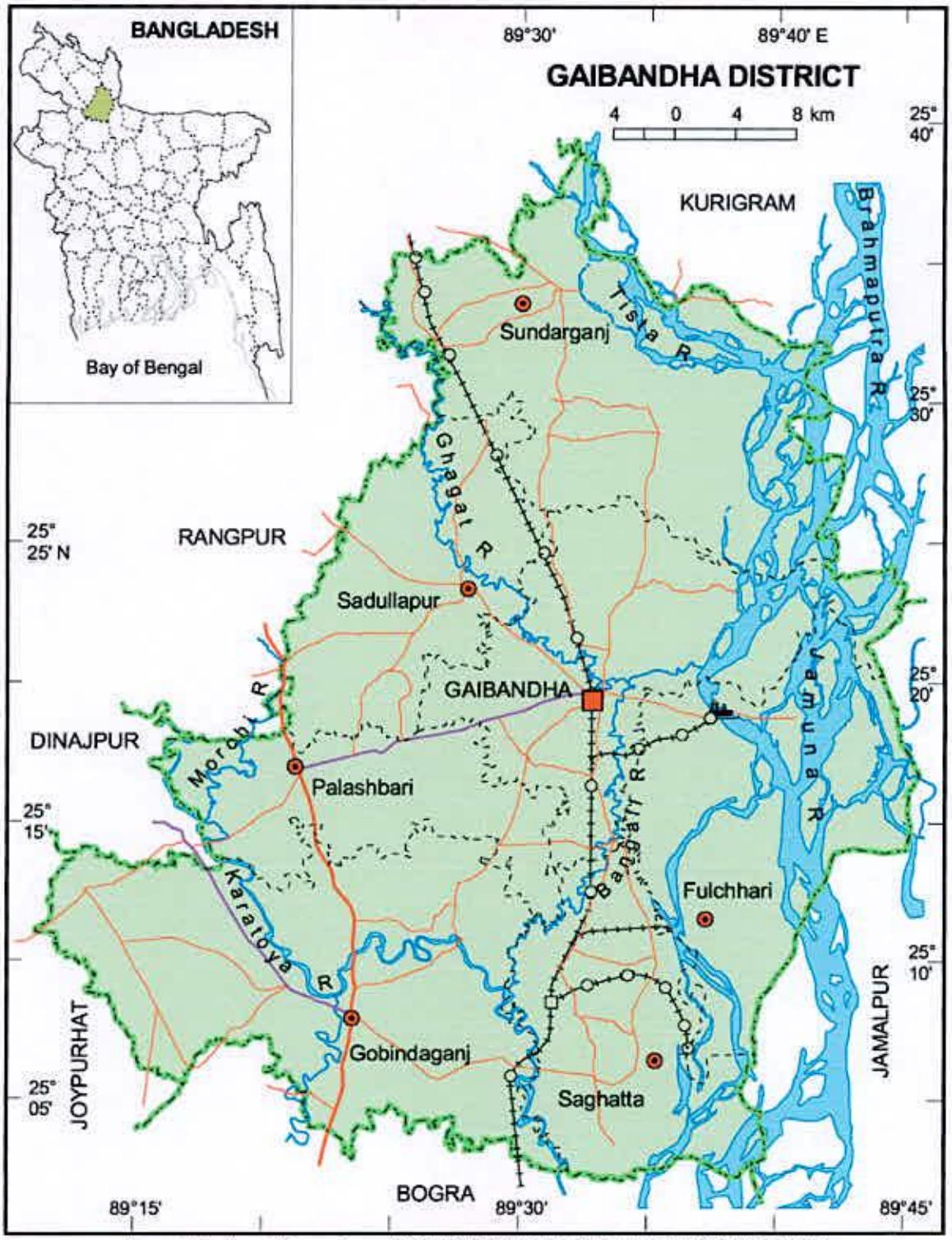
Importance of methodology for conducting any research can hardly be overemphasized. Keeping this point in view, the researcher took great care for the use of proper methods in all aspects of investigation. Methods and procedures followed in this study are discussed in this chapter.

3.1 Locale of the Study

Considering time and budget the study was conducted in two villages namely, Rajabirat and Katabari of Gobindaganj Upazila under Gaibandha district. These villages are situated in 20km and 10km north-east from Gaibandha district head quarters. The villages are familiar for T-aman cultivation. As the area is familiar for T-aman cultivation and no previous study was conducted in this area on farmers' problem confrontation regarding T-aman cultivation, to bring the area in the light of nations' concern it was selected as the locale of the study. Maps of Gaibandha District and Gobindaganj Upazilla showing the study areas are presented in Figures 3.1 and 3.2 respectevily.

3.2 Population and Sample

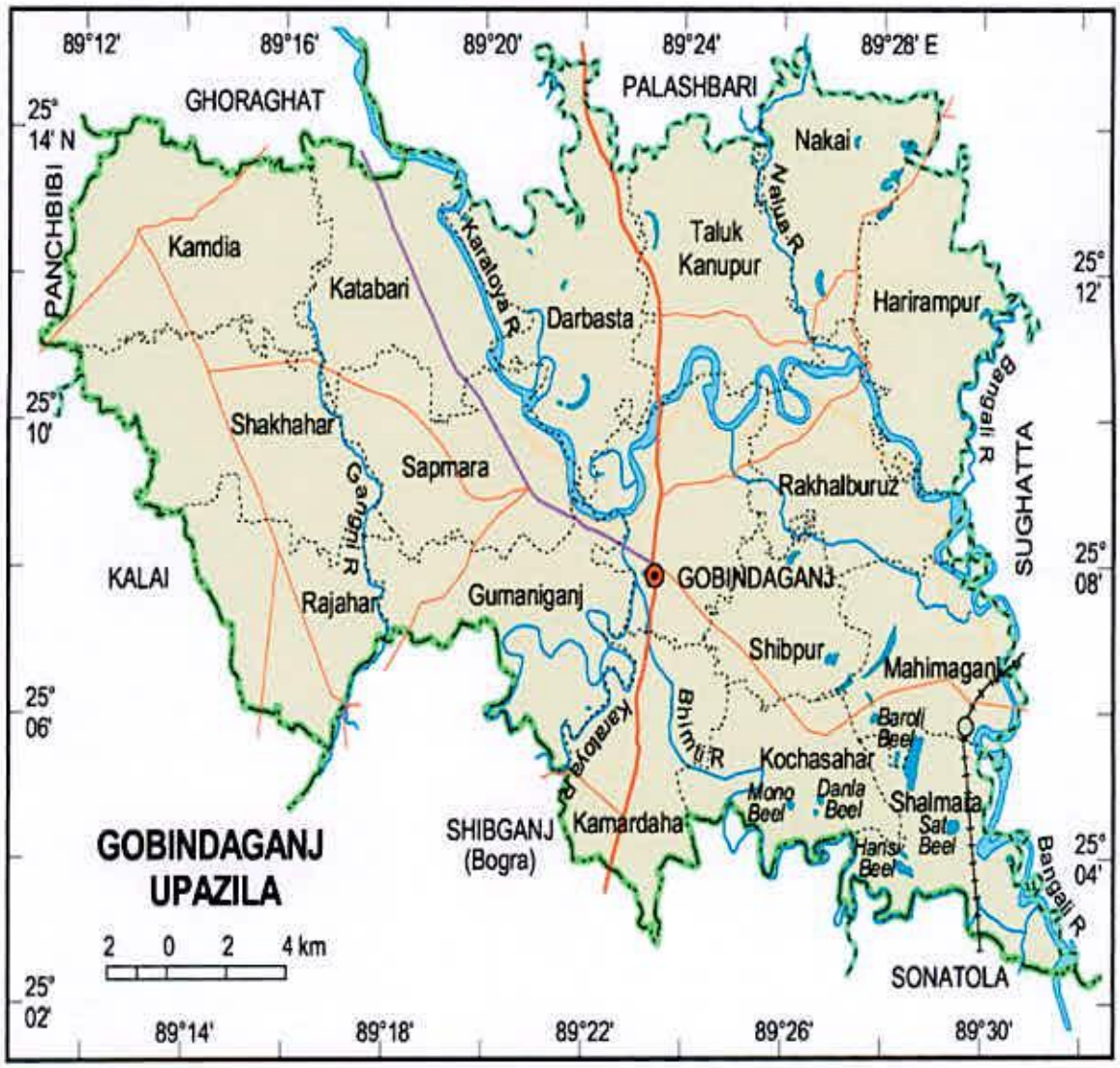
T-aman farmers of selected two villages namely Rajabirat and Katabari of Gobindaganj constituted the population of the study. An update list of 1029 T-aman farmers from the selected villages was prepared with the help of Sub-Assistant Agricultural Officers of the study areas. Ten (10) percent of the populations were proportionately and randomly selected as the sample of the study by using random sampling method. Thus, 103 T-aman farmers constituted the sample of the study.



