

University of Rajshahi

Rajshahi-6205

Bangladesh.

RUCL Institutional Repository

<http://rulrepository.ru.ac.bd>

Institute of Bangladesh Studies (IBS)

PhD thesis

2015

Effectiveness of Electronic Media for Sustainable Agricultural Development: An Investigation into TV Programmes

Islam, Md. Nazrul

University of Rajshahi

<http://rulrepository.ru.ac.bd/handle/123456789/272>

Copyright to the University of Rajshahi. All rights reserved. Downloaded from RUCL Institutional Repository.

**Effectiveness of Electronic Media for Sustainable Agricultural
Development: An Investigation into TV Programmes**

PhD Dissertation

By

Md. Nazrul Islam

PhD Fellow (Session: 2009-2010)
Institute of Bangladesh Studies
University of Rajshahi
Rajshahi-6205, Bangladesh



Institute of Bangladesh Studies
University of Rajshahi
Rajshahi-6205, Bangladesh

February, 2015

**Effectiveness of Electronic Media for Sustainable Agricultural
Development: An Investigation into TV Programmes**

PhD Dissertation

By

Md. Nazrul Islam

MSS in Mass Communication and Journalism
PhD Fellow (Session: 2009-2010)

A Dissertation

Submitted to the Institute of Bangladesh Studies, University of Rajshahi in
Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy



Institute of Bangladesh Studies
University of Rajshahi
Rajshahi-6205, Bangladesh

February, 2015

Dedicated
To
My Beloved Parents

DECLARATION

I do hereby declare that, except otherwise stated, this dissertation is entirely my own work under the guidance and supervision of Dr. Md. Mostafizur Rahman, Professor, Dept. of Agronomy and Agricultural Extension, University of Rajshahi and Dulal Chandra Biswas, Associate Professor, Department of Mass Communication and Journalism, University of Rajshahi. The guideline of Institute of Bangladesh Studies, University of Rajshahi has also been followed to prepare the dissertation. This work has not been submitted in any form to any other university for any degree.

Date:

(Md. Nazrul Islam)

PhD Fellow (Session: 2009-2010)
Institute of Bangladesh Studies (IBS)
University of Rajshahi
Rajshahi-6205, Bangladesh

CERTIFICATE

This is to certify with pleasure that the dissertation entitled “**Effectiveness of Electronic Media for Sustainable Agricultural Development: An Investigation into TV Programmes**” is the own work of Mr. Md. Nazrul Islam who has completed his dissertation under our direct guidance and supervision. Information included in this dissertation is original and was not submitted before for any other degree. We also certify that we have gone through the dissertation and found it satisfactory for submission to the Institute of Bangladesh Studies (IBS), University of Rajshahi in partial fulfillment of the requirements for the degree of Doctor of Philosophy (PhD).

(Dulal Chandra Biswas)
Co-Supervisor
Associate Professor
Department of Mass Communication
and Journalism
University of Rajshahi
Rajshahi-6205, Bangladesh

(Prof. Dr. Md. Mostafizur Rahman)
Supervisor
Professor
Department of Agronomy and
Agricultural Extension
University of Rajshahi
Rajshahi-6205, Bangladesh

ACKNOWLEDGEMENT

The author likes to acknowledge his heartiest gratitude, profound appreciation and immense indebtedness to his supervisor prof. Dr. Md. Mostafizur Rahman, Professor, Department of Agronomy and Agricultural Extension, University of Rajshahi, Rajshahi, Bangladesh and co-supervisor Dulal Chandra Biswas, Associate Professor, Department of Mass Communication and Journalism, University of Rajshahi, Rajshahi, Bangladesh for their scholarly suggestions and supervisions, untiring assistance and continuous inspiration throughout the study period. Without their guidance this task cannot be fulfilled.

Special thanks and deep gratitude are due to Porimol Chardra Shaha, Joint Secretary, Ministry of Public Administration, the then director, Planning of Bangladesh Sugar and Food Industries Corporation for his cordial help to start this research.

The author likes to acknowledge his heartiest gratitude to Prof. Dr. A. K. M. Nurunnabi, Vice-Chancellor, Begum Rokeya University, Rangpur for approving the study leave to complete the research work successfully. The deepest appreciation is also extended to the colleagues of department of Mass Communication and Journalism of Begum Rokeya University, Rangpur who continue their support for the completion of the research although a huge crisis.

During making the outline of this research the faculty members and the fellows of Institute of Bangladesh Studies (IBS) from different batches helped me a lot. I was first introduced with the latest research issues and the suitable research methodologies from the valuable lectures of the IBS faculties. I remember their

spontaneous help without which the base of this research could not be established. The entire environment of IBS is really memorable for the success of this research.

The author takes the opportunity to express his endless gratitude and cordial thanks to Upazila agriculture officer of Kurigram sadar and Ulipur Upazila and their officials who always gave me the highest priority to assist the research work. Besides many unnamed person gave me a huge coordination to complete the research are worth to be acknowledged.

The author would like to express his thanks to all of the respondents of the study area for their cooperation, patience and deliberation of information during data collection. It was a hard to make the map of the study area by researcher himself. Colleague and brother Md. Emdadul Haque made the task easy for me. A cordial gratitude goes to him.

At last, the author expressed his heartiest felicity to his own family members for their passionate support and patience during the inconvenience created at the time of my absence for the research work.

The Author

CONTENTS

<u>Items</u>	<u>Page No.</u>
Declaration	iv
Certificate	v
Acknowledgement	vi
Contents	viii
Bibliography	xvii
List of Tables	xviii
List of figures	xxi
List of appendices	xxii
List of Acronyms	xxiii
Abstract	xxv
Chapter 1: Introduction	1-34
1.1 Introduction	1
1.2 Status of Sustainable Agriculture in Bangladesh	3
1.2.1 Use of fertilizer and sustainable agriculture	4
1.2.2 Irrigation and sustainable agriculture	5
1.2.3 Use of pesticide and sustainable agriculture	7
1.2.4 Effects of agrochemical on sustainability	9
1.3 Statement of the Problem	9
1.4 Objective of the Study	13
1.5 Justification of the Study	14
1.6 Scope and Limitation of the Study	15
1.6.1 Scope of the study	15
1.6.2 Limitation of the study	15

1.7	Definition of Key Terms	16
1.7.1	Effectiveness of electronic media	16
1.7.2	Sustainable development	16
1.7.3	Sustainable agriculture	17
1.7.4	Sustainable agricultural development	17
1.7.4.1	Integrated pest management (IPM)	17
1.7.4.2	Chemical fertilizer	18
1.7.4.3	Pesticides	19
1.8	Literature Review	19
1.9	Conceptual Framework of the Study	33
Chapter 2: Methodology		35 -71
2.1	Study Area Selection	35
2.2	Location	37
2.3	Research Design	40
2.4	Sample Size and Sampling Techniques	40
2.5	Data Source	41
2.5.1	Primary data	41
2.5.2	Secondary data sources	41
2.6	Data Collection Techniques	42
2.6.1	Questionnaire survey	42
2.6.2	Observation	42
2.6.3	Focus group discussion	43
2.6.4	Case study	43
2.6.5	Content analysis	43
2.6.6	Secondary data collection	43
2.7	Variables of the Study	43
2.7.1	Selection of dependent variables	44
2.7.2	Selection of independent variables	44

2.8	Measurement of Dependent Variables	45
2.9	Development of Effectiveness Scale	46
2.10	Collection of Effectiveness Statements	46
2.11	Judge's Rating	47
2.12	Item Analysis	47
2.13	Validity of the Scale	48
2.14.	Reliability of the Scale	48
2.15	Effectiveness Score	49
2.15.1	Cognitive effectiveness score	49
2.15.2	Emotional effectiveness score	50
2.15.3	Attitudinal effectiveness score	51
2.15.4	Behavioral effectiveness score	51
2.16	Overall Effectiveness of Electronic Media	52
2.17	Measurement of Dependent Variables	52
2.17.1	Age	53
2.17.2	Gender	53
2.17.3	Education	53
2.17.4	Family size	54
2.17.5	Family education	54
2.17.6	Training experience	54
2.17.7	Mass media exposure	54
2.17.8	Supervision of crop production	55
2.17.9	Agricultural knowledge	56
2.17.10	Knowledge about sustainable agriculture	56
2.17.11	Farm size	57
2.17.12	Annual income	57
2.17.13	Profession	57
2.17.14	Socio-economic status	58
1.17.15	Ownership of agricultural implement	59

2.17.16	Formal group affiliation/organizational participation	60
2.17.17	Cosmopolitaness	61
2.17.18	Peer relationship	62
2.17.19	Innovativeness	62
2.17.20	Attitude	63
	A. Attitude toward sustainable agriculture	63
	B. Attitude toward television	64
	C. Development of the scale	64
	D. Validity of the scale	64
	E. Reliability of the scale	65
2.17.21	Risk orientation	65
	A. Development of the scale	65
	B. Validity of the scale	66
	C. Reliability of the scale	66
2.17.22	Aspiration	67
2.18	Hypothesis of the Study	69
2.18.1	Research hypothesis	69
2.18.2	Null hypothesis	69
2.19	Statistical Techniques	70
	Findings and Discussion	73-172
	Chapter 3: Agricultural Programmes Telecast by Selected Television Channel	73-82
3.1	Agricultural Television Programmes	73
3.2	Bangladesh Television	75
3.3	Channel <i>i</i>	76
3.4	Agricultural Programmes Telecast by BTV and Channel <i>i</i>	77
3.4.1	Crop	77
3.4.2	Fisheries	78
3.4.3	Poultry	78

3.4.4	Vegetables	79
3.4.5	Chemical fertilizer/pesticide	79
3.4.6	Livestock	79
3.4.7	Forestry/fruit/spices	80
3.4.8	New technologies	80
3.4.9	Labour/budget/cost	80
3.4.10	Marketing	81
3.4.11	Irrigation	81
3.4.12	Bio-fertilizer/bio-gas/compost	81
3.4.13	Others	82
Chapter 4: Agricultural Features and Characteristics of Farmers		83-114
4.1	Agricultural Characteristics	83
4.1.1	Agriculture at a glance	83
4.1.2	Geographical locale	84
4.1.3	Administrative structure	84
4.1.4	Climate	85
4.1.5	Soil condition	88
a.	Tista floodplain	88
b.	Brahmaputra-Jamuna floodplain	88
4.1.6	Agricultural land category	88
4.1.7	Agro-ecological zone (AEZ)	89
4.1.8	Major crops	90
4.1.9	Minor crops	91
4.1.10	Cropping pattern	92
4.1.11	Major constraints	93
4.2	Characteristics of Farmers	94
4.2.1	Age	94
4.2.2	Gender	95

4.2.3	Education	95
4.2.4	Family size	96
4.2.5	Family education	97
4.2.6	Training experience	98
4.2.7	Mass media exposure	99
4.2.8	Supervision of crop production	100
4.2.9	Agricultural knowledge	101
4.2.10	Knowledge about sustainable agriculture	102
4.2.11	Farm size	103
4.2.12	Annual income	104
4.2.13	Profession	105
4.2.14	Socio-economic status	106
4.2.15	Ownership of agricultural implement	107
4.2.16	Formal group affiliation/organizational participation	108
4.2.17	Cosmopolitaness	109
4.2.18	Peer relationship	110
4.2.19	Innovativeness	110
4.2.20	Attitude	111
4.2.21	Risk orientation	113
4.2.22	Aspiration	113
Chapter 5: Effectiveness of Electronic Media for Sustainable Agricultural Development		115-122
5.1	Cognitive Effectiveness of Electronic Media	115
5.2	Emotional Effectiveness of Electronic Media	117
5.3	Attitudinal Effectiveness of Electronic Media	117
5.4	Behavioural Effectiveness of Electronic Media	118
5.5	Total Effectiveness of Electronic Media	120

Chapter 6: Relationship between the Effectiveness of Electronic Media for Sustainable Agricultural Development and Selected Characteristics of Farmers **123-162**

6.1	Relationship	123
6.1.1	Age and effectiveness	126
6.1.2	Education and effectiveness	126
6.1.3	Family size and effectiveness	128
6.1.4	Family education and effectiveness	129
6.1.5	Training experience and effectiveness	130
6.1.6	Mass media exposure and effectiveness	131
6.1.7	Supervision of crop production and effectiveness	132
6.1.8	Agricultural knowledge and effectiveness	133
6.1.9	Knowledge about sustainable agriculture and effectiveness	134
6.1.10	Farm size and effectiveness	135
6.1.11	Annual income and effectiveness	136
6.1.12	Socio-economic status and effectiveness	137
6.1.13	Ownership of agricultural implement and effectiveness	138
6.1.14	Formal group affiliation/organizational participation and effectiveness	139
6.1.15	Cosmopolitanism and effectiveness	140
6.1.16	Peer relationship and effectiveness	141
6.1.17	Innovativeness and effectiveness	142
6.1.18	Attitude toward agriculture and effectiveness	143
6.1.19	Attitude toward television and effectiveness	144
6.1.20	Risk orientation and effectiveness	145
6.1.21	Aspiration and effectiveness	146
6.2	Contribution of Selected Independent Variables on Effectiveness	147
6.3	Path Analysis	149

6.3.1	Innovativeness	150
6.3.2	Training	151
6.3.3	Education	153
6.3.4	Sustainable agricultural knowledge	153
6.3.5	Peer relationship	154
6.3.6	Agricultural knowledge	154
6.4	Focus Group Discussion	154
6.4.1	FGD-1	155
6.4.2	FGD-2	156
6.5	Case Study	157
6.5.1	Case study-1	158
6.5.2	Case study-2	159
6.5.3	Case study-3	160
6.5.4	Case study-4	161
Chapter 7: Problems and solutions for the Effectiveness of electronic media for Sustainable Agricultural Development		163-172
7.1	Problems in Effectiveness of Electronic Media as Perceived by Farmers	164
7.2	Solutions for Overcoming the Problems in Effectiveness of Electronic Media for Sustainable Agricultural Development	168
Chapter 8: Summary, Conclusion and Recommendations		173-198
8.1	Summary of the Key Findings	173
8.1.1	Introduction	173
8.1.2	Objectives	174
8.1.3	Hypothesis	174
8.1.4	Methodology	174
8.1.5	Findings	175

8.1.5.1	Effectiveness of electronic media	175
8.1.5.2	Agricultural programmes telecast by selected television channel	177
8.1.5.3	Characteristics of the respondents	177
1)	Age	177
2)	Gender	177
3)	Education	178
4)	Family size	178
5)	Family education	178
6)	Training experience	179
7)	Mass media exposure	179
8)	Supervision of crop production	179
9)	Agricultural knowledge	180
10)	Knowledge about sustainable agriculture	180
11)	Farm size	180
12)	Annual income	181
13)	Occupation	181
14)	Socio-economic status	181
15)	Ownership of agricultural implement	181
16)	Formal group affiliation/organizational participation	182
17)	Cosmopolitaness	182
18)	Peer relationship	184
19)	Innovativeness	184
20)	Attitude	185
a)	Attitude toward sustainable agriculture	185
b)	Attitude toward television	185
21)	Risk orientation	185
22)	Aspiration	186
8.1.5.4	Relationships and hypothesis testing	186

8.1.5.5	Contribution of the selected independent variables on effectiveness of electronic media for sustainable agricultural development	188
8.1.5.6	Path analysis for measuring direct and indirect effects of selected independent variables on effectiveness of electronic media for sustainable agricultural development	188
8.1.5.7	Problems in effectiveness of electronic media for sustainable agricultural development	189
8.1.5.8	Possible solutions	189
8.2	Conclusion	189
8.3	Recommendations	194
8.3.1	Recommendation for further study	197
	Bibliography	199
	Appendices	211-250

LIST OF TABLES

Tables	Page
Table 1.1 Consumption and import of urea fertilizer	4
Table 1.2 Area irrigated by different methods (“000” acres)	6
Table 1.3 Percentage of increase/decrease of irrigated area under different crops	7
Table 1.4 Consumption of major pesticides (mt or kl) during the year 1990 to 2011 in Bangladesh	8
Table 2.1 Distribution of sample population	41
Table 2.2 Scoring of mass media exposure	55
Table 2.3 Scoring procedure for the measurement of socio-economic status	59
Table 2.4 Scoring of cosmopolitaness	61
Table 2.5 Scoring of aspiration	68
Table 3.1 Agricultural television programmes of different TV channels	74
Table 3.2 Programme content of ‘Krishi Dibanishi’ at BTV and ‘Ridoeye Mati O Manush’ broadcast at channel <i>i</i> from Feb. 2004 to Mar. 2008	77
Table 4.1 General statistics on agriculture of Kurigram Sadar and Ulipur upazila	83
Table 4.2 Administrative units of Kurigram Sadar and Ulipur	84
Table 4.3 Monthly temperature of Rangpur region (°C)	85
Table 4.4 Monthly rainfall of Kurigram (mm)	86
Table 4.5 Area, Production and Yield of different crops (2011-2012)	90
Table 4.6 Area, Production and Yield of different crops (2011-2012)	91
Table 4.7 Area under different crops (Area in acres)	92
Table 4.8 Distribution of the farmers according to their age	94
Table 4.9 Distribution of the farmers according to their level of education	96
Table 4.10 Distribution of the farmers according to their family size	97

Table 4.11 Distribution of the farmers according to their family education	98
Table 4.12 Distribution of the farmers according to their training experience	99
Table 4.13 Distribution of the farmers according to their mass media exposure	100
Table 4.14 Distribution of the farmers according to their supervision of crop production	101
Table 4.15 Distribution of the farmers according to their agricultural knowledge	102
Table 4.16 Distribution of the farmers according to their knowledge about sustainable agriculture	103
Table 4.17 Distribution of the farmers according to their farm size	104
Table 4.18 Distribution of the farmers according to their annual income	105
Table 4.19 Distribution of the farmers according to their socio-economic status	107
Table 4.20 Distribution of the farmers according to their ownership of agricultural implement	107
Table 4.21 Distribution of the farmers according to their organizational participation	108
Table 4.22 Distribution of the farmers according to their level of cosmopolitaness	109
Table 4.23 Distribution of the farmers according to their peer relationship	110
Table 4.24 Distribution of the farmers according to their innovativeness	111
Table 4.25 Distribution of the farmers according to their attitude Towards sustainable agriculture	112
Table 4.26 Distribution of the farmers according to their attitude towards Television	112
Table 4.27 Distribution of the farmers according to their risk orientation	113
Table 4.28 Distribution of the farmers according to their aspiration	114
Table 5.1 Distribution of the farmers according to their cognitive effectiveness	116
Table 5.2 Distribution of the farmers according to their emotional	117

effectiveness	
Table 5.3 Distribution of the farmers according to their attitudinal effectiveness	118
Table 5.4 Distribution of the farmers according to their behavioural effectiveness	119
Table 5.5 Distribution of the farmers according to their total effectiveness	121
Table 6.1 The meaning of correlation coefficient 'r' values	124
Table 6.2 Coefficient of correlation between the selected characteristics of farmers and the effectiveness of agricultural television programmes for sustainability	125
Table 6.3 Summary of the stepwise multiple regression analysis showing contribution of the selected independent variables to the effectiveness of agricultural television programmes for sustainability.	148
Table 6.4 Path coefficients showing the direct and indirect effects of selected independent variables towards the effectiveness of agricultural television programmes	150
Table 7.1 Rank order of different problems in effectiveness of electronic media for sustainable agricultural development as opined by the farmers	166
Table 7.2 Solutions for problems in effectiveness of electronic media for sustainable agricultural development as opined by the farmers	169
Table 8.1 Farmer's characteristics profile	183
Table 8.2 Summary of hypothesis testing relating to relationship or the characteristics of the farmers with the effectiveness of electronic media	187

LIST OF FIGURES

Figure	Page
Fig. 1.1 Consumption of urea in Bangladesh	5
Fig. 1.2 Diffusion of innovation model.	24
Fig. 1.3 Conceptual framework of the study	34
Fig. 2.1 Flow Diagram of Study Area Selection.	37
Fig. 2.2 Kurigram district situated in Bangladesh	38
Fig. 2.3 Two Upazila of kurigram district	38
Fig. 2.4 Belgacha Union of Kurigram Sadar	38
Fig. 2.5 Dharanibari Union of Ulipur Upazila	38
Fig. 2.6 Map of three villages selected from Belgacha Union of Kurigram Sadar	39
Fig. 2.7 Map of three villages selected from Dharanibari Union of Ulipur Upazila	39
Fig. 4.1 Trend of average rainfall	87
Fig. 4.2 Category of Agricultural Land	89
Fig. 4.3 Cropping pattern (areas of land in acre)	93
Fig. 4.4 Distribution of the farmers according to their gender	95
Fig. 4.5 Distribution of the farmers according to their profession	106
Fig. 5.1 Effectiveness of electronic media from four aspects	120
Fig. 5.2 Total effectiveness of electronic media	122
Fig. 6.1 Direct and indirect effects of selected independent variables on effectiveness of electronic media for sustainable agricultural development	152

LIST OF APPENDICE

Appendix		Page
I	English version of the interview schedule	211
II	Fourteen Criteria of Edward (1957) for Editing Scale Items	232
III	A Layout of Final Scale of Effectiveness Scale of Electronic Media with 't' and 'r' value	233
IV	A Layout of Final Scale of Attitude Measuring Scale with 't' and 'r' value	239
V	A Layout of Final Scale of Risk Orientation Scale with 't' and 'r' value	241
VI	Agriculture programme list of BTV and chanel <i>i</i>	242

LIST OF ACRONYMS

Acronym	Full Meaning
AEO	Agriculture Extension Officer
AEZ	Agro-Ecological Zone
AIS	Agriculture Information Service
AWD	Alternating Wetting and Drying
BARC	Bangladesh Agricultural Research Council
BARI	Bangladesh Agricultural Research Institute
BBS	Bangladesh Bureau of Statistics
BINA	Bangladesh Institute of Nuclear Agriculture
BRAC	Bangladesh Rural Advancement Committee
BRRI	Bangladesh Rice Research Institute
BTB	Bangladesh Television
DAE	Department of Agricultural Extension
DAP	Diammonium Phosphate
FAO	Food and Agricultural Organization
Fig.	Figure
FYM	Farm Yard Manure
GDP	Gross Domestic Product
GO	Government Organization
ha	Hectare
HYV	High Yielding Variety
ICM	Integrated Crop Management
IPM	Integrated Pest Management
IRRI	International Rice Research Institute
kg	Kilogram
kl	Kiloliter
LCC	Leaf Colour Chart

Acronym	Full Meaning
MOA	Ministry of Agriculture
MOM	Mati O Manush
MOP	Muriate of Potash
mt	Metric Ton
NGO	Non Government Organization
RDRS	Rangpur Dinajpur Rural Service
RMOM	Ridoye Mati O Manush
S. Agri. Knowledge	Sustainable Agricultural Knowledge
SAAO	Sub Assistant Agriculture Officer
SPSS	Statistical Package for Social Science
SRDI	Soil Resources Development Institute
SSP	Single Super Phosphate
T. Aman	Transplanted Aman
TCA	Total Cropped Area
TSP	Triple Super Phosphate
TV	Television
UAO	Upazila Agriculture Officer
UMG	Urea Mega Granule
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UP	Union Parishad
USG	Urea Super Granule
WHO	World Health Organization

ABSTRACT

The study was taken to assess the effectiveness of electronic media for sustainable agricultural development, to explore the relationship of 22 independent variables with the effectiveness of electronic media for sustainable agricultural development and to dig out the contribution of independent variables to the effectiveness of electronic media for sustainable agricultural development. Data were collected from 187 farm family heads selected randomly from 1249 farm family heads of six villages of two different Union Parishad (UP) under two Upazila of Kurigram district. Primary data were collected from the farm family heads during January 2011 to June 2011 by a structured interview schedule. Selected 22 characteristics of farmers were considered as the independent variables and effectiveness of electronic media for sustainable agricultural development was the dependent variable. Variables were measured by appropriately fit measuring scale. Appropriate measuring scales were developed to measure the psychological variables also. Pearson's Product Moment Correlation Co-efficient (r) was computed to examine the relationships between the concerned variables. The findings showed that almost three fourths (68.45 per cent) of the respondent farmers had the medium effectiveness, less than one fifth (17.65 per cent) had high effectiveness and only 13.90 per cent had low effectiveness to utilize the electronic media for sustainable agricultural development. The findings of correlation revealed that education, family education, training experience, mass media exposure, agricultural knowledge, knowledge about sustainable agriculture, annual income, formal group affiliation/organizational participation, cosmopolitanism, peer relationship, innovativeness, attitude toward agriculture, attitude toward television had significant positive relationships with the effectiveness of electronic media for sustainable agricultural development, but age, family size, supervision of crop production, farm size, socio-economic status, ownership of

agricultural implement, risk orientation and aspiration did not show significant relationship with the effectiveness of electronic media for sustainable agricultural development. Six variables entered into the stepwise multiple regression analysis and results showed that among these variables innovativeness alone contributed more than half (53.3 per cent) of the total variation in predicting the effectiveness of electronic media for sustainable agricultural development. Training, education, sustainable agricultural knowledge, peer group affiliation and agricultural knowledge has also considerable contribution. Path analysis revealed that innovativeness, training, education, sustainable agricultural knowledge, peer group affiliation and agricultural knowledge of the respondents had substantial direct and indirect effect on the effectiveness of electronic media for sustainable agricultural development and were channeled through each other. The problem in relation to effectiveness of electronic media for sustainable agricultural development “unsuitable broadcasting time for farmers”, “limited number of agricultural television programmes”, treatment of viewers towards television only as entertainment equipment”, “available number of channel” and “lack of mechanism to measure feedback” were ranked 1st, 2nd, 3rd, 4th, and 5th respectively. The suggestions from the respondents “broadcasting agricultural programmes at suitable time for the farmers”, “increasing number of agricultural television programmes”, “emphasizing the sustainability of agriculture in television programmes”, “establishing specialized television channel for agriculture” and “counting feedback beside repeated broadcasting of agricultural programmes” were ranked 1st, 2nd, 3rd, 4th and 5th respectively according to the farmer’s response for the effectiveness of electronic media for sustainable agricultural development. The findings of the study were presented toward media personnel, extension experts, researchers and administrators to take effective action plan for their own field of experiment for the purpose of effective television in sustainable agricultural works.

Chapter 1

Introduction

1.1 Introduction

Television was treated as a powerful mass medium from its emergence. Within very short span of time it became the part and parcel of every family. Last few decades television has become a major industry in the world. Television became more ubiquitous, it also became more central to daily life, first as the focal point of family leisure and entertainment, and later as the primary outlet for news and information (Ott, 2007). The whole society in most of the countries is now under the coverage of television. But how it affects the audiences' psychology was the main question among the people from many years. There may have two types of impact of television on society— good or bad. In case of positive influence, it has been acclaimed to be one of the most important communication tools available today much of its success in teaching lies in the unique combination of sight, sound and motion. This coupling of audio and visual stimuli has proven that it can change human behavior (Carpenter, 1983). For that extraordinary capacity of attracting the audience it can use for development purpose. As a good social change maker it seems to be an effective medium among the mass media, which can be used effectively for agricultural technology transfer among the farming community (Muhammad, 2004).

Television has an important role to establish any new idea among the illiterate people. Because television is such a medium for which education is not compulsorily necessary. It is easy for the uneducated people to access the information because of its simultaneous audio-visual capacity. Moeller (1996) told that television is a very accessible medium, it has the potential to reach learners that have not been able to participate in traditional adult literacy programmes. Television is accessible both in terms of its technology and in terms of its content. The development of new visual technologies (e.g. video recording

and playback, CD-ROM and videodisk technology, multimedia computer technology) makes it possible to provide users with more control and interactivity and thus to adapt televised instruction to the needs of a variety of learners and learning styles.

Education level among the farmers is very low in Bangladesh. So, the effectiveness of mass media is basically depending on the success of the electronic media particularly for agricultural development. Because, illiteracy is the main cause for the failure of other mass media in case of agricultural development in Bangladesh.

Information is an important phenomenon for human life without which development is impossible. Before penetration of modern mass media in Bangladesh people got information from various sources. As for example, people got it from the *Charā* (verses), *Kabitā* (poetry), *Gān* (song), *Khanār Vacan* (talking of agri-expert Khana), *Probād Provacan* (proverb) etc. These were disseminated only orally. Emerged locally, these media were highly culture specific and took long time for expansion. Dissemination of information using these media was very time consuming. Dominick (1993) also told that before the emergence of a mass communication system, it took a long time for news and information to reach large numbers of people.

In ancient time, the indigenous knowledge on agriculture was disseminated through various indigenous channels which was environment friendly. For example, from the *Khanār Vacan* people learnt different agricultural methods and those were environment friendly. *Khanā* included livestock and dairy farming as important parts of agriculture. She gave a lot of importance to paddy as the most important crop and highlighted the merits of local fruits rich in food nutrients such as banana. To this day her sayings and advices have not proven wrong in spite of today's huge scientific advancement made in the agricultural sector.

Nowadays farmers are damaging the environment following the latest agricultural practices suggested by television. They have been made to think about the economic loss and profit keeping ecology out of their consciences and concerns.

Farmers, nowadays are producing more agricultural commodities, but at the cost of the ecological balance. It causes the social and environmental damage (Khanna, 1995). But if anybody goes to disclose the ancient history of Bengal, it will discover a glorious past of green agriculture in this area.

Indigenous knowledge helped farmers to produce required agricultural output through sustainable way. Van den Ban told about the indigenous knowledge. He said that the valuable knowledge gathered by farmers over generation ... is often neglected by researchers, although this information can be quite important for location-specific recommendations and for developing sustainable farming systems (Ban and Hawkins, 2002). Indigenous knowledge never damages the precious environmental balance.

Decreasing the gap between information need and information available is necessary to enhance the effectiveness of any media. Traditionally the messages distributed by electronic media, especially agriculture related, are entirely target oriented. However, although the target people can be reached by media there can have some other biological and social conditions which may affect the ultimate goal. Besides, the information disseminated thorough television may be wrong or misinterpreted. So, only the mutual coexistence is not enough to make any television programme effective. So, there is a vehement necessity to identify the factors which influence the effectiveness of electronic media for sustainable agricultural development.

1.2 Status of Sustainable Agriculture in Bangladesh

The first and foremost objective of our National Agriculture Policy 2013 (NAP, 2013) is to ensure sustainable and profitable agriculture production system. On the other hand, according to our National Food Policy 2006 (NFP, 2006) we are obstinate to adequate and stable supply of safe and nutritious food for people. In response to these policies various government wings are working in favor of sustainable agriculture. But the ignorance of farmers about correct doses of pesticides and chemical fertilizers and their limited skills of water resource management are deteriorating the sustainable agricultural development and

accelerating the environmental pollution. Besides, it is causing the depletion of ground water level. If the indiscriminate water extraction existence decade after decade the ground water scarcity will hamper agriculture production in the future.

1.2.1 Use of fertilizer and sustainable agriculture

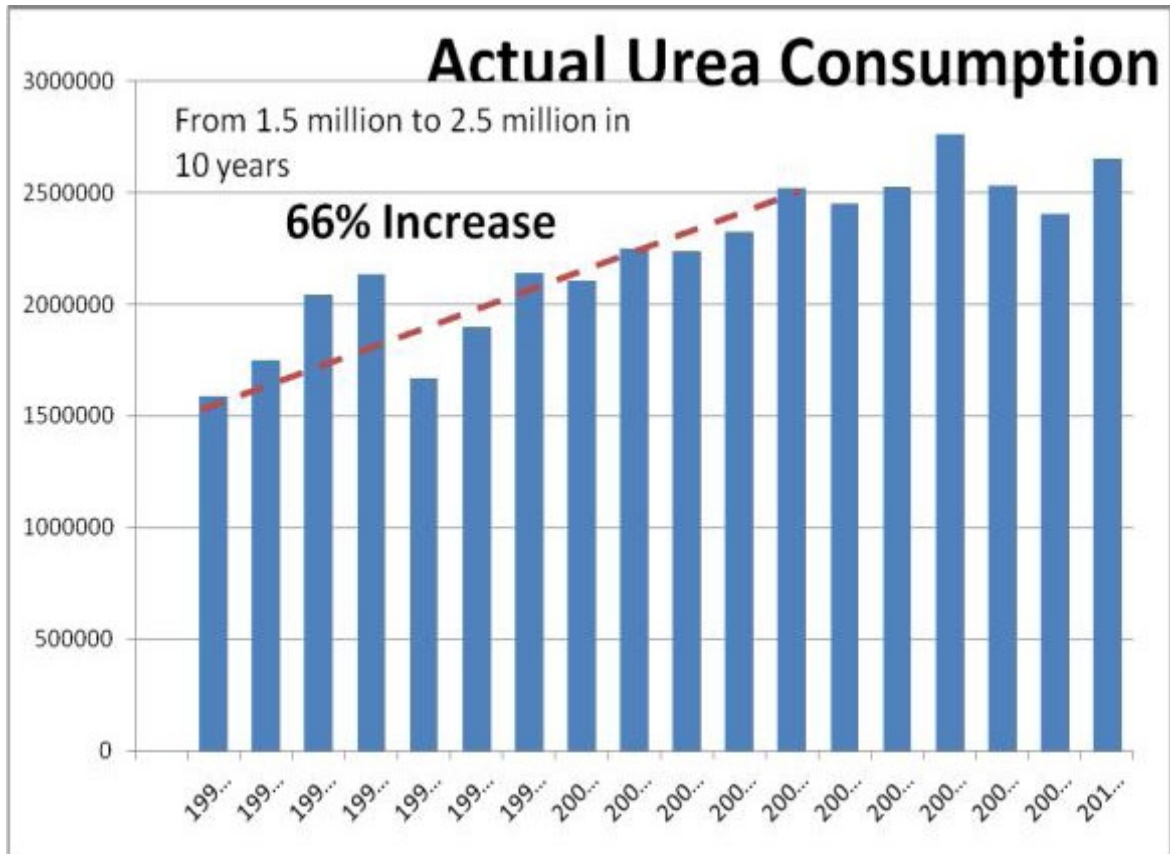
Profitable agriculture is the main way of the survival of farming activities in an agrarian society. The traditional and indigenous knowledge made the agriculture sustained for a long time in this area. However, population boom and indiscriminate occupation of agrarian land endangered the food availability and other fundamental demands of the population. Gap between the demand and supply of staple food caused the abominable famine in Bangladesh during the 40s to 90s of the last century. In that circumstances Bangladesh compelled to adopt chemical fertilizers as the catalyst of increasing food production. Besides, adoption of HYV crops compelled farmers to use chemical fertilizers and pesticides replacing their past environment friendly agricultural practices. It also helped farmers to make agriculture profitable. Because, the large and medium farmers, who were early adopters of new technology, were benefited more from higher use of fertilizer (Akanda, 2008). In this circumstances, managing over population and lower agricultural land paved the way to make relationship between agriculture and using chemical fertilizers. Table 1.1 shows the consumption and import of urea fertilizer in Bangladesh from 2005-06 to 2010-11.

Table 1.1 Consumption and import of urea fertilizer

Sl. No	Financial year	Import in MT	Total consumption
1	2005-06	771,521	2,451,375
2	2006-07	651,972	2,527,795
3	2007-08	1,162,823	2,762,783
4	2008-09	1,440,341	2,532,966
5	2019-10	1,465,582	2,408,000
6	2010-11	1,813,671	2,655,044

Source: BBS (2010) and Ahmed (2011)

Table 1.1 shows that each and every year the import and consumption of nitrogen fertilizer has increased. Farmers mainly depend on urea fertilizer to meet the nitrogen needs of high-yielding rice varieties in Bangladesh. Most farmers broadcast urea into the floodwater. But broadcasting is a highly inefficient application method because most of the nitrogen is lost to the air and water. Only one bag of urea in three is used by the plants (Science Daily, 2007).



Source: Ahmed (2011)

Fig. 1.1 Consumption of urea in Bangladesh

Fig. 1.1 shows that each and every year the usage of nitrogen fertilizer has increased. From 1993 to 2010 it increased about 66 percent. Excessive usage of nitrogen fertilizers compels farmers to irrigate more water to their land than the land where they use compost or other organic manure. Besides, chemical fertilizers mix with water and make it contaminated.

1.2.2 Irrigation and sustainable agriculture

The total land area of Bangladesh is about 14.4 million ha (approximately 21.24 million acres), of which about 66.6% is available for cultivation. Depending on the flooding depth, the land is categorized as high land (20%), medium highland

(35%), medium lowland (20%), lowland (8%) and very lowland (1%) (Bhuiyan, Banglapedia). But in dry season all types of agricultural land need to irrigate. It is estimated that surface water supplies are inadequate in Bangladesh to meet the total potential demand for irrigation. The patterns of rainfall distribution, physiographic condition and soils necessitate the development of irrigation in most part of Bangladesh (Ahmed, 1976). But a continuous and wholesale extraction of ground water can causes the depletion of it. Farmers face problem for irrigation in dry season. If this malpractice continues after a time being farmers will be unable to rear their farming activities due to the unavailability of ground water. Table 1.2 shows the continuous increasing in areas of cultivable land covered by different irrigation method from 2003-04 to 2010-11.

Table 1.2 Area irrigated by different methods (“000” acres)

Year	Power pumps	Tube wells	Canals	Traditional sources	Total
2003-04	1940	9177	359	718	12194
2004-05	1982	9252	-	1207	12441
2005-06	2191	10583	-	1068	13842
2006-07	2371	11161	-	1037	14569
2007-08	2560	11623	-	9630	15145
2008-09	2702	12129	-	875	15706
2009-10	2696	12619	-	871	16186
2010-11	2747	13297	-	860	16904

Source: BBS (2010), BBS (2011c).