Source: http://zesun35geo.webs.com/DISTRICTS%20MAPS/ GAIBANDHA%20DISTRICT.GIF

Figure 3.1 Map of Gaibandha District showing Gobindaganj Upazilla

38685



Source: http://bangladesh-maps.blogspot.com/2012/03/ Gobindaganj -upazila-map-map-of- Gobindaganj.html

Figure 3.2 Map of Gobindaganj Upazilla Showing the Study Area

A reserve list of 10 T-aman farmers was also prepared by the same method so that the respondents of this list could be used for interview if the respondents included in the original sample were not available at the time of data collection. The distribution of the population sample and number of T-aman farmers in the reserve list are given in Table 3.1.

Table 3.1 Distribution of the sample population and number of T-aman farmers in the reserve list

Name of the of village	No. of T-aman farmers	No. of T-aman farmers included in the sample	No. of T-aman farmers in the reserve list
Rajabirat	584	58	6
Katabari	445	45	4
Total	1029	103	10

3.3 The Research Instrument

A well structured interview schedule was developed based on objectives of the study for collecting information. An interview schedule was constructed containing direct and simple questions in open form and close form. Appropriate scales were developed to measure the variables of the study.

The interview schedule was pre-tested with ten T-aman cultivators in actual situation before finalized it for collection of data. Necessary corrections, additions, alternations, rearrangements and adjustments were made in the interview schedule based on pretest experience. The interview schedule was then multiplied by printing in its final form. An English version of the interview schedule is presented in Appendix-A.

3.4 Measurement of Variables

The variable is a character, which can assume varying, or different values in successive individual cases. In the scientific research, the selection and measurement of variable constitute a significant task. Following this conception, the researcher reviewed literature to widen this understanding about the natures and scopes of the variables relevant to this research. At last the researcher had selected problem confrontation in T-aman cultivation as the main focus of the study. Nine of the characteristics of the farmers such as: age, educational level, family size, experience in T-aman cultivation, T-aman cultivation area, annual family income, knowledge on T-aman cultivation, extension media contact and innovativeness were considered for the study which might have relationship with their problem confrontation in T-aman cultivation. The methods and procedures in measuring these variables are presented below:

3.4.1 Measurement of Selected Characteristics of the Farmers

The following procedures were followed for measuring the selected characteristics of the T-aman farmers:

3.4.1.1 Age

Age of a farmer was measured in terms of actual years from his/her birth to the time of interview. A score of one (1) was assigned for each year of age. No fraction of year was considered.

3.4.1.2 Educational level

Educational level was measured in terms of grades of education (school/college) completed by an individual. It was expressed in terms of year of successful schooling. A score of one (1) was assigned for each year of successful schooling completed. For example, if a respondent passed the S.S.C. examination, his

education score was given as 10, if he passes the final examination of class six, his score of educational level was given as 6. If a respondent did not know how to read and write, his score of educational level was given as '0' (zero). A score of 0.5 (half) was given to that respondent who could sign his name only.

3.4.1.3 Family size

Family size of an individual was measured in terms of counting total number of members of his/her family. A score of one (1) was assigned for each member. For example, if a respondent exist only himself in his family the score was given as 1, if another one is with him, his score was given as 2.

3.4.1.4 Experience in T-aman cultivation

Experience in T-aman cultivation of a respondent was measured by the period of time from the time he/she started to cultivate T-aman rice to the time of interview and it was measured in terms of completed years on the basis of their response. A score of one (1) was assigned for each year of cultivation.

Library

3.4.1.5 T-aman cultivation area

T-aman cultivation area of a respondent referred to the total area of land on which he/she cultivate T-aman rice in the last Aman season and the area being estimated in terms of full or partial benefit to his/her family. It was expressed in hectares for each respondent. The data were first recorded in terms of local unit i.e; *bigha, katha or pakhi* and then were converted to hectare.

3.4.1.6 Annual family income

Annual family income of a respondent was measured on the basis of total yearly earning from agriculture and other sources (service, business, daily labor etc.) by the respondent himself and other members of his/her family. For calculation of income score, one (1) score was assigned for one thousand taka yearly income.

3.4.1.7 Knowledge on T-aman cultivation

Knowledge on T-aman cultivation referred to the knowledge gained by the farmers in T-aman cultivation. Twenty questions on different aspects of T-aman cultivation were asked to the T-aman farmers to ascertain their knowledge score. The score was assigned as 2 for full correct answer and zero (0) for incorrect or no answer for each question. Partial score was assigned for partial correct answer. Thus, the knowledge scores of the respondents could range from '0' to 40 where zero (0) indicated very low and 40 indicated very high knowledge on T-aman cultivation.

3.4.1.8 Extension media contact

The extension media contact of the respondent farmers was measured on the basis of their responses regarding the extent of contact with the selected media in receiving information on problems confrontation in T-aman cultivation during the immediate past year. Five (5) extension media were considered for this study. A four point scale was used to compute the score of extension media contact. In this regard weight was assigned to each of the four types of responses provided by the respondent farmers in the following manner:

Responses	Weight
Regularly	3
Often	2
Rarely	1
Not at all	0

Logical frequencies were considered for each alternative response for each item. Then the extension media contact score of a respondent for the five selected extension media contact were added together to ascertain his/her total score of extension media contact. Thus, the extension media contact score of a respondent

could range from '0' to 15 where '0' indicated no extension media contact and 15 indicated highest extension media contact.

3.4.1.9 Innovativeness

Innovativeness is the degree to which an individual adopts an innovation relatively earlier than other members in a social system (Rogers, 1983). Here, innovativeness of a respondent was measured on the basis of the adoption of ten agricultural technologies by the respondents. A five point scale was used to compute the innovativeness. The score was assigned on the basis of time dimension which means how earlier a respondent used the technology continuously. The scoring was done in the following manner:

Adoption period	Assigned score
Used within 1 years of hearing	4
Used after 1 year before 2 years of hearing	3
Used after 2 year before 3 years of hearing	2
Used after 3 years of hearing	1
Don't use	0

Thus, the innovativeness score of a respondent was obtained by adding his/her scores for all the ten items and it could range from '0' to 40 where '0' indicated no innovativeness and 40 indicated highest innovativeness.

3.4.2 Measurement of Problem Confrontation for T-aman Cultivation

The procedure for measuring the problem confrontation of the farmers in T-aman cultivation was as follows:

The researcher generalized the problems confrontation of the farmers in T-aman cultivation in twelve different statements. A four point rating scale was used to determine the extent of each problem by the following scores:

Extent of the constrains	Assigned score
High problems	3
Medium problems	2
Low problems	1
Not at all	0

The problems score of a farmer was computed by adding all scores obtained by him/her on 15 selected items. Thus total score of problems confrontation of a farmer could range from '0' to 45, while '0' indicated no problem and 45 indicated highest problem in T-aman cultivation.

Problem Confrontation Index (PCI):

For clearer understanding of problems of farmers, Problem Confrontation Index (PCI) for each item was computed by using the following formula:

$$\text{Problem Confrontation Index (PCI)} = P_h \times 3 + P_m \times 2 + P_l \times 1 + P_n \times 0$$

Where,

P_h = Percentage of farmers confronted high problem in T-aman cultivation

P_m = Percentage of farmers confronted medium problem in T-aman cultivation

P_l = Percentage of farmers confronted low problem in T-aman cultivation

P_n = Percentage of farmers confronted no problem in T-aman cultivation

Problem Confrontation Index (PCI) for each of the selected 15 items could range from "0" to 300, where "0" indicated no problem confrontation and 300 indicated highest problem confrontation.

3.5 Hypothesis of the Study

In the present study the following null hypotheses were formulated:

"There are no significant relationships between the problems confrontation of the farmers in T-aman cultivation and each of their 9 selected characteristics".

3.6 Data Collection Procedure

The researcher himself collected data with the help of an interview schedule from the sample respondents through face to face interview during the pre-scheduled leisure period of respondent at his/her house or field. The researcher established desired rapport with the respondents so that they did not feel any hesitation at the time of interview. Whenever any respondent confronted difficulties in understanding questions, more attention was taken to explain the same with a view to enable the farmers to answer properly. No serious problem was confronted of the investigator during data collection but obtained cooperation from the respondents. Data collection was started in 01 October, 2012 and completed in 30 October, 2012.

3.7 Data processing

For data processing the following steps were followed:

3.7.1 Compilation and coding of data

After completion of field survey all the interview schedule 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. The responses to the question in the interview schedule were transferred to a master sheet to facilitate tabulation. Tabulation was done on the basis of categories developed by the investigator himself.

3.7.2 Categorization of respondents

For describing the various 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 procedures

have been discussed while describing the variable in the sub-sequent sections of next chapter.

3.8 Statistical Analysis of Data

Data collected from the respondents were complied, coded, tabulated and analyzed in accordance with the objectives of the study. Various statistical measures such as frequency counts, percentage distribution, mean, and standard deviation were used in describing data. SPSS (version 11.5) computer program was used for analyzing the data. The categories and tables were used in describing data. The categories and tables were also used in presenting data for better understanding.

For determining the relationships of the selected characteristics of the T-aman farmers with their problems in T-aman cultivation, Pearson's Product Moment Correlation co-efficient (r) was used. Five percent (0.05) level of probability was used as the basis for rejecting any null hypothesis.

CHAPTER 4

RESULTS AND DISCUSSION

In this Chapter, the findings are presented in four sections in accordance with the objectives of the study. The first section deals with the selected characteristics of the farmers. The second section has dealt with their problems in T-aman cultivation. The third section has dealt with relationships between the selected characteristics of the farmers and the problems confronted by them. The last section has dealt with the comparative severity among the problems confronted by farmers in T-aman cultivation.

4.1 Characteristics of the farmers

The findings relating to the selected characteristics of the farmers, namely; age, educational level, family size, experience in T-aman cultivation, T-aman cultivation area, annual family income, knowledge on T-aman cultivation, extension media contact and innovativeness are presented and discussed as follows:

4.1.1 Age

The age of the T-aman farmers ranged from 22 to 63 years with a mean and standard deviation of 36.13 and 8.97 respectively. Considering the age, the farmers were classified into three categories namely 'young', 'middle' and 'old' aged. The distribution of the respondents' based on their age are presented in Table 4.1.

Table 4.1 Distribution of the farmers according to their age

Categories (Scores)	Respondents		Mean	Standard deviation
	Number	Percent		
Young aged (upto 35 years)	56	54.4	36.13	8.97
Middle aged (35-50 years)	41	39.8		
Old aged (above 50 years)	6	5.8		
Total	103	100		

Table 4.1 indicates that the young aged T-aman farmers comprise the highest proportion (56 percent) followed by middle aged category (39.8 percent) and the lowest proportion were made by the old aged category (5.8 percent). Data also indicates that the young and middle aged T-aman farmers constitute about 94.2 percent of the respondents. It seemed, young and middle aged farmers were more involved in T-aman production.

4.1.2 Educational level

The score of educational level of the respondent farmers ranged from 0 to 15 with a mean and standard deviation of 4.04 and 3.54 respectively. Based on their score of educational level, the farmers were classified into five categories such as 'illiterate' (0), 'can sign only' (0.5), 'primary education' (1 to 5), 'secondary education' (6 to 10) and 'above secondary education' (above 10). The distribution of the farmers according to their educational level has been presented in Table 4.2.

Table 4.2 Distribution of the farmers according to their educational level

Categories (Scores)	Respondents		Mean	Standard deviation
	Number	Percent		
Illiterate (0)	11	10.7	4.04	3.54
Can sign only (0.5)	20	19.4		
Primary education (1-5)	45	43.7		
Secondary education (6-10)	21	20.4		
Above secondary education (above 10)	6	5.8		
Total	103	100		

Table 4.2 shows that farmers under 'primary education category constitute the highest proportion (45 percent) compared to 21 percent secondary level category,

19.4 percent can sign only and 10.7 percent illiterate category. On the other hand the lowest 6 percent belongs to above secondary level category. It means that 69.9% of the respondents were literate which was above the national average of Bangladesh.

4.1.3 Family size

The family size of the respondents' ranged from 2 to 9 score with a mean and standard deviation of 3.62 and 1.58 respectively. Based on their family size, the respondents were classified into three categories viz., small family size (≤ 4 nos.), medium family size (5 to 7 nos.) and large family size (>7 nos.). The distribution of the farmers according to their family size has been presented in Table 4.3.

Table 4.3 Distribution of the farmers according to their family size

Categories (Scores)	Respondents		Mean	Standard deviation
	Number	Percent		
Small family size (≤ 4 nos.)	79	76.7	3.62	1.58
Medium family size (5 to 7 nos.)	20	19.4		
Large family size (> 7 nos.)	4	3.9		
Total	103	100		

Table 4.3 indicates that the small family size constitutes the highest proportion (76.7 percent) of the farmers followed by 19.4 percent with medium family size and the lowest 3.9 percent large family size. The findings of the study reveal that majority (96.1 percent) of the farmers have small to medium family size.

4.1.4 Experience in T-aman cultivation

Experience in T-aman cultivation of the respondents ranged from 7 to 48 with a mean and standard deviation of 21.13 and 8.97 respectively. On the basis of their experience in T-aman cultivation, the farmers were classified into three categories, viz. low experienced, medium experienced and high experienced. The distribution of the farmers according to the experience in T-aman cultivation categories has been presented in Table 4.4.

Table 4.4 Distribution of the farmers according to their experience in T-aman cultivation

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low experienced (< 12)	12	11.7	21.13	8.97
Medium experienced (12-30)	81	78.6		
High experienced (> 30)	10	9.7		
Total	103	100		

Data in table 4.4 revealed that the farmers having medium experienced in T-aman constitute the highest proportion (78.6 percent) followed by low experienced in T-aman (11.7 percent) and high experienced in T-aman (9.7 percent). Table 4.4 showed overwhelming majorities (89.3 percent) of the farmers had medium to high experience in T-aman cultivation.

4.1.5 T-aman cultivation area

T-aman cultivation area of the farmers ranged from 0.21 hectare to 2.03 hectare with a mean and standard deviation of 0.84 and 0.45 respectively. Based on their T-aman cultivation area, the respondents were classified into three categories. These categories were small T-aman cultivation area (≤ 1.0 ha), medium T-aman cultivation area (1.01 to 2.0 ha) and large T-aman cultivation area (> 2.0 ha). The distribution of the farmers according to their T-aman cultivation area categories has been presented in Table 4.5.

Table 4.5 Distribution of the farmers according to their T-aman cultivation area

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Small (≤ 1.0 ha)	76	73.8	0.84	0.45
Medium (1.01-2.0 ha)	23	22.3		
Large (> 2.0 ha)	4	3.9		
Total	103	100		

Table 4.5 indicates that the farmers having small T-aman cultivation area constitute the highest proportion (73.8 percent) of the respondent followed by 22.3 percent with medium T-aman cultivation area holder and only 4 percent had

large T-aman cultivation area. The findings of the study reveal that majority (96.1 percent) of the farmers had small to medium T-aman cultivation area.

4.1.6 Annual family income

Annual family income of the respondents ranged from 61 to 186 thousand taka with a mean and standard deviation of 104.60 and 26.52 respectively. On the basis of their annual income, the farmers were classified into three categories, viz. low, medium and high annual family income. The distribution of the farmers according to the annual family income categories has been presented in Table 4.6.