The total area under irrigation is increasing continuously which is found out in the table 1.2. Table 1.2 shows the increasing number of land under irrigation system in each and every year. It was 12,194 thousand acres in 2003-04 while in 2010-11 it covered 16,904 thousand acres of land. Besides growing acreage the quantity of irrigation is increasing day after day because of growing cropping intensity.

Here we see that the usage of power pump and tube wells is increasing in a constant proportion. However, both of the irrigation systems extract ground water. On the contrary, the surface water irrigation system is decreasing in every year. Unfortunately, there is no canal irrigation from 2004-05 to till now because of

extinction of canals from Bangladesh or lack of water of the canals. The other traditional irrigation systems are also declining day by day.

Table 1.3 Percentage of increase/decreases of irrigated area under different crops

Name of Crops	Irrigated area 2009-10	Irrigated area 2010-11	Percentage of increase/decrease	
			2009-10	2010-11
Aman	1549	1715	(+) 9.32%	(+) 10.72%
Boro	11025	11313	(+) 0.56%	(+) 2.61%
Wheat	806	856	(-) 2.07%	(+) 6.20%
Sugarcane	138	140	(+) 12.20%	(+) 1.45%
Cotton	32	48	(+) 146.15%	(+) 50.00%
Potato	911	942	(+) 10.42%	(+) 3.40%
Vegetables	713	737	(+) 16.50%	(+) 3.37%
Others	1012	1153	(+) 8.93%	(+) 13.93%

Source: BBS (2011c).

Table 1.3 exhibits that most of the agricultural crop need irrigation. It is increasing in every consecutive year also. However, Boro rice consumed more water than the others because of its maximum coverage. On the other hand, rice needs more irrigation than other crops. So the percentage of usage of water in agriculture is increasing dramatically.

1.2.3 Use of pesticide and sustainable agriculture

Pesticide refers to the chemicals used to control insects, herb, fungus, rodent etc. for agricultural purpose. The consumption of insecticides, herbicides and fungicides is increasing every year in Bangladesh. Pesticide was first introduced in Bangladesh in 1951. About 2 tons of pesticides were imported in 1956-57 and the quantity was raised to about 8000 metric tons in 1993 (Rahman and Alam, 1997). Harmful level of presence of these chemical in the components of environment poses a perpetual risk on human health. It can reduce the reproductive capability and affect the offspring by accumulating in the food chain. In spite of this type of impact of pesticide the usage of it is increasing day after day. Small farmers used relatively more improper doses than medium and large

farmers because of their lower level of literacy (Akanda, 2008). Table 1.4 shows the consumption of major pesticides in Bangladesh.

Table 1.4 Consumption of major pesticides (mt or kl) during the year 1990 to 2011 in Bangladesh

Year	Insecticide	Fungicide	Herbicide	Rodenticide	Total pesticide
1990	6740.50	316.46	104.79	20.24	7161.75
1991	6554.70	361.48	98.58	40.44	7014.76
1992	6725.43	450.27	89.86	41.08	7265.56
1993	6926.32	565.48	111.38	57.11	7603.18
1994	7100.51	541.87	139.15	66.06	7781.53
1995	8419.19	584.93	140.02	76.97	9144.14
1996	10286.79	826.32	149.64	91.88	11224.89
1997	10242.95	862.20	159.88	101.82	11367.20
1998	10545.01	734.71	239.15	91.74	11610.60
1999	12840.40	1065.42	315.14	119.22	14340.18
2000	13768.10	1430.01	271.10	122.06	15632.24
2001	12320.00	2148.00	939.00	70.30	15398.61
2002	13974.00	2419.00	964.00	36.43	17393.43
2003	13767.00	2941.00	1354.00	1856	18080.36
2004	14351.00	4279.00	3463.00	23.08	22115.85
2005	16896.21	5771.75	2774.94	23.54	25466.43
2006	19531.00	8710.00	3205.00	15.00	31521.00
2007	23606.00	10228.00	3825.00	10.00	37731.00
2008	30168.00	14426.78	4024.77	68.18	48690.19
2009	27000.56	14353.67	3697.86	62.38	45172.43
2010	25494.56	13320.14	3346.12	79.81	42240.63
2011	19912.00	11835.00	2222.15	40.33	34014.26

Source: BBS (2010), BBS (2011b), AIS (2011) and Kamaly (2011).

Table 1.4 shows that in 1990 farmers used 7161.75 mt. pesticides while it was increased into six fold (42240.63 mt.) in 2010. But to the contrary, France had set a voluntary target of halving pesticide use (Reuters, 2015). Various types of pesticide usage are increasing in every year because of the commercialization of agriculture and dependency of the exotic seed which is mainly supplied by the multinational companies. The seed suppliers advise to use prescribed pesticides and fertilizers for certain seed because of their vulnerability to cope with unusual

weather and insect attack than the domestic seed. The whole agricultural process is going to be environment unfriendly by this way.

1.2.4 Effects of agrochemical on sustainability

An agrochemical is any substance used to help manage an agricultural ecosystem, or the community of organisms in a farming area. Agrochemicals include: (1) fertilizers, (2) liming and acidifying agents, (3) soil conditioners, (4) pesticides, and (5) chemicals used in animal husbandry, such as antibiotics and hormones. Agrochemicals have many negative effects on environment. Excessive use of fertilizers has led to the contamination of groundwater with nitrate, a chemical compound that in large concentrations is poisonous to humans and animals. In addition, the runoff of fertilizers into streams, lakes, and other surface waters can increase the growth of algae, leading to the death of fish and other aquatic animals. Consecutive use of pesticides makes the pest adaptable to it. It endangers the life of useful pests.

1.3 Statement of the Problem

In ancient time the economy of Bangladesh was mainly depended on agriculture. There were many agricultural product produced from that time. The basis of the rural society's economy was agriculture. The main crops produced in ancient Bengal were paddy, mustard, sugarcane, vegetables like beans, fruits such as bananas, pomegranates, date palms, cocoanuts, mangoes, jackfruits, *myrobalan*, oranges and melons. Wheat, barley, millet, pulses of different kinds and betel leaves and betel nuts were also produced. (Husain, 2011). Historically in Bengal, land was the main form of wealth and agriculture was the main form of economy (Chowdhury, 1987). For that reason, the contribution of agriculture sector in our economy is also noteworthy so far.

The contribution of agricultural sector to GDP (Gross Domestic Product) was 20.83 percent in FY (Fiscal Year) 2007-08, 20.48 percent in FY 2008-09 and 19.41 percent in FY 2011-12. The overall contribution of the broad agriculture sector at constant price is projected at 20.16 percent of GDP in FY 2009-10 and 18.70 percent in FY 2012-13. Though the direct contribution of the agriculture

sector has decreased slightly, it has indirect contribution to the overall growth of GDP. Only the agriculture sector provides 43.6% of the country's total employment (BES, 2010) and (BES, 2013). For that reason, agriculture matters. It matters because it produces the food that feeds people and provides most of the jobs and incomes on which the world's most vulnerable people depend (Madeley, 2002). So, this can easily find out that it is not possible to develop our nation without giving emphasis on agriculture.

On the other hand, television is a medium by which we can inform mass people about any issue within a short span of time. It is possible to inform the farmers of our country about the latest agricultural invention by using television. According to Pandey and Tewary, "Mass media consisting of newspapers, magazines, traditional media, radio, TV and information technology are powerful opinion makers as they cover more people in less time and cost" (Pandey and Tewari, 2004). Print and electronic media such as newspapers, radio and television help extension agents to reach large numbers of farmers simultaneously (Ban and Hawkins, 2002). Bonfadelli *et al.* (2007) stated the role of mass media in diffusion of innovations. He argued that mass media are the first and most important source of information when farmers come to judging a new and complex technology. Therefore, the mass media play a crucial role in creating and shaping public opinion. The reason for this is that about any new public issue few people have the opportunity to experience the technology directly. People who want to learn about that new technology and which benefits or risks the new technology includes depend mainly on media reporting. So, mass media are useful sources of agricultural information to farmers (Alam and Haque, 2014).

Among the other mass media television is more important. Because people kept in their mind 84% of any information by watching (Haider, 2001). So, it is possible to teach the farmer about the process of farming high yielding variety with an environment friendly way by television easily. It is hopeful that government own television as well as privately own TV channels are broadcasting some agriculture-based programmes from long ago. Already there are some positive improvements also in this sector.

Though various efforts of improvement are in there, but the agriculture sector is facing a range of challenges for its development like over population, climate change, loss of agricultural land, infertile land, use of excessive pesticides, lack of inputs, improper irrigation etc. (Alam and Haque, 2014). We can see the farmers never follow the crop cycle properly. The cropping pattern is not scientific. The post-harvesting procedures are not suitable for the long term preservation of food grains. The marketing tradition is not effective to have more profit from the produced goods because of the lack of available information. On the other hand, people use more fertilizers and pesticides than the necessity (Reza, 2001). Sometimes they unnecessarily use these types of harmful chemical agents to produce more and more agricultural product. They are extracting ground water indiscriminately. But they do not want to give proper attention to the long time impact of these chemicals and over extraction against land and water and even against the total environment. It seems that television does not emphasize on broadcasting adequate programmes to make the people disillusioned about the environment unfriendly agriculture.

Once upon a time, people would just think about the more production in agriculture. They did not think about the long time fertility of the land because of the great danger of food insecurity of Bangladesh at near past. But, at present, the country is in such a situation that very soon she will be able to avail the food self-sufficiency. On the other hand, only the higher production of food cannot ensure the long time food security while it is damaging the environment. So, those days are not in distance, when people should think about the sustainable food security in place of somehow food security. But, only agricultural information cannot fulfill this target. Rather, there need to have the sustainable agricultural information by which agriculture can be developed in a sustainable way.

In this context, television can play an important role. It will inform the people firstly, and then educate them by the information, after educating the common people media persuade them to make a decision about the issue and finally media lead them to have an action. Melvin L. DeFleur stated five stages for adoption process which was also discussed by Everett Rogers. At first individual learns of

the existence of the new item (awareness stage) then if he feels interested seek more information about it (interest stage). In third stage he mentally applies the new item to his or her present and expected future situation and decides whether to try it (evaluation stage) next he applies the new idea on small scale (trial stage) and finally he uses the new item or idea continuously on a full scale (adoption stage) (DeFleur and Dennis, 1991).

But the television is not successful sufficiently in this concern. Most often, it delivers the information but never calculates the impact. Sometimes it tells about modern invention of agriculture, but never evaluates the accessibility of information to the farmers. Sometimes television's presentation and the people's perception is not the same. Besides it never considers the feedback. In this regard Ban said effective communication is extremely difficult without feedback about how the receiver interprets the source's message. ... As one-way communication usually has little effect (Ban and Hawkins, 2002). Television always tells about the usage of chemicals and pesticides but never tells about its consequences. So, the farmers are not well informed, even sometimes they are misinformed. The illiterate farmers cannot gather sufficient knowledge from television about what they should use and what they should avoid. Thus it is evident that effectiveness of electronic media for sustainable agricultural development may have a relationship with some other social, economic and psychological factors of a respondent. In this point of view, it is rational to initiate a study regarding this aspect. To deal with these issues the study determines to find out the answers to the following questions:

1. What is the extent of effectiveness of electronic media for sustainable agricultural development?
2. What types of television programmes are suitable for disseminating agricultural information in the context of Bangladesh?
3. What are the factors associated with or affect the effectiveness of electronic media for sustainable agricultural development?

4. What type of relationship having between the selected characteristics of the farmers and the effectiveness of electronic media for sustainable agricultural development?
5. What are the factors that contribute significantly to the reception of information from electronic media?
6. What are the problems faced by the farmers during the reception of agricultural information from electronic media?

From the above circumstances, thus it is essential to conduct a systematic study to find out **whether the electronic media have any effectiveness to disseminate agricultural information for sustainable development?**

1.4 Objective of the Study

Based on the problem statements, the following objectives has been taken as the objective of the study:

1. To examine the level of effectiveness of electronic media for sustainable agricultural development.
 - a) Cognitive effectiveness
 - b) Emotional effectiveness
 - c) Attitudinal effectiveness
 - d) Behavioural effectiveness
2. To find out the programmes of different television channels related to sustainable agricultural development.
3. To determine and describe the farmer's selected Personal, Economic, Social and Psychological characteristics.
4. To explore the relationship between the extent of effectiveness of electronic media for sustainable agricultural development and the selected characteristics of farmers.

5. To find out the contribution of selected characteristics of farmers towards effectiveness of electronic media for sustainable agricultural development.
6. To identify the problems for watching agricultural television programmes and solutions to overcome it.

1.5 Justification of the Study

Schramm (1964) discussed the use of mass media for national development fifty years ago. According to Rogers (1995) development communication refers to the uses to which communication are put in order to further development. From the early stage, when people were feared of the violent impact of mass media, the opportunity of using mass media for development purpose was also introduced. The impact of television on society is omnipotent. Because of the audio-visual and motion capacity television gets more priority among the other mass media.

Historically Bangladesh is an agriculture dependent country. The pace of development of this country will grow high if we can develop it agriculturally. Communication technology can increase the rapidity of development easily. TV media produce some agriculture related programmes. Most often they broadcast the story of successful farmers, new variety, new technology, fertilizer, pesticide, high yield related programmes. Television played a very important role to introduce new variety and new technology. But there is no mechanism to judge the new born technology or variety whether it is environment friendly or human health friendly. On the other hand media personnel who have limited knowledge about sustainable agriculture are the producer of agricultural programmes. Besides, the viewers of agricultural programmes have different social, cultural and psychological characteristics, which may affect the effectiveness of electronic media. So there must be some problem occur to establish a sustainable agriculture by using electronic media. Considering the above fact, the present study entitled “Effectiveness of Electronic Media for Sustainable Agricultural Development: An Investigation into TV Programmes” has been undertaken.

1.6 Scope and Limitation of the Study

There are some scope and limitation in this study like other research. They are as bellows—

1.6.1 Scope of the study

The study is designed to explore the role of electronic media in disseminating agricultural information for sustainable development. It will cover the accessibility to the media of the farmers and the problems of accessibility. It is expected that the final result of this research work will help the farmers and the media personnel to do better regarding agricultural information reception and dissemination with the insight looking of sustainable agriculture. The findings of the study will be helpful for the researcher, students, extension worker and academicians also.

1.6.2 Limitation of the study

This research work has some of the limitations as like as the other research work. In this study it was not cover the whole Bangladesh as its research area. It covered just six villages under two different Upazilas of Kurigram district. So, it may be a limitation of this research.

Secondly, farmers are not dependent only the electronic media for their agricultural information. They also use various sources of information for developing their knowledge by consciously or unconsciously. But in this study the researcher could not include all of the source of information. It was just confined into two television channels among the various electronic media such as radio, television, online newspapers and mobile etc.

Thirdly, in this research only 22 characteristics of farmer was considered as the independent variables. But farmers have many more characteristics.

Fourthly, for the collection of data the researcher was depended only on the respondent's memory.

Fifthly, the researcher included the family and farm head for his sample population. But in a joint family one or more family member could be the decision maker. But for the convenience of the researcher and for the ultimate completion of research work within the time frame researcher just favoured to include the family and farm head.

Sixthly, the study was confined only within the farmers who have some television exposure.

1.7 Definition of Key Terms

1.7.1 Effectiveness of electronic media

According to Merriam Webster dictionary effectiveness refers to the capacity to persuade or the power to produce a desired result. On the other hand, electronic media refers to the broadcast or storage media that take advantages of electronic technology. They may include television, radio, internet, fax, CD-ROMs, DVD and any other medium that requires electricity or digital encoding of information (Business Dictionary, 2010). Thus, electronic media are the tools or technologies that facilitate dissemination of information and entertainment to large numbers through audio and visual impact.

Effectiveness of electronic media refers to the capacity to persuade the audience or the power to produce a desired result by disseminating her information. In this research the effectiveness of electronic media found out from sustainable agricultural development perspective.

1.7.2 Sustainable development

Sustainable development, the term first became generally known as the result of its use in the UN World Commission on Environment and Development's report *Our Common Future* (also known as the Brundtland Report), published in 1987. The report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987).

1.7.3 Sustainable agriculture

Sustainable agriculture refers to “farming that makes the best use of natural goods and services while not damaging the environment. It minimizes the use of non-renewable inputs (pesticides and fertilizers) that damage the environment or harm the health of farmers and consumers. In addition, it makes better use of the knowledge and skills of farmers (Duesterhaus, 1990). The application of husbandry experience and scientific knowledge of natural processes to create integrated, resource conserving farming systems, based on respect for the people and animals involved which reduce environmental degradation, and which promote agricultural productivity and economic viability in both the short and long term. It includes long-term maintenance of natural resources and agricultural productivity, minimal environmental impacts, adequate economic returns to farmers, optimal production with minimized chemical inputs, satisfaction of human needs for food and income, and provision for the social needs of farm families and communities (Hardin *et al.*, 1991). Sustainable agriculture integrates three main goals— environmental health, economic profitability, and social and economic equity.

1.7.4 Sustainable agricultural development

Sustainable agricultural development refers to that type of progress which helps farmer to conduct an environment friendly agriculture. Following the way of agriculture farmers can produce such type of food which is harmless for people’s health. Economically it is profitable. It ensures the long time productivity in agriculture also. For ensuring sustainable agricultural development some components should be looked after. They are as follows:

1.7.4.1 Integrated pest management (IPM)

Integrated Pest Management (IPM) is the coordinated use of pest and environmental information with available pest control methods to prevent unacceptable levels of pest damage by the most economical means and with the least possible hazard to people, property, and the environment. To control the insects, weeds and other pest problems IPM use mechanical trapping devices,

natural predators (e.g., insects that eat other insects), insect growth regulators, mating disruption substances (pheromones), and if necessary, chemical pesticides. The use of biological pesticides is an important component of IPM. It works with four consecutive steps. In early stages farmers set an action threshold when they use their mechanism to control pest. Sighting a single pest does not always mean control is needed. Knowing the level at which pests will either become an economic threat is necessary to control them. Not all insects, weeds, and other living organisms require control. Many organisms are innocuous, and some are even beneficial. So in second step IPM programs work to monitor for pests and identify them accurately, so that appropriate control decisions can be made in conjunction with action thresholds. In third step farmers are encourage in rotating between different crops, selecting pest-resistant varieties, and planting pest-free rootstock. These control methods can be very effective and cost-efficient and present little to no risk to people or the environment. Once monitoring, identification, and action thresholds indicate that pest control is required, and preventive methods are no longer effective or available, IPM programs then evaluate the proper control method both for effectiveness and risk in last stage. Effective, less risky pest controls are chosen first, including highly targeted chemicals, such as pheromones to disrupt pest mating, or mechanical control, such as trapping or weeding. If further monitoring, identifications and action thresholds indicate that less risky controls are not working, then additional pest control methods would be employed, such as targeted spraying of pesticides. Broadcast spraying of non-specific pesticides is a last resort (EPA, 2012).

1.7.4.2 Chemical fertilizers

Chemical fertilizers referred to the materials of synthetic origin which are added to soil to provide one or more plant nutrients. For example Urea, Triple Super Phosphate (TSP), Muriate of Potash (MOP) etc. are the commonly used chemical fertilizers in agriculture. It is an important ingredient for high productivity in agriculture. Environment friendly sustainable agriculture suggests using proper dozes and proper ways of usages of chemical fertilizer.

1.7.4.3 Pesticides

A pesticide is any substance used to kill, repel, or control certain forms of plant or animal life that are considered to be pests. Pesticides include herbicides for destroying weeds and other unwanted vegetation, insecticides for controlling a wide variety of insects, fungicides used to prevent the growth of molds and mildew, disinfectants for preventing the spread of bacteria, and compounds used to control mice and rats (NIEHS, 2015). Because of the widespread use of agricultural chemicals in food production, people are exposed to low levels of pesticide residues through their diets.

1.8 Literature Review

The review of literature portrays a vivid picture about the investigating issue. It represents a background of the research issue and helps to understand it in a proper perspective. It will help to understand the research gap and the future potentiality of new research. In this perspective some of the relevant books, articles and research work have been reviewed.

Effectiveness of mass media is an old research issue in the arena of media research. How much media can influence an audience was the key asking of researcher for decades. The effects of mass media described within three to four different phases. In the first phase (1920s-1940s) it was believed that media (movies and radio) has a direct, immediate and powerful effect on its audience. In the history of media effects, a "direct effects era" was dominant for a long period of time.

But these opinions mainly based more on anecdotal evidence than on empirical research. Sometimes it was described as the hypodermic needle or bullet theory. Lasswell (1927) in his PhD dissertation titled "Propaganda Technique in the World War" studied propaganda and concluded that the media could be used to change behavior: convince soldiers of their duty, get housewives to change food habits, improve morale of new recruits. It was assumed that the audience is passive and uncritical.

In second phase, approximately 1940s to 1960s, the effect of mass media was described within the context of 'Minimal Effects Theory'. Here people appear to be far more influenced by friends and acquaintances than by the media. Because, influential persons pick up new ideas from the media and pass them on to their followers through personal influence. Some communication researchers have claimed that the media only reinforce preexisting styles of behavior but cannot create new ones (Klapper, 1960). Because it is often non-purposive; it is flexible; it is trustworthy. It was suggested that the mass media more often play a reinforcing role in the strengthening of predispositions and of decisions already taken (Katz, 1957).

Lazarsfeld *et al.* (1944) conducted two massive studies of voter behavior and opinion during an election, concluding that the media had very little direct effect on voter's choices. Media has limited effects because audiences are stubborn and insulate themselves against contradictory messages. Some researchers believe that narcotizing dysfunction causes people to withdraw and become passive.

McQuail (1998) discussed the effects of mass media within 4 phases. In the first phase he agreed that media were credited with considerable power to shape opinion and belief, to change habits of life and to mould behavior actively more or less according to the will of those who control the media and their contents. In the second phase he also consented that the power of media is not limitless. Because the new methodology and some other new variables come forward in mass media research which proved that mass media is not out of influence of other related environment.

But in the third phase when television arrived in 1950s and 1960s as a new medium with even more power of attraction than its predecessors and with seemingly major implications for social life, he disagreed with minimal effect theory. So it was identified as returned to the concept of powerful mass media for its visual and voice contact at the same time.

In the fourth phase, 1960s to present, the effects of mass media are describing within the 'Cumulative Effects Theory'. Here media can have both powerful and

limited effects on an audience, depending on their situational factors. Because researchers got the evidence that mass media works within the social context where many factors work to develop their attitude, beliefs and values. As effectiveness of mass media depends upon the knowledge, emotion, attitude and practice of the respondents so, their personal, economic and social characteristics can play an important role to the decision making process. Here mass media is more influential during periods of unrest, when people are uncertain and it is more influential on some personalities than on others.

Klapper (1960) in his book titled 'The Effects of Mass Communication' gave more emphasis toward the social and psychological factors that would mediate the direct effects of the mass media. Klapper argued that because of these mediating factors, the media would operate far more frequently to reinforce a person's behaviours, attitudes and values than they would to change them. Based on his research, he concluded that although the mass media do not necessarily cause viewers to become more apathetic, passive, or aggressive, they might reinforce tendencies already present in the viewers.

Karim (1965) undertook a study to identify the communication media used by the cotton farmers of North Central Texas. The study followed the systematic sampling method to select 100 of the sample population from ten county of Texas. In this study the researcher found that the cotton farmers used extensively the indirect contact method, that is, neighbor and friend contact. Almost all the cotton producers gave much importance to their personal experience. The interesting matter is that the farmers gave least importance the radio and television (Karim, 1965).

In 1970s the agenda-setting theory was formulated by Maxwell McCombs and Donald L. Shaw (McCombs and Shaw, 1972). It became one of the most influential perspectives of media effects research. It rested on the assumption that media do not tell people what to think, but what to think about. This represented a general shift from attitudes to cognitions as media effects phenomena. The agenda-setting function of mass communication means that mass media cover news events selectively on the basis of media gate keeping processes. On the other

hand 'Uses and Gratifications Studies' regarding the effects of mass media explore that audience watch that programmes which fulfills their demand. It describes why people use the media- for surveillance, for socialization or for diversion. Besides, consistency theory says that people tend to watch and read what they agree with.

Bhuiyan (1974) conducted a study on radio as a method of extension teaching. The study followed the simple random sampling technique to choose 81 sample populations from the total 300 populations. In this study the researcher showed a significant relationship between the farm size and time spent in listening radio. Because the big farm holders employ laborers in their field so they themselves can use radio more than the farmers who work in his field own self. Another important finding of this study was that the message should be locality basis. Because on the basis of locality the necessity of information may different (Bhuiyan, 1974).

Parvez (1977) undertook a study in farmer's exposure to agricultural radio programme. The study followed the simple random sampling method to select 93 sample populations from the total 3153 populations. In this study the researcher found that agricultural radio programmes have a great potentiality. Findings of this study indicated that slightly more than two-third (67 per cent) of the farmers had high or medium exposure to agricultural radio programme. Among the five form of agricultural radio programme (lecture, discussion, interview, song and drama) farmers considered discussion as the most suitable method for presentation of agricultural information.

Schramm *et al.* (1981) carried out a study regarding educational television in American Samos. The findings of the study were published in book form titled "Bold Experiment: The Story of Educational Television in American Samoa". There they explained that television was introduced as part of a crash programme aimed at rapidly modernizing the school system. Television ushered in a new era (in what had been an isolated part of the South Pacific) with both negative and positive effects.

Islam (1988) conducted a study on the use of communication media in the adoption of improved farm method. Simple random sampling procedure was used in this study for the selection of 100 sample population from the total 1004 farm family head of Iswardi Union Parishad. The study indicated that age of the farmers had a significant but negative relationship on the use of communication media. Because comparatively the younger farmers use more communication media than those of older farmers. The findings showed that farmers with larger holding are expected to use more communication media than those having small farms (Islam, 1988).

Chakraborty (1992) conducted a study on the importance of the radio for extension works. The sample population of this study was 100. The simple random sampling procedure was used to select 100 sample populations from the total 10,000 population. Personal interview schedule was used to collect data. Findings showed that farmers use radio at morning, evening and night. So, the agricultural programmes should telecast at those times. It also showed that the locality mass programme is more fruitful (Chakraborty, 1992).

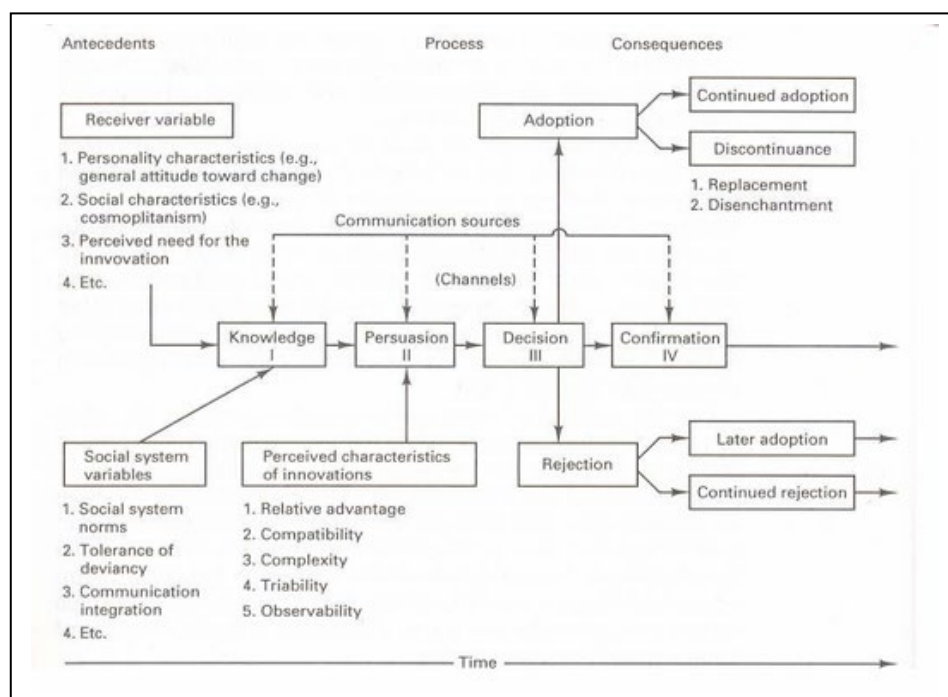
Islam (1995) undertook a study in use of communication media in receiving information on wheat technologies. The study followed the random sampling method to select 124 farmers from the total 478 respondents of selected 15 villages. The data collected from the research area by using interview schedule.

The study concluded that interpersonal communication media such as friends, relatives, neighbors, seed dealers, fertilizer dealer and pesticide dealer were used frequently by the farmers in receiving information on wheat technologies. Second important media were found are the individual contact media such as block supervisor, subject matter officer, thana agriculture officer, contact growers officer, contact farmer and farm and home visit. Mass media placed at the third important for information (Islam, 1995).

Khanna (1995) in his book discussed about planning for sustainable agricultural development. There the author described about the diffusion barrier for electronic media for agricultural development. The study found out that farmers showed less

enthusiasm towards electronic media because they got delayed response from these media when they face any problem in agricultural works and due to low level of literacy farmers are not able to understand technical expressions, which are used in agricultural programmes. Besides, many of the farmers were not aware of agricultural programmes featured in this media. The study expressed that modernization and commercialization of agriculture accelerated the environmental degradation. HYVs are more susceptible to diseases, HYVs require adequate chemical fertilizers and chemical fertilizer require more irrigation than organic manures. On the other hand, if chemical fertilizers are used once, in every subsequent year they have to be used in increased doses. Increased proportion of chemical fertilizers and pesticides make land infertile and environment damaged over a period of time.

Rogers (1995) in “Diffusion of Innovation” described the innovation process within four phases i.e knowledge, persuasion, decision and confirmation. The technologies in agriculture went to practice through these stages. The diffusion of innovation model suggested by Rogers has been presented bellow in Fig. 1.2.



Source: Rogers (1995)

Fig. 1.2 Diffusion of innovation model

Hasssanullah *et al.* (1996) conducted a study on Performance of Agricultural Extension Organizations of Bangladesh. In their study, researchers tried to find out the performance of agricultural organization using eight dependent and 119 independent variables. The sample populations were selected by purposive random sampling. The sample populations were 887 farmers and 437 service personnel. There they found out that the highest contributory variable was technology adoptability. The step-wise regression proved that among the other variables the explanatory power of P4 (Extension Technology-Resource-Management Process-Staff-Performance) was highly significant to explain the performance of AEOs.

Hossain (1996) conducted a study to understand the extent of usefulness of agricultural information received by the television viewer farmers from the agricultural programme of Bangladesh Television (BTV), '*Mati-o-Manush*' (Hossain, 1996). He used random sampling method for the selection of fifty per cent sample population from the total population. In this study the researcher found out that about 55% of the sample population has medium access to media and only 15% have the highest access.

Majdyan (1996) conducted a study named perception of the effectiveness of selected communication media used by the BAUEC farmers. In this study he used random sampling technique to select 100 sample populations from 554 farmers of five randomly selected villages under Sadar Thana of Mymensing district. The study found out that among 11 selected media farmers preferred block supervisor, result demonstration, neighbor and relatives and method demonstration highly, radio, village leader, television, newspaper, farm magazine and farm input dealer got moderate preference. Extension publication got the last level of preference.

Sarker (1996) conducted a study to find out the effectiveness of agricultural information disseminated by radio programmes. The study followed simple random sampling to select its sample population from the total 700 farm and family head of four villages. In his findings the researcher measured the effectiveness of agricultural information by considering timeliness, adequacy,

usefulness and applicability of information. According to the study one-fifths (20 per cent) of the farmers opined the agricultural information received from radio as low effective, 75 per cent as medium effective while only 5 per cent of the farmers considered the information as highly effective.

Dewary (1999) conducted a study titled “Mass Media and the growth of Agriculture with reference to Principal Crops in Bangladesh”. There he tried to explain the effectiveness of radio and television. Researcher selected the total 300 respondents from six villages from three different divisions. Respondents were selected by stratified random sampling technique. The study tried to analyze the importance of mass media in modernization of agriculture. It also reviewed the growth trend of mass media programmes on agriculture. In the study researcher saw that farmers faced many problems such as inadequate supply of quality seed-fertilizer-insecticides, decreased land fertility, high price of fuel, fertilizer and other necessary farm input and marketing problem of agro-product etc. On the other hand findings showed that the duration of agriculture programmes were not sufficient. So the findings suggested more agriculture programmes should be aired by mass media. It also gave the importance to broadcast some expert interviews so that the new invention of agriculture may get the ground of credibility.

Islam (2000a) argued that the success of pesticides in controlling pests on a short term basis cannot be denied, but their long term efficacy against pest, their overall effects on ecosystems (including human health) and environment are very much doubtful for two major reasons: (i) rapid evolution of new breed of pests, resistant to the pesticides applied, and, (ii) increasing pesticide hazards.

Islam (2001) conducted a study titled “Role of Communication to Protect Environment: Bangladesh Perspectives”. In this research researcher tried to identify how much mass media played their role to protect environment. Study found that Bangladesh Television (BTV) broadcasted a limited number of environment related programmes. It aired only 1.65% environment related programmes which was insufficient. But it can play the coordinating role to

increase awareness. The study suggested to broadcast increasing number of environment related programmes to overcome this problem.

Islam and Thompson (2001) showed the traditional aquaculture system and problems faced by the farmers in adopting new technologies. They told that farmers have traditional experience in aquaculture, and this has been influenced by mass media and farmer to farmer communication.

Reza (2001) tried to dig out the using pattern of fertilizer in the northern zone of Bangladesh. He found out that once upon a time organic fertilizer was very popular in the northern zone. But the inception of chemical fertilizer in 1950s to 1960s organic fertilizers was replaced by chemical fertilizers gradually. Modern irrigation system, high yielding variety paved the way to use more chemical fertilizers. Now the usage level of organic fertilizer is very low. Besides, the quality of organic fertilizer is not guaranteed. Farmers use much fertilizer in some years and less in the other years by imitating others. They have no own knowledge to use balanced fertilizer. To overcome the problem study suggested to take effective motivational programme and to build up strong communication network.

Islam (2002) in his article titled 'Present Situation of the Use of Folk Media in Development Communication: Analyzing Bangladesh Perspective' told that folk media like popular theatre, folk song etc. can be a powerful tool for bringing people together, raising issues and motivating them to talk about and do something about their problems. Indigenous media are more effective for giving location specific information to its audience. The study suggested making bondage with mass media to increase the fruitful role of folk media.

Madeley (2002) in his book "Food for All: The Need for A New Agriculture", tried to describe why agriculture is important for the development. He gave importance to the right kind of agriculture because it can make an important contribution to poverty alleviation, food security and economic growth and development. He told that agricultural modernization approach requires high technology, chemical fertilizers, high-yielding seeds, irrigation, and labour-saving

machinery... Farmers were told they could get higher yields with much less effort- from a bag of chemicals, for example, rather than applied knowledge. With high tech approach, many decisions were taken out of the hands of farmers and local people, thus decreasing local self-reliance and confidence. However, he argued that, it is now increasingly recognized that indigenous farming system, based on mixed cropping, soil and water conservation and biological pest management ... can produce more output and a wider range of harvest products, particularly in marginal environments.

Suliaman (2002) told that agricultural development is a complex process that is affected by the interaction and inter-relation of many factors. These factors range from natural resource endowment in a respective area, socio-economic, cultural and political factors. As a part of agricultural development in a certain agro-ecosystem, the agri-business involves the use of appropriate technology package, the provision of farm inputs, and the existence of infrastructures and supporting institutions such as financial and extension institutions, postharvest and marketing services of agricultural products.

Reddy (2003) in his chapter, Sustainable Development: The Gandhian Approach, stated the Gandhiji's concern for sustainable development. There he highlighted that everything in the universe is so interdependent that if a part or section is destroyed, it will affect the whole system. In other words if you harm others you are harming in the process yourself. For agricultural sustainability he suggested to give priority to minor irrigation. He gave the importance to harvest and manage every drop of rain water for using agricultural purpose. For better water management he uttered the Gandhiji's wish to focus attention on dry farming technology and extension services. Besides, the author emphasized to popularize the integrated pest management technique to lessen the environmental and health risk.

Muhammad *et al.* (2004) in their paper tried to assess the role of television in agricultural technology transfer. Data showed that majority of the respondents were unaware of the regular agricultural telecasts. Only 5.60% respondents were

found to be regular viewers and they preferred watching agricultural telecasts over other programmes. Feedback link between farmers and TV authorities appeared to be totally missing. Majority of the respondents watched agricultural telecasts rarely. A reasonable number was occasional viewers, and only a fraction of the respondents was regular viewers. This research was conducted only through field survey. No mass media selected for content analysis.

Mokwatlo (2005) found in his study that the information disseminated by the Agricultural Research Council (ARC)'s agricultural pamphlets is not effectively communicated because of the language and the arrangement of picture or frames used in the pamphlets, which confused most illiterate participants. So, there is a communication problem with the illiterate people. In this research it depicts that only dissemination is not effective but the understandability is an important factor for its effectiveness.

Akpabio *et al.* (2006) in their study named reportage of agricultural news in the pioneer newspaper (2004-AD) Nigeria, revealed that agricultural news was accorded a very low level of reportage, as they ranked 8th and 7th (out of 9 news items) respectively; in terms of prominence and frequency of reportage.

Dewary and Azad (2006) conducted a study on the role of private television channels for the development of agriculture in Bangladesh. They said that the role of private TV channel is very vital in the development of agriculture. This is a descriptive type of study. In this study they did not take any population for investigate the empirical side of it.