Table 4.6 Distribution of the farmers according to their annual family income

Categories	Respondents		Mean	Standard deviation
	Number	Percent		
Low income (≤ 100 thousand Tk.)	49	47.6	104.60	26.52
Medium income (>100 thousand Tk.)	54	52.4		
Total	103	100		

Data in Table 4.6 revealed that the farmers having medium income constitute the highest proportion (52.4 percent) and the rest (47.6 percent) had low annual family income. It means that the whole portion (100 percent) of the T-aman farmers had low to medium annual family income.

4.1.7 Knowledge on T-aman cultivation

Knowledge on T-aman cultivation score of the respondents was found to range from 14 to 38 against a possible range from zero (0) to 40. The average score was 25.65 with a standard deviation of 4.75. Based on the score of farmers' knowledge on T-aman cultivation the respondents were classified into three categories as 'low knowledge' (≤ 20), 'medium knowledge' (21-30) and 'high knowledge' (> 30). The distribution of the respondents according to their knowledge on T-aman cultivation has been presented in Table 4.7.

Table 4.7 Distribution of the farmers according to their knowledge on T-aman cultivation

Categories (Scores)	Respondents		Mean	Standard deviation
	Number	Percent		
Low knowledge level (≤ 20)	17	16.5	25.65	4.75
Medium knowledge level (21-30)	69	67		
High knowledge level (> 30)	17	16.5		
Total	103	100		

Findings shown in Table 4.7 indicate that the highest proportion (67 percent) of the respondents had medium knowledge on related aspects while 16.5 percent and 16.5 percent of the respondents had low and high knowledge on T-aman cultivation respectively.

Library

4.1.8 Extension media contact

The extension media contact score of the respondents farmers ranged from 5 to 14 against the possible range of zero '0' to 15 score with a mean and standard deviation of 9.02 and 2.11 respectively. Based on their extension media contact score, the respondents were classified into three categories. These categories were low, medium and high extension media contact. The distribution of the respondents according to their extension media contact has been presented in Table 4.8.

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

Categories (Scores)	Respondents		Mean	Standard deviation
	Number	Percent		
Low contact (< 7)	14	13.6	9.02	2.11
Medium contact (7-11)	78	75.7		
High contact (> 11)	11	10.7		
Total	103	100		

Table 4.8 indicates that the farmers having medium extension media contact category constituted the highest proportion (75.7 percent) followed by low contact (13.6 percent) and high contact category (10.7 percent). Table 4.8 showed that the

majorities (89.3 percent) of the farmers had low to medium extension media contact.

4.1.9 Innovativeness

The maximum innovativeness score of the respondents was 21 and the minimum score was 7 against the possible range of '0' to 40. However, the average was 13.95 and the standard deviation was 3.45. Based on their innovativeness scores, the respondents were classified into two categories: low innovativeness and medium innovativeness. The distribution of the respondents according to their innovativeness is shown in Table 4.9.

Table 4.9 Distribution of the farmers according to their innovativeness

Categories (Scores)	Respondents		Mean	Standard deviation
	Number	Percent		
Low innovativeness (≤ 12)	31	30.1	13.95	3.45
Medium innovativeness (> 12)	72	69.9		
Total	103	100		

Data contained in Table 4.9 indicate that the highest proportion (69.9 percent) of the T-aman cultivators had medium innovativeness as compared to 30.1 percent of low innovativeness and no farmer had high innovativeness.

4.2 Problems confrontation of the farmers in T-aman cultivation

Problems confrontation of the farmers in T-aman cultivation was found to range from 18 to 38 against a possible range from zero (0) to 45. The average score was 27 with a standard deviation of 5.80. Based on the score of problems confrontation in T-aman cultivation, the farmers were classified into two categories as 'medium problem' (≤ 30) and 'high problem' (> 30). The distribution of the respondents according to their problems confrontation in T-aman cultivation has been presented in Table 4.10.

Table 4.10 Distribution of the farmers according to their problems confrontation in T-aman cultivation

Categories (Scores)	Respondents		Mean	Standard deviation
	Number	Percent		
Medium problem (≤ 30)	75	72.8	23.03	4.93
High problem (> 30)	28	27.2		
Total	103	100		

Findings shown in table 4.10 indicate that the highest proportion (72.8 percent) of the respondents' confronted medium problem in T-aman cultivation, while the rest 27.2 percent of the respondents' confronted high problem in their T-aman cultivation. Table 4.10 showed that the whole portion (100 percent) of the farmers' confronted medium to high problems in their T-aman cultivation.

4.3 Relationship between problems confrontation of the farmers in T-aman cultivation with their selected characteristics

Pearson's Product Moment Correlation Co-efficient (r) was computed in order to find out the extent of relationship between problems confrontation in T-aman cultivation by the farmers and their selected characteristics. To reject or accept any null hypotheses, 0.05 level of probability was used. Results of correlation have been shown in Table 4.11. Correlation co-efficient among all the variables may be seen in the correlation matrix in Appendix-B.

Table 4.11 Pearson's product moment co-efficient of correlation showing relationship between problems confrontation of the farmers in T-aman cultivation and their selected characteristics

N =103

Dependent variable	Independent variables	Value of co-efficient of correlation (r)	Tabulated value at 101 df	
			0.05 level	0.01 level
Problems confrontation of the farmers in T-aman cultivation	Age	-0.137^{NS}	0.194	0.253
	Educational level	-0.280**		
	Family size	-0.181^{NS}		
	Experience in T-aman cultivation	-0.137^{NS}		
	T-aman cultivation area	0.076^{NS}		
	Annual family income	-0.129^{NS}		
	Knowledge on T-aman cultivation	-0.498**		
	Extension media contact	-0.398**		
	Innovativeness	-0.376**		

^{NS}Not significant

**Significant at the 0.01 level

*Significant at the 0.05 level

4.3.1 Relationships between problems confrontation of the farmers and their age

Relationship between age and problems confrontation of the farmers in T-aman cultivation was determined by Pearson's product moment correlation coefficient.

The coefficient of correlation between age and problems confrontation of the farmers in T-aman cultivation is presented in Table 4.11. The coefficient of correlation between the concerned variables was found -0.137. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

a. The relationship showed a negative trend between the concerned variables.
b. The observed value of "r" (-0. 137) between the concerned variables was found to be smaller than the tabulated value (r = 0.194) with 101 degrees of freedom at 0.05 level of probability.
c. The null hypothesis could not be rejected.

d. The relationship between the concerned variables was statistically non significant at 0.05 level of probability.

Based on the above findings, it was concluded that age of the famers had non-significant negative relationships with the problems confrontation of the farmers in T-aman cultivation.

4.3.2 Relationships between problems confrontation of the farmers and their educational level

Relationship between educational level and problems confrontation of the farmers in T-aman cultivation was determined by Pearson's product moment correlation coefficient.

The coefficient of correlation between educational level and problems confrontation of the farmers in T-aman cultivation is presented in Table 4.11. The coefficient of correlation between the concerned variables was found -0.280. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

a. The relationship showed a negative trend between the concerned variables.
b. The observed value of "r" (-0.280) between the concerned variables was found to be greater than the tabulated value (r = 0.253) with 101 degrees of freedom at 0.01 level of probability.
c. The null hypothesis was rejected.
d. The relationship between the concerned variables was statistically significant at 0.01 level of probability.

Based on the above findings, it was concluded that educational level of the famers had significant negative relationships with the problems confrontation of the farmers in T-aman cultivation.

4.3.3 Relationships between problems confrontation of the farmers and their family size

Relationship between family size and problems confrontation of the farmers in T-aman cultivation was determined by Pearson's product moment correlation coefficient.

The coefficient of correlation between Family size and problems confrontation of the farmers in T-aman cultivation is presented in Table 4.11. The coefficient of correlation between the concerned variables was found -0.181. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

a. The relationship showed a negative trend between the concerned variables.
b. The observed value of "r" (-0.181) between the concerned variables was found to be smaller than the tabulated value (r = 0.194) with 101 degrees of freedom at 0.05 level of probability.
c. The null hypothesis could not be rejected.
d. The relationship between the concerned variables was statistically non significant at 0.05 level of probability.

Based on the above findings, it was concluded that family size of the famers had non-significant negative relationships with the problems confrontation of the farmers in T-aman cultivation.

4.3.4 Relationships between problems confrontation of the farmers and their experience in T-aman cultivation

Relationship between experience in T-aman cultivation and problems confrontation of the farmers in T-aman cultivation was determined by Pearson's product moment correlation coefficient.

The coefficient of correlation between experience in T-aman cultivation and problems confrontation of the farmers in T-aman cultivation is presented in Table 4.11. The coefficient of correlation between the concerned variables was found -0.137. The following observations were made on the basis of the value of

correlation coefficient between the two concerned variables of the study under consideration.

a. The relationship showed a negative trend between the concerned variables.
b. The observed value of "r" (-0.137) between the concerned variables was found to be smaller than the tabulated value (r = 0.194) with 101 degrees of freedom at 0.05 level of probability.
c. The null hypothesis could not be rejected.
d. The relationship between the concerned variables was statistically non significant at 0.05 level of probability.

Based on the above findings, it was concluded that experience in T-aman cultivation of the famers had non-significant negative relationships with the problems confrontation of the farmers in T-aman cultivation.

4.3.5 Relationships between problems confrontation of the farmers and their T-aman cultivation area

Relationship between T-aman cultivation area and problems confrontation of the farmers in T-aman cultivation was determined by Pearson's product moment correlation coefficient.

The coefficient of correlation between T-aman cultivation area and problems confrontation of the farmers is presented in Table 4.11. The coefficient of correlation between the concerned variables was found 0.076. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

a. The relationship showed a positive trend between the concerned variables.
b. The observed value of "r" (0.076) between the concerned variables was found to be smaller than the tabulated value (r = 0.194) with 101 degrees of freedom at 0.05 level of probability.
c. The null hypothesis could not be rejected.

d. The relationship between the concerned variables was statistically non significant at 0.05 level of probability.

Based on the above findings, it was concluded that T-aman cultivation area of the famers had non-significant positive relationships with the problems confrontation of the farmers in T-aman cultivation.

4.3.6 Relationships between problems confrontation of the farmers and their annual family income

Relationship between annual family income and problems confrontation of the farmers in T-aman cultivation was determined by Pearson's product moment correlation coefficient.

The coefficient of correlation between annual family income and problems confrontation of the farmers in T-aman cultivation is presented in Table 4.11. The coefficient of correlation between the concerned variables was found -0.129. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

a. The relationship showed a negative trend between the concerned variables.
b. The observed value of "r" (-0.129) between the concerned variables was found to be smaller than the tabulated value (r = 0.194) with 101 degrees of freedom at 0.05 level of probability.
c. The null hypothesis could not be rejected.
d. The relationship between the concerned variables was statistically non significant at 0.05 level of probability.

Based on the above findings, it was concluded that annual family income of the famers had non-significant negative relationships with the problems confrontation of the farmers in T-aman cultivation.

Library

4.3.7 Relationships between problems confrontation of the and knowledge on T-aman cultivation

Relationship between knowledge on T-aman cultivation and problems confrontation of the farmers in T-aman cultivation was determined by Pearson's product moment correlation coefficient.

The coefficient of correlation between knowledge on T-aman cultivation and problems confrontation of the farmers in T-aman cultivation is presented in Table 4.11. The coefficient of correlation between the concerned variables was found -0.498. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

a. The relationship showed a negative trend between the concerned variables.
b. The observed value of "r" (-0.498) between the concerned variables was found to be greater than the tabulated value (r = 0.253) with 101 degrees of freedom at 0.01 level of probability.
c. The null hypothesis was rejected.
d. The relationship between the concerned variables was statistically highly significant at 0.01 level of probability.

Based on the above findings, it was concluded that knowledge on T-aman cultivation had highly significant negative relationships with the problems confrontation of the farmers in T-aman cultivation.

4.3.8 Relationships between problems confrontation of the farmers and their extension media contact

Relationship between extension media contact and problems confrontation of the farmers in T-aman cultivation was determined by Pearson's product moment correlation coefficient.

The coefficient of correlation between extension media contact and problems confrontation of the farmers in T-aman cultivation is presented in Table 4.11. The

coefficient of correlation between the concerned variables was found -0.498. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

a. The relationship showed a negative trend between the concerned variables.
b. The observed value of "r" (-0.498) between the concerned variables was found to be greater than the tabulated value (r = 0.253) with 101 degrees of freedom at 0.01 level of probability.
c. The null hypothesis was rejected.
d. The relationship between the concerned variables was statistically highly significant at 0.01 level of probability.

Based on the above findings, it was concluded that extension media contact of the famers had highly significant negative relationships with the problems confrontation of the farmers in T-aman cultivation.

4.3.9 Relationships between problems confrontation of the farmers and their innovativeness

Relationship between innovativeness and problems confrontation of the farmers in T-aman cultivation was determined by Pearson's product moment correlation coefficient.

The coefficient of correlation between innovativeness and problems confrontation of the farmers in T-aman cultivation is presented in Table 4.11. The coefficient of correlation between the concerned variables was found -0.376. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study under consideration.

a. The relationship showed a negative trend between the concerned variables.
b. The observed value of "r" (-0.376) between the concerned variables was found to be greater than the tabulated value (r = 0.253) with 101 degrees of freedom at 0.01 level of probability.
c. The null hypothesis was rejected.

d. The relationship between the concerned variables was statistically highly significant at 0.01 level of probability.

Based on the above findings, it was concluded that innovativeness of the famers had highly significant negative relationships with the problems confrontation of the farmers in T-aman cultivation.

4.4 Comparative severity among the problems confrontation of the farmers in T-aman cultivation.

The farmers confronted more or less problems in T-aman cultivation. A problems confrontation index (PCI) was calculated for each of the problems in T-aman cultivation. The rank order of the problems was made on the basis of the descending order of the PCI. Comparative view of the 15 selected problems has been shown in Table 4.12 on the basis of their Problems Confrontation Index (PCI).

Table 4.12 Rank order of 15 selected items of problems confrontation in T-aman cultivation according to descending order of PCI

Sl. No.	Problems	Percentage (%) of the respondents				Problem Confronta-tion Index (PCI)	Rank Order (RO)
		Confrontation high problem (P_h)	Confrontation medium problem (P_m)	Confrontation low problem (P_l)	Confrontation no problem (P_n)		
01.	High cost of production	82.8	13.9	3.3	0	279.5	**1**
02.	Adulterated fertilizers and pesticides	75.3	12.9	6.2	5.6	257.9	**2**
03.	Lack of quality seed	38.7	41.9	13.1	6.3	213	**3**
04.	Disease infestation and insect attack in T-aman cultivation	24	33.2	40.8	2	179.2	**4**
05.	High cost of seed	8.3	62.8	23.2	5.7	173.7	**5**
06.	Lack of suitable land for seedbed	5.2	54.7	34.9	5.2	159.9	**6**
07.	Insufficient rainfall during transplantation results over-aged of seedlings	2.4	60.8	30.1	6.7	158.9	**7**
08.	Drought problem	7.3	28.9	56.5	7.3	136.2	**8**
09.	Lack of irrigation facility	5.2	19	68.2	7.6	121.8	**9**
10.	Lack of skilled labor.	3.4	20	50.8	25.8	101	**10**
11.	Seedling unavailability	4.3	11.5	63.4	20.8	99.3	**11**
12.	Lack of necessary technical advice from extension worker	3.3	15.2	56.5	25	96.8	**12**
13.	Weed infestation	1.4	16.8	50.7	31.1	88.5	**13**
14.	Flood problem	0	13.6	49.3	37.1	76.5	**14**
15.	Lack of knowledge on rice seed production	0	3.4	62.8	33.8	69.6	**15**

Problem Confrontation index (PCI) of the farmers on 15 items in problems in T-aman cultivation ranged from 69 to 280 against the possible range of 0 to 300. The PCI in the Table 4.12 indicates that the farmers confrontation highest problem in "high cost of production" followed by "adulterated fertilizers and pesticides" and "lack of quality seeds".