Irfan, *et al.* (2006) conducted a study to assess the role of mass media in the dissemination of agricultural technologies among farmers. In the study they have shown that the available technologies, if adopted by farmers according to the recommendations, can enhance agricultural production considerably. The study was conducted by using random sampling technique. But they did not analyze the content of any media. On the other hand they found that a vast majority of the respondents did not listen/watch agricultural radio/TV broadcasts regularly or occasionally. The major sources of agricultural information are fellow farmers

and pesticide agencies. Then the third important source of agricultural information is TV and the fourth important source is extension workers.

Oladosu (2006) conducted a study on the attitude of farmers towards extension agents in Ogbomoso Zone of Oyo State, Nigeria. Stratified sampling technique was used in the selection of one hundred farmers and thirteen extension agents as the sample for the study. Interview schedule and structured questionnaire were used respectively to elicit information from the respondents. The findings showed that majority of the respondents (farmers) had very favourable attitude towards the extension services. In the study researcher found that radio is the second important source of information to the farmer and television and newspaper got the fifth and eighth position respectively.

Eicher (2007) in his study titled “Agricultural Extension in Africa and Asia” shown that the progressive farmers are the most important source of information for smallholders, followed by input dealers, radio and television. The surprising finding of this study is that only 6% of the farmers in the national survey gained their information from extension workers.

Dewary and Azad (2007) attempted to find out the role of radio and television to rejuvenate the jute industry in Bangladesh. In the article they gave the time schedule of agriculture related programmes of different electronic media. They also told about some of radio center which broadcast agricultural program. They also took some of the newspaper article to authenticate their idea. But they did not discuss the content of the agricultural programmes. Besides they did not see the impact of that programmes upon the farmer. They told about the extensive role of radio and television to resurrect the jute sector. They gave a focus on how we can develop our agriculture by using radio and television (Dewary and Azad, 2007).

Akanda (2008), in his book titled Process of Agricultural Development in Bangladesh, discussed about the agricultural development process from different development policies and development theories. Author stated that small farmers used relatively more improper doses of pesticides than medium and large farmers

because of their lower level of literacy. On the other hand the large and medium farmers were the early adopters of Shallow Tube Well (STW).

Nooripoor *et al.* (2008) conducted a study named Integration of Communication Media for Horticultural Sustainability: The Application of Multiple Criteria Decision Making (MCDM). In their study they reveal that for different purposes different media are fruitful. The results of this study clearly demonstrated that the combination of communication media for sustainable horticulture is imperative.

Opara (2008) conducted a study in Imo State, Nigeria for identifying the sources of agricultural information available to farmers and the preferred sources for agricultural information of the farmers. In his methodology the researcher used field survey for collecting primary data by using stratified proportionate sampling. He only collected the data from the farmers but did not take any media for the content analysis. The result showed that 88.1% of the total population got the agricultural information from extension worker and the second important source of agricultural information is radio which attracts the attention of 63.2% of the total population.

Abubakar *et al.* (2009) conducted a study on the role of mass media in disseminating agricultural information to farmers. The study showed that access to mass media on agricultural information is mainly through radio and television, and most of them indicated that the media sources are conventional, accessible and preferred to listen to the agricultural programmes in the night time (8pm-11.59pm). The hypotheses tested showed a significant relationship between farmer's sources of agricultural information and relevance of information received in solving agricultural problems (Abubakar *et al.*, 2009).

Choudhury (2011) in his study tried to find out the role of media in development communication. He argued that from the very inception of TV in India it has been working for community development and formal education. By the television programmes they popularized the modern method in agriculture.

Khalil (2012) conducted a study titled "Adaptation Technique of Sea Shore Farmers of Bangladesh on the Perspective of World Climate Change". He studied

the issue using purposive sampling procedure. He found out that regarding weather report and warning most of farmers could not understand the information which they disseminate. The respondents suggested that the weather report should be disseminated through understandable language. Because, only the information like 5-10 ft high water rise and 140-180 km fast gusty wind does not make them aware how it could be devastating. So, respondents suggested to disseminate information using local language with the possible devastation.

Mancha (2012) in his study told that media plays significant role in transforming the various development activities and dissemination of information by the government for the tribal development. Media can act as a social change agent for social change and somehow they act as mediators to the tribes and providers of social and economic supports.

Uddin (2012) conducted a study on farmers' perception of modern variety potato production technologies in selected areas of northwest Bangladesh. The study tried to find out the farmers' perception and adaptation of modern variety potato production technologies and to explore relationship with the studied characteristics. Multi stage sampling procedure was used to select the 232 respondents from 20 villages of three Upazilas under Rajshahi district. Data were collected through structured questionnaire, case study and focus group discussion. The study found out that the slight majority 37.07% had medium perception compared to overall 36.64% high and 26.29% had low perception on potato production technologies by the farmers. Almost three fourths 73.71% of the potato producers had medium and high perception. Stepwise regression analysis showed that education had the highest (95.60%) contribution to the perception of farmers.

Alam and Haque (2014) tried to assess the contribution of television channels in disseminating agricultural information for the development of Bangladesh. They conducted their study at Durgapur Thana of Rajshahi district in Bangladesh selecting 60 respondents farmers randomly. In the study they collected data by using structured questionnaire. The study found that majority of the respondents

(45%) watches the agricultural information based programme in BTV and Mati O Manush broadcasted by BTV is preferred more respondents than the other agriculture related TV programmes.

Nian *et al.* (2014) in their study titled “Impact of land use change on water resource allocation in the middle reaches of the Heihe River Basin in northwestern China” found that the overuse of surface water and overexploitation of groundwater had direct consequences on the natural environments. They suggested that the efficiency of surface water resources use among different irrigation districts needs to be improved, which would significantly ease the conflicts between increasing water demand for irrigation and a shortage of water resources in the middle reaches of the Heihe River Basin.

Some of the previous research showed that media has significant role but some of the research indicated that only the mass media are not enough to have a positive change in agriculture especially in the field of sustainable agriculture. Mainly there were no research done before which could merely account the effectiveness of television programmes for sustainable agricultural development. After reviewing the related books, articles and other materials it seems that more research should be done regarding this issue.

1.9 Conceptual Framework of the Study

Primarily effectiveness of electronic media depends upon the information they disseminate. The frequency and duration of that programmes continuously increase the viewer’s cognitive, emotional, attitudinal knowledge and finally make their mind to practice it in their daily life. Besides, the social context of the audience plays an important role to adopt or reject anything. So, in an effectiveness measuring research the audience’s social context should be measured to understand the issue properly. Considering the information of electronic media and other media and the social, economic and psychological context of the respondents a conceptual framework was developed. The conceptual model has been presented in Figure 1.3.

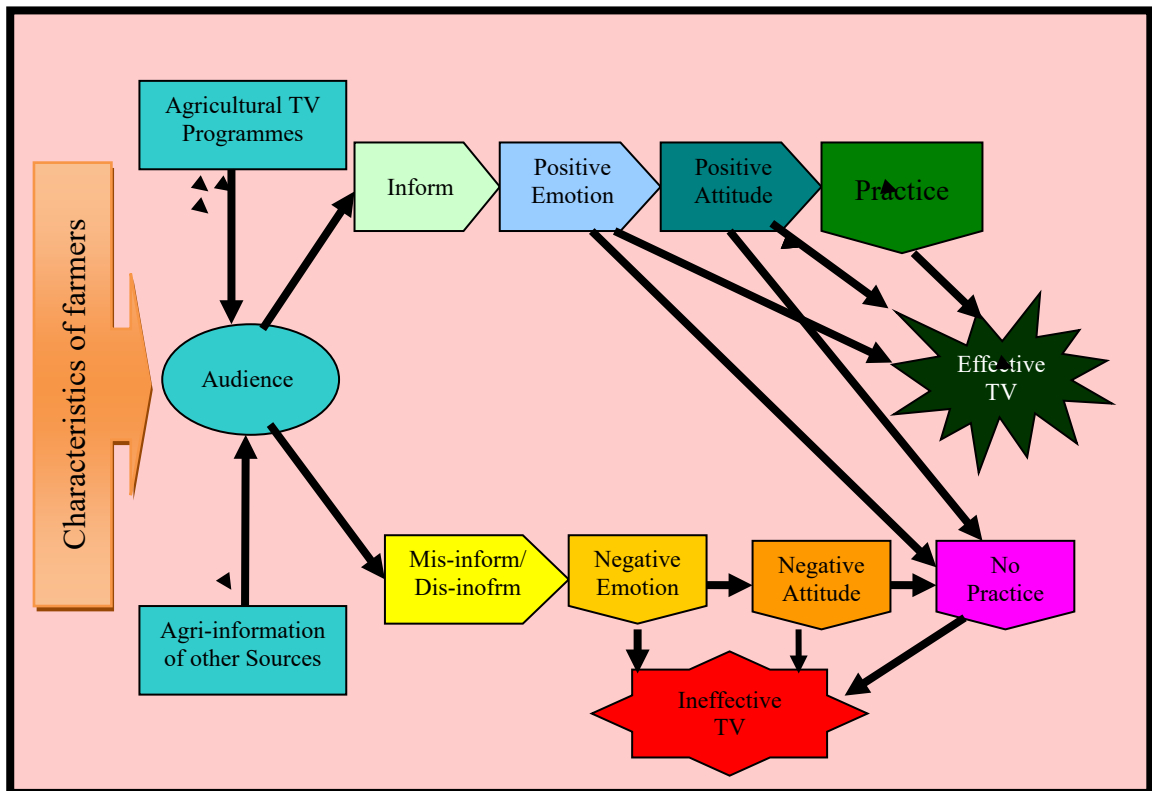


Fig. 1.3 Conceptual framework of the study

However, measuring all of the social characteristics of a farmer is not possible in a single study. So, considering the more important characteristics of farmers Ten personal, five economic, four social and three psychological characteristics were selected to measure the effectiveness of electronic media for sustainable agricultural development. The influences of the farmer's characteristics on the effectiveness of electronic media will be explored as per the expectation. The study will formulate some possible guidelines regarding sustainable agriculture for policy maker, researcher, media personnel and academicians.

Chapter 2

Methodology

The purpose of the chapter is to describe the procedure and method followed in this study to explore the objectives. It included the details of study location, sampling procedure, selection process of variables, measurement of variables, data collection techniques, analysis of data and statistical treatments.

2.1 Study Area Selection

As per the objectives of this research the study area was divided into two parts from two different aspects. Firstly two television channels were selected randomly to identify the agricultural programmes by content analysis. Analyzing the content of different television channels primarily researcher watched that Bangladesh Television (BTV) and Channel *i* broadcasted highest number of agricultural television programmes. They gave comparatively highest priority toward agriculture than the other television channels. On the other hand, BTV is the only terrestrial television channel of Bangladesh and it has the highest access to the people of Bangladesh especially to the rural people where the cable connection is not available. Researcher saw that these two television channels were most popular to the viewers who watch agricultural programmes. Besides, among the private television channels, channel *i* had the greater passionate toward agriculture. From this point of view researcher selected these two television channels purposively as the primary data source.

Secondly, to assess the viewer's opinion researcher chose to select a study area to collect primary data from them. The selection of the study area was made for the ultimate success of the research work. As it was an agriculture related research work so, the researcher had chosen to select an area which was dependent mainly on agriculture. Kurigram district was selected purposively. Because Kurigram is such an area which economy depends mainly on agriculture and most of the dwellers of this district are relied on agriculture. The failure of agricultural production causes a tremendous consequence to the farmers of this district. So it is

easy to have some handful information about agriculture from them. These villages also represent whole Bangladesh. Because, Bangladesh is a village dominated country, especially regarding agricultural development.

So the researcher selected six villages from two Union under two different Upazilas of Kurigram District as the research area. Firstly, two Upazilas was selected purposively among the 8 Upazilas of Kurigram district. Then two unions of these two Upazilas were selected purposively. Finally, three villages from each of the union were selected randomly. The area had been chosen by the researcher due to some reasons which are given below:

1. Agriculture land is the main earning source of this area. But over doses of agro-chemicals and pesticides is spoiling the land fertility which hampers the food productivity of this area. Besides, over and unnecessary use of ground water for agricultural works is causing the depletion of the level of ground water, for which in dry season farmers fail to extract adequate water from the pumps which is less than thirty feet deep in the research area.
2. Climatic situation and the soil condition of this area are very suitable for agricultural practices. So researcher thinks that more research should be done in this area to harvest the natural resource properly.
3. Researcher has the easy access in the study area, because personally researcher is the inhabitant of this area.
4. Lack of such research work in the research area provoke researcher to select this area.

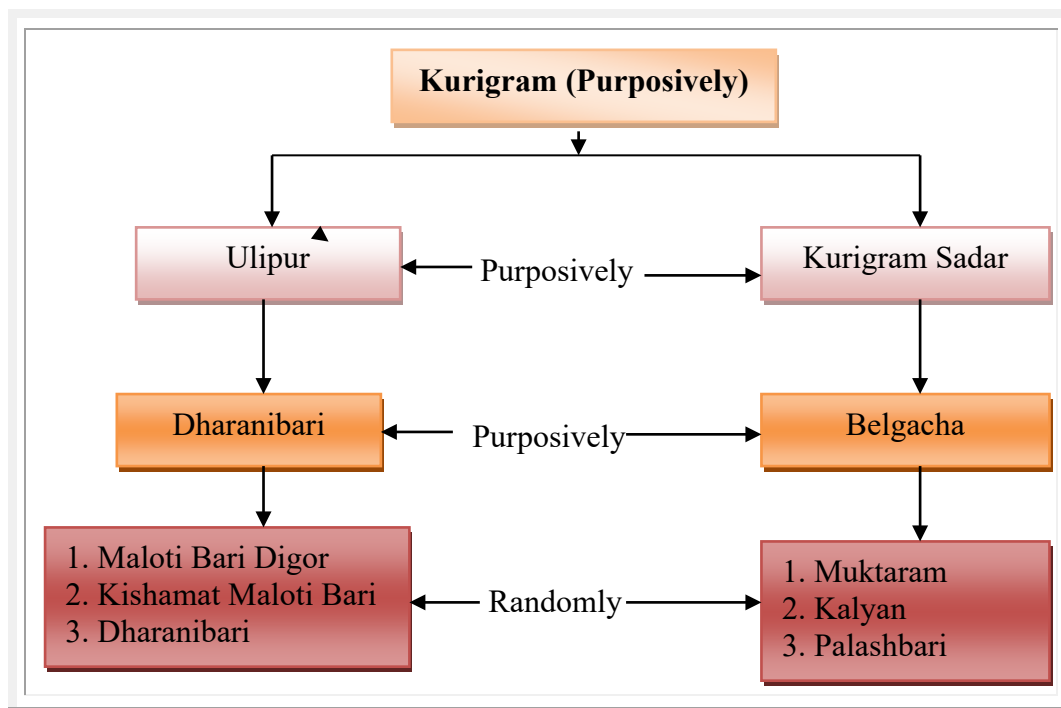


Fig. 2.1 Flow Diagram of Study Area Selection.

2.2 Location

Kurigram Sadar: The upazila occupies an area of 276.43 sq. km. It is located between 25°45' and 25°55' north latitude and between 89°34' and 89°50' east longitudes. The upazila is bounded on the north by Nageswari and Phulbari upazilas on the east by India, on the south by Ulipur upazila and on the west by Rajarhat upazila and Lalmonirhat Sadar upazila.

Ulipur: The upazila occupies an area of 504.19 sq. km. including 78.73 sq. km riverine area. It is located between 25°33' and 25°49' north latitude and between 89°29' and 89°51' east longitudes. The upazila is bounded on the north by Kurigram Sadar and Rajarhat upazilas on the east by India and Raumari upazila, on the south by Chilmari upazila and Sundarganj upazila of Gaibandha zila and on the west by Pargacha upazila of Rangpur zila and Sundarganj upazila of Gaibandha zila. Map of Kurigram district showing its two Upazila Kurigram Sadar and Ulipur and the three villages from each of the Upazila have been presented in Figure 2.2, 2.3, 2.4, 2.5, 2.6 and 2.7 respectively.

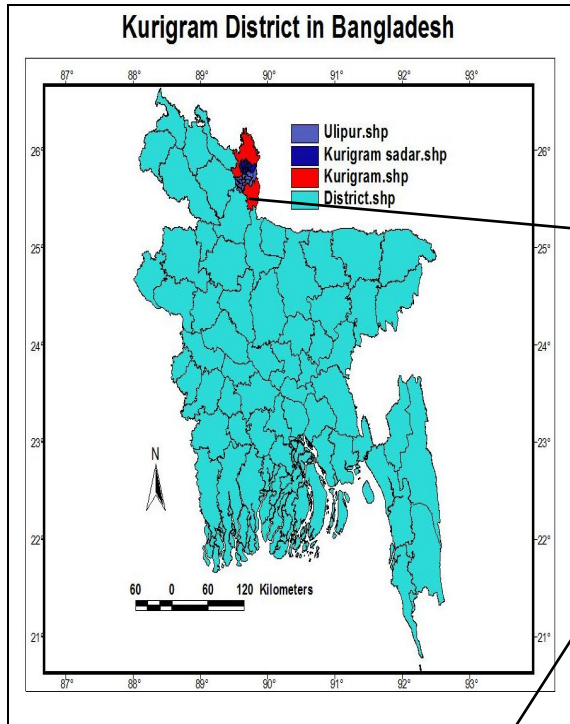


Fig. 2.2 Kurigram district situated in Bangladesh

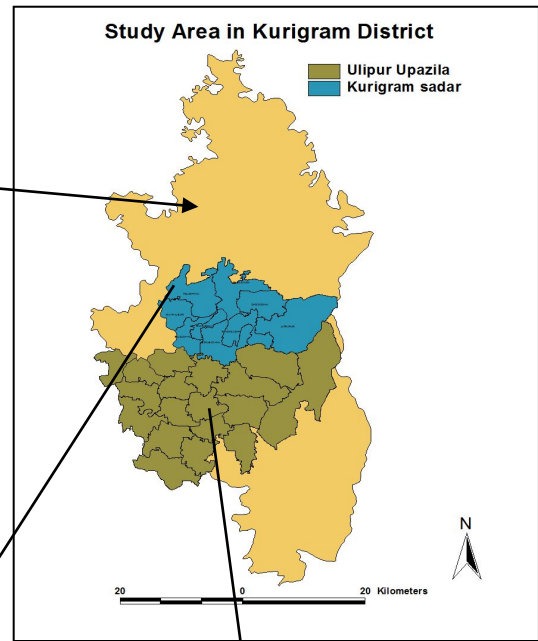


Fig. 2.3 Two Upazila of kurigram district

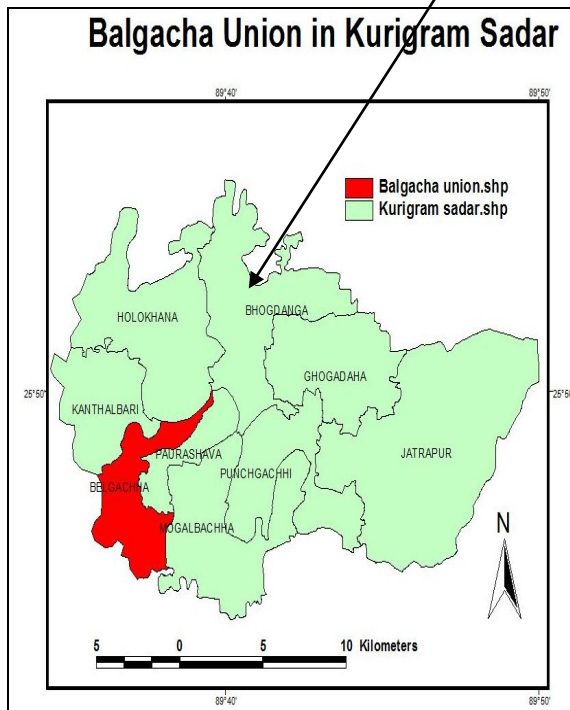


Fig. 2.4 Belgacha Union of Kurigram Sadar

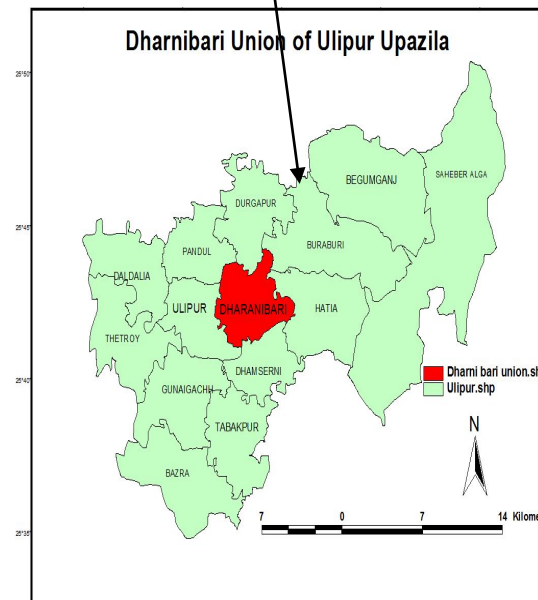


Fig. 2.5 Dharanibari Union of Ulipur Upazila

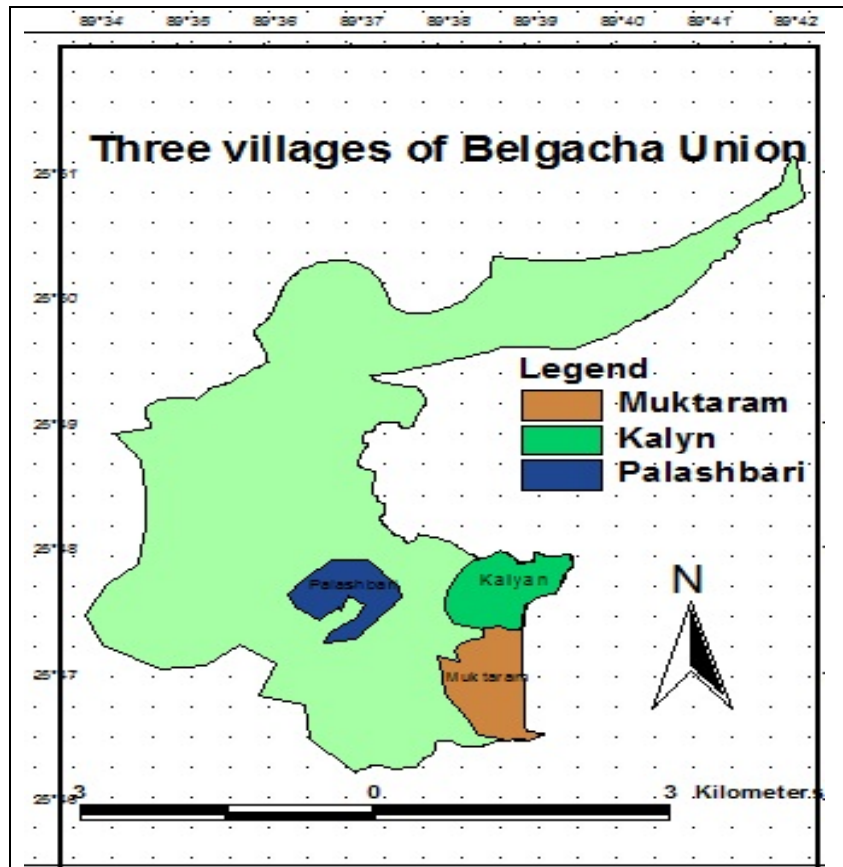


Fig. 2.6 Map of three villages selected from Belgacha Union of Kurigram Sadar

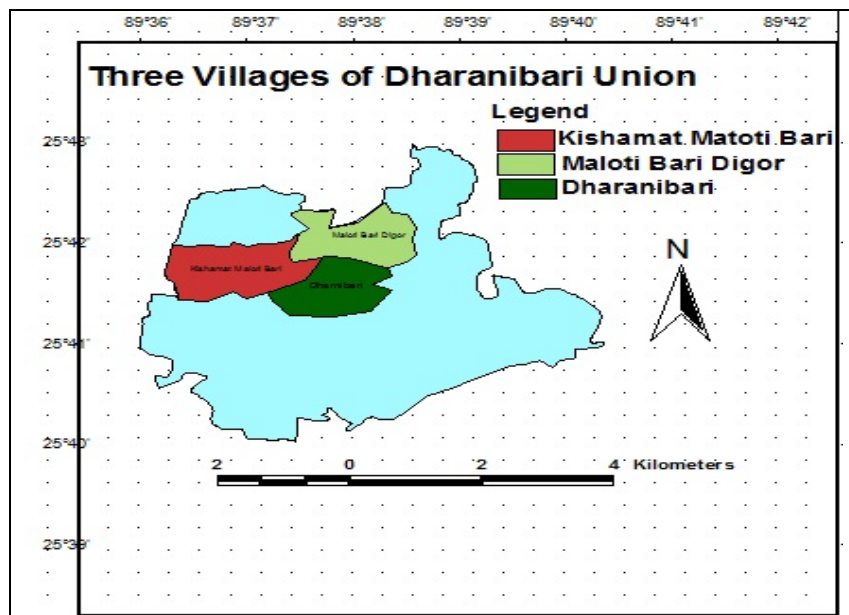


Fig. 2.7 Map of three villages selected from Dharanibari Union of Ulipur Upazila

2.3 Research Design

In terms of research design, the research was descriptive in nature. Mainly the research was to fulfill the goal of describing and exploring the effectiveness of electronic media for sustainable agricultural development. Besides, researcher made an effort to test the relationship between a dependent variable and some selected independent variables. Effectiveness of electronic media for sustainable agricultural development treated as the dependant variable. On the other hand, review of related literature, personal observation of the researcher and discussion with the resource person made the way to select a number of independent variables. However, due to time and resource constraints researcher selected 22 independent variables among them. The research was conducted with both quantitative and qualitative approach. So this is a mixed method study in terms of research approach.

2.4 Sample Size and Sampling Techniques

From the two different Union of two different Upazila of Kurigram district six villages were selected randomly. All farm family heads having TV set or TV media exposure of these six villages were considered population of the study area.

All of the farm family head having TV set or TV media exposures were listed by a primary survey. There were total of 1249 farm family found which constituted the population of the study area. The 15% of the population of each village was randomly selected as sample by using simple random sampling technique. Among the respondent 2% were retained as reserved sample. If any respondents become absent it will fill up from this reserve sample. In this technique no item or unit is selected on account of likes or dislikes of the investigator, and the selection is left to chance. This provides every item a fair and equal chance for selection (Gupta and Gupta, 2011). Thus the sample size stood at 187. A reserve list of 2% of the population was also prepared to replace any respondent who could not be made available during data collection despite at efforts. The distribution of total farm family and the sample population are presented in Table 2.1.

Table 2.1 Distribution of sample population

District	Upazila	Union	Village	Farm Family	15% working Sample	2% Reserve Sample
Kurigram	Ulipur	Dharanibari	Maloti Bari Digor	234	35	13
			Kishamat Maloti Bari	167	25	
			Dharanibari	247	37	
	Kurigram Sadar	Belgacha	Muktaram	100	15	12
			kalyan	267	40	
			Palashbari	234	35	
Total =				1249	187	25

2.5 Data Sources

Both primary and secondary data was used in this research work. The source of data of the proposed research will be as follows–

2.5.1 Primary data

The primary data was collected from the two television channels through content analysis and from the selected research area with the help of a specifically designed and pre-tested questionnaire. Focus group discussion and case study method was followed for collecting qualitative data and the triangulation or cross check of the primary data.

2.5.2 Secondary data sources

Secondary data was collected from the government offices— such as information directorate, department of agricultural extension, Bangladesh Agricultural Development Corporation (BADC), Bangladesh Agricultural University (BAU), Bangladesh Rice Research Institute (BRRI), Bangladesh Agricultural Research Institute (BARI), Bangladesh Agricultural Research Council (BARC), Bangladesh Institute of Nuclear Agriculture (BINA) etc, and non-government and international organizations such as SAARC Agricultural Information Center (SAIC), Country office of International Rice Research Institute (IRRI) etc. Besides books, articles, reports, related research paper, various publications, census, online documents, publications of different research organizations was used as the secondary data source in this research.

2.6 Data Collection Techniques

Kothari (2003) suggested that the researcher would have to decide which sort of data he would be using (thus collecting) for his study and accordingly he will have to select one or the other method of data collection. The research was mainly based on primary data. For the purpose of successful collection of primary data, a number of data collection techniques have been used in this research. Some secondary data was also used in this research. The technique of collecting and using primary and secondary data are discussed bellows—

2.6.1 Questionnaire survey

Collecting data from a large number of respondents questionnaire survey is very fruitful. However, before using this method, it is always advisable to conduct ‘pilot study’ (Pilot Survey) for testing the questionnaires (Kothari, 2003). To prepare a final questionnaire a draft questionnaire was pre-tested among 25 farm family head. The pretest was helpful to identify the limitations of questions and statements thus helped the necessary correction, addition, modification and adjustment of the questionnaire. Finally in the collection of primary data from the study area this pre-tested questionnaire was used. The questionnaire was designed with both open-ended and close ended questions. Data were collected through face to face interview by using questionnaire. Whenever respondents faced any difficulty in understanding any question, the researcher carefully explained it to enable him to answer properly. An English version of the questionnaire is presented in *Appendix I*.

2.6.2 Observation

Observation is a good technique to make a valid and reliable research. The observation method is the most commonly used method specially in studies relating to behavioural sciences (Kothary, 2003). Here researcher carefully observed the non-verbal behavior and their daily practical works of the respondents. It helped researcher to triangulate the information collected by other techniques.

2.6.3 Focus group discussion

Focus group discussion was used for the purpose of validation of primary data and to collect some qualitative data. There were conducted different sessions at the two research area (Union). The duration of FGD was three to five hours as needed. The sample was selected through purposive sampling from community leaders, educated farmers, media personnel, extension worker, local authority etc. In the FGD a discussion frame work was used for the successful completion of the FGD.

2.6.4 Case study

In an explanatory and descriptive type of research where the main target of the researcher is to understand the decision making process, case study can add an important insight about the situation and circumstances. For the purpose of in-depth investigation and a clear understanding of the study 4 respondents was taken for the case study. In-depth interview was conducted each of the cases. The cases were studied as long as it was necessary.

2.6.5 Content analysis

The content of the selected TV programmes were analyzed with the quantitative and qualitative approach. Content analysis method was used to collect the necessary data from the selected TV programmes.

2.6.6 Secondary data collection

Books, records, biographies, newspapers, published censuses or other statistical data, data archives, internet articles, research articles by other researchers and other databases were reviewed to collect secondary data. Mainly literature survey technique was used to collect secondary data from various sources. It helped researcher to develop the conceptual and theoretical aspects of this research.

2.7 Variables of the Study

Correlation analysis studies the joint variation of two or more variables for determining the amount of correlation between two or more variables (Kothari,

2003). Two sets of variables determined by extensive study of related literature and previous research. In this research, researcher also set a dependent variable and some independent variables to test the relationship between them.

2.7.1 Selection of dependent variables

The dependency on agriculture sector is relatively high of Bangladesh. Because of this dependency the development of Bangladesh relies upon the scientific and technological development of agriculture. Scientific and technological development can influence the agriculture sector more when farmers will aware of them. Unfortunately, most of the farmers of Bangladesh are poor. Their literacy rate is too low to accept the technological development. In this situation, electronic media can play an important role. Because, illiteracy is the main impediment to read printed materials. Bangladesh tried to use electronic media for so long to develop agriculture but the development is not evident so far. Besides new media are coming day after day. But they did not give proper importance toward agriculture. On the other hand, the other media such as blogs, apps, email, internet, 3G phones etc. are not available to the farmers so far. So television is the best way to aware the farmers about new technology and invention for sustainable agricultural development. In this point of view researcher were interested to select the extent effectiveness of electronic media for sustainable agricultural development as the dependent variable of the study.

2.7.2 Selection of independent variables

A large number of factors can affect the human behavior. But it is not possible to work with all of the factors in a single research. For that reason researcher choose some of the important factors which can affect the effective procedure more. To select the independent variables researcher reviewed the related research work. Then he discussed with agriculture experts, research fellows, teachers, agriculture extension worker and officers of DAE and media personnel to identify and select the more influential factors. Researcher carefully counted the various characteristics of farmers which influence the effectiveness of electronic media for sustainable agricultural development. There was time and money constraint

that was also considered by the researcher. Lastly, researcher selected twenty two characteristics of farmers among them ten personal, five economic, three social and four psychological. To measure the dependent variables some of the farmer's characteristics have been set as the independent variable in this study. The independent variables are given bellow:

- 1) Age,
- 2) Gender,
- 3) Education,
- 4) Family size,
- 5) Family education,
- 6) Training experience,
- 7) Mass media exposure,
- 8) Supervision of crop production,
- 9) Agricultural knowledge,
- 10) Knowledge about sustainable agriculture,
- 11) Farm size,
- 12) Annual income,
- 13) Profession,
- 14) Socio-economic status,
- 15) Ownership of agricultural implement,
- 16) Formal group affiliation/organizational participation,
- 17) Cosmopolitaness,
- 18) Peer relationship,
- 19) Innovativeness,
- 20) Attitude,
- 21) Risk orientation,
- 22) Aspiration.

2.8 Measurement of Dependent Variables

The study tried to measure the effectiveness of electronic media for sustainable agricultural development. So researcher selected the effectiveness of electronic

media as the dependent variable of this study. In this research effectiveness of electronic media was measured with the four psychological aspects of respondents. They were (1) cognitive effectiveness, (2) emotional effectiveness, (3) attitudinal effectiveness and (4) behavioural effectiveness. Effectiveness of any information disseminated by media goes through these four psychological stages of a person. If any information obstructed on any of these four stages then it became failure to be effective.

2.9 Development of Effectiveness Scale

To measure the effectiveness of electronic media for sustainable agricultural development a scale was developed based on Likert's (1932) technique. The collected statements were edited as per the suggestion given by Thrustone and Chave (1929), and Edward and Kilpatrick (1948). Fourteen criteria suggested by Edward's (1957) were used to edit the statements. These statements were framed in such a way that they expressed the cognition, emotion, attitude and behaviour towards effectiveness of electronic media for sustainable agricultural development. The score of each individual item on the scale was calculated by summing up the weights of the individual items. In order to find out the discriminating index for each item 't' value was calculated using the formula and procedure given by Edwards (1957). Thus the scale was developed finally consisted of 25 statements whose 't' values were found to be significant at five percent level of probability.

2.10 Collection of Effectiveness Statements

According to the objectives of the study some related statements were collected from the respondents. At first to measure the effectiveness some statements were selected according to the review of literature, discussion with researcher, teacher and other specialist, media personnel and farmers. The statements were set in such an oversight, so that it may depict the psychological condition of the respondents. As the level of effectiveness were judged as per the four definite psychological stages, so the statements were set form these four stages. To identify the four different stages firstly 40 statements on effectiveness of electronic media for

sustainable agricultural development were collected for each of the four stages. The most powerful statements were retained and the less powerful and ambiguous statements were deleted and total statements were edited according to the fourteen criteria suggested by Edward (1957). These criteria have been shown in *Appendix II*. Before judge rating 35 statements out of 40 statements were retained for each stage.

2.11 Judges' Rating

For judges' rating researcher chose 10 judges, among them two were from extension personnel, two from media personnel, two local leaders (farmers), two teachers and two pesticide and fertilizer dealers. The edited 35 statements of each stage were examined and tested for the relevancy of those statements to measure the effectiveness of electronic media for sustainable agricultural development. The relevancy was measured by using three points scale such as relevant, not relevant and don't know. The statements which were indicated relevant by the judges were picked up and other statements were discarded. Based on the above selection process 30 statements were selected for each psychological stage.

2.12 Item Analysis

Twenty five farmers were randomly interviewed for item analysis. They were asked to answer from the 4 point rating method such as strongly effective, effective, ineffective and strongly ineffective for each of the 30 statements of four psychological stages. Based on the response from the farmers on a three-point rating method namely strongly effective, effective, ineffective and strongly ineffective 3 was given to strongly effective, 2 to effective, 1 to ineffective and 0 to strongly ineffective. For each of farmers' response, a total was obtained by summing all the scores of individual item.

The 'r' value between the individual item scores and the total item scores were accounted. The 'r' values which are significant at the 5% level of probability were finally retained for this study. By this way, finally 25 statements were selected for each stage to identify the effectiveness of electronic media for sustainable agricultural development. The outline of making the scale is shown in *Appendix*

III. These 25 items for each stage were used for measuring effectiveness of electronic media for sustainable agricultural development to determine the four psychological stages of the respondents as suggested by Huston *et al.* (1998).

2.13 Validity of the Scale

A scale possesses validity when it actual measures what it claims to measure (Goode and Hatt, 1952). In the final selection, items were carefully included all of the related issues with the help of experts opinion. Items were collected through various sources including specialists and hence it was assumed that the scores obtained by administering this test measured effectiveness of electronic media as intended. Moreover, the ‘r’ values being significant for all of the 25 items in each stage constructing the scale indicated the validity of the scale explained that the statements had high relevance to effectiveness. On the basis of the procedure followed, it can be assumed that the effectiveness of electronic media scale had the content validity. Thus, the scale may be taken as valid instrument to measure the effectiveness of electronic media for sustainable agricultural development which was mentioned by Guilford (1956).

Finally the scale was administered to a random sample of 187. The value of ‘t’ is a measure of the extent which a given statement differentiates between the two halves. Usually, ‘t’ value equal to or greater than 1.75 indicates that the average response of the two halves to a statement differs significantly. A layout of final effectiveness scale with ‘t’ values is shown in *Appendix III*. The ‘t’ values being significant for all the 25 statements constituting the scale explained that the statements had high discriminating values. Therefore, reasonable enough the scale was taken as a valid measure of the desired dimension.