It is to be noted here that, all the problems affect the T-aman cultivation of the farmers. Some may be most serious and some may be less. However, less serious problems were identified as "lack of knowledge on rice seed production" which was positioned in the rank order as 15th. Rank order of other problems has shown in Table 4.12.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with the summary of findings, conclusions and recommendations of this study.

5.1 Summary of Findings

5.1.1 Characteristics of the farmers

Age:

Young aged T-aman farmers comprise the highest proportion (54.4 percent) followed by middle aged category (39.8 percent) and the lowest proportion were made by the old aged category (5.8 percent).

Educational level:

Farmers under 'primary education category constitute the highest proportion (45 percent) compared to 21 percent secondary level category, 19.4 percent can sign only and 10.7 percent illiterate category. On the other hand the lowest 6 percent belongs to above secondary level category.

Family size:

The small family size constitutes the highest proportion (76.7 percent) followed by 19.4 percent with medium family size and the lowest 3.9 percent were large family size.

Experience in T-aman cultivation:

The medium experienced farmers constituted the highest proportion (78.6 percent) of the respondent followed by 11.7 percent with medium experienced and only 9.7 percent high experienced farmers.

T-aman cultivation area:

The farmers have small T-aman cultivation area category constitute the highest proportion (73.8 percent) followed by medium T-aman cultivation area (22.3 percent) and high T-aman cultivation area (3.9 percent).

Annual family income:

The farmers having medium income constitute the highest proportion (52.4 percent) followed by low annual income (47.6 percent).

Knowledge on T-aman cultivation:

The highest proportion (67 percent) of the respondents had medium knowledge on related aspects while 16.5 percent of the respondents had low and high knowledge on T-aman cultivation each.

Extension media contact:

The farmers having medium extension media contact category constituted the highest proportion (75.7 percent) followed by low contact (13.6 percent) and high contact category (10.7 percent).

Innovativeness:

The highest proportion (69.9 percent) of the T-aman cultivators had medium innovativeness as compared to 30.1 percent low innovativeness.

5.1.2 Problems confrontation of the farmers:

The highest proportion (72.8 percent) of the respondents' confronted medium problem in T-aman cultivation, while 27.2 percent of the respondents' confronted high problem in T-aman cultivation.

5.1.3 Relationship between the problems confrontation of the farmers in T-aman cultivation with their selected characteristics

Educational level, knowledge on T-aman cultivation, extension media contact and innovativeness of the T-aman farmers had significant negative relationships with their problems confrontation in T-aman cultivation. Age, family size, experience in T-aman cultivation, T-aman cultivation area and annual family income of them had no significant relationships with the problems confrontation in T-aman cultivation.

5.1.4 Comparative severity among the problems confrontation of the farmers in T-aman cultivation

According to the severity the problems, "high cost of production" ranked first followed by "adulterated fertilizers and pesticides", "lack of quality seed".

Library

5.2 Conclusions

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

1. The whole portion (100 percent) under the study area confronted medium to high problems in T-aman cultivation. Therefore, it may be concluded that farmers of the study area confronted the problems in T-aman cultivation to a variety of degree.

2. A 30.10 percent of the farmers were either illiterate or could sign only and 43.7 percent of the farmers had completed merely primary education. There existed a negatively significant relationship between farmers' educational level and their problem confrontation in T-aman cultivation. Therefore, it may be concluded that, low educated farmers confronted high problems or with the increase in educational level of the farmers tend to decrease their problems confrontation in T-aman cultivation.

3. A great majority (83.5 percent) of the farmers had low to medium knowledge on T-aman cultivation, while there had a very strong negative significant

relationship between knowledge on T-aman cultivation and their problems confrontation in T-aman cultivation. Therefore, it may be concluded that, low knowledgeable farmers in case of T-aman cultivation confronted high problems or with the increase of knowledge level of the farmers tends to decrease their problems confrontation in T-aman cultivation.

4. An over-whelming majority (89.30 percent) of the farmers had low to medium extension media contact, and there was a strong negative significant relationship between farmers' extension media contact and their problems in T-aman cultivation. Therefore, it may be concluded that, with the increase in extension media contact of the farmers tends to decrease their problems confrontation in T-aman cultivation.

5. The whole proportion of the farmers possessed low to medium innovativeness, while there was a strong negative significant relationship between innovativeness of the farmers and their problems confrontation in T-aman cultivation. Therefore, it may be concluded that, low innovative farmers confronted high problem or with the increase of innovativeness of the farmers tends to decrease their problems confrontation in T-aman cultivation.

6. Based on the severity among the problems, it may be concluded that farmers in the monga area faced severe problem in "high cost of production" followed by "adulterated fertilizers and pesticides" and "lack of quality seeds".

5.3 Recommendations for policy implications

Recommendations based on the findings and conclusions of the study are presented below:

1. The whole proportion (100 percent) of the farmers had medium to high problems in T-aman cultivation. They confronted main problems as "high cost of production", "adulterated fertilizers and pesticides" and "lack of quality seed". Therefore, it may be recommended that necessary steps should be taken

to minimize the problems of the farmers for T-aman cultivation regarding the above facts.

2. Education of the farmers had significant negative relationship with their problems confrontation in T-aman cultivation. Therefore, it may be recommended that, adult education should be provided to the farmers so that they could increase their educational level which might be helpful to decrease their problems in T-aman cultivation.

3. Knowledge on T-aman cultivation had significant negative relationship with their problems confrontation in T-aman cultivation. Therefore, it may be recommended that, there should be conducted more extension works for educating and training the farmers which will increase their knowledge and skills and will be supportive to solve their problems in T-aman cultivation.

4. Extension media contact had significant negative relationship with their problems confrontation in T-aman cultivation. Therefore, it may be recommended that, extension service providers should increase their contact with farmers so that the farmers could minimize their problems by setting information from the extension providers.

5. Innovativeness had significant negative relationship with their problems confrontation in T-aman cultivation. Therefore, it may be recommended that, DAE should increase their motivational programs that would make the farmers more innovative to adopt various new convenient technologies in T-aman cultivation.

6. Based on the Problem Confrontation Index, it may be recommended that attempts should be taken to minimize the problems on the basis of severity especially by reducing the cost of production and supplying pure fertilizers, pesticides and good quality seeds.

5.3.1 Recommendation for further study

This study investigated problems confrontation of the farmers in T-aman cultivation. As a small and limited research has been conducted in the present study cannot provide much information related to this aspect. Further studies should be undertaken to covering more information in the relevant matters. So the following suggestions were put forward for further research:

1. The present study was conducted only in two villages of Gobindaganj Upazila under Gaibandha district. Findings of the study need further verification through similar research in other parts of the country.

2. It is difficult to explore all the problems confrontation of the farmers in T-aman cultivation. Measurement of problems of the farmers is not free from questions. More reliable measurement of concerned variables is necessary for further study.

3. The study investigated the relationship of nine characteristics of the T-aman farmers with their problems in T-aman cultivation. So it is recommended that further study would be conducted with other dependent and independent variables.

4. The study investigated only 15 dimensions of problems of the farmers in T-aman cultivation. It is necessary to examine the relationship of the characteristics of the farmers with their problems confrontation in other aspect of agricultural problem confrontation.

5. Research should be undertaken on the effectiveness of agricultural extension services and other related organizations in helping people to solve their agricultural problems.

BIBLIOGRAPHY

Agnew, JR., Simla, air Stainlay, C. Whiteing, and D.M. Hogarth. 2002. Increased sugar industry profitability through harvesting based practice. Proceeding of the 2002 Conference of the Australian Society of Sugarcane Technology held at Carrus Queensland, Australia. 29 April to 2 May, 2002: 184-189.

Ahmed, S. 2002. Problem Confrontation of the Contact Growers of BADC in Jute Seed Production. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Akanda, M.G.R. 1993. Problem Confrontation of the Farmers in Respect of Cultivating Mukta (BR11) Rice. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Akanda, M.G.R. 2005. Technological Gap in Modern Rice Production at Farmers' level. Ph.D. Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Alam, A.T.M.M., R. Choudhury and M.Z.A. Chowdhury. 2003. Rice production at farmers' level: practices and problems. Bangladesh Journal of Training and Development, 13 (1&2): 229-236.