2.14 Reliability of the Scale

The importance of reliability is obvious. Unreliable measures cannot be used to detect relationships between variables (Wimmer and Dominick, 2003). A scale is reliable when it will consistently produce the same results when applied to the same sample (Goode and Hatt, 1952). The reliability of the scale was tested by employing split-half method. The items of the scale were divided into two halves

by pulling the odd numbered items for one score and the even numbered items for another score. The coefficient of correlation between two sets of scores was computed and the value 0.581 for cognitive effectiveness, 0.679 for emotional effectiveness, 0.558 for attitudinal effectiveness and 0.501 for behavioural effectiveness were found to be significant at 1 percent level. The reliability coefficient, thus obtained, indicated that the internal consistency of the effectiveness test developed for the study was quite high. In case of test-retest method 25 items for each stage of effectiveness test was administered to 30 farmers twice at the interval of 30 days. The coefficient of correlation value was 0.598 for cognitive effectiveness, 0.681 for emotional effectiveness, 0.561 for attitudinal effectiveness and 0.498 for behavioural effectiveness which was found to be significant. Hence, the effectiveness test scale constructed was highly stable and dependable for measurement of this variable.

2.15 Effectiveness Score

The effectiveness of electronic media for sustainable agricultural development was calculated from four different aspects as per Huston *et al.* (1998). Huston *et al.* (1998) in their study worked on a research question— how to measure the effects of media content? The target of the study was to measure the media content and it added a new phenomenon in media effect research. Knowledge, Attitude and Practice (KAP) method were used to measure media extension effectiveness in agriculture. But Huston *et al.* (1998) suggested adding a new psychological stage of human being i.e. emotion. In order to find out the effectiveness of media content the new method should be knowledge or cognition, emotion, attitude and behaviour or Practice. In this study these four psychological stages of the respondents were examined to find out the effectiveness of electronic media for sustainable agricultural development.

2.15.1 Cognitive effectiveness score

Cognitive effectiveness score was measured by using a three point scale of 25 items (statements) on cognitive effectiveness of electronic media for sustainable agricultural development. Respondents were asked to indicate in what extent the

electronic media were effective to increase the cognitive level of the respondents in respect of 25 agriculture related knowledge. Each respondent expressed the effectiveness level by checking any of the four responses. Scoring was made in the following way:

<u>Response</u>	<u>Weights</u>
Strongly effective	3
Effective	2
Ineffective	1
Strongly ineffective	0

Sustainable agriculture related cognitive effectiveness score of a respondent was determined by summing up the weights for responses against all the 25 statements. Thus, the sustainable agriculture related cognitive effectiveness score of a respondent could range from 0 to 75, zero (0) indicating ‘no effectiveness’ and 75 indicating ‘very high effectiveness’.

2.15.2 Emotional effectiveness score

Emotional effectiveness score was also measured by using a 3 point scale of 25 items (statements) on emotional effectiveness of electronic media for sustainable agricultural development. Respondents were asked to indicate in what extent the electronic media were effective to increase the emotional level of the respondents in respect of each of 25 agricultural issues. Each respondent expressed the effectiveness level by checking any of the four responses. Scoring was made in the following way:

<u>Response</u>	<u>Weights</u>
Strongly effective	3
Effective	2
Ineffective	1
Strongly ineffective	0

Sustainable agriculture related emotional effectiveness score of a respondent was determined by summing up the weights for responses against all the 25

statements. Thus, the sustainable agriculture related emotional effectiveness score of a respondent could range from 0 to 75, zero (0) indicating ‘no effectiveness’ and 75 indicating ‘very high emotional effectiveness’.

2.15.3 Attitudinal effectiveness score

Attitudinal effectiveness score was also measured by using a three point scale of 25 items (statements) on attitudinal effectiveness of electronic media for sustainable agricultural development. Respondents were asked to indicate in what extent the electronic media were effective to increase the attitudinal level of the respondents in respect of each of 25 agricultural issues. Each respondent expressed the effectiveness level by checking any of the four responses. Scoring was made in the following way:

Response	Weights
Strongly effective	3
Effective	2
Ineffective	1
Strongly ineffective	0

Sustainable agriculture related attitudinal effectiveness score of a respondent was determined by summing up the weights for responses against all the 25 statements. Thus, the sustainable agriculture related attitudinal effectiveness score of a respondent could range from 0 to 75, zero (0) indicating ‘no effectiveness’ and 75 indicating ‘very high attitudinal effectiveness’.

2.15.4 Behavioural effectiveness score

Behavioural effectiveness score was also measured by using a three point scale of 25 items (statements) on behavioural effectiveness of electronic media for sustainable agricultural development. Respondents were asked to indicate in what extent the electronic media were effective to increase the behavioural level of the respondents in respect of each of 25 agricultural issues. Each respondent expressed the effectiveness level by checking any of the four responses. Scoring was made in the following way:

Response	Weights
Strongly effective	3
Effective	2
Ineffective	1
Strongly ineffective	0

Sustainable agriculture related behavioural effectiveness score of a respondent was determined by summing up the weights for responses against all the 25 statements. Thus, the sustainable agriculture related behavioural effectiveness score of a respondent could range from 0 to 75, zero (0) indicating ‘no effectiveness’ and 75 indicating ‘very high behavioural effectiveness’.

2.16 Overall Effectiveness of Electronic Media

The overall effectiveness of electronic media for sustainable agricultural development was determined by summing up the four components of effectiveness scale which range from $4*(0-75) = 0$ to 300. Hence, the overall effectiveness scores are given bellow:

Components of effectiveness score	Range of scores
Cognitive effectiveness scores	0 – 75
Emotional effectiveness scores	0 – 75
Attitudinal effectiveness scores	0 – 75
Behavioural effectiveness scores	0 – 75
Overall effectiveness scores	= 0 – 300

2.17 Measurement of Independent Variables

Among various characteristics of farmers twenty two personal, economic, social and psychological characteristics considered as independent variables. The characteristics are- age, Gender, education, family size, family education, training experience, mass media exposure, supervision of crop production, agricultural knowledge, knowledge about sustainable agriculture, farm size, annual income, profession, socio-economic status, ownership of agricultural implement, formal group affiliation/organizational participation, cosmopolitans, peer relationship,

innovativeness, attitude, risk orientation and aspiration. The procedure followed in measuring these variables have been discussed bellows:

2.17.1 Age

The total number of years from his birth was treated as the age of the farmers. If fraction of a year reported it was rounded up to the nearest year. The age was measured on the basis of the year they read in what class or as per the Secondary School Certificate (SSC) or other available records or from their oral information. In the interview schedule this variable was included in item no. 1 (*Appendix I*).

2.17.2 Gender

Gender issues matter because of the central roles women play in the mediation of household welfare and nutrition, both through their own-account income earning and through their participation the “4 Ps”— the production, processing, preservation and preparation of food (FAO, 1977). The total number of male and female family head was counted to identify the gender of the respondents. It helped the researcher to identify the situation of half of the total population *i.e.* women. This variable has been included in the interview schedule in item no. 2 (*Appendix I*).

2.17.3 Education

The total schooling year was counted to measure the education of the respondents. Each year of schooling added one point and total number of schooling year showed the total score of education for each respondent. For example, a score of 1 was assigned for passing class-1, 10 for passing SSC, 12 for HSC, 14 for Bachelor and 16 for passing Master’s degree. 0 (zero) was given to a farmer who could not read and write at all. Islam (2000) and Rahman (2008) also followed this method in their study. In the interview schedule this variable was included in item no 3 (*Appendix I*).

2.17.4 Family size

Family size was defined as the total number of individuals in the family including own self, spouse, children, and other dependent members who lived and ate together as family unit. The total number of family member was considered as the family size score. Hossain (2008), Rahman (2008) and Kamaly (2011) followed this method in their study. This variable has been included in item no 5 in the interview schedule (*Appendix I*).

2.17.5 Family education

Family education referred to the average education score of the total family population. Family education was determined by computing the year of schooling of each of the family member and the summated score was divided by total number of family member. Family education score showed the consistency or inconsistency of education among the each and every family member. Hossain (2008) and Kamaly (2011) also used this method in their study. This variable included in the interview schedule in item no. 6 (*Appendix I*).

2.17.6 Training experience

Training experience of a respondent was measured based on the training received by the respondents on various sustainable agricultural issues during last one year. A score 1 (one) was assigned for one day received training. Roy (2008) and Kamaly (2011) also followed this method in their study. This variable has been included in the interview schedule in the item no. 10 (*Appendix I*).

2.17.7 Mass media exposure

Mass media exposure of a farmer was measured by computing a 'mass media exposure score' on the basis of his frequency of contact with 7 selected information sources within a given time frame. The farmers were asked to mention the frequency of contact with each of the 7 selected information sources. In the interview schedule this variable has been included in item no. 7 and their responses were assigned weights in the following manner.

Table 2.2 Scoring of mass media exposure

Sl. No.	Mass media source	Basis of Scoring
1	Radio	Not at all = 0 Suddenly = 1 Sometimes = 2 Often = 3 Always = 4
2	Television	
3	Newspaper	
4	Movies	
5	Magazine	
6	mobile	
7	Others	

Thus, the mass media exposure score of the respondents were calculated by summing together their weights for all the 7 mass media sources. The mass media exposure scores of the farmers could range from 0 to 28, 0 indicating no mass media exposure and 28 indicating highest level of mass media exposure. This measurement was developed with the help of the method followed by Miah (2002) and Akanda (2005) in their study.

2.17.8 Supervision of crop production

It refers to the level of supervision of the other farmer's activity which measured on the basis of frequency of advice they give. The respondents were asked about 15 farming activities to indicate the degree of crop supervision in the research area. The following score was used for measuring the supervision of crop production score. This variable included in item no. 15 in the interview schedule (*Appendix I*).

<u>Supervision criteria</u>	<u>Score</u>
No supervision	0
Sudden supervision	1
Sometimes	2
Always	3

The respondents were asked how much they supervise the crop production. The 15 replies can carry the score from 0 to 45 according to the score assigned.

2.17.9 Agricultural knowledge

Agricultural knowledge of the respondents means the knowledge of the farmers about various agricultural practices which help them to operate the agricultural works successfully. The agricultural knowledge of a farmer was measured from the answers given by the respondents about agricultural practices. In order to measure the agricultural knowledge of a farmer a 26 item agricultural knowledge test scale was used (*Appendix I*).

The sample populations were asked to give an appropriate answer for each of the 26 questions. Each correct answer provided two (2) score, partly correct answer provide one (1) and incorrect answer provide zero (0) score for the respondents. The total score from the replies of all items against each respondent indicate his agricultural knowledge. Thus, agricultural knowledge score could range from zero (0) to fifty two (52), where 0 indicate no agricultural knowledge and 52 indicate very high knowledge of a respondent.

2.17.10 Knowledge about sustainable agriculture

Knowledge about sustainable agriculture refers to the knowledge of farmers about various aspects of sustainable agricultural issues which ensure the perpetual development of agriculture. The sustainable agricultural knowledge of a farmer was measured by getting answers from different statements related to sustainable agriculture. In order to compute the sustainable agricultural knowledge of a farmer, a 25 item knowledge on sustainable agricultural practices test scale was used (*Appendix I*). Islam (2000) and Kamaly (2011) followed this method in their study.

The sample populations were asked to give an appropriate answer for each of the 25 questions. Each correct answer provided two (2) score, partly correct answer provided one (1) and incorrect answer provided zero (0) score for the respondents. The total score from the replies of all items against each respondent indicates his knowledge on sustainable agriculture. This, sustainable agricultural knowledge score could range from zero (0) to fifty (50), where 0 indicates no

sustainable agricultural knowledge and 50 indicate very high knowledge of a respondent.

2.17.11 Farm size

Farm size refers to the area of land owned by a farmer on which farming activities are carried out. It was determined by using the following formula and it was presented in hectare (ha). Chowdhury (2009) and Kamaly (2011) also followed this method in their study. In the interview schedule this variable has been presented in item no. 7 (*Appendix I*).

$$\text{Farm size} = \{a+b+\frac{1}{2}(c+d)+e+f\}-g$$

Where,

a = Own land under own cultivation

b = Leased land taken

c = Sharing land taken (Borga)

d = Sharing land given (Borga)

e = Homestead area

f = Others (pond+forestry+fallow land+nursery)

g = Leased land given

2.17.12 Annual income

Annual income refers to the total income earned by the respondent and other members of the family from agricultural (field crops, vegetables, fruits, spices, livestock and fisheries) and non agricultural (business, service and others) sources. To calculate the annual income of a farmer, yearly earnings from agricultural and non agricultural sources were added together. A score of 1 was assigned for each thousand taka to compute the annual income score of the farmers. Muttaleb (2006) and Hossain (2008) also used this method in their study. In the interview schedule this variable was included in item no. 8 (*Appendix I*).

2.17.13 Profession

There is considerable evidence that higher non-farm earnings result in higher agricultural yields and improving natural environments (Ellis, 2004). Here the

profession of the respondents was measured by the occupation of them from which they earn besides agriculture. In the interview schedule this variable has been included in item no. 13 and their responses were assigned weights in the following manner.

<u>Occupation pattern</u>	<u>Assigned score</u>
Agriculture	1
Agriculture and business	2
Agriculture and service	3
Agriculture and others	4

2.17.14 Socio-economic status

Socio-economic status is a vast term which make up of some related economic possessions. The issues were farm size, annual income, house owned, farm animals and material possessions etc.

In order to identify the socio-economic status of the farmers in the study area, researcher followed a slightly modified method which was developed by Islam (2000). On that method economic status was measured by a 7-item economic status, while after slightly modified 5-item economic status comprising farm size, annual income, house-owned, farm animals and material possessions were used to measure the socio-economic status of the respondents in the study area.

Table 2.3 Scoring procedure for the measurement of socio-economic status

Sl. no.	Item	Sub-item	Score
1.	Farm size	Marginal farm (0.02-0.20)	1
		Small farm (0.21-1.00)	2
		Medium farm (1.01-3.00)	3
		Large farm (>3.00)	4
2.	Annual income	For every 20,000 taka	1
3.	House-owned	Thatched/Kāchā house	2
		Tin shed Kāchā house	3
		Brick built tin shed house	5
		Brick built pucca roof house	7
		Multi storied building house	10
4.	Farm animals	Goat/sheep	2
		Calf	3
		Bull/bullock	6
		Buffalo	6
		Milking cow	7
5.	Material possession	Chair	1
		Chowki	3
		Alna	3
		Table	3
		Khat	5
		Almirah	5
		Dressing table	5
		Show case	5
		Gun	7
		Bicycle	2
		Motor cycle	6
		Black & white TV	5
		Colour TV	10

Sub-items under respective items along with their assigned score are presented in Table 2.17. In the interview schedule this variable was included in the item no. 9 (*Appendix I*).

2.17.15 Ownership of agricultural implement

Ownership of agricultural implement of a farmer was determined on the basis of the agricultural material possessed by the respondent. Farmers were asked to give

the answer how many agricultural materials they possess. Here the question included 9 (nine) material to collect the level of ownership of agricultural implement of the respondents. The score assigned for each of the agricultural material according to the average score get from the expert, extension officer, teacher and educated farmer of the research area. The number of material was multiplying with the assigned score of that material made the each material score. Finally the total score was added of the 9 material to measure the ownership of agricultural implement.

2.17.16 Formal group affiliation/organizational participation

Organizational participation means the degree of involvement of a respondent in different formal organization as ordinary member, executive committee member or executive committee officer. Organizational participation of a farmer was computed by an organizational participation score according to the nature and duration of participation in various organizations. The following scale was used to measure organizational participation. Chowdhury (2009) and Kamaly (2011) also used this method in their study. This variable is included in item no 14 of the interview schedule (*Appendix I*).

Organizational participation score = $\sum P \times D$

Where, P = Participation criteria and D = Duration of participation

Participation criteria were computed by the following way:

<u>Participation criteria</u>	<u>Score</u>
No participation	0
Ordinary participation	1
Executive committee member	2
Executive committee officer	3

Duration of participation score was computed by the following way:

<u>Duration of participation</u>	<u>Score</u>
None	0
Up to 1 year	1
2 year	2
3 year	3
-	-
-	-
9 year	9
10 year	10

Multiplying participation criteria with duration of participation make the score of organizational participation of a farmer. It depicts the activities of a respondent in respective organization.

2.17.17 Cosmopolitaness

According to Akanda (2005) cosmopolitaness refers to the extent to which an individual's orientation is external to his own social system. In this research cosmopolitaness of a farm family head was measured by computing a 'cosmopolitaness score' on the basis of his frequency of visit seven (7) selected places outside his own social system. The farm family heads were asked to indicate the number of his visit to the 7 selected places. The frequency of visit of a farm family head was assigned scores in the following manner. Islam (2000), Akanda (2005) and Kamaly (2011) also followed this method in their study.

Table 2.4 Scoring of cosmopolitaness

Sl. No.	Places of visit	Basis of scoring
1	Other village (per month)	Not even once = 0 1-5 times = 1 6-9 times = 2 10> times = 3
2	Other Union Parishad (per month)	Not even once = 0 1-4 times = 1 5-7 times = 2 8> times = 3
3	Own Upazila Sadar (per month)	Not even once = 0 1-2 times = 1 3-4 times = 2 5> times = 3

Sl. No.	Places of visit	Basis of scoring
4	Other Upazila (per year)	Not even once = 0 1-2 times = 1 3-5 times = 2 6> times = 3
5	Own district Sadar (per year)	Not even once = 0 1-2 times = 1 3-4 times = 2 5> times = 3
6	Other district (per year)	Not even once = 0 1 times = 1 2 times = 2 3> times = 3
7	Capital city (so far)	Not even once = 0 1 times = 1 2 times = 2 3> times = 3

The cosmopolitanism score of a farm family head was obtained by adding the scores for his visit to all the seven different places. Thus, the cosmopolitanism scores of a respondent could range from 0 to 21, where 0 indicating no cosmopolitanism and 21 highest level of cosmopolitanism.

2.17.18 Peer relationship

The degree to which an individual communicated technical and professional information with his peer (in terms of age, farm size and education) was the basis for measuring peer relationship. It was measured according to the mean number of contact made by the respondents with five selected or less number of existing peers for communicating farm information during the last one year. This method was used in Miah (2002).

2.17.19 Innovativeness

Innovativeness refers to the degree to which an individual is relatively earlier in adopting new ideas than other members of social systems (Rogers, 1995). It was measured on the basis of period of adoption to 10 improved agricultural practices, score assigned as per the time required by a farmer to adopt each of the new practice. The assigned score was as follows—

<u>Adoption period</u>	<u>Score</u>
Do not use	0
Within 5 years	1
Within 4 years	2
Within 3 years	3
Within 2 years	4
Within 1 years	5

Innovativeness score of a farmer was measured by adding his scores for adoption of all the 10 improved agricultural practices. Innovativeness score may be a range from 0 to 50, where 0 indicating no innovativeness and 50 indicating very high innovativeness of a respondent. Islam (2000) and Kamaly (2011) also followed this method for measuring innovativeness of farmers. In the interview schedule this variable has been presented in the item no. 19 (*Appendix I*).

2.17.20 Attitude

Attitude can be defined as a positive or negative evaluation of people, object, event, activities, ideas or just about anything of the environment. Attitude of farmer was measured from the two aspects. As this research is about sustainable agriculture and effectiveness of agricultural television programmes, so it is necessary to identify the attitude of farmers toward sustainable agriculture and television.

A. Attitude toward sustainable agriculture

Sustainable agricultural attitude refers to the understanding and evaluation of sustainable agricultural issues by the farmers. If farmers have positive attitude toward sustainable agriculture then they will be more inspired to practice it in their daily life. Now a day the movement for sustainable agriculture is gaining increasing support and acceptance within mainstream agriculture. Not only sustainable agriculture address many environmental and social concerns, but it offers innovative and economically viable opportunities for growers, labourers, consumers, policy makers and many others in the entire food system with

concerning congenial environment (Faroque *et al.*, 2011). However, positive attitude is an important factor for and sign of the success in this field.

B. Attitude toward television

Attitude toward television means how the respondents evaluate the television. It is a predisposition to respond in a favorable or unfavorable manner to the stimulus given by the programme of television. Mainly the effectiveness of agriculture television programmes depends upon the attitude of the respondents toward television because of its causal mediator role.

C. Development of the scale

The procedure followed to develop the scale to measure the effectiveness of electronic media for sustainable agricultural development was also followed to develop the scale for measuring attitude of farmers. The correlation test was carried out between the individual item scores and the total item scores. The item being significant at 5% level of probability were retained as suitable for the measurement. On the basis of the largest 'r' values, 12 out of 27 items were selected for each of the two dimensions of attitude measuring scale i.e. attitude toward sustainable agriculture and attitude toward television. The half of the items was positive and half of the item was negative for both of the measuring scale.

D. Validity of the scale

Items were collected through various sources including specialists, extension personnel, media personnel, farmers and hence it was assumed that the scores obtained by administering this test measured as intended. Moreover, the 'r' values being significant for all of the 12 items for each scale constructing the scale indicated the validity of the scale explained that the statements had high relevance. On the basis of the procedure followed, it can be assumed that the attitude measuring scale had the content validity. Thus, the scale may be taken as valid instrument to measure the attitude toward television and sustainable agriculture which was mentioned by Guilford (1956). A layout of final attitude measuring scale with 't' and 'r' values is shown in *Appendix IV*.

E. Reliability of the scale

The reliability of the scale was tested by employing the same method which was following to measure the reliability of the effectiveness scale. The items of the scale were divided into two halves by pulling the odd numbered items for one score and the even numbered items for another score. The coefficient of correlation between two sets of scores was computed and the value 0.579 for attitude toward sustainable agriculture and 0.589 for attitude toward television was found to be significant. The reliability co-efficient, thus obtained, indicated that the internal consistency of the attitude measuring test developed for the study was quite high. In case test-retest method 12 items of attitude test was administered to 30 farmers twice at the interval of 30 days. The coefficient of correlation value 0.568 was for attitude toward sustainable agriculture and 0.609 for attitude toward television which was found to be significant. Hence, the attitude measuring test scale constructed was highly stable and dependable for measurement of this variable.

2.17.21 Risk orientation

Risk orientation refers to the degree of risk taken by the respondents. In agriculture many uncontrollable factors such as rainfall, insect pests, disease, price fluctuation and unavailability of input may create many risks to cultivation, harvesting and marketing process. But if farmers can manage the natural or manmade risk fruitfully then he will be successful. Risk orientation of a respondent was measured by computing a 'risk orientation score' using 'Scale product method' which combines Thrustone's and Likert's technique.

A. Development of the scale

The development procedure of the risk orientation scale was same as the procedure of making the effectiveness score. Randomly selected 25 farmers were interviewed for item analysis. They were asked to respond to each of the 20 statements (positive and negative statements were randomly arranged) in terms of their own agreement or disagreement on a four point rating method, namely 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. For

positive statements, these scale assigned 4,3,2,1 and 0 score respectively. In case of negative statements the scoring system was reversed. From each farmer's response, a score for each individual item was obtained, while his total item score was obtained by summing all the score for all individual items. Then, correlation test was carried out between the individual item scores and the total item scores. The items concerned with 'r' values which were significant at 5% level of probability were selected. Finally, 6 positive and 6 negative items were selected.

B. Validity of the scale

The content of the scale was based on relevant literature, expert's opinion, extension personnel, media personnel, farmers and hence it was assumed that the scores obtained by administering this test measured as intended. Moreover, the 'r' values being significant for all of the 12 items constructing the scale indicated the validity of the scale explained that the statements had high relevance. On the basis of the procedure followed, it can be assumed that the risk orientation measuring scale had the content validity.

C. Reliability of the scale

The reliability of the scale was tested by employing the same method which was following to measure the reliability of the effectiveness scale. The items of the scale were divided into two halves by pulling the odd numbered items for one score and the even numbered items for another score. The coefficient of correlation between two sets of scores was computed and the value 0.601 was found to be significant at 1 percent level. The reliability co-efficient, thus obtained, indicated that the internal consistency of the risk orientation measuring test developed for the study was quite high. In case test-retest method 12 items of risk orientation test was administered to 30 farmers twice at the interval of 30 days. The coefficient of correlation value was 0.689 which was found to be significant. Hence, the risk orientation measuring test scale constructed was highly stable and dependable for measurement of this variable. A layout of final risk orientation measuring scale with 't' and 'r' values is shown in *Appendix V*.

2.17.22 Aspiration

Aspiration refers to a strong desire to have or do something. It has been observed in many studies that the higher level of aspiration of the farmers is related to higher level of adoption of agricultural technologies (Kamaly, 2011). However, the evaluation or measurement of a person's ambition or level of aspiration is a complex psychological problem which has long troubled psychologists. (Hills, 1995). Because each and every social system may influence the level of aspiration of respondents. So measuring tools should be different from region to region as per the necessary elements of influencing aspiration. In Bangladesh perspective Kamaly (2011) followed the measurement of aspiration scores which was developed by Sagar (1983). It was a nine items and four point aspiration measurement scales. But in Kamaly (2011) it was modified into 10 item four point scale aspiration measurement scale. Here in this study a 10 item four point scale of aspiration measurement scale was used. Farmers were asked to express his/her level of aspiration as per the 4 point rating as follows:

Table 2.5 Scoring of aspiration

Items of aspiration	Score assigned
Educational aspiration for son	0 = No education 1 = Primary 2 = Secondary 3 = Higher secondary 4 = Graduate or above
Educational aspiration for daughter	0 = No education 1 = Primary 2 = Secondary 3 = Higher secondary 4 = Graduate or above
Occupational aspiration	0 = Agriculture labour 1 = Traditional profession 2 = Improved cultivation 3 = Business 4 = Government service/Respectable job
Aspiration of land	0 = None 1 = Less than 25% 2 = Increase up to 25-50% 3 = Increase up to 51-75% 4 = More than 75%
Aspiration for farm produce	0 = None 1 = Less than 25% 2 = Increase up to 25-50% 3 = Increase up to 51-75% 4 = More than 75%
Aspiration for purchase of agricultural implements	0 = None 1 = Rice weeder 2 = Hand sprayer 3 = Shallow tube well 4 = Power tiller
Aspiration for increasing annual income	0 = None 1 = Less than 25% 2 = Increase up to 25-50% 3 = Increase up to 51-75% 4 = More than 75%
Aspiration for house construction	0 = None 1 = Minor repair in existing house 2 = Construction of one tin house 3 = Construction one pucca house 4 = Construction of two or more house
Aspiration for general contentment in life	0 = None 1 = Some better 2 = Better 3 = Mostly better 4 = Certainly better
Aspiration for farm loan	0 = None 1 = Less than 25% 2 = Increase up to 25-50% 3 = Increase up to 51-75% 4 = More than 75%

Thus, the total aspiration score of a farmer was computed by adding his scores together for 10 items of aspiration. The possible aspiration score could be range from 0 to 40, 0 indicating lowest level of aspiration while 40 corresponding highest level of aspiration.

2.18 Hypothesis of the Study

Hypotheses are single tentative guesses, good hunches –assumed for use in devising theory or planning experiments intended to be given a direct experimental test when possible (Rogers, 1966). Hypothesis is a formal statement that presents the expected relationship between an independent and dependent variable. In broad sense hypothesis can categorize into two different categories: (a) Research hypothesis, (b) Null hypothesis.

2.18.1 Research hypothesis

A research hypothesis is a statement of expectation or prediction that will be tested by research. Research hypothesis will find out the relationship between the variables. According to the review of literature and development of conceptual framework, the following research hypothesis was formulated.

Each of the 22 selected characteristics of the farmers (age, Gender, education, family size, family education, training experience, mass media exposure, supervision of crop production, agricultural knowledge, knowledge about sustainable agriculture, farm size, annual income, occupation, socio-economic status, ownership of agricultural implement, formal group affiliation/organizational participation, cosmopolitaness, peer relationship, innovativeness, attitude, risk orientation and aspiration) and the effectiveness of electronic media for sustainable agricultural development have a significant relationship. But in a statistical test it is necessary to formulate a null hypothesis.

2.18.2 Null hypothesis

The null hypothesis represents a theory that has been put forward, either because it is believed to be true or because it is to be used as a basis for argument, but has not been proved. In a relationship study a null study states that there is no

relationship between the concerned variables. Hence, the earlier research hypotheses were changed into null hypotheses as follows:

The twenty two selected characteristics of the farmers (age, education, family size, family education, training experience, mass media exposure, supervision of crop production, agricultural knowledge, knowledge about sustainable agriculture, farm size, annual income, occupation, socio-economic status, ownership of agricultural implement, formal group affiliation/organizational participation, cosmopolitaness, peer relationship, innovativeness, attitude toward sustainable agriculture, attitude toward television, risk orientation and aspiration) and the effectiveness of electronic media for sustainable agricultural development have no significant relationship.

2.19 Statistical Techniques

After executing the survey, it is highly essential to review the answers of the respondents provided in the questionnaires from the angle of legibility, completeness, consistency and homogeneity (Panneerselvam, 2011). Total interview were scrutinized after completing the data collection. Data obtained from the respondents were examined thoroughly to find out the errors and omission. In the analysis and interpretation collected data will be coded, compiled, tabulated, and analyzed in accordance with the objectives of the study. Qualitative data were converted into quantitative forms following the appropriate and suitable scoring technique whenever necessary. The available version of computer software like Microsoft Excel and SPSS were used to analyze the data.

Statistical measures such as number, percentage, mean, range, rank order, standard deviation, correlation, stepwise multiple regression and Path analysis were used to describe the findings of the study. The following statistical techniques were used for data analysis:

1. Using SPSS the total data were presented in frequency distribution according to the selected characteristics of the respondents. Besides, respondents were divided into three categories as per the range of the frequency distribution.

2. Pearson's Product-Moment Correlation (r) was used to find out the relationship between the selected characteristics of farmers and the effectiveness of electronic media for sustainable agricultural development.
3. Five percent (0.05) and one percent (0.01) level of probability was used as the basis for the rejection of any null hypothesis throughout the study.
4. Stepwise multiple regressions was carried out according to least square procedure to explore the variance in the effectiveness of electronic media for sustainable agricultural development in relation to independent variables.
5. Path analysis was used to measure the direct and indirect effects of selected characteristics of the farmers to the effectiveness of electronic media for sustainable agricultural development.

Findings and Discussion

Findings and discussion are the core part of a dissertation which mainly illustrate the outcome of the research. In these chapters researcher shows the collected data through diverse statistical ways and describe the logical reason. The discussion assists to explain the outcomes in appropriate perspective and relate them with pertinent other research.

Findings and discussion are described in the subsequent chapters according to the objectives of the study. The findings are presented in the following chapters:

Chapter 3: Agricultural Programmes Telecast by Selected Television Channel

Chapter 4: Agricultural Features and Characteristics of Farmers

Chapter 5: Effectiveness of Electronic Media for Sustainable Agricultural
Development

Chapter 6: Relationship between the Effectiveness of Electronic Media for
Sustainable Agricultural Development and Selected Characteristics of
Farmers

Chapter 7: Problems and solutions for the Effectiveness of electronic media for
Sustainable Agricultural development

Chapter 3

Agricultural Programmes Telecast by Selected Television Channel

3.1 Agricultural Television Programmes

Various types of agricultural programmes are aired on different television channels. The pioneer of that type of programmes was Bangladesh Television (BTV). BTV established in 25 December 1964. After the establishment of a TV channel it was used for various purposes. Dewary (1999) told about the primary history of using television for agricultural development.

“BTV is not only the medium of entertainment but it is also a source of attaining information on various subjects. It has been showing agro-based programmes since its inception. At different times it appeared under different names. At the beginning, there was a programme called “Kājer Kathā” (Words of Importance) which was a documentary styled presentation.

In 1982, there was another programme named “Āmār Desh” (My Country) a programme better planned than the previous one. It was a fortnightly programme with each episode spanning fifty minutes and was shown in the early hours of the evening when only a countable number of viewers watched BTV.

“Āmār Desh” basically featured a subject or topic as a whole and it did not quite portray the success of an individual working in the field of agriculture. In 1986 the same programme conceived a little differently than before and appeared under the title “Māti O Mānush (MOM)” (Soil and Man) and began to highlight individual success stories.

“Māti O Mānush” has achieved popularity among the viewers. Popular agro-based programme “Māti O Mānush” is shown on every Saturday on the BTV just after the Bengali news on 8 PM. These programmes popularize High Yielding Variety (HYV) rice, wheat in the 1970s, 1980s and in early 1990s. But yet these are to be popularized among the greater masses. “Māti O Mānush” has been playing

important role in motivating farmers for improving and modernisation of our agriculture (Dewary, 1999)”.

At first agricultural television programmes were introduced at BTV. After then it became popular day by day. Now the private television channels are telecasting many agricultural programmes also. “Ridoye Māti O Mānush (RMOM)” (Soil and Man in Heart) is the most popular agricultural television programme which telecasted by channel *i*. This is a prestigious programmes which can attract many farmers and policy makers. It is a success of Shykh Seraj to make Urea Mega Granule (UMG) popular among the growers level by this programme. Environment friendly UMG is fruitful to curb the cost of agricultural production also. Government owned terrestrial channel Bangladesh Television (BTV) and privately owned satellite television channels are broadcasting many agricultural programmes.

Table 3.1 Agricultural television programmes of different TV channels

Channel	Programme title	Air time	Day
Bangladesh Television	Māti O Mānush (Soil and Man)	22-25 Minutes	5 days per week
	SAARC Krishi (SAARC Agriculture)	22-25 Minutes	Weekly
	Krishi Dibanishi (Agriculture Always)	22-25 Minutes	Weekly
Channel <i>i</i>	Hridoye Māti O Mānush (Soil and Man in Heart)	22-25 Minutes	Weekly
	Hridoye Māti O Mānusher Dāk (Call for Soil and Man in Heart)	22-25 Minutes	Weekly
	Fire Chal Mātir Tāne (Return to land)	-	Seasonal
Bangla Vision	Shyamol Bānglā (Green Bangla)	22-25 Minutes	Weekly
ATN Bangla	Mātir Subās (Smell of Earth)	22-25 Minutes	Weekly
Mohona TV	Mohonār Krishi O Krishāk (Marginal Agriculture and Farmer)	22-25 Minutes	Weekly
Diganta TV	Shufalā Bangladesh (Productive Bangladesh)	22-25 Minutes	Weekly
Boishakhi TV	Krishi O jiban (Agriculture and Life)	22-25 Minutes	Weekly
MY TV	Khāmār Bāri (Farm House)	22-25 Minutes	Weekly

Source: Rahman *et al.* (2012)

Weak marketing facility for agro-product make farmer unenthusiastic in commercial production. In this situation electronic media can make the marketing of agricultural product easier. It can inform the market price of agricultural commodities within a few seconds. Farmers can make their decision whether they will sell their product. Where or when they will sell their product. It helps them to identify the causes of low price of their commodities. Farmers can forecast what agro-product will be profitable in next season. Because they can easily know the total estimated and achieved amount of any agro-product. By informing the demand and production they can choose what they will cultivate. By this way agricultural television programmes can help them to carry the profit.

Bangladesh Television (BTV) and Channel *i* is the highest contributor in the agricultural development sector, although various channel started to broadcast this type of programmes also. To identify the effectiveness of agricultural television programmes, BTV and channel *i* had been selected purposively as the primary data source in this research.

3.2 Bangladesh Television

Bangladesh Television (BTV), a state-owned national TV station began its operations in 1964. Besides education and entertainment, it ensures the equitable dissemination of information to the mass people and contributes to the nation's socio-economic development of Bangladesh. It telecasts various program comprising drama, documentaries, musicals, education and information including 14 News bulletins in English and Bangla daily.

BTV transmits 18 hours program terrestrially through a Centre, a sub-centre, and 14 relay stations daily. The main centre of BTV is located in Dhaka, the capital city of Bangladesh. Chittagong is a sub-centre, transmits one hour and 45 minutes locally produced separate programs daily.

BTV has a potential coverage of about 97 percent of the country's population. About 92% of its content is self-produced and the rest are imported. For the greater interest of the nation 78% of the total programmes included the issues like agriculture, health and population, children and women, education and human

rights etc. Its content mix comprises 20% news, 30% development and educative, 35% cultural and entertainment and other program 15% (BTV, 2012). BTV also telecast the national team Cricket, Football and other important sports events live form venue.

3.3 Channel *i*

Channel *i* is a privately owned television network in Bangladesh owned by the Impress Group. Channel *i* was launched in the June 1, 1997, broadcasting pre-recorded programs 12 hours day. Within two years of its official launch, Channel *i* began broadcasting 24 hours a day and became the first digital channel in Bangladesh.

It currently broadcasts satellite transmissions using PanAm Sat, which covers most of Asia and parts of Australia. Channel *i* started transmissions on October 1, 1999. It broadcasts many educational programmes. It runs 24 hours a day since launching in October 1, 1999. Channel *i* with the slogan "*Ridoye Bangladesh*" (Bangladesh in heart) has been acclaimed as one of the leading educational and entertaining Bangla channels. The channel is using C band space segment from Telstar 10 at 76.5° E geo-stationary orbital location. More than 84 countries including part of Australia, Asia and Pacific Islands, Middle East, Africa and part of Europe are covered by the global C-band beam Telstar 10, where Channel *i* is available.

It has been one of the most popular agro-based programmes on Channel *i*. Hridoye Mati O Manush is a documentary programme on the contemporary agro-economics and development. The programme was the reformed edition of Mati O Manush, earlier telecasted on BTV, remained on air for 14 years and was immensely popular both among the farmers as well as other common viewers. Shaikh Seraj and his show have made a significant contribution in bringing Bangladeshi television closer to mainstream life. Travelling to all corners of the country, and sometimes well beyond, his programme has repeatedly identified success stories in agriculture pointing towards the immense prospects in the sector.