Ali, M.A. 1978. Cattle Problems of the Farmers in Tarakanda Union of Fulpur Thana under Mymensingh District. M.Sc. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Anwar, A.B.M.N. 1994. Study for Involving Rural Youth Activities in Three Selected Villages of Mymensingh District. Ph.D. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Annonymous. 1998. Problem and prospects for suitable intensification of rice production in Bangladesh. Project publication no. 12. TCTTI Dhaka. p-1.

Arya, S. R.S. and S.L. Shah, 1984. New Technology of Rainfed Agriculture and Identification of Problems on its Adoption in Mid-hills of U.P. Agricultural Station in India. 37(7): 487-490. Rural Development Abstracts. 1985. 8(2).

BBS. 2003 & 2007. Statistical Year Book of Bangladesh. Bangladesh Bureau of Statistics, Statistical division, Ministry of Planning, Government of People's Republic of Bangladesh, Dhaka.

BBS. 2005. Statistical Pocket Book. Bangladesh Bureau of Statistics, Statistical division, Ministry of Planning, Government of people Republic of Bangladesh, Dhaka.

BBS. 2009. Statistical Year Book of Bangladesh, Bangladesh Bureau of Statistics, Ministry of Planning, Government of people Republic of Bangladesh, Dhaka.

BBS. 2011. Yearbook of Agricultural Statistics of Bangladesh, Bangladesh Bureau of Statistics, Ministry of Planning, Government of people Republic of Bangladesh, Dhaka.

Bhuiyan, S.I. and A.N.M.R. Karim. 1999. Rice production in Bangladesh: an overview. pages 1-11 in Bhuiyan, S.I. and A.N.M.R. Karim (ed.). Increasing Rice Production in Bangladesh: Challenges and Strategies. Dhaka (Bangladesh): Bangladesh Rice Research Institute and Manila (Philippines): International Rice Research Institute.

Bhuiyan, M.A.S. 2002. Problem Confrontation of the Farmers in Banana Cultivation in Kuliarchar upazila under Kishoreganj District. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

CARE, 2008. Report on "Monga" in Northern Bangladesh. Economic Development Unit, CARE Bangladesh.

Chander, S.H.N. and Singh, J.P. 2003. Knowledge, Adoption and Constrains Analysis of IPM Practices. Indian Journal of Extension Education. XXVI(1&2): 94-98.

Faroque, M.G. 1997. Participation of Female Rural Youth in Selected Homestead Activities in Two selected villages of Bhaluka Upazila under Mymensingh District. MS. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Freeman, WA. and S.A. Breth, 1994. Population pressure land use and the productivity of Agricultural Systems in the West African Savanna, Issues in African Rural Development: 103-114.

Goode, C.V. 1945. Dictionary of Education. New York: McGraw-Hill Book Company, Inc.

Goode, W.J. and P.K. Hatt 1952. Methods of Social Research. New York: McGraw-Hill Book Company, Inc. p. 56.

Gumisiriza, G.W. Wagoire, B. Bungutski and D.G. Tanner 1994. Wheat Production and Research in Uganda; Problems and Susta inability. Developing sustainable wheat production systems. The 8th Regional Wheat Workshop for Easter, Central and Southern Africa, Kampala, Uganda 7 to 10 June 1993: 51-56.

Halim, M.A. 2003. Problems confrontation of the farmers in Adopting Crop Diversification. MS. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hamid, M.A. 2001. A database on Agriculture and Foodgrains in Bangladesh. Ayesha Akhter. 606 North Shahjahanpur, Dhaka. 425 p.

Hasan, A.N.M. 2005. Problem Confrontation of the Farmers in Crop Production Activities in Two Selected Villages of Atrai Upazila in Naogaon District. M.S. Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hasan, A.N.M. 2005. Problem Confrontation of the Farmers in Crop Production Activities in Two Selected Villages of Atrai Upazila in Naogaon District. M.S. Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hatt, P.K. 1952. Critical Dimensions of Community Structure. The Rulers and the Ruled. New York: John Wiley.

Haque, M.S. 1995. Problem Confrontation of the Members of Mohila Bittaheen Samabaya Samitte working under the Bangladesh Rural Development Board. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hossain, M.S. 2002. Resource Poor Farmers Problem Confrontation in using Manures Towards Integrated Plot Nutrition System. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Hoque, M.K. 2001. Environmental Awareness and Problem Confrontation of the FFS Farmer in Practicing IPM. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Islam, M.S. 2004. Extent of Knowledge and Information System in Rural Community for Improving Rural Livelihood of Farmers, M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Ismail, S.M. 2001. Agricultural Problem confrontation of the Farm Youth in a Selected Block of Haor Area of Mohanganj Upazila under Netrokona District. MS. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

IRRI. 1980. Proc. of a symposium on the agrometereology of the rice crop. Los Banos, Philippines.

Karim, Z. 2007. Accelerating the growth of agriculture in Bangladesh. Pages 53-64 in Bhuiyan, S.I. and A.N.M.R. Karim (ed). Increasing Rice Production in Bangladesh: Challenges and Strategies. Dhaka (Bangladesh): Bangladesh Rice Research Institute and Manila (Philippines): International Rice Research Institute.

Karim, M.L. 1996. Relationship of Selected Characteristics of Kakrol Growers with Their Problem Confrontation. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Karim, A.S.M.Z. and S.G. Magboob. 1974. Relationship of selected characteristics of transplanted aman rice growers with their adoption of fertilizers in a rural area of Bangladesh. Indian Journal of Extension Education. 10(1&2): 16-22.

Kashem, M.A. 1977. A study of the Landless Farmers of Bharakhata Union Under Rangpur District. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Kumar, S.C.R., Shivarmu, H.S., Chary, G.R., Yadav, S.C. and Gaikwad. 1995, Economics of improved managetnent practices, their extent and problems in adoption in Madya District, Karnataka. Journal of Soils and Crops. 5(1): 22-25.

Library

Marothia, D.K. 1983. Constrains Analysis of Farm Level Adption of Paddy Technology in Raipur District, Madhya Pardesh. Rural Development Abstracts, 8(2): 132.

Mansur, M.A.A. 1989. Farmers Problem Confrontation in Feeds and Feeding Cattle in Sonapur Union of Raipur Upazial Under Lakshmipur District. M.Sc. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension and Teachers' Training, Bangladesh Agricultural University, Mymensingh.

Pramanik, N.K. 2001. Crop Cultivation problems of the Farm Youth in A Selected Block of Muktagacha Upazila under Mymensingh District. MS. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Rahman, H. Z. and Hossain, M. 2006. "Mora Kartik: Seasonal Deficits and Vulnerability of the Rural Poor." *A Case Study* in *Rethinking Rural Poverty - Bangladesh*, Pp. 234-253, Dhaka.

Rahman, M.H. 1995. Problems confrontation of the farmers in Cotton Cultivation. MS. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Rahman, M.S. 1996. "Farmers' Problems in Potato Cultivation Satia Union under Gafforgaon Thana of Mymensingh District." M.Sc. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Raha, S.K., R.K. Talukder and M.H. Rahman. 1986. Relative profitability of cotton and its competing crops in Bangladesh. Bangladesh Journal of Agricultural Economics. 9(1): 74-82.

Raha, A.K. 1989. Deep Tubewell Irrigation Problems of the Farmers in the Cultivation of Boro Paddy in Two Selected Blocks of Muktagacha Upazila under Mymensingh Dirstrict. M.Sc. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension & Teachers' Training, Bangladesh Agricultural University, Mymensingh.

Ramachandran, P. and K.B. Sripal, 1990. Problems in Adoption of Dryland Technology for Rainfed Cotton. Indian Journal Extension Education. XXIV(3 & 4) : 74-76.

Rashid, M.M. 1999. Willingness of Dropout Rural Youth of undertaking Selected Agricultural Entrepreneurship in their Self-employment. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Rashid, M.Z. 2003. Participation of School Dropout Rural Youth in Selected Agricultural Activities in Two Villages of Mymensingh District. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Rogers, E.M. 1983. Diffusion of Innovations. 3rd edn. New York: The Free Press.