Table 3.2 Programme content of ‘Krishi Dibanishi’ at BTV and ‘Ridoeye Mati O Manush’ broadcast at channel *i* from Feb. 2004 to Mar. 2008

Sl. No.	Programme content	Number of programmes	Percentage (%)
1.	Crop	47	12.40
2.	Fisheries	46	12.14
3.	Poultry	28	7.39
4.	Vegetables	21	5.54
5.	Chemical fertilizer/pesticide	18	4.75
6.	Livestock	11	2.90
7.	Forestry/fruit/spices	58	15.30
8.	New technology/invention	49	12.93
9.	Labour/budget/cost	19	5.01
10.	Marketing	7	1.85
11.	Irrigation	5	1.32
12.	Bio-fertilier/bio-gas/compost	5	1.32
13.	Others	65	17.15
Total		379	100

3.4 Agricultural Programmes Telecast by BTV and Channel *i*

Agricultural programmes were broadcasted with different targets. However, the content of the programmes may discuss within this 13 criteria. Now a short discussion will be presented within the 13 criteria so that a vivid scenario of agricultural programmes could be drawn. An agricultural programme list have been included in *Appendix VI*.

3.4.1 Crop

Crops are the plant product grown, harvested or collected for human use. Crops are usually recognized under four major groups. The food crops included the cereals, tubers, roots, pulses, vegetables, oil crops, fruits, tree nuts, sugarcane, and spices; forage crops included Bhadoi and Rabi fodder which are grown to feed livestock; fiber crops included jute, cotton, hemp and kenaf and miscellaneous crops included tea, tobacco, rubber, ornament flowers and plants that produce perfumes, pharmaceuticals and dyes. (Kabir, 2012). Table 3.1 shows that 47 programmes telecast by BTV and channel *i* which are mainly told about the different types of crop such as paddy, wheat, jute, sugarcane, maize etc. The

programmes included collecting seedling from plot, rice variety, cultivation of super hybrid rice, integrated crop management, cropping intensity, cropping pattern, floating seedling plot, insect attack in rice field and sugarcane production etc. It covered 12.40 percent among the total agricultural programmes.

3.4.2 Fisheries

Fisheries are the important sector in agriculture. It included the occupation or industry of catching fish or tapping other marine or freshwater resources. It is now playing a major role in nutrition, employment and foreign exchange earning in Bangladesh. At first agricultural TV programmes draw the farmer's attention to clean up the doba and cultivate fish there. BTV and Channel *i* included the programmes regarding fisheries which is very fruitful for the farmers. It broadcasted 46 number of fisheries programmes during the period. The programmes included description of fish firming, fish farming in paddy field, success stories of fish farming, shrimp farming, tilapia farming, hatchery business etc. The number of fisheries programmes is 12.14 percent among the total agricultural programmes aired on the selected time schedule.

3.4.3 Poultry

The growing number of poultry farms proves that Bangladesh is considering this agricultural practice with a great importance. It requires no big land and huge capital to raise poultry and set up dairy farms. One could do it on the rooftop or veranda or other small space available. With the huge publicity in mass media poultry industry is doing well in Bangladesh. Mass media gave special priority to public the poultry related programmes. In the study period BTV and channel *i* produced 28 poultry related programmes which were 7.39 percent of the total agricultural programmes. In poultry related programmes mainly it focused to poultry farm management, duck farming, Bird flu, condition of poultry industry, success stories of poultry industry, poultry diseases diagnosis lab, problems and prospects of poultry etc.

3.4.4 Vegetables

At first the television programmes made the homestead vegetable farming popular. It attracted the attention to the space lying open and unused just behind the farmer's house. Now in everywhere of the country we can see the proper use of homestead areas by cultivation of various types of vegetables. On the said time BTV and channel *i* aired 21 programmes regarding vegetables. It covered 5.54 percent of total agricultural programmes. Among them vegetable production and nutrition, tomato cultivation, potato seed production, preservation and marketing of potato, preparing vegetable seedling in soil made tub etc. are remarkable.

3.4.5 Chemical fertilizer and pesticide

Annual crop loss in Bangladesh due to insect pests alone is about 16% for rice, 15% for jute, 11% for wheat, 20% for sugarcane, 25% for vegetables, and 25% for pulse crops (Kabir, 2012a). For that reason, using pesticide and fertilizer is necessary to reduce crop loss and to fulfill the growing demand of the population. Besides, the sustainability of agriculture and the health of the population may endangered by using high doses of chemical fertilizer and pesticides on agricultural product. In Bangladesh farmers used lower amount of fertilizer than the recommended doses so far. However in case of pesticide they never follow the scientific way. Almost always farmers never use mask when they spray pesticides on their field although it is highly recommended. Some of the chemical pesticide may active even after 10 days of using. So, it is recommended not to harvest before 15 days after the spraying of their agricultural field with those pesticides. The number of chemical fertilizer and pesticide related programmes were 18 in the research period which is only 4.75 percent of their total. Basically, this programmes focused on adulteration of fruits, tomato ripening through spraying, chemical in Gur, puffed rice and chemical ingredients, using urea in fattening cow, fertilizer crisis etc.

3.4.6 Livestock

In our National Livestock Development Policy 2007, we focused to accelerate economic growth for reduction of rural poverty by promoting sustainable

improvements in productivity of milk, meat and egg production including processing and value addition (NLDP, 2007). Electronic media telecasted some programmes related to livestock also. In the research period BTV and channel *i* aired 11 programmes related livestock which is 2.90 percent of the total. BTV and Channel *i* focused mainly on advance impregnation of livestock, milk farm, immunization of livestock, fattening livestock, blanket made of sheep wool, damages of livestock in flood etc.

3.4.7 Forestry, fruit and spices

According to National Forest policy (NFP, 1994) attempts will be made to bring about 20% of the country's land under the afforestation programmes of the government and private sector by year 2015 by accelerating the pace of the program through the coordinated efforts of the government and NGOs and active participation of the people in order to achieve self reliance in forest products and maintenance of ecological balance. During the study period BTV and channel *i* broadcasted 58 programmes related to forestry, fruit and spices which is about 15.30 percent of the total agricultural programmes. It comprised tree plantation, deforestation, success story of fruits and spices farming, social forestry etc.

3.4.8 New technology and invention

Electronic media played an important role to disseminate the new technology and innovation. Here the study found that 49 (12.93 percent) programmes telecasted by BTV and channel *i* during the research period. It included introduction of drum seeder, Vietnam's 3R technology, introduction of hybrid china and BINA rice etc.

3.4.9 Labour, budget and cost

A profitable agriculture should be cost effective. If the price of the necessary input of agriculture is growing high and the price of their product growing low then there will need the government subsidy. However lack of information from the farmers sometimes causes the hindrance. Fortunately, electronic media can play the exact mediator to overcome this problem. Regarding this issue BTV and channel *i* aired 19 programmes to minimize the problem. Specially it emphasized

the farmer's budget, labour cost, high price of agriculture input, low price of agro-product, economist reaction etc.

3.4.10 Marketing

In the agricultural policy modified in 2013, the government of Bangladesh came up with various strategies for the development of agricultural marketing. Emphasis was given on establishing a proper marketing network to facilitate timely marketing of farm produce and make a competitive agriculture. The policy also specified certain steps to reduce the control of middlemen and to ensure fair prices of crops for both growers and consumers. The agricultural policy, first of its kind in the country, had pleaded for the development of agricultural industries and processing of agricultural commodities that was neglected during the periods under British and Pakistan rule (NAP, 2013). Weakness in marketing policy of agro-product causes the economic losses of farmers. Agricultural programmes of electronic media can address this issue properly. So in some cases farmers can overcome the problems by watching agricultural TV programmes. However the effort of electronic media is not sufficient so far. Electronic media broadcasted 7 programmes during the study period regarding marketing. It included marketing prospects, prices of different agro-product etc.

3.4.11 Irrigation

Indiscriminate extraction of ground water causes failure of some shallow tube well in dry season. We have to decline the water extraction from ground water to overcome the problem. Electronic media should emphasize this issue. It telecasted 5 (1.32 percent) programmes regarding irrigation in the study time. It included electricity problem, irrigation crisis etc.

3.4.12 Bio-fertilizer, bio-gas and compost

To ensure the sustainable agriculture in Bangladesh it is necessary to produce and use the environment friendly green manure, compost and judicious use of agro-chemicals in agriculture. The TV programmes first suggested the farmers that the cow-dung they throw away everyday can be used to produce biogas. Then the

used cow-dung can reuse in their agricultural land as environment friendly manure. Electronic media as a catalyst disseminated 5 programmes regarding this issue. It emphasized introduction of bio-fertilizer factory, bio-gas plant, use of compost and Urea Mega Granule (UMG) etc.

3.4.13 Others

Electronic media broadcast many agricultural programmes besides the above 12 categories. They are also very important to describe the effectiveness of electronic media for sustainable agricultural development. Media telecasted 65 others categories programmes in the research period. It was 17.15 percent of the total agricultural programmes. Basically the others programmes were about anniversary, farmer's football, special programmes, person's special contribution and achievement, communication facility for agricultural transport etc.

Study revealed that electronic media broadcasts various agricultural programmes. In this research the agricultural programmes were categorized into 13 categories. The study found out that highest proportion of agricultural programmes were crop, fisheries, forestry/fruit/spices and new technology/invention related. Findings showed that 52.77 per cent television programmes were crop, forestry/fruit/spices and new technology/invention oriented. On the other hand, chemical fertilizer, marketing of agro product, irrigation and bio-fertilizer/bio-gas/compost related programmes had the lowest coverage in the agricultural television programmes, which is very much related to the sustainability of agriculture. It occupied only 7.39 percent space of the total agricultural programmes. Thus it is assumed that there is a lack of attention toward sustainable farming practice in electronic media's programmes. Besides, most of the fertilizer or pesticide related programmes suggested to use more and more fertilizer and pesticide for higher production. In their programmes the media personnel never told that over doses of fertilizer and pesticide may causes what type of side effect.

Chapter 4

Agricultural Features and Characteristics of Farmers

Different characteristics of farmers are the important factors which influence the knowledge, emotion, attitude and behaviour. But before discussing those factors it is important to know the prevailing agricultural condition of the research area. Because with the farmers characteristics, the natural condition such as Geographical location, administrative structure, climate, soil quality, major crops, cropping pattern etc. also influence the agriculture much. In this section focus has been given on those agricultural features of the research area. Besides, it will discuss the characteristics of sample farmers within the social context of Bangladesh.

4.1 Agricultural Characteristics

4.1.1 Agriculture at a glance

Table: 4.1 General statistics on agriculture of Kurigram Sadar and Ulipur upazila

Categories		Kurigram Sadar	Ulipur
Total population	:	3,12,408	3,95,207
Population density per sq. km	:	1130	862
Literacy (%)	:	46.1	45.6
Total number of farm family	:	32,763	55,315
Total area	:	27642 ha	45850 ha
Cultivable land	:	19387 ha	31540 ha
Current fallow land	:	1173 ha	2720 ha
Water body	:	3000 ha	9832 ha (with char land)
Others (settlements)	:	4972 ha	3506 ha
Cropping intensity	:	226 %	219 %
Single cropped area	:	902 ha	1020 ha
Double cropped area	:	11905 ha	22118 ha
Triple cropped area	:	5535 ha	5682 ha
More than triple cropped area	:	-	-
Net cropped area	:	18,342 ha	28820 ha
Total cropped area	:	41,317 ha	62302 ha
Total food requirements (453.60 gm/man/day)	:	51,723 mt	65,432 mt
Total food production	:	1,58,340 mt	1,54,423 mt
Irrigated area	:	17495 ha (90.24%)	25940 ha (90.01%)
Fertilizer dealer	:	92	93
Pesticide dealer	:	79	68
Seed dealer	:	40	6

Source: BBS (2011a) and DAE, Kurigram, (2013)

4.1.2 Geographical locale

Kurigram Sadar: The upazila occupies an area of 276.43 sq. km. It is located between 25°45' and 25°55' north latitude and between 89°34' and 89°50' east longitudes. The upazila is bounded on the north by Nageswari and Phulbari upazilas on the east by India, on the south by Ulipur upazila and on the west by Rajarhat upazila and Lalmonirhat Sadar upazila.

Ulipur: The upazila occupies an area of 504.19 sq. km including 78.73 sq. km riverine area. It is located between 25°33' and 25°49' north latitude and between 89°29' and 89°51' east longitudes. The upazila is bounded on the north by Kurigram Sadar and Rajarhat upazilas on the east by India and Raumari upazila, on the south by Chilmari upazila and Sundarganj upazila of Gaibandha zila and on the west by Pirgacha upazila of Rangpur zila and Sundarganj upazila of Gaibandha zila.

4.1.3 Administrative structure

Kurigram sub-division was turned into a zila in 1984. Among the 9 upazilas Kurigram Sadar and Ulipur occupied about 35% of the total area of Kurigram District. Kurigram Sadar consists of 8 union parishads, 78 mauzas, 266 villages. There is a paurashava in this upazila named Kurigram Paurashava which has 9 wards. On the other hand, Ulipur Thana was formed in 1902 and it was turned into an upazila in 1984. It comprises 13 union parishads, 147 mauzas and 354 villages. In this upazila there is also only one paurashava named ulipur paurashava which has 9 wards.

Table 4.2 Administrative units of Kurigram Sadar and Ulipur

Name of upazila	Number of Unions	Number of Mauzas	Number of Wards	Number of villages
Kurigram Sadar	8	78	9	266
Ulipur	13	147	9	354

Source: BBS (2011b)

4.1.4 Climate

Climate is average condition of the atmosphere near the earth's surface over a long period of time, taking into account temperature, humidity, precipitation, wind, cloud and barometric pressure etc. Geographical location and physical setting govern the climate of any area (Kamaly, 2011). It is affected by the latitude, terrain and altitude as well as nearby water bodies and their currents.

The research area is located in tropical monsoon region and its climate characterized by moderate temperature, relatively high rainfall, moderate humidity and fairly marked seasonal variations. According to the climate, three distinct seasons can be seen here among six seasons. The rainy monsoon season lasts from May to September. More than 94 percent rainfall occurs in this season.

Table 4.3: Monthly temperature of Rangpur region (°C)

Year		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
1981	Max	25.2	32	34.8	33	33.5	37.5	32.5	34	30.2	33	30.5	28.2
	Min	10	12.5	16	18	21.4	20.4	16	18	13	12	10	11
1982	Max	27.5	30	34.8	36.8	38	33.8	39	34	35.7	33.1	29.5	25.7
	Min	10.4	11.3	15.5	18	18	16	18.7	20.5	16	11.5	12.6	11.6
1983	Max	26.6	29.5	36	38.4	35	35.6	34.7	34.8	33.5	34.5	30.6	27
	Min	13.2	15.9	17.8	25	22.5	17.8	16	17.5	18	12.8	11.8	10.8
1984	Max	24.2	29	35.5	38.6	35.5	36	33.6	35.5	33.8	33.7	30	28
	Min	10	12.7	14.6	15	15	20.5	21	15.6	16	17	12	11.5
1985	Max	27.1	28.8	35.9	37.1	35	35.3	34.4	35.1	33.6	33.6	30	27
	Min	10	10	14.4	18.5	25	21	17	15	19	13	11	10.5
1986	Max	23.2	30.4	34.2	37	36	36	37.1	36.4	34	33	30.7	27.5
	Min	12	14	15.6	16	20	22	20	16.6	21	18.3	15	10
1987	Max	27.2	31.4	32.2	37.2	37.6	37.6	33.4	35.6	33.6	33.5	31	27.8
	Min	12.3	14	16	20.5	21.4	17	25	21.4	12	15	12	11.5
1988	Max	26.7	29.8	33.8	37.7	35.6	36.3	35.5	34.8	35.4	34	30.5	28
	Min	11.2	13	14.4	18.5	20.5	25	17	15	19	15.3	14	13
1989	Max	26.2	30.2	34	38.9	39.6	36	35.2	34.2	34.8	34	30.3	26.6
	Min	12.5	14.9	15.8	25	22.5	16.8	16.5	18.5	15	12.6	11.8	10.5
1990	Max	28.9	27.8	33.5	35	35.2	35.5	34	36	35.8	32.6	31.6	27.4
	Min	10.5	12.9	15.8	24	23.5	16.8	16.5	19.5	15	12.6	12.8	11.5
1991	Max	27.5	31.3	36.5	36.5	36.5	34.7	35.6	36.7	33.8	34.2	32.4	27.5
	Min	12.2	15.9	17.6	26	22.5	19.8	18	17.5	18	13.8	16.8	13.8
1992	Max	27.5	26.3	37.4	39.7	33.5	36	35.2	35.6	35.1	33.8	31	27.8
	Min	11.2	13.4	17.8	25	22.5	17.8	16	17.5	15.7	12.8	11.8	10.8
1993	Max	27	29.4	32.9	36.4	34.8	34.6	34.8	35.6	35	33.5	30.3	28.8
	Min	12.3	14.4	15.6	26.7	21.5	17.8	17	17.5	18.6	16.8	19.8	12.5
1994	Max	27.2	30	35	36.3	39.7	34.5	35.6	35.7	35.3	34	31.2	27.7
	Min	10.2	13.9	16.8	18.4	20.5	25.4	17.3	18.5	18.5	12.8	11.9	11.8
1995	Max	25.6	28.3	36	39	37	35.7	33.6	34.2	34.6	33	31	26.4
	Min	13	15.9	16.1	18	22.5	17.8	16	17.5	22	20.2	15.8	13.3

Year		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
1996	Max	25.5	28.8	34.8	37.5	37.2	36	35	35.2	35.9	34.6	32.7	27.2
	Min	9.2	12.9	17.3	21.5	22.7	17.8	22	18.5	19	14.8	14.8	10.8
1997	Max	25.6	27.7	33.7	33.4	35.6	37.2	35.4	36.3	33.1	34	31.6	27
	Min	9.5	12.9	11.8	16	22.5	17.8	16	17.5	19	12.8	11.8	9.8
1998	Max	26	29.8	31.7	36.3	37.7	38.2	34.7	33.8	35.6	35.2	31.2	29.4
	Min	16.2	15.9	17.8	26.4	22.5	19.8	19	20.5	18	14.8	13.8	12.4
1999	Max	28	31.9	33.8	36	36.6	36.7	35.5	35	34	33.4	31.8	28.5
	Min	11.9	13.9	14.8	25	22.5	17.8	16	17.5	16	12.8	11.8	12.8
2000	Max	26.4	27.1	33.6	36	37	36.4	34.8	35	34.8	34.6	31	26.9
	Min	11.2	13.9	17.6	25.9	22.5	18.8	16.7	17.5	16	12.8	11.8	9.8
2001	Max	26.6	30	34.2	36.6	35.3	35.6	37	39.8	34.8	33.2	30.4	26.7
	Min	12.4	13.4	17.5	25.6	25.5	18.8	17	16.5	15	13.8	12.6	12.5
2002	Max	25.5	30.6	34.4	34.6	35.7	34	35.2	35.5	38.3	34	31	30.3
	Min	11.4	13.9	15.8	24.7	21.4	16.8	16.8	15.5	18.6	17.5	16.8	13.9
2003	Max	26	28.7	33	35.7	36.8	36.3	36.9	35.8	35	33.2	31.1	27.5
	Min	11.4	12.9	17.8	23.7	21.4	16.8	16.8	17.5	16.6	17.5	14.8	12.9
2004	Max	25.5	31.5	35.8	39.5	37.3	34.7	34	35.2	34.4	33.7	30.8	27.8
	Min	11.4	13.6	15.5	24.6	22.5	16.8	16.5	15.5	18.5	14.8	13.3	12.2
2005	Max	23.7	28.6	33	33.5	36.7	36	35	35.1	35.6	32.5	31.4	27.7
	Min	12.6	14.9	15.8	24.4	22.5	15.8	18	17.8	14	13.9	12.6	11.6
2006	Max	27.4	32.2	34.5	34.8	37	35.4	36	36.5	35	33.2	30.5	27
	Min	10.5	12.9	13.8	24	22.5	16.8	16	16.5	17	15.8	14.6	12.4
2007	Max	27.5	29.3	34.4	34.6	38.2	36.5	34.5	37.5	34.5	35.5	32	27.8
	Min	12.2	13.9	15.8	27	25.5	18.8	17.5	19.5	18.2	14.8	13.8	12.5
2008	Max	27	29.4	33	35.7	35.1	34.6	34.8	36.6	34.5	34	31.5	28.7
	Min	12.5	15.3	17.2	25.1	22.6	17.3	17	17.5	16.6	12.8	11.8	11.4
2009	Max	26.8	30.6	33.7	37.5	36.6	37.1	36.4	34.1	35.5	34	31.6	28.3
	Min	12.4	15.9	16.8	24.7	24.5	17.5	17.1	15.5	18	13.8	12.5	11.8
2010	Max	27.4	29.8	35.5	38.2	36	36.3	35.3	36.5	34.2	34	31.2	27.3
	Min	10.2	12.9	15.8	24.6	21.5	17.8	15.8	16.5	17	12.8	11.8	11.4
2011	Max	25.5	29.2	34.8	35.5	35.7	35.5	35.2	36.3	36.2	34.5	30.1	22
	Min	12.2	15.9	17.8	25	22.5	19.8	16	17.5	18	13.8	12.8	10.8

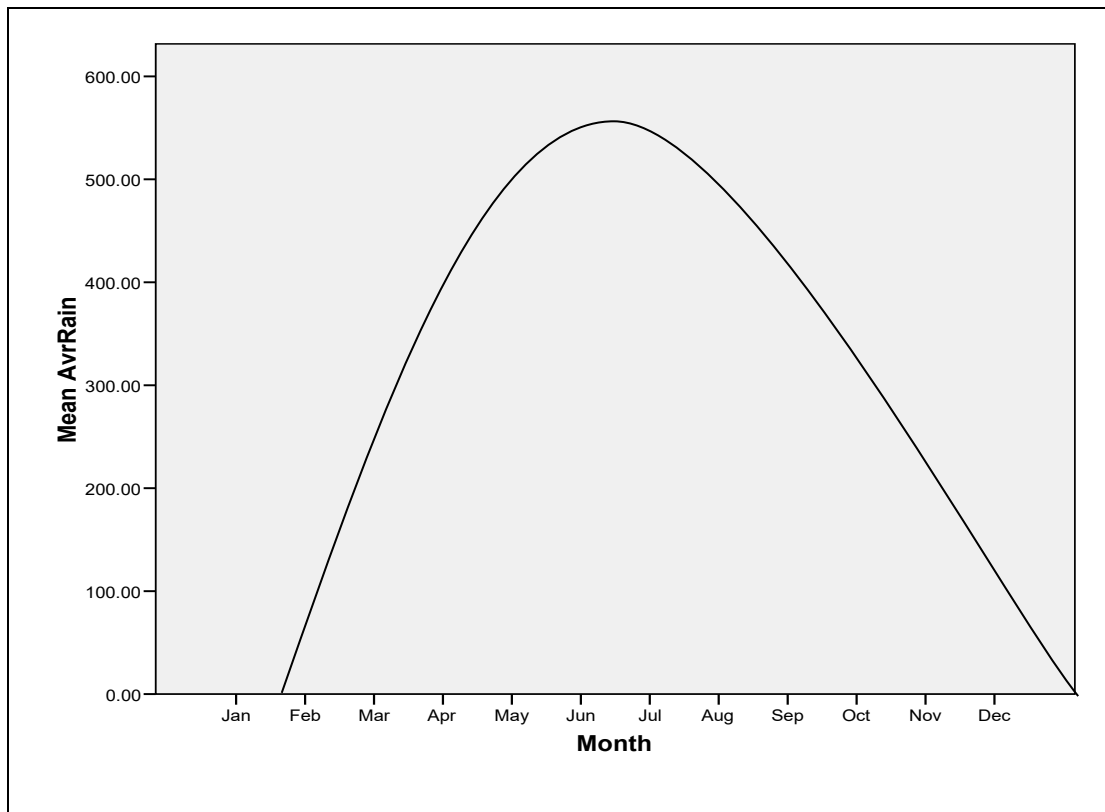
Source: Rangpur Meteorological Office, 2012.

Table 4.4 Monthly rainfall of Kurigram (mm)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	No v	Dec
2001	0	9	31	33	30.06	220.8	228.4	376.3	200.7	523.8	0	0
2002	11.7	0	54.3	395.7	314	813	684.1	215.1	544.7	62.5	2.5	0
2003	7.7	174.2	83.9	244.5	302.3	831.9	567.8	158.7	81.9	290.8	0	31.5
2004	6.8	1.6	16	310.2	516.4	626.7	818.6	55.2	714.7	580	0	0
2005	6.5	6.3	57.8	188.8	201.5	754.5	744.1	327.3	181.8	806.5	0	0
2006	0	13	3.6	210.4	395.6	425.9	243.3	150	351.7	66.1	3	15
2007	0	36.9	0	0	0	638	520.4	421.5	426	283.3	1	0
2008	43	0	62.7	201.3	337.9	443.2	485.7	605.8	264.5	299.5	0	0
2009	0	0	6.1	130.5	382.3	486.2	134.44	850	331.7	241.2	0	0
2010	0	0	11.5	311.5	342.2	554	214.9	181.8	206.8	106.3	3.8	2.5
2011	0	22.3	39.9	31.7	320.3	301.4	395.1	295.3	261.5	12.7	15	0
2012	0	5	33	100	280.5	350.3	385.6	200.4	150	49	0	0

Source: DAE, Kurigram, 2013.

Table 4.3 and Table 4.4 shows the monthly temperature ($^{\circ}\text{C}$) and monthly rainfall (mm) of Kurigram district.



Source: DAE, Kurigram, 2013.

Fig. 4.1 Trend of average rainfall

The winter season starts from September and it exists up to February. It is a very dry and cool season. In the mid of February and March the hot summer season comes. The pre-monsoon hot season is characterized by high temperature and thunderstorm. The humidity of air is relatively low in this period. The highest temperature recorded in the month of June, July, August and September. In that time rainfall also occurs high. The rhythm of life in Bangladesh is geared to the seasonality of rainfall. Each of the seasonal rainfall characteristics has its significance in determining cropping pattern (Islam, 1987). But the dependency on rain is not so crucial nowadays. The average monthly maximum and minimum temperature as well as the total monthly rainfall has been given in the Table 4.3 and 4.4.

4.1.5 Soil condition

The types of soil of these two upazila can describe within two categories. (a) The Tista Floodplain and (b) Brahmaputra-Jamuna Floodplain. The maximum area of these two upazila lies under the Tista Floodplain and only the eastern part of Kurigram Sadar and Ulipur are in the active Brahmaputra-Jamuna Floodplain.

a. Tista floodplain

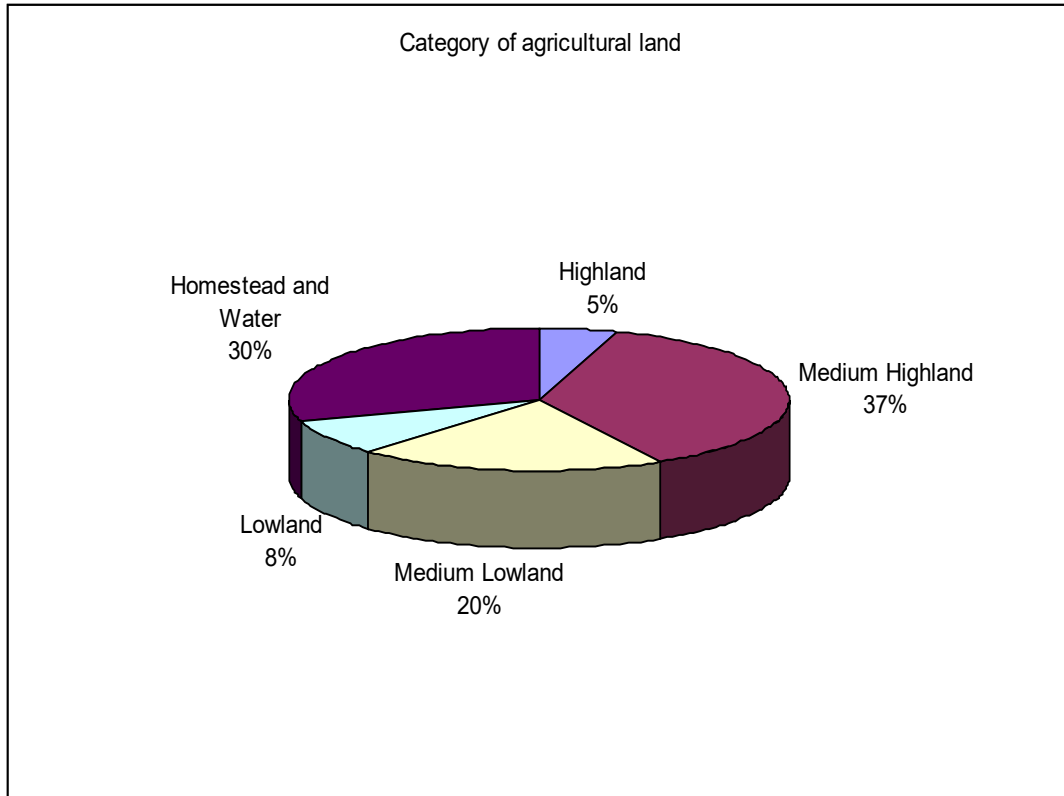
The area of Tista Floodplain of these two upazila is about 58,797 ha. which is 80% of the total area. The Tista Floodplain is formed by sandy loam and some silt loam. The land of the area is plain.

b. Brahmaputra-jamuna floodplain

The eastern part of Kurigram Sadar and Ulipur upazila lies under the active Brahmaputra-Jamuna Floodplain. The area of Active Brahmaputra-Jamuna Floodplain is about 14,694 ha. which is 20% of the total area of the two upazila. This area is usually flooded in the rainy season. Maximum area of this zone lies under the Brahmaputra-Jamuna river.

4.1.6 Agricultural land category

Most of the agricultural land is medium high-land (37 percent) in category in the research area. 20 percent of land is medium lowland, while 30 percent comprises homestead and water, 8 percent is lowland and 5 percent is highland. The category of agricultural land is shown below.



Source: DAE, Kurigram, 2013.

Fig. 4.2 Category of Agricultural Land

4.1.7 Agro-Ecological Zone (AEZ)

The whole study area is under AEZ-2 and AEZ-7. The characteristics of these two zones is given bellow.

AEZ 2: Active Tista Floodplain (83644 ha.)

Kurigram Sadar upazila lies under AEZ-2 (Active Tista Floodplain). This region includes the active floodplains of the Tista, Dharla and Dudkumar rivers. It has complex patterns of low, generally smooth ridges, inter-ridge depressions, river channels and cut-off channels.

The area has irregular patterns of grey stratified sands and silts. They are moderately acidic throughout and parent alluvium is rich in weatherable minerals. Four General Soil Types occur in the region of which, Noncalcareous Alluvium predominates. Organic matter content is low and CEC (Cat ion Exchange Capacity) is medium. Soil fertility level, in general, including Mg and B status is low to medium.

AEZ 7. Active Brahmaputra-Jamuna Floodplain (319001 ha)

Ulipur upazila lies under AEZ-7 (Active Brhmapura-Jamuna Floodplain) and AEZ- 2 (Active Tista Floodplain). This region comprises the belt of unstable alluvial land along the Brahmaputra-Jamuna rivers where land is constantly being formed and eroded by shifting river channels. It has an irregular relief of broad and narrow ridges and depressions.

The area is occupied by sandy and silty alluvium, rich in weatherable minerals with slightly alkaline in reaction. Six General Soil Types occupy the area of which, only Non Calcareous Alluvium predominates. Organic matter status is low and fertility status is low to medium. Nitrogen is limiting whereas the K, S and Zn status is low to medium.

4.1.8 Major crops

In the Kurigram Sadar the major crops are rice (61.32%), Jute (6.55%), potato (4.53%), vegetable (3.46), wheat (1.93%), pulse (1.80%), because they are grown on one percent or more of the Total Cropped Area (41,317 ha.). Area, production and yield of major crops have been given in the Table 4.5.

Table 4.5 Area, Production and Yield of different crops (2011-2012)

Crop		Area (ha)	Production (mt)	Yield
Aus	HYV	110	250	2.27
	Local	-	-	-
T. Aman	HYV	9255	25914	2.8
	Local	4395	7032	1.6
Boro	HYV	7650	30600	4
	Hybrid	3800	18400	4.84
	Local	125	132	1
Total Rice	-	25335	82328	3.25
Jute	-	2705	6812	2.52
Potato	-	1870	31540	16.86
Vegetable	-	1430	20115	14
Wheat	-	800	1600	2
Pulse	-	747	946	1.27
Banana	-	280	2450	8.75
Maize	-	150	750	5
Sugarcane	-	125	5000	40
Others	-	884	3536	4

Source: DAE, Kurigram, 2013.

In the Ulipur upazila the major crops are rice (70.38%), wheat (3.93%), Jute (3.60%), oil seed (3.47%) vegetable (2.04%), potato (1.48%), spices (1.32%) because they are grown on one percent or more of the Total Cropped Area (62,302 ha). Area, production and yield of major crops have been given in the Table 4.6.

Table 4.6 Area, Production and Yield of different crops (2011-2012)

Crop	Variety	Area (ha)	Production (mt)	Yield
T. Aman	HYV	20375	52057	2.55
	Local	3090	4814	1.55
Boro	HYV	12524	70100	5.60
	Hybrid	7605	45000	5.92
	Local	255	400	1.57
Total Rice	-	43849	172371	3.93
Wheat	-	2450	4410	1.8
Jute	-	2245	22180	9.88
Oil Seed	-	2165	2336	1.08
Vegetable	-	1272	14044	11.04
Potato	-	925	10980	11.87
Spices	-	825	2901	3.52
Pulse	-	483	1014	2.10
Maize	-	475	3390	7.14
Others	-	1278	5112	4

Source: DAE, Kurigram, 2013.

Rice dominates on both of the research area. Mainly hybrid and high yielding variety of rice in both aman and aus is cultivated as the main agricultural product which is about 66% of total crops production. Transplanted aman, HYV boro and hybrid boro is grown almost everywhere in these upazilas.

Next to rice, jute is the most important crop in Kurigram Sadar and wheat in Ulipur upazial. Potato, vegetables, pulse and spices are the other important crop in these areas.

4.1.9 Minor crops

Crops that grown less than one percent of the Total Cropped Area (TCA) of an area is considered as minor crops (Hossain, 2008).

In Kurigram Sadar, banana (0.68%), maize (0.36%), and sugarcane (0.30%) and in Ulipur, pulse (0.78), maize (0.76%) etc. are cultivated as the minor crops.

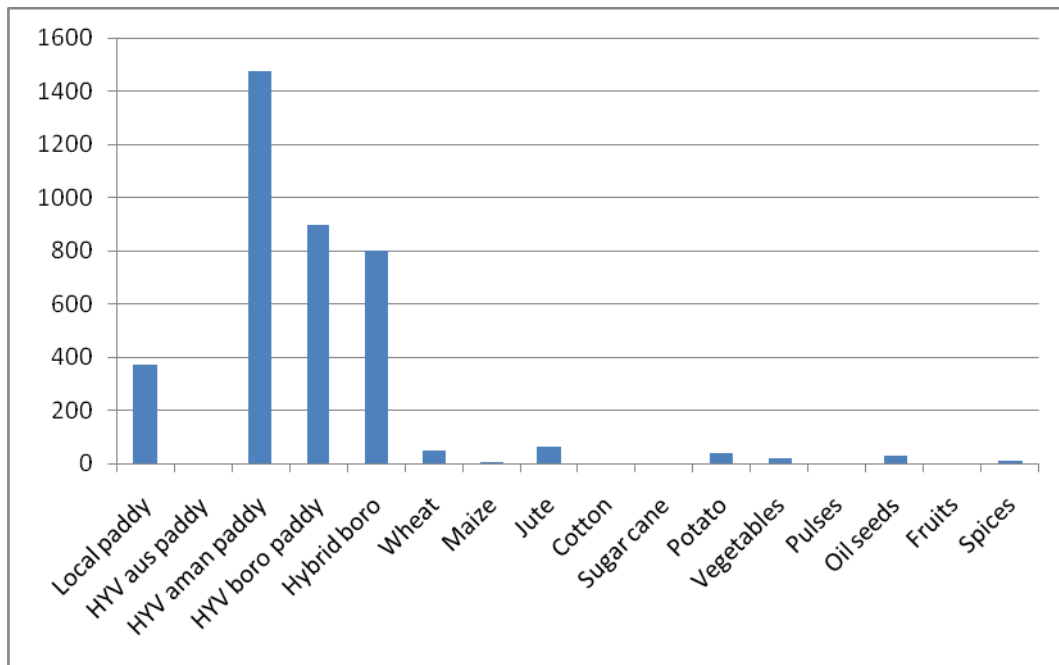
4.1.10 Cropping pattern

The cropping pattern of these two areas is too much monotonous. Because farmers transplant rice after harvesting rice. This tradition comes from a long. The rice cultivated area always use for cultivating rice. Only the land is not suitable for rice they might be used for other various crops. Almost 95% cultivable lands are on irrigation facility. But some other crop like tomato, soybean and vegetables are cultivated in homestead only for daily diet. But the commercial cultivation is not started so far. Before coming HYV rice, farmers cultivated various crops such as wheat, jute, pulses, oil seed, potato, onion, garlic, vegetables, lentil, mustard, betel, nut besides the traditional variety of rice. Recently, there were created a favourable environment for other crops because of the low price of rice. Farmers again started to plant wheat, jute, mustard and potato for making the agriculture profitable.

Table 4.7 Area under different crops (Area in acres)

Name of Village	Net temporary cropped	Grossed cropped	Local paddy	HYV aus paddy	HYV aman paddy	HYV boro paddy	Hybrid boro	Wheat	Maize	Jute	Cotton	Sugar cane	Potato	Vegetables	Pulses	Oil seeds	Fruits	Spices
Dharanibari	576	1145	80	9	486	268	217	19	2	25	-	0	5	3	-	2	1	3
Kishamat Maloti Bari	261	531	25	-	239	201	40	1	-	8	-	-	1	1	-	-	-	1
Maloti Bari Digor	360	825	142	0	248	179	173	25	1	24	-	-	3	3	2	1	-	1
Kalyan	457	932	31	0	409	219	208	2	-	6	1	-	9	10	-	11	0	4
Muktaram	111	246	8	-	87	30	77	-	0	0	-	-	18	2	1	15	-	0
Palashbari	90	188	85	-	7	-	84	0	1	1	-	-	4	0	-	2	-	-
Total area:			371	0	1476	897	799	47	4	64	1	0	40	19	3	31	1	9

Source: BBS (2011a).



Source: BBS (2011a)

Fig. 4.3 Cropping pattern (areas of land in acre)

Maximum land of the research area is used for cultivating different types of rice. Fig. 4.3 showed that highest number of land is cultivating for HYV Aman rice. Secondly 897 acres of land is used for HYV Boro rice. In third position they cultivate Hybrid Boro. The area under the other crops such as wheat, maize, potato, jute, cotton, sugarcane, vegetables, pulses, fruits, oil seed and apices are negligible.

4.1.11 Major constraints

- ⇒ Flood
- ⇒ Drought
- ⇒ Cold wave
- ⇒ Sandy land
- ⇒ Monotonous cropping pattern
- ⇒ Lack of seed bank and dependency on multinational company
- ⇒ Labour crisis in peak season and high labour rate
- ⇒ Lack of agri-technology

4.2 Characteristics of farmers

Effectiveness of agricultural television programmes depends upon some of the personal, economic, social and psychological characteristics of the farmers. Because these characteristics help and influence them to become more active in their daily life. The practice is a must for the effectiveness of electronic media for sustainable agricultural development. But some of the characteristics determine how much the respondents respond against it. Ten personal, five economic, four social and three psychological characteristics of the farmers were studied in this research and considered as independent variables that are presented in this chapter.

4.2.1 Age

Age of the farmers refers to the number of years after their birth. It indicates that according to age category the range of the respondents is 27 years to 90 years while the mean become 43.36 with standard deviation 8.59 and the variance is 73.80. According to mean and standard deviation the study shows that the farmers age concentrate around 36 to 50 years. That means the majority of the farmers belong the age between 36 to 50 years in the study area. In this study categorically the respondents are classified into three categories as young (up to 35), middle aged (36-50) and old (above 50). The distribution of farmers according to their age has been shown in the Table- 4.8 given below.

Table 4.8 Distribution of the farmers according to their age

Categories (years)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Young (27-35)	40	21.39	43.36	8.59	73.80
Middle (36-50)	109	58.29			
Old (>50)	38	20.32			
Total	187	100	Max- 90, Min- 27 Range- 63		

Table 4.8 shows that the highest proportion of the farmers (58.29 percent) are middle aged while 21.39 percent are young and 20.32 percent are old aged. It

depicts the similar findings like Abubakar *et al.* (2009), Mathews-Njoku and Onweremadu (2007).

4.2.2 Gender

If the female participation becomes high in any development issue then the development process will be accelerated. Because almost half of the population are female. In this study the result shows that the cent percent of the farmers are male.

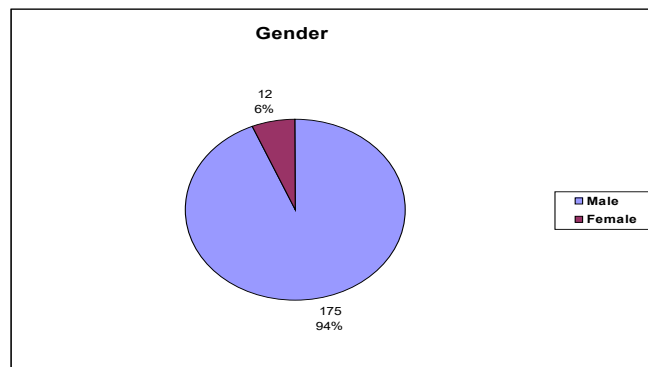


Fig. 4.4 Distribution of the farmers according to their gender

Figure 4.4 shows that 93.58 percent of the total research population are male and only 6.42 percent are female. According to BBS (2011) about 2.86% of the total farms are female headed. This is obviously true that so far the female part of the population remain workless in the northern part of Bangladesh. Their involvement in agriculture as farm family head is very negligible in Bangladesh. It is similar to the findings of Abubakar *et al.* (2009).

4.2.3 Education

Education is the basic need for any development activity. It refers to the year of formal schooling of an individual. In this research, Education level of the farmers determined by the scores ranged from 0 (zero) to 16. In the study it is found out that mean of education level is 6.95 while the standard deviation is 3.62 and the variance is 13.11. The farmers were categorized into 5 separate groups according to their level of education as shown bellows.

Table 4.9 Distribution of the farmers according to their level of education

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Illiterate (0)	20	10.70	6.95	3.62	13.11
Sign Only (0.5)	1	0.53			
Primary (1-5)	45	24.06			
Secondary (5-10)	101	54.01			
Above secondary (>10)	20	10.70			
Total	187	100	Max-16, Min-.00 Range- 16		

Table 4.9 shows that a majority number of the farmers (54.01%) have the secondary level of education, while 24.06 % are primary educated. On the other hand 10.70% are illiterate, 10.70% are in the level of above secondary education and only 0.53% has scores sign only that means they have only the signing ability. The finding showed a wide range of educational qualification of the respondents. It depicted a different picture other than the national literacy rate. In this study the scenario became different because the respondents who own television set or having television exposure were selected as respondent in this research. So the sample population are somewhat higher educated. Besides, the efforts made by the government and nongovernment organizations for education had the influence on the findings.

4.2.4 Family size

Family size refers to the number of members including the respondents himself/herself, wife/husband, children and other permanent members who live and eat together in the family. The total number of family members was considered as the family size score of the respondent. The family size score from 2 to 11. The mean is 5.44 with standard deviation 1.74 while the variance is 3.05. Based on the family size scores, farmers were classified into three categories as "small family" (up to 4), "medium family" (5-8) and "large family" (above 8). The distribution of the respondents according to the family size has been given in the Table 4.10.

Table 4.10 Distribution of the farmers according to their family size

Categories (number)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Small family (up to 4)	62	33.16	5.44	1.74	3.05
Medium family (5-8)	116	62.03			
Large family (>8)	9	4.81			
Total	187	100	Max- 11, Min-2 Range- 9		

Data showed in the Table 4.10 indicates that average family size of the respondents is 5.44 which is similar to that of the national average of 5.60 (BBS, 2011b). 62.03 percent families of the respondents are medium in size, 33.16 percent families are small sized and only 4.81 percent families are large in size. 95.19 percent families are small and medium in size. It depicted the picture of popularity of nuclear family in Bangladesh. The family planning activities had been continuing since long time in the study area. As most of the farm family head who have TV set or TV exposure are more aware and enthusiastic about family planning so their family size is becoming small or medium day after day.

4.2.5 Family education

Family education was computed within the score form 1 to 12. The mean, standard deviation and variance of the respondents was 5.44, 2.08 and 4.33 respectively. The respondents were classified into three categories. From 1 to 5 scores the respondents were treated as primary educated, 6 to 10 were treated as secondary educated and above 10 scores was treated as above secondary level of education holder. The distribution of the farmers according to their family education has been shown in Table 4.11.

The distribution of the farmers according to their family education shows the result that 62.57 percent families who are from the secondary level of education. 32.62 percent families are from the primary level of education and only 4.81 percent families hold the average family education above secondary level.

Table 4.11 Distribution of the farmers according to their family education

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Primary (1-5)	61	32.62	5.44	2.08	4.33
Secondary (6-10)	117	62.57			
Above Secondary (>10)	9	4.81			
Total	187	100	Max- 12, Min- 1.5 Range- 10.5		

It is found that more than 95 percent family from the research area who possesses television as the agricultural development instrument are either primary or secondary educated. It is obvious that in this research no family of the area covered obtained 0 scores as the family education. Because most often the illiterate people are reluctant to watch the agricultural programmes in television and side by side who are illiterate cannot afford the television.

4.2.6 Training experience

Trained people are more positive in any positive change. Training experience of a farmer counted with the various training activities in organizations. It increases the knowledge and skills of the respondents which can intensify the positive change in agriculture. So far the total number of days in which a respondent participated in the agriculture related training programmes was considered as his training experience.

Training experience scores of the farmers ranged from 0 to 18 with the mean, standard deviation and variance being 6.02, 4.61 and 21.29 respectively. On the basis of the training experience scores, farmers were classified into four categories such as no training (0), low training experience (1-5), medium training experience (6-10) and high training experience (above 10). The distribution of the farmers according to their training experience has been given in the Table 4.12.

Table 4.12 Distribution of the farmers according to their training experience

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
No training experience (0)	53	28.34	6.02	4.61	21.29
Low training experience (1-5)	17	9.09			
Medium training experience (6-10)	91	48.67			
High training experience (>10)	26	13.90			
Total	187	100	Max- 18, Min-0.00 Range- 18		

Data showed in the Table 4.12 indicates that most of the respondents had medium training experience (48.67 percent). This finding is differed with the Kamaly (2011). But about the no training experience it found out the similar finding with Kamaly (2011). It is 28.34 percent of the total respondents. On the other hand 13.90 percent obtained high training experience and 9.09 percent obtained low training experience. Among the high trained farmers most of them got the repeated training about same issue. That means there was limited number of training conducted in these areas which was not properly distributed also.

The study revealed that about half of the farmers have medium training experience. The training about rice production, IPM (Integrated pest Management) and fish production influenced the percentage of training experience of this area. There were the continuous activities of the DAE of these two upazila made this improvement. But more training should be conducted in this area regarding sustainable agriculture because the lack of practice of training issues in practical life made the training experience in vein. Most often them were trained but never used the experience in their practical life. Besides, more training programmes should be conducted related to water management, livestock production, fruit production, poultry production and seed production etc. Because there were the lack of these type of training in these areas.

4.2.7 Mass media exposure

The calculated mass media exposure scores of the farmers ranged from 2 to 16 against the possible range of 0 to 28. The mean, standard deviation and variance were 6.41, 3.22 and 10.41 respectively. Based on the observed mass media

exposure scores, farmers were classified into three categories such as low user (2-6), moderate user (7-11) and high user (above 11). The distribution of farmers based on their mass media exposure scores has been shown in Table 4.13.

Table 4.13 Distribution of the farmers according to their mass media exposure

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low user (2-6)	107	57.22	6.41	3.22	10.41
Moderate user (7-11)	67	35.83			
High user (>11)	13	6.95			
Total	187	100	Max- 16, Min- 2 Range- 14		

Result showed in Table 4.13 indicates that the highest (57.22 percent) proportion of respondents were low user and 35.83 percent were moderate user of different mass media and only 6.95 percent farmers were high user which is a very small portion. It is obvious that 93.05 percent farmers were low and moderate user of mass media. Most of the villagers use mass media but the data shown only the farmers who use television and other mass media for enlarging their agricultural knowledge. It revealed that the proportion of viewers of agricultural programmes is very low. Most often respondents watch television for entertainment purpose.

4.2.8 Supervision of crop production

Supervision of the crop production is an important category of farmers by which we can judge the opinion leadership of them. In many cases it is found out that the respondents who have high education and training experience can supervise his/her own or neighbor's agricultural activities properly. Cosmopolitaness and organizational participation also can influence his/her degree of supervision. The calculated supervision of crop production scores of the farmers ranged from 10 to 45 against the possible range of 0 to 45. The mean, standard deviation and variance were 29.05, 6.83 and 46.71 respectively. According to the observed supervision of crop production scores farmers were classified into three categories such as low supervision (10-21), medium supervision (22-33) and high

supervision (above 33). The distribution of farmers according to their supervision of crop production scores has been given in Table 4.14.

Table 4.14 Distribution of the farmers according to their supervision of crop production

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low supervision (10-21)	31	16.58	29.05	6.83	46.71
Medium supervision (22-33)	82	43.85			
High supervision (>33)	74	39.57			
Total	187	100	Max- 45,Min- 10 Range- 35		

Finding showed in Table 4.14 indicates that the highest proportion of (43.85 percent) of the farmers had medium supervision ability, 39.57 percent of the farmers had high supervision ability and only 16.58 percent had the low supervision ability. Data revealed that about 60% percent of total respondents had low and medium supervision ability and about 40% respondents had high supervision ability. The high supervision category was shown by the highest number of farmers than Alam (2008) and Hossain (2008) observed in their findings. It happened because of the selection of the television owner as respondent only. Most often the people who have a handsome number of land and other property are the owner of television. So they were the higher part of the supervision category. But it does not mean that the average number of farmers had the higher supervision ability of this area.

4.2.9 Agricultural knowledge

The agricultural knowledge scores of the farmers ranged from 20 to 50 against the possible range of 0 to 52. The mean value, standard deviation and variance were 34.95, 6.83 and 46.65 respectively. Based on the agricultural knowledge the farmers of the research area were classified into three categories such as low knowledge (20-29), medium knowledge (30-39) and high knowledge (above 39). The distribution of the farmers based on their agricultural knowledge scores is presented in Table 4.15.

Table 4.15 Distribution of the farmers according to their agricultural knowledge

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low knowledge (20-29)	47	25.13	34.95	6.83	46.65
Medium knowledge (30-39)	79	42.25			
High knowledge (>39)	61	32.62			
Total	187	100	Max- 50, Min- 20 Range- 30		

Study revealed that about more than two-fifths (42.25 percent) of the total farmers had medium agricultural knowledge. 32.62 percent had high agricultural knowledge and 25.13 had low agricultural knowledge. One-fourths of the total respondents were possessed low agricultural knowledge. It had reported that most of the farmers who had no training experience were low informed about the agriculture related issues. It was also related to the education of the respondents. Because, respondents who were low educated did not get the chance to be trained. According to the function of the television it is one of the important function is to be informed the viewers. Although most of the television viewers were mostly aware of their surroundings. But most of them were not eager to know the agricultural information from television. From the various training programmes they can know most of the agricultural information. So some of the improvements regarding agricultural knowledge were being occurred. There might be a limited effects of the agricultural television programmes to its viewers securing the agricultural knowledge.

4.2.10 Knowledge about sustainable agriculture

The sustainable agricultural knowledge scores of the farmers ranged from 20 to 48 against the possible range of 0 to 50. The mean value, standard deviation and variance were 34.00, 6.57 and 43.22 respectively. Based on the agricultural knowledge the farmers of the research area were classified into three categories such as low knowledge (20-29), medium knowledge (30-39) and high knowledge (above 39). The distribution of the farmers based on their agricultural knowledge scores is presented in Table 4.16.

Table 4.16 Distribution of the farmers according to their knowledge about sustainable agriculture

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low knowledge (20-29)	53	28.34	34.00	6.57	43.22
Medium knowledge (30-39)	92	49.20			
High knowledge (>39)	42	22.46			
Total	187	100	Max- 48, Min- 20 Range- 28		

Result indicated that about half (49.20 percent) of the total respondents were showed medium sustainable agricultural knowledge, 28.34 percent consented to have low and 22.46 percent had high sustainable agricultural knowledge. Findings confirmed that more people were unaware about the sustainable agricultural knowledge than the agricultural knowledge.

In the study it is found out that in most cases knowledge of the respondents depend upon the content of the training programmes. But most often the contents of the training programmes conducted by DAE and other organizations are not friendly to sustainable agriculture. So the mean value concentrated within 34.00 with the standard deviation 6.57 where the possible highest value can be 50 in this regard.

4.2.11 Farm size

Farm size of the respondents ranged from 0.02 to 2.63 hectares. The average farm size of the farmers was 0.86 with the standard deviation 0.43 and the variance 0.19. Based on the farm size of the farmers, they were classified into four categories, such as marginal, small medium and large (DAE, 1996). The distribution of the farmers on the basis of their farm size is presented in Table 4.17.

Table 4.17 Distribution of the farmers according to their farm size

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Marginal farm (0.02-0.20)	02	1.07	0.86	0.43	0.19
Small farm (0.21-1.00)	126	67.38			
Medium farm (1.01-3.00)	59	31.55			
Large farm (>3.00)	00	00			
Total	187	100	Max- 2.82, Min- 0.19 Range- 2.63		

Result showed in Table 4.17 indicates that two-thirds (67.38 percent) of the respondents belonged small farms while 31.55 percent of them possessed medium farms and 1.07 percent farmers possessed marginal farms. The number of small and medium farm holder (98.93 percent) of the research area is consistent with the national average such as 64.21 percent small and 34.28 percent medium (BBS, 2011b). But there is a significant findings from the study found out that no farmers reached as the large farm owner. The maximum farm size was 2.82 hectares and the minimum farm size was 0.19 hectares while the range was 2.63. So the farm size proved that the research area is a backward and low income generated area. Because in the profession characteristics we saw that most of the respondents were engaged merely agriculture as their profession. But what are the causes behind the low or small farm holdings? Rumi (1987) specified that subdivision of holding is mainly the result of two causes, firstly, the growing heavy pressure of population on a relatively static cultivable area and secondly, the laws of inheritance coupled with unrestricted transfer of land.

In Bangladesh the marginal and small farmers generally live on a subsistence level and this may be one of the vital reasons for their inactive tendency to implicate the agricultural television programmes in their field activities.

4.2.12 Annual income

In a major report on world agriculture, the Food and Agricultural Organization (FAO) stated: ...in the long run, people can attain food security only if they have adequate income (Rivera, 2001). The annual income scores of the respondents ranged from 20 to 320, and the mean value being 120.94. The standard deviation was 62.60 and variance was 3919.00. On the basis of annual income of the

farmers, they were classified into four categories, such as very low income (20-50), low income (51-120), medium income (121-200) and high income (above 200). The distribution of the farmers according to their annual income has been shown in Table 4.18.

Table 4.18 Distribution of the farmers according to their annual income

Categories ('000'Taka)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Very Low Income (20-50)	28	14.97	120.94	62.60	3919.00
Low income (51- 120)	86	46.00			
Medium income (121-200)	52	27.81			
High income (>200)	21	11.22			
Total	187	100	Max- 320, Min-20 Range-300		

Result showed in the Table 4.18 indicates that 46.00 percent respondents were in low income category while the second largest farmer group who are in medium income category occupied the 27.81 percent. Among the farmers 14.97 percent were in very low income and only 11.22 percent were in high income category. The more annual income helps the respondents more to be effective in their mass media exposure, peer relationship, organizational participation and cosmopolitans. But the result showed that more than two-thirds of the research population (73.81 percent) were in low and medium earners category. It can affect the ultimate effectiveness of agricultural television programmes among the respondents.

4.2.13 Profession

Profession is an important category of farmers which can affect the other categories. In this study the profession of the farmers was calculated into 4 different categories. Among the respondents who possess agriculture only avail score 1, who possess business beside agriculture avail the score 2, who is a service holder beside agriculture avail the score 3 and for the other profession there gave the score 4. The distribution of the farmers according their occupation has been given in the Fig. 4.5.

Result in the Fig. 4.5 shows that more than half of the respondents (57.22 percent) were professionally farmers. Their only income source was agriculture. On the

other hand, 20.85 percent respondents occupied business, 18.72 percent adopted service and 3.21 percent do others job beside their agricultural work.

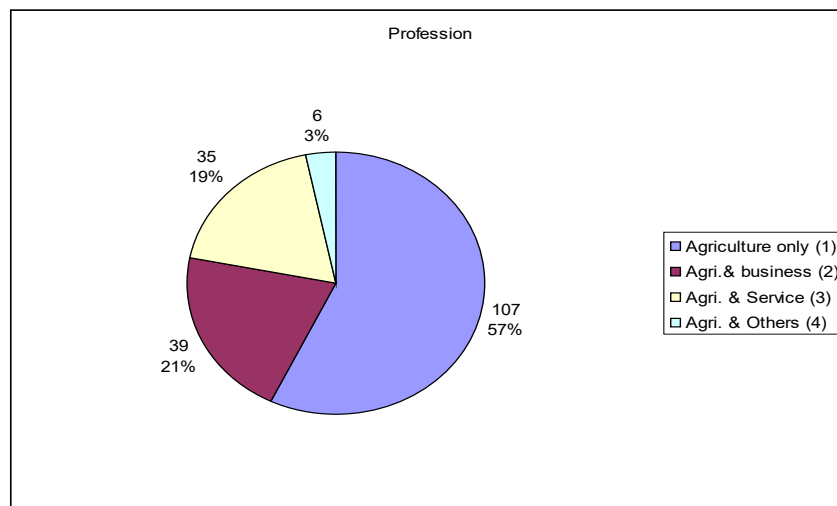


Fig. 4.5 Distribution of the farmers according to their profession

Profession helps the respondents to their organizational participation and peer relationship. The cent per cent respondents were mainly depend upon agriculture. It is proved that the research area is an agriculture dominated area. The economy of this area is mainly dependant on agriculture. It depicts the common scenario of Bangladesh also.

4.2.14 Socio-economic status

Socio-economic status depends mainly upon the annual income of the respondents. If the annual income becomes high then their socio-economic status will be also high. The socio-economic status scores of the farmers ranged from 30 to 285 with a mean 97.44, standard deviation was 48.25 and the variance was 2328.59. Based on their socio-economic status score the respondents were classified into three categories, such as, low status (30-115), medium status (116-200) and high status (above 200). The distribution of farmers according to their socio-economic status has been showed in Table 4.19.

Table 4.19 Distribution of the farmers according to their socio-economic status

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low status (30- 115)	138	73.79	97.44	48.25	2328.59
Medium status (116- 200)	42	22.47			
High status (>200)	7	3.74			
Total	187	100	Max- 285, Min- 30 Range- 255		

The above result in Table 4.19 shows that the highest proportion of farmers of the research area possessed the low status (73.79) while 22.47 percent farmers fell in the medium status category and 3.74 percent fell into high socio-economic status category. This is obvious that most of the respondents of the research area possessed the lower and medium status (96.26%). The cause of the backwardness can be the low annual income, lack of non farm jobs, small farm size, frequent natural calamities etc.

4.2.15 Ownership of agricultural implement

Ownership of agricultural implements scores of the farmers ranged from 3 to 38 with the mean, standard deviation and variance being 15.01, 8.30 and 69.07 respectively. On the basis of the Ownership of agricultural implements scores, farmers were classified into four categories such as very low ownership (up to 6), low ownership (7-15), medium ownership (16-24) and high ownership (above 24). The distribution of the farmers according to their training experience has been given in the Table 4.20.

Table 4.20 Distribution of the farmers according to their ownership of agricultural implement

Categories (scores)	Farmers		Mean	Standard deviation	Variance
	Number	Percent			
Very low ownership (Up to 6)	41	21.93	15.01	8.31	69.07
Low ownership (7-15)	76	40.64			
Medium ownership (16-24)	40	21.39			
High ownership (>24)	30	16.04			
Total	200	100	Max- 38, Min- 3 Range- 35		

High ownership of agricultural implements is the sign of high engagement with agricultural related activities of the respondents. In this study result showed that the 40.64 percent of the farmers were low owner of agricultural implements, 21.93 percent were very low owner and 21.39 percent were medium owner of agricultural implements while only 16.04 percent were high owner of agricultural implements. Although 80 percent of the total population are dependent upon agriculture but only 16.04 percent were engaged with agriculture fully in this research area. From the medium to very low agricultural implements owner did their agricultural works by taking rent from others. It compelled them to spend their earnings in that purpose. Low income and low social or economic status are the other important causes for the low ownership of agricultural implements.

4.2.16 Formal group affiliation/organizational participation

Organizational participation can help the farmers to be aware of the different agricultural issues. It can help them to follow sustainable agricultural practices and other contemporary environment friendly activities. Because, people with many social ties are more apt to adopt innovations than those who have few ties to others (Rogers & Kincaid, 1981). In this study the organizational participation varied from 0 to 16. The mean, standard deviation and variance were 5.41, 5.05 and 25.56 respectively. Based on the organizational participation scores of the farmers they were classified into four categories such as no participation (00), low participation (up to 5), medium participation (6-11) and high participation (above 11). The distribution of the farmers based on their organizational participation scores has been shown in Table 4.21.

Table 4.21 Distribution of the farmers according to their organizational participation

Categories (scores)	Farmers		Mean	Standard deviation	Variance
	Number	Percent			
No participation (00)	31	16.58	5.41	5.05	25.56
Low participation (Up to 5)	76	40.64			
Medium participation (6- 11)	51	27.27			
High participation (>11)	29	15.51			
Total	187	100	Max- 16, Min- 00 Range- 16		

According to the data showed in Table 4.21 indicates that highest number (40.64 percent) of respondents were low participant of the research area, while 16.58 percent lies under no participant, 27.27 percent medium participant and 15.51 percent high participant category. The low participation in organization might deprive them to exchange their views and broaden their ideas about sustainable agriculture. Because it can help the farmers knowing about the environment friendly and useful agricultural practices. It also helps them to make decision to take or avoid any new technologies and practices. Ultimately the effectiveness of any television programmes related to sustainable agriculture may depend upon the organizational participation.

4.2.17 Cosmopolitaness

Cosmopolitaness scores of the farmer varied from 5 to 19 against the possible score 0 to 21. The mean, standard deviation and variance were 11.1, 3.52 and 12.45. Based on the cosmopolitaness scores, farmers were classified into three categories such as low cosmopolitaness (5-8), medium cosmopolitaness (9-13) and high cosmopolitaness (above 13). The distribution of farmers according to their innovativeness scores has been presented in Table 4.22.

Table 4.22 Distribution of the farmers according to their level of cosmopolitaness

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low cosmopolitans (5-8)	57	30.48	11.01	3.52	12.45
Medium cosmopolitans (9-13)	70	37.43			
High cosmopolitans (>13)	60	32.09			
Total	187	100	Max- 19, Min-5 Range-14		

Findings showed in Table 4.22 indicates that highest proportion (37.43 percent) of the farmers were in medium cosmopolitaness category while 30.48 percent respondents were in low and 32.09 percent were in high category. The result shows that two-thirds of the farmers (67.91 percent) had medium and low cosmopolitaness. It is obvious that most of the farmers had little knowledge and idea beyond locality. Results were similar to the findings of Kamaly (2011) and

Hossain (2008). Cosmopolitans widened the knowledge and attitude towards new environment friendly agricultural practice and technology.

4.2.18 Peer relationship

Peer relationship refers to the communication level among the same aged people. It helps the respondents to identify what is credible and what is not. Peer relationship was measured as the days meet with the peer group per week. It scores minimum 18 to maximum 34 against the range of 0 to 35. The mean, standard deviation and variance were 25.55, 3.47 and 12.04 respectively. The distribution of the farmers according to their peer relationship scores has been showed in Table 4.23.

Table 4.23 Distribution of the farmers according to their peer relationship

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low peer relationship (18-23)	48	25.67	25.55	3.47	12.04
Medium peer relationship (24-29)	107	57.22			
High peer relationship (>29)	32	17.11			
Total	187	100	Max- 34, Min- 18 Range-16		

Data presented in Table 4.23 indicates that the highest proportion (57.22 percent) of the farmers had medium peer relationship compared to 25.67 percent having low peer relationship and 17.11 percent high peer relationship. The above data revealed that more than four-fifths (82.89 percent) of the farmers had medium and low peer relationship in the study area. This is obvious that the level of communication among the peer group of the study area were not sufficient for the effectiveness of effectiveness of electronic media. Because they could not do enough consultation with their peer group for better credibility.

4.2.19 Innovativeness

The computed innovativeness scores of the farmers ranged from 17 to 45 against the possible range of 0 to 50. The mean, standard deviation and variance were 31.45, 6.67 and 44.49 percent respectively. According to the innovativeness scores farmers were classified into three categories that is low innovativeness (17-

26), medium innovativeness (27-35) and high innovativeness (above 35). The distribution of the farmers according to their innovativeness was scores has been showed in Table 4.24.

Table 4.24 Distribution of the farmers according to their innovativeness

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low innovativeness (17-26)	48	25.67	31.45	6.67	44.49
Medium innovativeness (27-35)	84	44.92			
High innovativeness (>35)	55	29.41			
Total	187	100	Max- 45, Min- 17 Range- 28		

Data showed in Table 4.24 indicates that medium innovativeness respondents score the highest number that is 44.92 percent while 25.67 percent had low innovativeness and 29.41 percent had high innovativeness. For a farmer, who has high level of innovativeness are more positive to any of the new agriculture technologies. But the study found out that in the study most of the farmers were moderately innovative. It refers the same finding of kamaly (2011). The finding showed a little bit high proportion of high innovativeness (29.41 percent). But it might be occurred due to the purposively selection procedure of the television owner and viewer as the respondents.

4.2.20 Attitude

In this study, attitude of the respondents computed through two different targets. The first target is to find out the attitude toward sustainable agriculture and second the attitude towards television. In attitude towards sustainable agriculture respondents scores from 18 to 46 against the possible range 0 to 48. The mean, standard deviation and variance were 35.67, 4.73 and 22.37 respectively. Based on the attitude towards sustainable agriculture farmers were classified into three categories namely slightly favourable attitude (18-27), moderately favourable attitude (28-36) and highly favourable attitude (above 36). The distribution of the farmers according to their attitude towards sustainable agriculture scores has been presented in Table 4.25.

Table 4.25 Distribution of the farmers according to their attitude toward sustainable agriculture

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Slightly favourable attitude (18-27)	38	20.32	35.67	4.73	22.37
Moderately favourable attitude (28-36)	101	54.01			
Highly favourable attitude (>36)	48	25.67			
Total	187	100	Max- 46, Min- 18 Range- 28		

Data presented in Table 4.25 indicates that highest proportion (54.01 percent) of the farmers were moderately positive toward sustainable agriculture, while 20.32 percent had low attitude and 25.67 percent had high attitude in favour of sustainable agriculture. Data presented in the findings that about three-fourths (74.33 percent) of the farmers had medium and low attitude toward sustainable agriculture. In this circumstance, there might be some difficulties to implement sustainable agriculture.

Secondly, in attitude towards television respondents scores from 20 to 46 against the possible range 0 to 48. The mean, standard deviation and variance were 32.13, 6.15 and 37.78 respectively. Based on the attitude towards television, farmers were classified into three categories namely slightly favourable attitude (20-28), moderately favourable attitude (29-38) and highly favourable attitude (above 38). The distribution of the farmers according to their attitude towards television scores has been presented in Table 4.26.

Table 4.26 Distribution of the farmers according to their attitude towards television

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Slightly favourable attitude (20-28)	14	7.49	32.13	6.15	37.78
Moderately favourable attitude (29-38)	120	64.17			
Highly favourable attitude (>38)	53	28.34			
Total	187	100	Max- 46, Min- 20 Range- 26		

Result showed in Table 4.26 indicates that the majority (64.17 percent) of the farmers had moderately favourable attitude toward television, while 7.49 percent had slightly favourable attitude and 28.34 percent had highly favourable attitude. Data presented that there were a handsome percentage of the farmers who were moderately and highly favourable towards television. Respondents showed little

hesitation toward the powerful and positive effect of television. So the total attitude towards television is moderately favourable.

4.2.21 Risk orientation

The range of risk orientation scores of the farmers was found to be 18 to 44 against the possible range of 0 to 48. The mean, standard deviation and variance were 29.89, 5.06 and 25.59 respectively. Based on the risk orientation scores farmers were classified into three categories namely low risk orientation (18-26), medium risk orientation (27-35) and high risk orientation (above 35). The distribution of the farmers according to their risk orientation scores is given in Table 4.27.

Table 4.27 Distribution of the farmers according to their risk orientation

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low risk orientation (18-26)	45	24.06	29.89	5.06	25.59
Medium risk orientation (27-35)	112	59.90			
High risk orientation (>35)	30	16.04			
Total	187	100	Max- 44, Min- 18 Range- 26		

Findings showed in Table 4.27 indicates that the highest proportion (59.90 percent) of the respondents had medium risk orientation, while 24.06 percent had low risk orientation and only 16.04 percent had high risk orientation. More than four-fifth (83.96 percent) of the farmers had medium and low risk orientation. The risk orientation level is not satisfactory to the farmers in the study area. Because most often farmers never adopted any new agricultural practice at the beginning. It might be due to lower success of the previous experience. A lot of farmers were most often busy to think about the natural calamity. So they take time to adopt any big budgetary agricultural technology or practice.

4.2.22 Aspiration

Aspiration refers to the desire of the respondents to increase or stalemate his living style, asset and social status. In this study aspiration referred to the expectations of a farmer towards a desired life style as a whole. Aspiration of the

farmers was measured as aspiration scores computed against ten (10) aspects of life styles as advocated by Sagar (1983) and Kamaly (2011). The range of aspiration scores of the farmers was found to be 17 to 39 against possible range of 0 to 40. The mean, standard deviation and variance were 27.92, 4.53 and 20.48 respectively. The respondents were classified into three categories as low aspiration (17-24), medium aspiration (25-32) and high aspiration (above 32). The distribution of the farmers according to their aspiration scores is given in Table 4.28.

Table 4.28 Distribution of the farmers according to their aspiration

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low aspiration (17-24)	34	18.18	27.92	4.53	20.48
Medium aspiration (25-32)	124	66.31			
High aspiration (>32)	29	15.51			
Total	187	100	Max- 39, Min- 17 Range- 22		

Result showed in Table 4.28 indicates that the highest proportion (66.31 percent) of the respondents had medium aspiration, while 18.18 percent farmers had low aspiration and 15.51 percent had high aspiration. The above data revealed that more than four-fifths (84.49 percent) of the farmers has medium and low aspiration. Because of the lower income, lower status and lower property holder most of the farmers possessed a moderate and lower aspiration for their future development.

Chapter 5

Effectiveness of Electronic Media for Sustainable Agricultural Development

Effectiveness of electronic media for sustainable agricultural development was measured by measuring the four psychological stages of the respondents. The electronic media (like radio, TV, mobile phone etc.) can expedite the transfer of agricultural information to the farmers (Khan *et al.*, 2013). Farmers need agricultural information predominately regarding sustainable agriculture. Data regarding effectiveness of electronic media for sustainable agricultural development were analyzed in the light of four psychological aspects of farmers, namely, 1) Cognitive effectiveness, 2) Emotional effectiveness, 3) Attitudinal effectiveness and 4) Behavioural effectiveness. Effectiveness of electronic media for sustainable agricultural development was judged with the four effects upon the viewers following Huston *et al.* (1998). They used four scales to identify the effect of the content of mass media. In this research the four scales were used to dig out the effectiveness of electronic media for sustainable agricultural development. These four aspects of effectiveness of electronic media have been presented in this chapter.

5.1 Cognitive Effectiveness of Electronic Media

Cognition is an area for the processing of information, applying knowledge, and changing preferences. Learning a fact from the mass media is the most straightforward type of cognitive effect. Less obvious, and considerably more complicated, are the ways that mass media stimulate different cognitive processes. Building awareness among farmers is the main and first way of making media effective. 'To inform' is the primary function of communication media. With each and every television programmes media want to inform about something. In the relationship measuring chapter there we found some of the characteristics of the farmers which contribute a huge for raising awareness level. In the area of agricultural content, for example, researchers have examined the cognitive

effectiveness of electronic media with such reactions as (a) smiling at new agricultural news, (b) leaning forward in a conversation of agricultural issue, (c) eye expression, (d) body language, as well as (e) evaluations of agricultural practices.

In order to compute the cognitive effectiveness for sustainable agricultural development of the respondents, effectiveness scores were measured for all the sample population according to the procedure described in methodology chapter. Media content will be understood within the framework of existing knowledge (Huston *et al.*, 1998). Although television is a powerful media but there might be the same recognition that it is also successful to increase the knowledge which the respondents already avail. In this study scores of cognitive effectiveness of the farmers computed within the range 0 to 75 while respondents got the scores from 31 to 73 with the mean value 53.74, standard deviation 9.14 and variance 83.56. According to observed scores, farmers were classified into three categories namely low effectiveness (31-45), medium effectiveness (46-60) and high effectiveness (above 60). The distribution of farmers according to their cognitive effectiveness scores has been shown in Table 5.1.

Table 5.1 Distribution of the farmers according to their cognitive effectiveness

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low effectiveness (up to 45)	35	18.72	53.74	9.14	83.56
Medium effectiveness (46-60)	110	58.82			
High effectiveness (>60)	42	22.46			
Total	187	100	Max- 73, Min- 31 Range- 42		

Table 5.1 indicates that the highest proportion (58.82 percent) of farmers had medium effectiveness compared to 22.46 percent having high effectiveness and 18.72 percent had low cognitive effectiveness. As most of the farmers have previous knowledge about agriculture and sustainable agriculture so television can play a positive role among the highest proportion (81.28 percent) of farmers regarding cognitive effectiveness.

5.2 Emotional Effectiveness of Electronic Media

Emotional reactions are often accompanied by some physiological change. Some effects, like crying during a sad scene we are readily aware of, but others like an increase in blood pressure may not be accessible at a conscious level. For some mass media theorists, excitement and its accompanying physiological arousal is an indispensable component in explaining the relationship between media exposure and behavior (Zillmann, 1982). But it is quite impossible to define the emotional effectiveness of electronic media by computing the internal psychological arousal. In this research the emotional effectiveness were trying to judge within the scoring range from 0 to 75 while respondents got the scores from 30 to 74 with the mean value 51.64, standard deviation 9.52 and variance 90.65. According to observed scores, farmers were classified into three categories namely low effectiveness (up to 45), medium effectiveness (46-60) and high effectiveness (above 60). The distribution of farmers according to their emotional effectiveness scores has been shown in Table 5.2.