Rogers, E.M. 1995. Diffusion of innovations, 4th Edn. New York: The Free Press.

Rokanuzzaman, M. 2004. Impact of Community Based Fisheries Management Project on Livelihoods of a Fishing Community in Haor Area of Suhamganj District, M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Saha, B.K. 1983. Farmers' Problem Confrontation in Respect of Breeding of Poultry through Cockrel Exchange Programme and other Aspects in Dewkhali Union of Phulbaria Thana under Mymensingh District. M.Sc.

(Ag. Ext. Ed.) Thesis, Department of Agricultural Extension & Teachers' Training, Bangladesh Agricultural University, Mymensingh.

Sarkar M.H. and Haque A. 2001, "Conceptualization and Measurement of Food Insecurity: The context of Bangladesh." Bangladesh Agricultural Research Council, Dhaka.

Sarker, G.C.1983. Relationship of Selected Characteristics of the Poultry Farmers in Tarundia union of Mymensingh District with their Poultry Problem Confrontation. M.Sc. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University. Mymensingh.

Salam, M.A. 2003. Problems Confrontation of the Farmers in Adopting Environmentally Friendly Farming Practices. M.S. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

Shehrawat, P.S. and R.K. Sharma. 1994. Educated Unemployed Rural Youth: Problems Encountered, Factors Dissuading Them from Family Occupation, and their Human Resources Development. Journal of Rural Reconstruction. 27(1): 73-82.

Siddique. I. Quamrul and H.C. Monowar. 2000. Flood 98: losses and Damages. A Seminar on Flood 98 held in Dhaka in December, 1998.

Uddin, M.J. 2004. Problems Confrontation of the Farmers in Commercial Cultivation of Vegetables. MS. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.

WFP. 2009. Agricultural Production and National Food Balance. Food Security Atlas, Bangladesh. 2(1): 13.

Zug, S. 2006. "Monga - Seasonal Food Insecurity in Bangladesh - Bringing the Information Together" *The Journal of Social Studies*, No. 111, Centre for Social Studies, NETZ, Dhaka.

APPENDIX-A

English Version of the Interview Schedule

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

INTERVIEW SCHEDULE FOR A RESEARCH STUDY ON

"PROBLEM CONFRONTATION OF THE FARMERS ON T-AMAN CULTIVATION IN THE SELECTED MONGA AFFECTED UPAZILA"

Serial No. .....

Name of the respondent.....

Village..... Union.....

Upazila..... District.....

(Please answer to the following questions. Your answers will be kept confidential.)

1. Age

How old are you? (.....) years

2. Educational level

Please mention your educational level by putting tick (√) in the appropriate box.

i) Do not know reading and writing (.....).

ii) Do not know reading and writing, but can sign only (.....).

iii) Never attended school, but I can little read and write (.....).

iv) I have passed ..... class.

3. Family size

Including yourself, how many members belong to your family?

Male: ..... Nos. Female: .....Nos. Total: .....Nos.

4. Experience in T-aman Cultivation

How many years have you been cultivating T-aman rice? (.....) years

5. T-aman cultivation area

Mention the area you have cultivated T-aman last year

..... Acre/bigha/pakhi .....hectare

6. Annual Family Income

Please mention your annual income:

Source of income	Production (Unit)	Price (Tk./Unit)	Total taka
1. Agricultural sector			
a) Rice			
b) Wheat and Jute			
c) Maize			
d) Potato and sweet potato			
e) Pulses			
f) Vegetables			
g) Fruits			
h) Poultry			
i) Cattle			
j) Fishes			
k) Others (Please mention)			
2. Services			
3. Business			
Total income per year (1+2+3) =			

7. Knowledge on T-aman Cultivation

Please answer the following questions in relation with T-aman cultivation:

Sl. No.	Questions	Score	Score obtained
1	Name two local varieties of T-aman.	2	
2	Name two improved varieties of T-aman.	2	
3	What is the sowing time of T-aman seeds for seedlings?	2	
4	What is the transplanting time of T-aman?	2	
5	What type of land is suitable for T-aman cultivation?	2	
6	When manuring is needed in T-aman cultivation?	2	
7	How much tillage is needed in T-aman cultivation?	2	
8	What type of irrigation is needed for T-aman cultivation?	2	
9	Name two diseases and two major insects of T-aman.	2	
10	Name two harmful weeds of T-aman.	2	
11	Why crop rotation is essential?	2	
12	How many times urea should apply in T-aman cultivation?	2	
13	Which fungicide is to be applied to control brown spot of rice and which insecticide is to be applied to control stem borer of rice?	2	
14	Mention two urea deficiency symptoms of rice.	2	
15	Mention the benefits of gap filling.	2	
16	What is the seed rate in T-aman cultivation?	2	
17	What is the appropriate seedling age for transplanting T-aman?	2	
18	What is the harvesting time of T-aman?	2	
19	Mention the techniques of T-aman seed production and preservation.	2	
20	What are the qualities of good T-aman seed?	2	

Library

8. Extension Media Contact

Please mention your nature of contact with the following extension personnel:

Sl. No.	Extension personnel	Nature of extension contact			
		Regularly	Often	Rarely	Not at all
1	T-aman model farmers				
2	Input dealers				
3	SAAOs				
4	NGO workers				
5	Upazila Agricultural Officers (UAO)				

9. Innovativeness

Please indicate the duration of use from first hearing, if you use the following:

Sl. No.	Name of the technologies	Extent of use after hearing				Never used
		Used within 1 year	Used after 1 year before 2 years	Used after 2 year before 3 years	Used after 3 years	
01.	Use of hybrid varieties of T-aman rice					
02.	Use of Gutee urea					
03.	Use of Boron fertilizer					
04.	Use of balanced fertilizer					
05.	Use of leaf color chart					
06.	Use of green manure					
07.	Use of Zinc fertilizer					
08.	Use of IPM to control pests and diseases					
09.	Use of power tiller or tractor					
10.	Use of herbicides to control weeds					

10. Problems Confrontation in T-aman Cultivation

Please indicate the constraints faced by the T-aman cultivation:

Sl. No.	Problems	Nature of problems			
		High	Medium	Low	Not at all
1	Lack of quality seed				
2	High cost of seed				
3	Lack of suitable land for seedbed				
4	Seedling unavailability				
5	Disease infestation and insect attack in T-aman cultivation				
6	Lack of necessary technical advice from extension worker				
7	Insufficient rainfall during transplantation results over-aged of seedlings				
8	High cost of production				
9	Weed infestation				
10	Lack of skilled labor				
11	Lack of irrigation facility				
12	Lack of knowledge on rice seed production				
13	Adulterated fertilizers and pesticides				
14	Flood problem				
15	Drought problem				

Thank you for your cooperation

Date: .....

.....

Signature of the interviewer

Appendix-B. Correlation Matrix

Characters	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	Y
X_1	1									
X_2	-0.043	1								
X_3	-0.110	-0.066	1							
X_4	1.00**	-0.043	-0.110	1						
X_5	-0.06	0.488**	-0.117	-0.060	1					
X_6	-0.043	0.502**	-0.036	-0.043	0.800**	1				
X_7	0.097	0.409**	0.151	0.097	0.227*	0.227*	1			
X_8	-0.31**	0.342**	0.138	-0.310**	0.426**	0.480**	0.421**	1		
X_9	-0.041	0.292**	0.118	-0.041	0.284**	0.349**	0.467**	0.320**	1	
Y	-0.137	-0.280**	-0.181	-0.137	0.076	-0.129	-0.498**	-0.398**	-0.376**	1

X_1: Age
X_2: Educational level
X_3: Family size
X_4: Experience in T-aman cultivation
X_5: T-aman cultivation area
X_6: Annual family income
X_7: Knowledge on T-aman cultivation
X_8: Extension media contact
X_9: Innovativeness
Y: Problem confrontation in T-aman cultivation

Sher-e-Bangla Agricultural University
Library
Accession No 38685
Sign: Date: 2/12/14