Table 5.2 Distribution of the farmers according to their emotional effectiveness

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low effectiveness (up to 45)	52	27.81	51.64	9.52	90.65
Medium effectiveness (46-60)	101	54.01			
High effectiveness (>60)	34	18.18			
Total	187	100	Max- 74, Min- 30 Range- 44		

Table 5.2 indicates that the highest proportion (54.01 percent) of farmers had medium effectiveness compared to 27.81 percent having low effectiveness and 18.18 percent had high emotional effectiveness. The above data revealed that more than four-fifths (81.82 percent) of the farmers had medium and low effectiveness. Only 18.18 percent had high emotional effectiveness of electronic media for sustainable agricultural development.

5.3 Attitudinal Effectiveness of Electronic Media

Attitudes predict behavior, but they are also important in their own right (Huston *et al.*, 1998). Only attitude cannot forward the respondents towards the

destination. But some other characteristics such the surrounding circumstances help the respondents to do any action. In this study the attitudinal effectiveness were being judged within the scoring range from 0 to 75 while respondents got the scores from 32 to 75 with the mean value 52.22, standard deviation 9.29 and variance 86.24. According to observed scores, farmers were classified into three categories namely low effectiveness (up to 45), medium effectiveness (46-60) and high effectiveness (above 60). The distribution of farmers according to their attitudinal effectiveness scores has been shown in Table 5.3.

Table 5.3 Distribution of the farmers according to their attitudinal effectiveness

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low effectiveness (up to 45)	46	24.60	52.22	9.29	86.24
Medium effectiveness (46-60)	108	57.75			
High effectiveness (>60)	33	17.65			
Total	187	100	Max- 75, Min- 32 Range- 43		

Findings showed in Table 5.3 indicates that the highest proportion (57.75 percent) of the respondents had medium effectiveness, while 24.60 percent had low effectiveness and only 17.65 percent had high effectiveness. More than four-fifths (82.35 percent) of the farmers had medium and low attitudinal effectiveness. By the agricultural television programmes farmers were influenced moderately in attitudinal effectiveness.

5.4 Behavioural Effectiveness of Electronic Media

Behavioural effectiveness is the final stage of effectiveness. Normally farmers can be informed too many new idea regarding sustainable agriculture through television. But if he does not use it in his practical life then we cannot tell it totally effective. The computed behavioural effectiveness scores of the farmers ranged from 30 to 65 against the possible range 0 to 75. The mean, standard deviation and variance were 50.12, 6.37 and 40.55 respectively. The distribution of farmers based on their behavioural effectiveness scores has been shown in Table 5.4.

Table 5.4 Distribution of the farmers according to their behavioural effectiveness

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low effectiveness (up to 45)	40	21.39	50.12	6.37	40.55
Medium effectiveness (46-57)	131	70.05			
High effectiveness (>57)	16	8.56			
Total	187	100	Max- 65, Min- 30 Range- 35		

Table 5.4 indicates that 70.05 percent farmers had shown their nod towards medium effectiveness while 21.39 percent shown low effectiveness and only 8.56 percent shown high effectiveness. Data also revealed that majority (91.44 percent) of the respondents had low or medium effectiveness. Huston *et al.* (1998) also told that it is often a person's exposure to mass media in combination with some other important characteristic that leads to a behavioural response. So when farmers were asked television is the only way by which they were mostly influenced to the sustainable agriculture, the answer shown quite weak. Because so many other factors also had the major influence to the behavioural effectiveness. On the other hand, television just can broadcast the idea but they never can supply the input (capital, labour, seed, fertilizer, pesticides/insecticides, equipment, etc.) to implement the idea. So there was a huge gap among knowledge-emotion-attitude and practice process. Fig. 5.1 shows the effectiveness of electronic media for sustainable agricultural development.

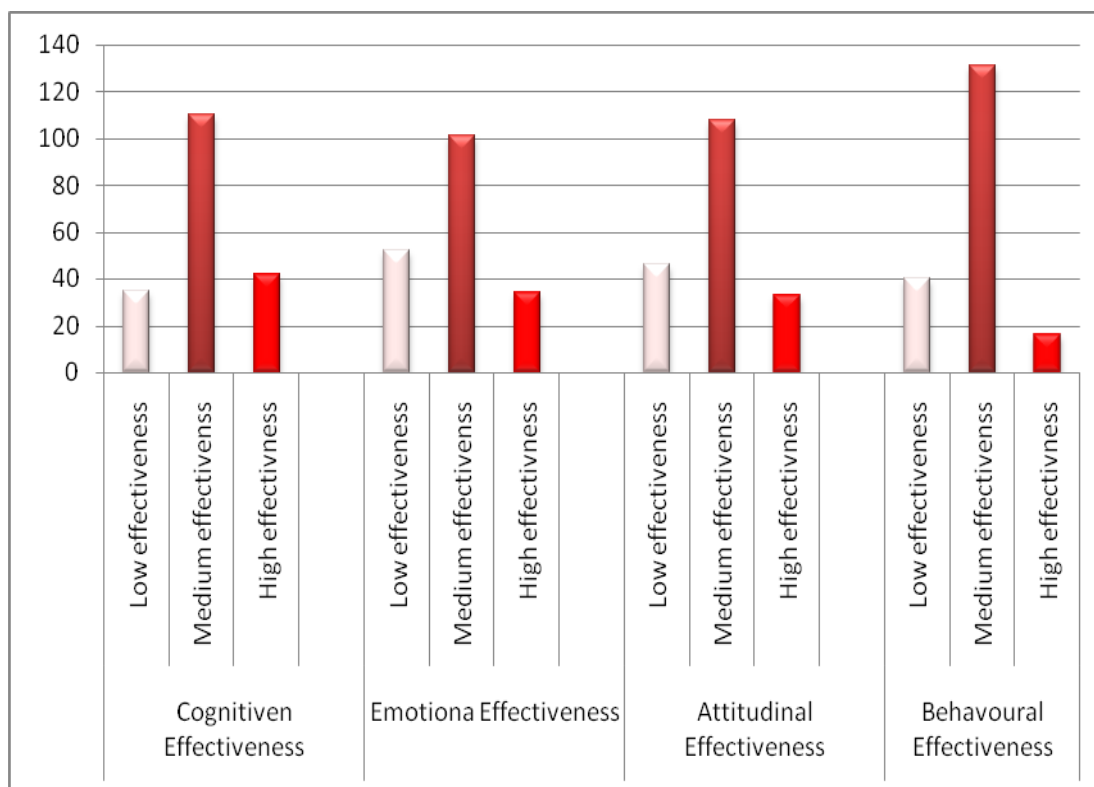


Fig. 5.1 Effectiveness of electronic media from four aspects

5.5 Total Effectiveness of Electronic Media

Effectiveness in total is the aggregate of the four scales namely cognitive, emotional, attitudinal and behavioural. The four scales can separately measure the level of effectiveness. But if it computed in a single table it can depict the partial picture of the exact scenarios. Because although there were a limited behavioural effect shown in the separate discussion but in totality the degree of effectiveness can be more positive because of the high cognitive, emotional and attitudinal effectiveness. Albeit it is important because of the lack of effectiveness measuring any other tool. The computed total effectiveness scores of the farmers ranged from 130 to 281 against the possible range 0 to 300. The mean, standard deviation and variance were 207.72, 29.46 and 865.76 respectively. Based on the effectiveness of agricultural television programmes scores, farmers were classified into three categories viz. low effectiveness (up to 180), medium effectiveness (181-230) and high effectiveness (above 230). The distribution of farmers based on their total effectiveness scores has been shown in Table 5.5.

Table 5.5 Distribution of the farmers according to their total effectiveness

Categories (scores)	Farmers		Mean	Standard deviation	variance
	Number	Percent			
Low effectiveness (up to 180)	26	13.90	207.72	29.46	867.76
Medium effectiveness (181-230)	128	68.45			
High effectiveness (>230)	33	17.65			
Total	187	100	Max- 281, Min- 130 Range- 151		

Findings showed in Table 5.5 indicates that the highest proportion (68.45 percent) of the respondents had medium effectiveness, while 13.90 percent had low effectiveness and only 17.65 percent had high effectiveness. More than four-fifths (82.35 percent) of the farmers had medium and low effectiveness. By the agricultural television programmes farmers were influenced moderately. It supported the limited effect theory of mass media.

In order to make a media effective it is necessary to practise the specific agricultural practice or process in their daily life which is shown in television. But for using the knowledge in their real life farmers want the input also besides getting information. Unfortunately, electronic media cannot help farmers getting the input because of lack of collaboration with the other related agriculture organizations. Fig. 5.2 shows the total effectiveness of electronic media for sustainable agricultural development.

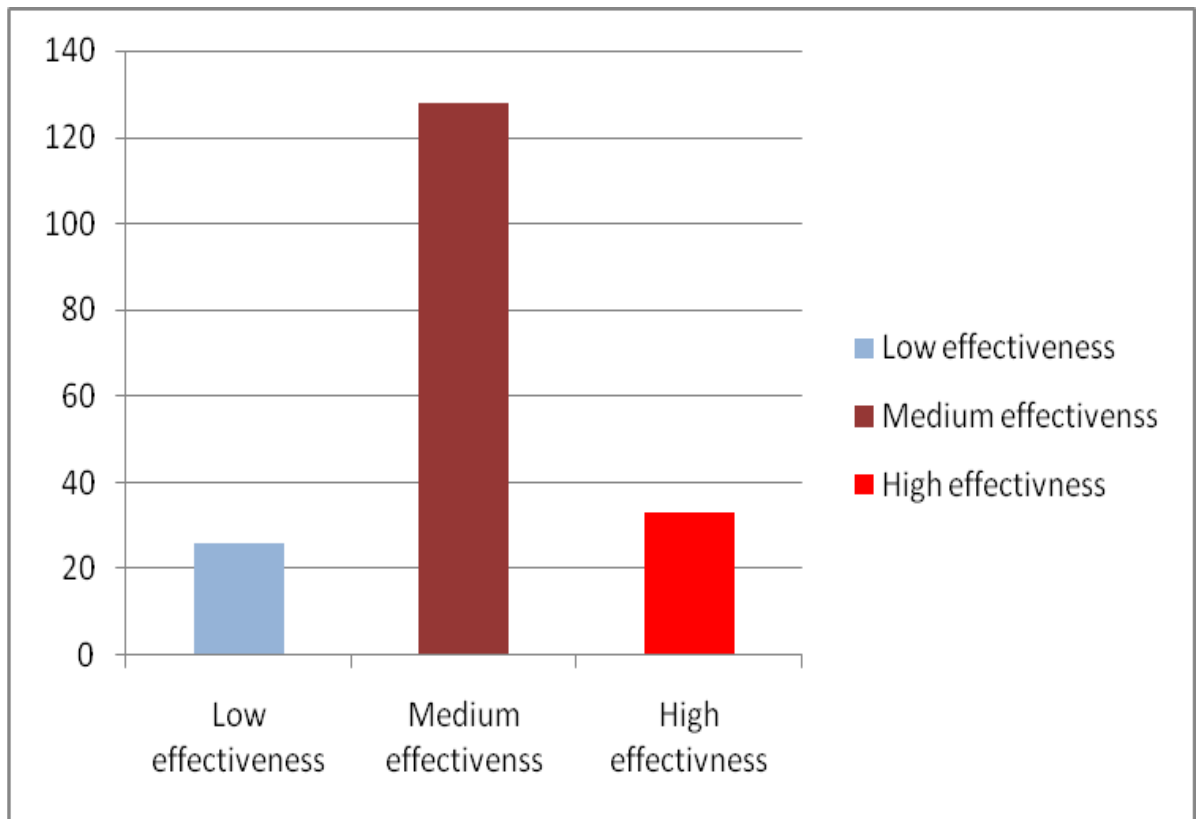


Fig. 5.2 Total effectiveness of electronic media

Chapter 6

Relationship between the Effectiveness of Electronic Media for Sustainable Agricultural Development and Selected Characteristics of Farmers

There are, however, many antecedent variables such as media structure, media technology, social circumstances, psychological variables, needs, values, and beliefs that all relate to the particular gratification pattern used by the audience (Wimmer and Dominick, 2003). In this chapter it will discuss the relationships of the twenty one independent variables with the dependent variable. The independent variables included nine personal, four economic, three social and five psychological characteristics of the farmers. Coefficient of correlation test has been used to explore the relationships of the independent variables with the effectiveness of electronic media for sustainable agricultural development.

6.1 Relationships

Relationship of the twenty one independent variables with the effectiveness of electronic media for sustainable agricultural development as was found by correlation test is described in the section of this chapter. To test the hypothesis concerning the relationship between the dependent and independent variables Pearson's Product Moment correlation Co-efficient (r) has been computed. One percent (0.01) and five percent (0.05) level of probability were used as the basis for acceptance or rejection of the null hypothesis "There is no relationship between the selected characteristics of farmers and the effectiveness of electronic media for sustainable agricultural development". A null hypothesis was rejected when the observed ' r ' value was greater than the tabulated value of ' r ' at 0.01 or 0.05 level of probability. Table 6.1 has been used for descriptive interpretation of the meaning of ' r ' (Cohen and Holiday, 1982).

Table 6.1 The meaning of correlation coefficient ‘r’ values

r-value	Meaning
0.00 to 0.19	Very low correlation
0.20 to 0.39	Low correlation
0.40 to 0.69	Moderate correlation
0.70 to 0.89	High correlation
0.90 to 1.00	Very high correlation

Relationship between each of the independent variable and dependent variable has been described in separate sub-section. The number of possible correlations between the twenty one independent variables and one dependent variable were twenty one. Among the correlation one was negatively significant at the five percent (0.05) level of probability, thirteen were positively significant at one percent (0.01) level of probability and seven were non-significant. A Summary of the twenty one correlations has been presented in Table 6.2. Relationship between dependent variable and independent variables have been shown in the next 21 subsection.

Table 6.2 Coefficient of correlation between the selected characteristics of farmers and the effectiveness of electronic media for sustainable agricultural development

Dependent variable	Independent variables	Computed 'r' values	Table of 'r' at 185 df	
			0.05	0.01
Effectiveness of electronic media for sustainable agricultural development	Age	-0.188*	0.144	0.140
	Education	0.637**		
	Family size	-0.128 ^{NS}		
	Family education	0.274**		
	Training experience	0.602**		
	Mass media exposure	0.216**		
	Supervision of crop production	0.128 ^{NS}		
	Agricultural knowledge	0.650**		
	Knowledge about sustainable agriculture	0.660**		
	Farm size	0.137 ^{NS}		
	Annual income	0.301**		
	Socio-economic status	0.138 ^{NS}		
	Ownership of agricultural implement	0.119 ^{NS}		
	Formal group affiliation/organizational participation	0.221**		
	Cosmopolitaness	0.527**		
	Peer relationship	0.214**		
	Innovativeness	0.731**		
	Attitude towards agriculture	0.508**		
	Attitude towards television	0.287**		
	Risk orientation	0.60 ^{NS}		
Aspiration	0.88 ^{NS}			

** = Correlation is significant at 0.01 level of probability (2-tailed)

* = Correlation is significant at 0.05 level of probability (2-tailed)

^{NS} = Non-significant

6.1.1 Age and effectiveness

The relationship between the age of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between age of the respondents and the effectiveness of electronic media for sustainable agricultural development”

The co-efficient of correlation between the concerned variables was found to be ‘r’ = -0.188 as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the negative direction between the concerned variables.
- ⇒ Correlation between the two concerned variables was very low.
- ⇒ The computed value of ‘r’ (-0.188) was smaller than the table value (r = 0.144) with 185 degree of freedom at 0.05 level of probability.
- ⇒ Hence, the concerned null hypothesis could be rejected.

The findings indicated that age of the selected farmers had a significant and negative relationship with the effectiveness of electronic media for sustainable agricultural development. Thus, it could be told that the less is the age of farmers, the more would be the effectiveness of electronic media for sustainable agricultural development. Age of the farmers is one of the important factors to adopt any new idea. To adopt the new technology, the youths are thought to be more enthusiastic than that of older people. The study just revealed it.

6.1.2 Education and effectiveness

The relationship between the education of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between education of the respondents and the effectiveness of electronic media for sustainable agricultural development”

The co-efficient of correlation between the concerned variables was found to be ‘r’ = 0.637 as shown in Table 6.2. This led to the following observations regarding the relationship between the two variables under consideration:

- ⇒ The relationship showed a tendency in the positive direction between the concerned variables.
- ⇒ Secondly, a moderate correlation was found to exist between the two concerned variables.
- ⇒ The computed value of ‘r’ (0.637) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.
- ⇒ Hence, the concerned null hypothesis could be rejected.

The findings indicated that education of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. Thus, it could be told that increase in level of education of farmers formed their better effectiveness of electronic media for sustainable agricultural. Similar findings were also observed by Kamaly (2011), Choudhury (2009), Akanda (2005) and Miah (2002).

Education of the farmers is one of the most important factors to gain knowledge and thus increase their level of understanding. Educated people can gather knowledge from television easily and it broadens their horizon of knowledge. Educated farmers had more cosmopolitanism and relevant to high experience of crop supervision than the illiterate. So with the improvement of personal education, the effectiveness tended to be higher.

6.1.3 Family size and effectiveness

The relationship between the family size of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between family size of the respondents and the effectiveness of electronic media for sustainable agricultural development”

The computed value of the co-efficient of correlation between family size of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be ‘r’ = -0.128 as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the negative direction between the concerned variables.
- ⇒ Correlation between the two concerned variables was very low.
- ⇒ The computed value of ‘r’ (-0.128) was smaller than the table value (r = 0.144) with 185 degree of freedom at 0.05 level of probability.
- ⇒ Hence, the concerned null hypothesis could be accepted.

The findings implied that the family size of farmers had a negative trend but non-significant relationship with the effectiveness of electronic media for sustainable agricultural development. Thus, it could be said that family size of the farmers was not considerably associated with the effectiveness of electronic media for sustainable agricultural development. Similar findings were observed by kamaly (2011), Islam (2000) and Hossain (1999).

Family is the primary learning source of its members. But unfortunately regarding agricultural information dissemination it plays a non significant role in Bangladesh. Most often the farm-family head never shares agricultural issues with the other family members. So, other family members are hindered from the

possible contribution to their family. Therefore, family size has no noteworthy relationship with the effectiveness of electronic media for sustainable agricultural development.

6.1.4 Family education and effectiveness

The relationship between the family education of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between family education of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between family education of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.274$ as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the positive direction between the concerned variables.
- ⇒ Correlation between the two concerned variables was low.
- ⇒ The computed value of ‘ r ’ (0.274) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.
- ⇒ Hence, the concerned null hypothesis could be rejected.

The findings indicated that family education of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. Thus, the higher the family education of the farmers, the more favourable was the effectiveness. Similar findings that means the positive relationship of family education dependent variable were reported by Kamaly (2011), Hosssain (2008) and Islam (2000) also.

Education is an important agent which can change the psychological settings of the farmers. The family education is also more effective than any of the other external agents in this case. So, more family education cause a more enlightenment among the family members and consequently having a broaden outlooks and progressive attitude. Ultimately, it is the cause of effectiveness of agricultural television programmes.

6.1.5 Training experience and effectiveness

The relationship between the training experience of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between training experience of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between training experince of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be ‘r’ = 0.602 as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the positive direction between the concerned variables.
- ⇒ Secondly, a moderate correlation was found to exist between the two concerned variables.
- ⇒ The computed value of ‘r’ (0.602) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.
- ⇒ Hence, the concerned null hypothesis could be rejected.

The findings implied that the training experince of farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. Thus, it could be told that the more is the training

experience of the farmers, the more would be their favourable attitude towards agricultural television programmes which brings its effectiveness. Training improves knowledge, skills and attitude which are the main precondition for paying heed to new technology and practice in agriculture. Similar findings were reported by Kamaly (2011), Choudhury (2009) and Akanda (2005).

Training acquainted its personnel to the opportunities and limitations of different technologies and practices. Farmers can get the sustainable agricultural information through training which are environment friendly. Thus, effectiveness can be developed in an individual due to the participation in training. It is evident that the IPM training programmes conducted by DAE had an important effectiveness among the farmers. Because after taking part in the training programmes farmers showed the more positive attitude to use the compost fertilizer in lieu of chemical fertilizer and perching system instead of pesticide. Hence, it might conclude that training received by the farmers can play an important role to the effectiveness of agricultural television programmes.

6.1.6 Mass media exposure and effectiveness

The relationship between mass media exposure of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between mass media exposure of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between mass media exposure of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.216$ as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a low correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.216) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.

⇒ Hence, the concerned null hypothesis could be rejected.

The findings indicated that mass media exposure of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. Thus, it could be said that mass medial exposure of the farmers was considerably associated with the effectiveness of electronic media for sustainable agricultural development.

Frequent exposure to mass media can help the respondents to form a favourable attitude towards the new practices in agriculture. Thus, farmers having longer duration of mass media exposure had more favourable atmosphere to make the agricultural television programmes effective. But in this study it is reported that there is a low correlation between these two variables.

6.1.7 Supervision of crop production and effectiveness

The relationship between supervision of crop production of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between supervision of crop production of the respondents and the effectiveness of electronic media for sustainable agricultural development”

The co-efficient of correlation between supervision of crop production of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.128$ as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the positive direction between the concerned variables.
- ⇒ Secondly, a very low correlation was found to exist between the two concerned variables.
- ⇒ The computed value of 'r' (0.128) was smaller than the table value (r = 0.144) with 185 degree of freedom at 0.05 level of probability.
- ⇒ Hence, the concerned null hypothesis could be accepted.

The findings implied that supervision of crop production of the selected farmers had a positive but non-significant relationship with the effectiveness of electronic media for sustainable agricultural development. Thus, it could be said that supervision of crop production of the farmers was not associated with the effectiveness of electronic media for sustainable agricultural development.

6.1.8 Agricultural knowledge and effectiveness

The relationship between agricultural knowledge of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between agricultural knowledge of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between agricultural knowledge of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be 'r' = 0.650 as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the positive direction between the concerned variables.
- ⇒ Secondly, a moderate correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.650) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.

⇒ Hence, the concerned null hypothesis could be rejected.

The findings indicated that agricultural knowledge of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. Knowledge is the force by which respondents can make any decision without the impediments like prejudice, prevailing procedure etc. So, the respondents who have more knowledge about agriculture are more favourable towards the new idea and technology regarding agriculture.

6.1.9 Knowledge about sustainable agriculture and effectiveness

The relationship between knowledge about sustainable agriculture of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between knowledge about sustainable agriculture of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between knowledge about sustainable agriculture of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.660$ as shown in Table 5.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a moderate correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.660) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.

⇒ Hence, the concerned null hypothesis could be rejected.

The findings indicated that knowledge about sustainable agriculture of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. To have a sustainable agriculture, farmers should have the knowledge about sustainable agriculture. Because only the knowledge of agriculture cannot ensure the sustainable agriculture. Farmers should have had the knowledge how to lead the agriculture without do any harm to our environment. Thus, findings concluded that if the sustainable knowledge level is high, then the effectiveness will be the high.

6.1.10 Farm size and effectiveness

The relationship between farm size of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between farm size of the respondents and the effectiveness of electronic media for sustainable agricultural development”

The co-efficient of correlation between farm size of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be ' $r = 0.137$ ' as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a very low correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.137) was smaller than the table value ($r = 0.144$) with 185 degree of freedom at 0.05 level of probability.

⇒ Hence, the concerned null hypothesis could be accepted.

The findings indicated that farm size of the farmers had a positive but non-significant relationship with the effectiveness of electronic media for sustainable agricultural development. Whether the farm size is big or small it does no matter in the effectiveness of agricultural television programmes for sustainability. Thus, it could be said that farm size of the farmers was not considerably associated with the effectiveness of electronic media for sustainable agricultural development.

6.1.11 Annual income and effectiveness

The relationship between annual income of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between annual income of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between annual income of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be 'r' = 0.301 as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a low correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.301) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.

⇒ Hence, the concerned null hypothesis could be rejected.

The findings implied that annual income of the farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. It depicted that the farmers with more annual income had more favourable attitude towards effectiveness. Similar findings were reported by Kamaly (2011) and Akanda (2005) in their study.

Higher income helps farmers to maintain high social status, sound economic standing and enables them to become more cosmopolitans, innovative, educated and the higher grade of family education. They also participate more in organization. All these factors might help them interact with others which contributed to the development of more favourable atmosphere for the effectiveness of electronic media for sustainable agricultural development.

6.1.12 Socio-economic status and effectiveness

The relationship between socio-economic status of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between socio-economic status of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between socio-economic status of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.138$ as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the positive direction between the concerned variables.
- ⇒ Secondly, a very low correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.138) was smaller than the table value ($r = 0.144$) with 185 degree of freedom at 0.05 level of probability.

⇒ Hence, the concerned null hypothesis could be accepted.

The findings indicated that socio-economic status of the respondents had a positive but insignificant relationship with the effectiveness of electronic media for sustainable agricultural development. Kamaly (2011) and Islam (2000) had an opposite finding in their respective study. They saw that socio-economic status of the farmers had the significant positive influence on farmer's attitude. But here observed the opposite result. It may be the cause of training experience of the respondents. Farmers got the training irrespective of their social-economic status. So, with the help of these training low socio-economic status holder farmers got the similar knowledge like high social-economic status holder farmers. For that reason the level of effectiveness was not differ for their socio-economic status.

6.1.13 Ownership of agricultural implement and effectiveness

The relationship between ownership of agricultural implements of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between ownership of agricultural implements of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between ownership of agricultural implements of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be ' $r = 0.119$ ' as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a very low correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.119) was smaller than the table value ($r = 0.144$) with 185 degree of freedom at 0.05 level of probability.

⇒ Hence, the concerned null hypothesis could be accepted.

The findings indicated that ownership of agricultural implements of the selected farmers had a positive but non-significant relationship with the effectiveness of electronic media for sustainable agricultural development. Most of the owners of agricultural implements are low level farmer of the area. They rent their instrument to the big farmer. Their education, family education, annual income and socio-economic status are comparatively low. So, only the owner of agricultural implements might not interfere or influence the effectiveness of electronic media for sustainable agricultural development in this study.

6.1.14 Formal group affiliation/organizational participation and effectiveness

The relationship between organizational participation of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between organizational participation of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Accounted value of the co-efficient of correlation between organizational participation of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.221$ as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a low correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.221) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.

⇒ Hence, the concerned null hypothesis could be rejected.

The findings indicated that organizational participation of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. The more educated, high annual income, high social status and high cosmopolitaness farmers had the high organizational participation. So the level of effectiveness could be high on them. It suggested that the farmers having high organizational participation had more favourable attitude towards effectiveness of electronic media. Similar findings was observed by Kamaly (2011: 180-181), Choudhury (2009) and Hossain (2008) in their study.

With the participation of various organizations, farmers can get the cognitive components and thus they might form favourable attitude towards effectiveness of electronic media.

6.1.15 Cosmopolitans and effectiveness

The relationship between cosmopolitans of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between cosmopolitans of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between cosmopolitans of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.527$ as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the positive direction between the concerned variables.
- ⇒ Secondly, a moderate correlation was found to exist between the two concerned variables.
- ⇒ The computed value of ‘r’ (0.527) was greater than the table value (r = 0.140) with 185 degree of freedom at 0.01 level of probability.
- ⇒ Hence, the concerned null hypothesis could be rejected.

The findings showed that cosmopolitans of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. The result support that the farmers with high cosmopolitans were found the high level of attitude towards effectiveness. Kamaly (2011), Akanda (2005) and Islam (2000) found the similar result regarding cosmopolitans in their respective study.

6.1.16 Peer relationship and effectiveness

The relationship between peer relationship of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between peer relationship of the respondents and the effectiveness of electronic media for sustainable agricultural development”

The co-efficient of correlation between peer relationship of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be ‘r’ = 0.214 as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a low correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.214) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.

⇒ Hence, the concerned null hypothesis could be rejected.

The findings implied that peer relationship of the farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. Peer group can play an important role to make the respondent more positive. If the surroundings of a person is positive then he is compelled to behave positively. Thus, it can be said that more relation with the peer group ensures the more favourable attitude towards effectiveness of electronic media for sustainable agricultural development.

6.1.17 Innovativeness and effectiveness

The relationship between innovativeness of the farmers and effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between innovativeness of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between innovativeness of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.731$ as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a high correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.731) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.

⇒ Hence, the concerned null hypothesis could be rejected.

The findings indicated that innovativeness of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. It refers that the more innovativeness of farmer was, the more effective behaviour towards agricultural television programmes. Kamaly (2011) and Islam (2000) also reported the same result in their study.

Because of innovative nature of the farmers, they were more curious about various agricultural innovations and adopt them accordingly (Kamaly, 2011). By this way, they acquire more favourable attitude towards agricultural invention and thus they treat more positively to the effectiveness of electronic media.

6.1.18 Attitude toward agriculture and effectiveness

The relationship between attitude towards agriculture of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between attitude toward agriculture of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Co-efficient of correlation between attitude toward agriculture of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.508$ as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

- ⇒ Secondly, a moderate correlation was found to exist between the two concerned variables.
- ⇒ The computed value of 'r' (0.508) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.
- ⇒ Hence, the concerned null hypothesis could be rejected.

The findings nodded that attitude toward agriculture of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. It refers that the more positive attitude towards agriculture had high influence into the effectiveness of electronic media for sustainable agricultural development. Cognitive level is the primary stage for the effective process. So, a vast influence of it was reported on the effectiveness in this study.

6.1.19 Attitude toward television and effectiveness

The relationship between attitude toward television of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between attitude toward television of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between attitude toward television of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be $r = 0.287$ as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

- ⇒ The relationship showed a tendency in the positive direction between the concerned variables.
- ⇒ Secondly, a low correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.287) was greater than the table value ($r = 0.140$) with 185 degree of freedom at 0.01 level of probability.

⇒ Hence, the concerned null hypothesis could be rejected.

The result indicated that attitude towards television of the selected farmers had a significant and positive relationship with the effectiveness of electronic media for sustainable agricultural development. Although television is the medium by which the voice and video can broadcast at the same time and it can depict the picture of the target issues, the literacy is not required to understand its information, but there are some other problems which create the impediment to the effectiveness of its agricultural programmes. Albeit the result showed a low significant positive relationship with the two variables.

6.1.20 Risk orientation and effectiveness

The relationship between risk orientation of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between risk orientation of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between risk orientation of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be ' $r = 0.60$ ' as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a moderate correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.60) was greater than the table value ($r = 0.144$) with 185 degree of freedom at 0.05 level of probability.

⇒ Hence, the concerned null hypothesis could be accepted.

The findings indicated that risk orientation of the selected farmers had a positive but non-significant relationship with the effectiveness of electronic media for sustainable agricultural development. Innovative farmers are willing to take risk (Rogers, 1983). The effectiveness should be high on them who take more risk. But in this study is showed a different result than that of Kamaly (2011) and Islam (2000).

6.1.21 Aspiration and effectiveness

The relationship between aspiration of the farmers and the effectiveness of electronic media for sustainable agricultural development was examined by testing the following null hypothesis.

“There is no relationship between aspiration of the respondents and the effectiveness of electronic media for sustainable agricultural development”

Computed value of the co-efficient of correlation between aspiration of the respondents and the effectiveness of electronic media for sustainable agricultural development was found to be 'r' = 0.88 as shown in Table 6.2. The following observations were recorded regarding the relationship between the two variables on the basis of the co-efficient of correlation:

⇒ The relationship showed a tendency in the positive direction between the concerned variables.

⇒ Secondly, a high correlation was found to exist between the two concerned variables.

⇒ The computed value of 'r' (0.88) was greater than the table value ($r = 0.144$) with 185 degree of freedom at 0.05 level of probability.

⇒ Hence, the concerned null hypothesis could be accepted.

The findings indicated that aspiration of the selected farmers had a positive but non-significant relationship with the effectiveness of electronic media for sustainable agricultural development. The high ambitious people should have more positive attitude towards effectiveness of electronic media for sustainable agricultural development. But in this study it revealed the result which is dissimilar with Kamaly (2011) and Islam (2000).

6.2 Contribution of Selected Independent Variables on Effectiveness

The result of correlation did not reveal the effects and contributions of independent variables (i.e. farmers' characteristics) to the independent variable (i.e. effectiveness of agricultural television programmes) of the study. The purpose of this section was to examine the effects and contribution of the selected characteristics on the effectiveness of electronic media for sustainable agricultural development. Different characteristics of farmers may interact together to contribute combined effect to the effectiveness of electronic media for sustainable agricultural development. Keeping the perspective on attention, full model multiple regression analysis of 22 selected characteristics of the farmers was run with the effectiveness of electronic media for sustainable agricultural development. Due to multicollinearity problem among the independent variables the result was no possible to use. Then in order to avoid the problem, stepwise multiple regression analysis was run with the above independent variables to ascertain the contribution of independent variables on the dependent variable. In this method, the 14 variables which had significant relationship with the effectiveness of electronic media for sustainable agricultural development were fitted together and use in the regression model.

Table 6.3 Summary of the stepwise multiple regression analysis showing contribution of the selected independent variables to the effectiveness of agricultural television programmes for sustainability.

Step No.	Variables entered	R	R ²	Adjusted R ²	Increase in R ²	Variance explained in %
1.	Innovativeness	0.730	0.533	0.531	0.533	53.3
2.	Training	0.783	0.613	0.609	0.080	8.0
3.	Education	0.807	0.651	0.646	0.038	3.8
4.	S. Knowledge	0.818	0.669	0.661	0.017	1.7
5.	Peer relationship	0.823	0.678	0.669	0.009	0.9
6.	Agricultural knowledge	0.828	0.685	0.675	0.008	0.8
Total						68.50

The summary of the stepwise multiple regression analysis has been showed in Table 6.3. Data contained in Table 6.3 reveals that out of 13 correlated variables, only 6 independent variables were finally entered in the stepwise multiple regression analysis which combinedly accounted for 68.50 percent of the total variance and the selected variables were: innovativeness, training, education, sustainable agricultural knowledge, peer relationship and agricultural knowledge. Other 7 variables were deleted as their F values or tolerance was too small to continue. The first variable to enter the stepwise multiple regression equation was innovativeness. This variable had the highest contribution of 53.3 percent in predicting the effectiveness of electronic media for sustainable agricultural development. The second variable to enter was training experience which contributed 8.0 percent in the effectiveness process. The variable innovativeness and training jointly contributed 61.3 percent in predicting the effectiveness of electronic media for sustainable agricultural development. The third variable to enter was education which contributed 3.8 percent in predicting the effectiveness. The variables innovativeness, training and education jointly contributed 65.1 percent in the prediction of the effectiveness of electronic media for sustainable agricultural development.

The remaining three to enter stepwise were sustainable agricultural knowledge, peer relationship and agricultural knowledge. Each of these variables contributed

near about one percent in predicting the effectiveness of electronic media for sustainable agricultural development and that may be considered less important in predicting the dependent variable. These three variables are jointly contributed 3.4 percent in predicting the effectiveness of electronic media for sustainable agricultural development.

Training and education also have remarkable positive influence among farmers for the effectiveness. Other characteristics of farmers like knowledge about sustainable agriculture, peer relationship and agricultural knowledge had somewhat positive influence upon farmers for the effectiveness of electronic media for sustainable agricultural development. Since, the rest 7 variables or characteristics of the farmers did not enter in the regression model, it is inferred that these eight characteristics have minimum contribution to the total explained variance of 68.50 percent.

6.2 path Analysis for Measuring Direct and Indirect Effects of Selected Independent Variables on the Effectiveness of Agricultural Television Programmes

Path analysis is an extension of the regression model used to test the fit of the correlation matrix against two or more casual model which being compared by the researcher. Stepwise regression analysis does not show separately direct and indirect influence of the independent variables on the dependent variable. Path analysis can give a solution regarding this problem. The objectives of conducting path analysis were to measure the direct and indirect effects of one variable upon another and allow the separations of correlation coefficients into components of direct and indirect effects.

In this study path coefficient analysis was done to give clear understanding of direct and indirect effects of 6 variables, which were entered into the stepwise regression model on the effectiveness of electronic media for sustainable agricultural development. Variables, through which substantial indirect effects were channeled, were also explored. The path coefficient of selected independent variables with respect to the effectiveness of electronic media for sustainable agricultural development are presented in Table 6.4.

The targeted 6 variables included in the path analysis had direct and indirect effects in various degrees on the effectiveness of electronic media for sustainable agricultural development and were channeled through each other. Analysis of data furnished in Table 6.4 indicates that among the independent variables, innovativeness had the highest positive direct effect (0.368) on the effectiveness of electronic media for sustainable agricultural development followed by education with the direct effect (0.215) and agricultural knowledge with the direct effect (0.138). Sustainable agricultural knowledge (0.135), Training (0.132), and peer relationship (0.099) had also positive and substantial direct effects on the effectiveness of electronic media for sustainable agricultural development. Training had the highest indirect effect (0.600) and innovativeness

Table 6.4 Path coefficients showing the direct and indirect effects of selected independent variables towards the effectiveness of agricultural television programmes

Independent variables	Total direct effect	Total indirect effect	Variables through which substantial indirect effects are channeled						Total effect
			Innovativeness	Training	Education	Sustainable agricultural knowledge	peer relationship	Agricultural knowledge	
Innovativeness	0.368	0.362		0.06388	0.12255	0.08032	0.01524	0.08004	0.730
Training	0.132	0.600	0.30879		0.10449	0.08532	0.01336	0.08818	0.732
Education	0.215	0.422	0.20976	0.06415		0.07101	0.00712	0.07051	0.637
Sustainable agricultural knowledge	0.135	0.524	0.21896	0.08342	0.11309		0.01019	0.09922	0.659
peer relationship	0.099	0.364	0.05667	0.267	0.01548	0.01390		0.01090	0.463
agricultural knowledge	0.138	0.513	0.21344	0.08434	0.10986	0.09706	0.007821		0.651

had the lowest (0.362) total indirect effects. From these findings it can be concluded that all the six variables were important in consideration of direct and indirect effects on the effectiveness of electronic media for sustainable agricultural development. A brief discussion of path analysis is presented below:

6.3.1 Innovativeness

The direct effect of innovativeness on effectiveness of electronic media for sustainable agricultural development was positive and substantial (0.368) which

indicated that innovativeness had a very high direct influence on farmers for the effectiveness of electronic media for sustainable agricultural development. The total indirect effect of innovativeness on the effectiveness of electronic media for sustainable agricultural development was also positive and substantial (0.362) which showed that the level of innovativeness has substantial indirect effect on effectiveness. The indirect effect was channeled through training (0.06388), education (0.12255), sustainable agricultural knowledge (0.08032), peer relationship (0.01524) and agricultural knowledge (0.08004). Thus, it may be inferred that other variables remaining constant, innovativeness had a substantial direct and indirect influence on the effectiveness of electronic media for sustainable agricultural development.

6.3.2 Training

The direct effect of training on effectiveness of electronic media for sustainable agricultural development was positive and substantial (0.132) which indicated that training had a very high direct influence on farmers for the effectiveness of electronic media for sustainable agricultural development. The total indirect effect of training on the effectiveness of electronic media for sustainable agricultural development was also positive and substantial (0.600) which showed that the level of training has substantial indirect effect on effectiveness. The indirect effect was channeled through innovativeness (0.30879), education (0.10449), sustainable agricultural knowledge (0.08532), peer relationship (0.01336) and agricultural knowledge (0.08818). Thus, it may be inferred that other variables remaining constant, training had a substantial direct and indirect influence on the effectiveness of electronic media for sustainable agricultural development.

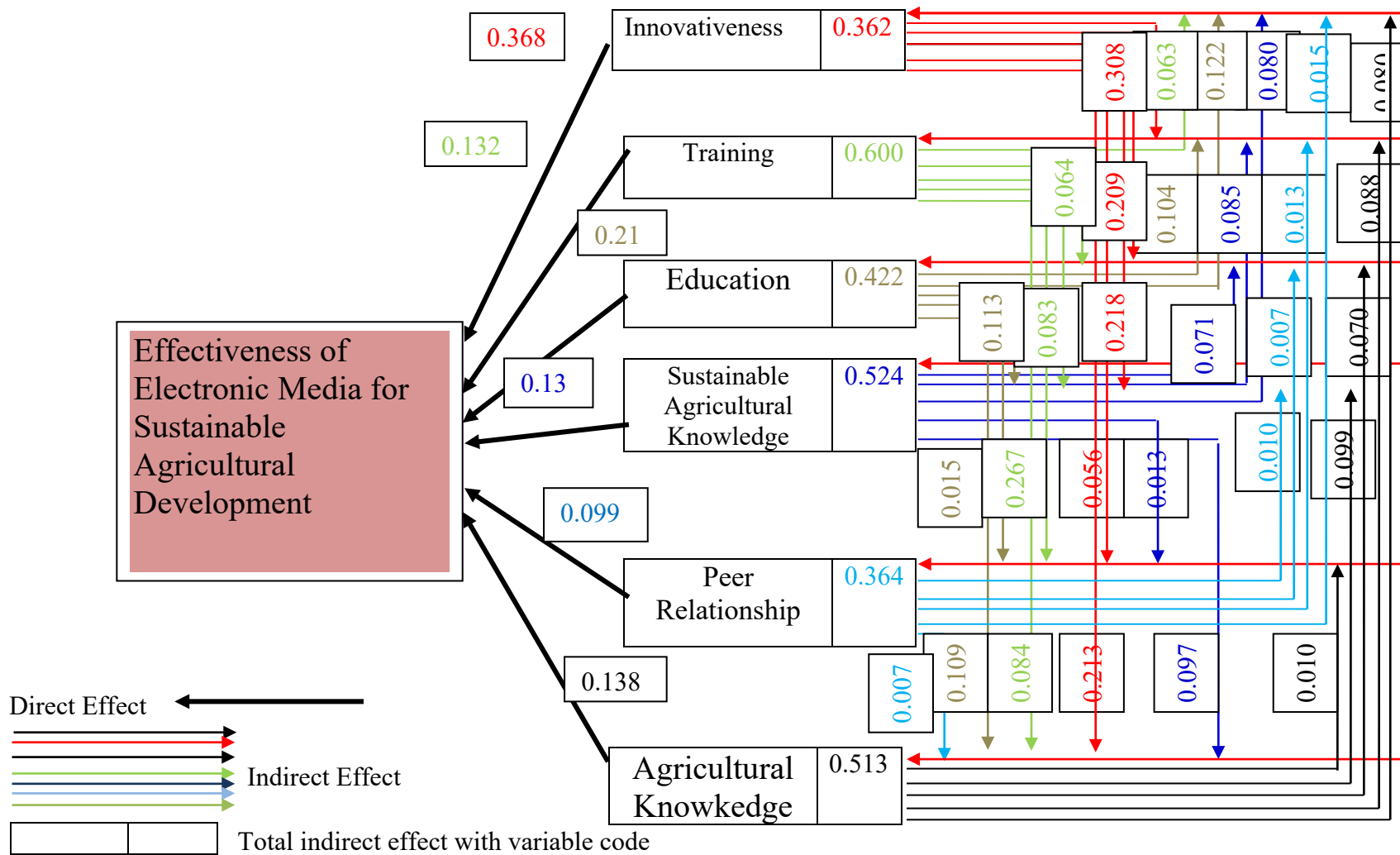


Fig. 6.1 Direct and indirect effects of selected independent variables on effectiveness of electronic media for sustainable agricultural development

6.3.3 Education

The direct effect of education on effectiveness of electronic media for sustainable agricultural development was positive and substantial (0.215) which indicated that education had a very high direct influence on farmers for the effectiveness of electronic media for sustainable agricultural development. The total indirect effect of education on the effectiveness of electronic media for sustainable agricultural development was also positive and substantial (0.422) which showed that the level of education has substantial indirect effect on effectiveness. The indirect effect was channeled through innovativeness (0.20976), training (0.06415), sustainable agricultural knowledge (0.07101), peer relationship (0.00712) and agricultural knowledge (0.07051). Thus, it may be inferred that other variables remaining constant, education had a substantial direct and indirect influence on the effectiveness of electronic media for sustainable agricultural development.

6.3.4 Sustainable agricultural knowledge

The direct effect of sustainable agricultural knowledge on effectiveness of electronic media for sustainable agricultural development was positive and substantial (0.135) which indicated that sustainable agricultural knowledge had a very high direct influence on farmers for effectiveness of electronic media for sustainable agricultural development. The total indirect effect of sustainable agricultural knowledge on the effectiveness of electronic media for sustainable agricultural development was also positive and substantial (0.524) which showed that the level of sustainable agricultural knowledge has substantial indirect effect on effectiveness. The indirect effect was channeled through innovativeness (0.21896), training (0.08342), education (0.11309), peer relationship (0.01019) and agricultural knowledge (0.09922). Thus, it may be inferred that other variables remaining constant, sustainable agricultural knowledge had a substantial direct and indirect influence on the effectiveness of electronic media for sustainable agricultural development.

6.3.5 Peer relationship

The direct effect of peer relationship on effectiveness of electronic media for sustainable agricultural development was positive and substantial (0.099) which indicated that peer relationship had a very high direct influence on farmers for the effectiveness of electronic media for sustainable agricultural development. The total indirect effect of peer relationship on the effectiveness of electronic media for sustainable agricultural development was also positive and substantial (0.364) which showed that the level of peer relationship has substantial indirect effect on effectiveness. The indirect effect was channeled through innovativeness (0.05667), training (0.267), education (0.01548), sustainable agricultural knowledge (0.01390) and agricultural knowledge (0.01090). Thus, it may be inferred that other variables remaining constant, peer relationship had a substantial direct and indirect influence on the effectiveness of electronic media for sustainable agricultural development.

6.3.6 Agricultural knowledge

The direct effect of agricultural knowledge on effectiveness of electronic media for sustainable agricultural development was positive and substantial (0.138) which indicated that peer relationship had a very high direct influence on farmers for the effectiveness of electronic media for sustainable agricultural development. The total indirect effect of agricultural knowledge on the effectiveness of electronic media for sustainable agricultural development was also positive and substantial (0.513) which showed that the level of agricultural knowledge has substantial indirect effect on effectiveness. The indirect effect was channeled through innovativeness (0.21344), training (0.08434), education (0.10986), sustainable agricultural knowledge (0.09706) and peer relationship (0.007821). Thus, it may be inferred that other variables remaining constant, agricultural knowledge had a substantial direct and indirect influence on the effectiveness of electronic media for sustainable agricultural development.

6.4 Focus group discussion

Focus group discussion (FGD) helps researcher to understand the thinking of a community as a whole. It also helps researcher to cross check the data by

triangulation with the data collected by other method. Researcher observed that, Once upon a time, most of the farmers had cultivated their land only for their own food. They did not think to produce commercial purpose because of the low yield of the prevailing crop. Nowadays farmers make it possible to cultivate commercially with the help of the High Yielding Variety (HYV) crops. They got the necessary information for more production from various sources. However, electronic media is an important medium of information in this case.

Different sessions of focus group discussion were arranged in two different unions to determine the level of effectiveness of electronic media for sustainable agricultural development among the stakeholders. Researcher guided one session in Dharanibari union of Ulipur Upazial and one session in Belgaca union of Kurigram Sadar Upazila under Kurigram district. Here, a brief description is presented based on the FGDs.

6.4.1 FGD-1

In Belgaca union of Kurigram Sadar Upazila one session of FGD was conducted with 17 group members respectively. Participants of the FGDs expressed their opinion about the effectiveness of electronic media for sustainable agricultural development. Among the 17 group members of the FGD, 11 were from the middle aged, 4 were from young aged and only 2 were from old aged. Their response proved that group members were more aware about sustainable agriculture who have more training. On the other hand, the trained farmers were more enthusiastic to watch the agricultural programmes broadcast by electronic media. The middle and young aged participants got maximum training but very few of them operated their daily livelihood by agricultural works. It was found that the more the education the more the segregation from farming activities. However, the educated participants possessed more cognitive, emotional and attitudinal effectiveness. Unfortunately, the segregation from farming activities of the educated participants deters them from behavioural effectiveness. The participants articulated and focused the following major impediments for the ineffectiveness of electronic media for sustainable agricultural development— a) electronic media shows

maximum agricultural programmes at day time when farmers keep themselves busy at their farmland, b) number of agricultural programmes is so less that it cannot make any influence, c) farmers changed their mind to adopt any new technology or variety after watching TV programmes but when they go to buy the input of it almost always fail because unavailability or incomplete information, d) channels changed time schedule of agricultural programmes but did not declare it before or never advertise their upcoming agricultural programmes, so farmers forget to watch it although enthusiasm, e) no programmes for problem solving about agriculture, f) lack of variation in agricultural programmes discourage its viewers, g) lack of measuring feedback from the viewers regarding agricultural programmes, h) limited follow up of the previous stories. Farmers also discussed about the suggestions to overcome the problems as follows: a) time schedule should fix up according to the farmer's convenience, b) increasing number of agricultural television programmes, c) making input available besides information dissemination, d) advertise before broadcast agricultural television programmes, e) phoning programme should start to solve the farmer's problem, f) not only the success stories but various types of agricultural programmes should broadcast, g) measuring feedback of agricultural programmes, h) agricultural television programmes should be followed up etc.

6.4.2 FGD-2

For collecting data from Dharanibari union of Ulipur upazila one session of FGD was organized with 15 group members. The maximum dwellers of this research area are out of the coverage of cable TV connection. Their main source of agricultural programmes was BTV. Occasionally they watched private TV channels through cable connection when they go to the nearby bazaar. As they had no alternative but BTV so the maximum viewers watched all of the programmes daily from 8 PM to 10 PM. This is an opportunity for us to give any information regarding agriculture within this time frame. Among the total members of these two sessions 70% were from middle aged and 30% were from young aged. About half (49.35%) of the member of these FGDs had medium effectiveness to utilize agricultural television programmes followed by 35.45% having low effectiveness

and 15.20% having high effectiveness. During the discussion participants expressed their opinion for the problems of effectiveness in utilizing agricultural television programmes and gave some suggestions to overcome it. They identified and emphasized the following problems in utilizing agricultural television programmes successfully: a) limited number of agricultural programmes, b) no repeated broadcast of agricultural television programmes, c) untimely broadcast of agricultural television programmes, d) no advertisement of agricultural television programmes to remind the programme schedule, e) lack of expert manpower in television, f) everybody watch television only for amusement, g) no separate television channel which broadcast only agricultural programmes, h) limited number of marketing related programmes which is more important for the profitable agriculture, i) unavailable input relevant to the agricultural television programmes in nearby market place. Farmers gave following solution to minimize the problems: a) number of agricultural programmes should be increased, b) agricultural programmes should broadcast repeatedly, c) broadcasting agricultural programmes at the off time when farmers return home from their field, d) agricultural programmes schedule should be advertised before broadcast, e) increasing number of programmes to facilitate marketing of agricultural product, f) establishing separate television channel for agriculture, h) television should be used for learning and i) broadcasters, extension workers and input dealers should have a collaborative participation to introduce any new technology in agriculture.

6.5 Case study

According to Kothari (2003) through case study a researcher can obtain a real and enlightened record of personal experiences which would reveal man's inner strivings, tensions and motivations that drive him to action along with the forces that direct him to adopt a certain pattern of behavior. Four respondents were taken to study them as cases of this research. Four farmers were selected for conducting the case study from two unions.

6.5.1 Case study-1

Md. Unus Ali son of late Foyeze Ali was a small farmer. He lived in Maloti Bari Digor village of Dharanibari Union of Ulipur Upazila under Kurigram district. He had .05 ha land. He did small business besides the agricultural works. His annually income was 50,000 taka. He had no television set at his home. He watched television at nearby Bazar. He never watched the agricultural television programmes as his target. Occasionally if it came before him then he watched it. He got agricultural information who watched television regularly. He had a peer group. Mainly they discussed about their business. Occasionally they discussed about agriculture. The experienced fellow farmers gave the information sometimes what he wanted to know. In his agriculture field he cultivated rice and jute. He never cultivated vegetables or other crops. He rented the irrigation from the nearby shallow tube well. He has no shallow tube well of his own. The owner of shallow tube well gave necessary information if he faced any problem. He did not take any training on agriculture. His agricultural knowledge is moderate but very limited he knew about sustainable agriculture. He never learnt about AWD from television programmes or extension workers. He used parching system to manage pest from his farm land. He learnt it from the fellow farmers. He used spray to protect his crop from pests. He did not use light trap or net to curb insects. He used Urea Super Granule (USG) in his boro rice field according to his previous knowledge and information from the other farmers. He used cow dung when he prepared his land. He never used compost, bio-fertilizer, FYM and ash to increase the sustainability of farm fertility because of his limited time and unavailability of them. He said agricultural programmes telecast by electronic media did not get the proper attention because of available other attractive programmes in different channels. Moreover maximum farmers who worked himself in the field could never get the chance to watch the agricultural television programmes. Sometimes they got the information from viewers who frequently watch television. By this way electronic media can play the semi-effective role he uttered.

6.5.2 Case study-2

Md. Nurul Islam son of late Mannan Islam was a medium farmer who took training on IPM. He lived at Dharanibari village of Dharanibari Union of Ulipur Upazila under Kurigram district. He had one son. His age was 37 years and education was up to class XIV. He had 2.00 ha of farm land where he worked with the help of labourers. He attended 14 days training on IPM and fertilizer management throughout his farming career. He had become a skilled farmer as per his training and experience. He had very high knowledge of agriculture and sustainable agriculture. He was a member of an IPM club. There were 33 group members of the club. They frequently discussed about their agricultural problems. He gave advice to other small farmers. But he himself did not do his agricultural works. He had been depended to the hired labours. He had high favourable attitude toward sustainable agriculture. He knew about the harmful effects of excessive use of chemical fertilizers and pesticides. His attitude toward cow dung, bio-fertilizer, FYM and green manure was more favourable. But he could not use those environment friendly manure because of unavailability. For unavailable time and inactive and idle lifestyle he did not take any step to produce environment friendly manure. He had a high favourable attitude toward agricultural television programmes. He tried to watch every agricultural television programmes of BTV. But he failed sometimes because of the other business. He said, “If electronic media broadcasted the agricultural programmes repeatedly it could be beneficial for him”. He knew about Urea Mega Granule (UMG) from the agricultural television programmes. But UMG was not available in market. On the other hand it was not viable to buy a machine to make UMG for his limited farm. He said that agricultural television programmes made some changes in agriculture. Only the publicity from extension workers was not enough to make those changes. Electronic media’s audio-visual presentation increased the credibility of new invention in agriculture easily. So electronic media were playing the exact catalytic role to adopt the invention and new technology, he believe. He used parching system to control the insects biologically. He learnt it from the extension department of Ulipur Upazila. He cultivated HYV rice from long ago. He used

chemical fertilizer such as Urea, TSP, MOP, gypsum frequently. He tried to avoid chemical pesticide for his rice field. But when he found that it was not possible to control them by any other ways then he used chemical pesticide according to the prescribed dosage.

6.5.3 Case study-3

Md. Abdul Aziz son of late Abdul Goni was a medium farmer, lived at Kishamat Maloti Bari village of Dharanibari Union of Ulipur Upazila under Kurigram district. The age of the farmer was 56 with 5 years of schooling. He was a small farmer having 1.00 ha. of land. He had two daughters and two sons. There were 8 members of his family. The family education score VII. His total annual income was 40,000 taka. He reared 6 hens and 3 ducks in an indigenous way. He took 4 days training on poultry and livestock rearing. He spent his idle time by gossiping with his peers and friends at nearby Bazar. Very few moments they discuss about agriculture at that moment. The respondent had medium agricultural knowledge and low sustainable agricultural knowledge. He possessed medium innovativeness. He reared poultry at a small scale. If he faces any problem regarding his poultry farm instantly he seeks suggestion from the poultry feed dealer and nearby seller. Most often he found solution from them but if they became failed then they referred to the officials of Upazila agriculture office. He possessed medium risk orientation. He also reared cattle but in the traditional ways. He had moderately favourable attitude toward sustainable agriculture and television. As per the suggestion from the input dealer he often used various types of pesticide in his rice and homestead vegetable field. He was not aware of the long term harmful effect of the chemical on agriculture field and human health. But he knew it from a television reporting that some of the preserving matter which is used by the fruit dealer is harmful for human health. But he thought it is not possible for him to do anything for stopping that type of adulteration. He did not know how to use Leaf Colour Chart (LCC) and Alternating Wetting and Drying (AWD) system. He saw less number of agriculture related special programmes because he did not know the time schedule of the programmes. But he was a regular viewer of evening news of various private TV channels. He suggested broadcasting the agricultural issues in news format.

Viewers watch agricultural programmes but most of the viewers use to watch the news regularly. So, agricultural news may cover more people than the agricultural programmes. He explained that the purpose of all of the TV channels was giving entertainment. He believes that TV can play an important role in development. But lack of proper attention toward development made TV ineffective. If we can establish separate TV channel for development purpose it can work well.

6.5.4 Case study-4

Md. Haider Ali son of Md. Saber ali was a rich farmer of having 5.00 hectare of land. He lived at Muktarlam village of Belgaca Union of Kurigram Sadar Upazila under Kurigram district. He was 35 years old. He took education up to XII. He had one son and one daughter. From last 5 years he worked for his farming land. He attended 7 days training on fertilizer management and agriculture so far. His family was a combined family. The total number of his family was 11. The average family education was X. Almost all of the active family members were educated. As per his personal profile he was a conscious farmer in that area. He adopted HYV rice in the early stages of its arrival. He had his own shallow tube well to irrigate his farm land. His total annual income was more than 150,000 taka. He cultivated vegetables on his homestead area only for consumption. He was aware of the health and environmental risk for indiscriminate using of chemical fertilizers and pesticides on agriculture field. He had a livestock farm having 3 fattening cow. He had medium status of agricultural knowledge and sustainable agricultural knowledge. He moderately participated with the formal groups. He supervised other's crop production in limited scale besides his own. He watched mass media moderately for various purposes. He had a friend circle but they never discussed about agricultural issues. He used chemical fertilizer and pesticide in his crop field. He knew the usefulness of cow dung, compost, green manure and bio-fertilizers. But he compelled to use the chemical fertilizer because of unavailability of other environment and health friendly fertilizers. He learnt about IPM. He could not follow IPM because of a huge area of land he cultivates. He said that only environment friendly agriculture or only chemical using in agriculture cannot ensure the sustainability of agriculture. But it is necessary to make a coexistence of

both of them for the sustainability and profitability of agriculture. He learnt about ribbon rating from extension worker and television programmes but believed that it may damage the quality of jute. He said that ribbon rating is environment friendly but it costs more labours than traditional process. On the other hand, because of lack of training of the labourers they are less enthusiastic to work for ribbon rating. He used his own shallow tube well to irrigate his farm land. He never knew AWD before. When his farm land became little dry he irrigated. Electronic media or extension worker never gave this type of information to irrigate maintaining AWD, he said. He believed that because of excessive using of chemical fertilizer and pesticide the soil, water and air qualities were deteriorated day by day. It hampered the bio-diversity of us. For that reason the useful insects like earthworm, frog, spider and snails were decreasing day after day. On the other hand he knew it from the agriculture experts that excessive use of chemical fertilizer makes the soil hard which is very harmful for the agricultural future productivity. He said that regarding agricultural development electronic media had medium effectiveness. He detected some impediment toward the effectiveness such as lack of agricultural TV programmes, lack of literacy of rural people, over attention of mass media toward high productivity by using synthetic chemical etc. In his potato field he always sprayed the pesticides suggested by dealer. He never tried to curb the insecticides by pesticide free and health friendly method. He never got that type of information from electronic media so far.

Chapter 7

Problems and solutions for the Effectiveness of electronic media for Sustainable Agricultural development

Effectiveness of electronic media is very important for sustainable agricultural development. For the sustainable development in agriculture reinforcement of indigenous knowledge is necessary. On the other hand using the latest agricultural technology in a useful manner is another precondition of it. To maintain the continuous higher growth in agriculture we should manage the both side in a same time. Mainly the sustainable agricultural growth depends upon the successful management of agricultural practices in a sustainable way. But majority of the farm family head (82.35 per cent) reported that in the study area electronic media had low or medium effectiveness towards the sustainable agricultural development. Only 17.65 per cent farmers had reported higher effectiveness of electronic media for sustainable agricultural development. But the question is how can we increase the media effectiveness regarding sustainable agricultural development? The purpose of this chapter was to have an understanding on problems faced by the farmers in acquiring agricultural cognition to practice and find out the probable solutions to overcome the problems. In order to select the major problems and probable solutions for overcoming the problems regarding the effectiveness of electronic media for sustainable agricultural development, the related literature were reviewed rigorously. Consultation was also made with teachers, extension and media personnel, experts, and farmers. Finally fifteen (15) important problems regarding the effectiveness of electronic media for sustainable agricultural development were identified and also fifteen possible solutions for overcoming the problems were recognized. Last 19th April 2014 in a round table meeting agriculturalist, academician and media personnel emphasized some of the recommendation to overcome the problems of ineffectiveness of mass media. They suggested establishing specialized agricultural TV channel, introducing agriculture

journalism in academic course curriculum and broadcasting agricultural issues in news format (Desherkhobor, 2014).

7.1 Problems in effectiveness of electronic media as perceived by farmers

The rank order as per the importance of each problem to address the problem of effectiveness of electronic media for sustainable agricultural development was computed according to the opinion of the respondents. The respondents of the study indicated the importance of different problems by putting tick mark in any one of three columns such as very important, important and not important. The answer tick marks of the farmers were accounted by assigning weights as shown below:

<u>Response</u>	<u>Weights</u>
Very important	2
Important	1
Not important	0

The Importance Score (IS) was computed for each problem by adding the weights for responses of the farmers against that problem. Therefore, the importance score of any problem could range from zero (0) to 374. The importance score (IS) of each of the problem was computed and was expressed in percentage by using the following formula:

$$\text{Important Problem Score Index (IPSI)} = \frac{\text{Observed Problem Score}}{\text{Possible Problem Score}} \times 100$$

The possible Important Problem Score Index (IPSI) of a problem could range from zero (0) to 100, where zero (0) indicated the statement did not cause any problem to the effectiveness of electronic media for sustainable agricultural development, while 100 indicated very high problem for the effectiveness of electronic media for sustainable agricultural development. The higher the Important Problem Score Index (IPSI) proved the higher problem responsible for the ineffectiveness of electronic media for sustainable agricultural development. The problems with rank order as opined by the respondents are presented in Table 7.1.

Important Problem Score Index (IPSI) was found from the farmer's opinion to the effectiveness of electronic media for sustainable agricultural development ranged from 71.39 to 92.78 percent. The respondents mentioned 15 problems related to the performance of broadcast media, people's perception towards TV programmes, economic capability of farmers, national policy etc. From the response of the farmers the study found that problems of broadcasting time ranked first as the most important factor to the ineffectiveness of electronic media for sustainable agricultural development. People, who work in agricultural land, cannot watch television at day time. Mainly the watching period of the farmers are from 6 PM to 10 PM. However, most of the agricultural television programmes are telecasted at other times when respondents stay in farm land or in other business. According to Bates (1983), there are both diurnal and seasonal variations in viewing rates for Open University television programs. For these programs, viewing rates were found to drop when their broadcast time was moved from the evening hours to earlier parts of the day. Viewing was also found to decrease during the summer period due to vacations and summer schools, and at the end of the school year when students are busy preparing for exams.

Farmers describe the number of agricultural programmes as the 2nd important problem for making the electronic media effective. In a huge number of entertaining and amusement programmes farmers hardly watch the agricultural programmes. In addition to the significance of broadcast time, Bates (1983) also stresses the importance of repeat broadcasts. The re-broadcasting of episodes or programs that were previously shown has been demonstrated to enhance the likelihood that learners will view the program, and may allow slower learners to review difficult material.

From the aspect of performance of electronic media in this study farmers ranked the Lack of mechanism to measure feedback of electronic media as the 5th important problem for sustainable agricultural development. On the other hand, to broadcast the real life practices of farmers, electronic media faced ineffectiveness as ranked 7th, language barrier ranked 10th and the standard of television

programmes ranked as the 14th important problem to make an effective electronic media for sustainable agricultural development.

Table 7.1 Rank order of different problems in effectiveness of electronic media for sustainable agricultural development as opined by the farmers

Minimum= 0; Maximum= 374

Sl No	Problems	Very important	Important	Not important	IS	IPSI	Rank order
1.	Broadcasting time is not fit for farmer	320 (160)	27 (27)	0 (0)	347	92.78	1
2.	Agricultural TV programmes is too few to make any influence	332 (166)	10 (10)	0 (11)	342	91.44	2
3.	Maximum people treat TV as a medium of entertainment rather than learning equipment	306 (153)	32 (32)	0 (20)	338	90.37	3
4.	Audience lose attraction toward agricultural programmes for the available other channel	312 (156)	21 (21)	0 (10)	333	89.04	4
5.	Lack of mechanism to measure feedback	302 (151)	22 (22)	0 (14)	324	86.63	5
6.	Lack of collaboration with other agricultural organization	298 (149)	25 (25)	0 (13)	323	86.36	6
7.	TV does not depict the real life agricultural practices of farmer	294 (147)	28 (28)	0 (12)	322	86.10	7
8.	Television buying capacity of farmers is very limited	294 (147)	23 (23)	0 (17)	317	84.76	8
9.	Concept of disseminating information using TV is not followed nationally	288 (144)	27 (27)	0 (16)	315	84.22	9
10.	Ineffectiveness causes for the language barrier	282 (141)	29 (29)	0 (17)	311	83.16	10
11.	Lack of skilled media personnel	296 (148)	12 (12)	0 (27)	308	82.35	11
12.	Commercial TV fails to live up to its responsibilities as public service	300 (150)	6 (6)	0 (31)	306	81.82	12
13.	Watching agricultural TV programmes is the cause of losing indigenous knowledge	280 (140)	19 (19)	0 (28)	299	79.95	13
14.	TV programmes are not standard enough to positive change in agriculture	268 (134)	7 (7)	0 (46)	275	73.53	14
15.	Lack of trustworthiness of agricultural TV programmes	220 (110)	47 (47)	0 (30)	267	71.39	15

Besides, regarding the people's perception toward television programmes the 3rd important problem is the treatment of television as a medium of entertainment. Viewers never treat television as a medium of learning. However, at the end of the 1960s and the beginning of 1970s there was a belief that television could be used for promoting learning and social behavior. The medium was deliberately used for preschool learning, often called *pro-social learning*, and compensatory education in many countries. Television is a very accessible medium; it has the potential to reach learners that have not been able to participate in traditional adult literacy programs. Television is accessible both in terms of its technology and in terms of its content (Moeller, 1996). Now in third world countries like Bangladesh, it is high time to use television as learning equipment rather than entertainment box.

When farmers were quizzed why most powerful mass media like television was not working properly in effective agricultural development? Most often they answered that so many other sources of information also had the major influence from cognition to practice. On the other hand, television just can broadcast the idea but they never can supply the input (capital, labour, seed, fertilizer, pesticides/insecticides, equipment, etc.) to implement the idea. So there was a huge gap among knowledge-emotion-attitude and practice process. For that reason, lack of collaboration with other agricultural organization is ranked the 6th important problem. Among the agricultural television programmes most of them are success story. But commercial TV fails to live up to its responsibilities as public service for its predetermined priorities. This problem stood 12th important problem among the 15.

Farmers economic condition may hinder the effectiveness of television programmes, because in rural areas electricity is not available everywhere. The cost of television operating may goes beyond their capability. In the study, findings showed that television buying capacity is ranked as the 8th important problem for the effectiveness of electronic media for sustainable agricultural development.

Regarding national policy so far Bangladesh could not follow her target properly. Lack of skilled manpower, lack of devotion to the interest of the state, lack of

proper monitoring and abundant of corrupted and sluggish mentality always make her failure to implement the national policy. According to our proposed National Broadcasting Policy (NAP, 2013), an important objective of our mass media to increase awareness among the people to participate in the development activities such as education, health, agriculture, women empowerment and poverty reduction. But disseminating information using TV for the development of agriculture is not followed nationally. This problem ranked the 9th important problem which opined by farmers. All of the problems are shown in the Table 7.1 according to rank order.

7.2 Solutions for overcoming the problems in effectiveness of electronic media for sustainable agricultural development

Television disseminates agricultural programmes in various ways. It is increasing cognitive, emotional and attitudinal intuitions. But if farmer don't use it in their daily agricultural practices then whole effort will go to in vain. The study tried to find out the suggestions which can solve the problems for effectiveness of electronic media for sustainable agricultural development by increasing the positive behavioural change.

In respect of each of the solution, the respondent indicated importance of solutions by putting a tick mark in any of the three responses, such as very important, important and not important. The weight assigned as per the following ways for each of the responses:

<u>Response</u>	<u>Weights</u>
Very important	2
Important	1
Not important	0

The Importance Score (IS) of solutions were computed by adding the weights for responses of all the respondents against all of the suggestions. As per the formula followed in this study the Importance Score (IS) of any solution could range from zero (0) to 374. The Importance Score (IS) of each of the solutions was computed and was expressed in percentage by using the following formula:

$$\text{Important Solution Score Index (ISSI)} = \frac{\text{Observed Solution Score}}{\text{Possible Solution Score}} \times 100$$

The Important Solution Score Index (ISSI) of solution could range from zero (0) to 100, where zero (0) referred no important solution for the effectiveness of electronic media and 100 referred very important solution for the effectiveness. That is, higher the ISSI, the higher was the solution important for effectiveness of electronic media for sustainable agricultural development. The solutions with rank order as opined by farmers are presented in Table 7.2.

Table 7.2 Solutions for problems in effectiveness of electronic media for sustainable agricultural development as opined by the farmers

Minimum= 0; Maximum= 374

SI No	Solutions	Very important	Important	Not important	IS	ISSI	Rank order
1	Agricultural programmes should broadcast from 6 to 10 PM which fit for farmer	338 (169)	18 (18)	0 (0)	353	94.39	1
2	Increase the number of agricultural TV programmes comparatively	326 (163)	17 (17)	0 (0)	343	91.71	2
3	Sustainability in agriculture should be emphasized in TV programmes	290 (145)	42 (42)	0 (0)	332	88.77	3
4	Specialized agricultural TV channels should be established	298 (149)	31 (31)	0 (0)	329	87.97	4
5	Broadcast agricultural TV programmes repeatedly and count the feedback	310 (155)	18 (18)	0 (10)	328	87.70	5
6	Broadcast agricultural TV programmes with understandable Language	296 (148)	30 (30)	0 (9)	326	87.17	6
7	Electronic media should work with collaboration with other agricultural organizations	302 (151)	19 (19)	0 (17)	321	85.83	7
8	To make skilled manpower agriculture journalism course should introduce	296 (148)	23 (23)	0 (16)	319	85.29	8
9	TV should treat as a medium of learning rather than an entertainment box	188 (144)	28 (28)	0 (15)	316	84.49	9
10	Audience attraction should increase toward agricultural programmes by publicity and advertisement	294 (147)	19 (19)	0 (21)	313	83.69	10

SI No	Solutions	Very important	Important	Not important	IS	ISSI	Rank order
11	Information of agricultural TV programmes should have conformity to indigenous knowledge	282 (141)	29 (29)	0 (17)	311	83.16	11
12	Affordable Price of television to farmers	280 (140)	30 (30)	0 (17)	310	82.88	12
13	Increase the standard of agricultural TV programmes	268 (134)	38 (38)	0 (15)	306	81.82	13
14	Concept of disseminating information using TV should be followed by nationally	262 (131)	43 (43)	0 (13)	305	81.55	14
15	Depict time befitting real life agricultural practices of farmer to increase effectiveness	258 (129)	38 (38)	0 (20)	296	79.14	15

The study identified a wide variation of solutions by ISSI which can fit best to solve the problems in effectiveness of electronic media for sustainable agricultural development. The ISSI as obtained from the farmers in effectiveness of electronic media ranged from 79.14 to 94.39 percent.

The tenant and the own land farmers who work in their farm land cannot watch television or any electronic media at day time. They go to their work at 6 AM and till 5:30/6 PM they continue their farming activities. So, this is not possible for them to watch television on that period. Unfortunately maximum agricultural television programmes telecasted their programmes on that time span. In this research, respondents mark their highest tick as very important solution to prevent this unwanted situation by telecasting within 6 PM to 10 PM. In the rank order, this solution stood first.

Nowadays electronic media broadcast some agricultural programmes but there are limited numbers of variation. Most of the agricultural programmes are documentary based success story of the farmers or news. But electronic media do not cover agricultural issues by the other type of programmes such as discussion, dialogue, talk show, interview, advertisement, drama, cinema, expert opinion, question-expert answer etc. On the other hand, electronic media broadcast various programmes throughout the day. Proportionately the numbers of other programmes

are so high that agricultural programmes do not get proper attention. So number of agricultural programmes should be increased. Respondents identified it as the 2nd important solution to solve the ineffectiveness of electronic media for sustainable agricultural programmes.

Among the agricultural programmes most of them are emphasized just on high yield. But they never talk about the sustainable and healthful agricultural yield although, only sustainable and healthful agricultural development can ensure the long term food security of any country. According to farmer's opinion, by focusing and emphasizing sustainable agricultural practice we can solve this problem. The ISSI of this solution is 88.77 which ranked as the 3rd important solution to solve the ineffectiveness of electronic media for sustainable agricultural development.

Among the 3 government and 23 active private TV channels 17 channels were established for entertainment purpose, 4 are for news, 2 are for music and government owned sangsad TV was established for covering the proceedings of National Assembly, BTV world and Bangladesh Television were also given their emphasize toward entertainment and news (MOI, 2014). So, there is a lack of TV channels which give the importance toward agriculture or development issues. Here respondents ranked the establishment of special agriculture TV channel as the 4th important solution to overcome the problem. Broadcast agricultural TV programmes repeatedly and count the feedback stood the 5th important solution. Language barrier is another important cause of ineffectiveness of agricultural television programmes. So, it is necessary to broadcast the agricultural TV programmes with understandable language. Respondents identified the solution as 6th important solution in ISSI.

Collaborative working with the other agricultural organization, increase the skill of manpower by introducing agriculture journalism in academic and training syllabus, treat TV as a medium of learning rather than entertainment box and attract audience by publicity and advertisement toward agricultural TV programmes are the 7th, 8th, 9th and 10th important solution consecutively bearing ISSI 85.83, 85.29, 84.49 and 83.69.

Farmers want to watch that type of programmes which does not break their values, tradition. So, they suggested to broadcast that type of agricultural programmes which was not irrelevant to their indigenous knowledge. This solution ranked as 11th important solution to overcome the problem.

Most of the farmers of the study area are poor. They have limited source of income. So they cannot buy television sets easily. For that reason, television set should sell in affordable price for farmers. Respondents considered it as the 12th important solution to prevent ineffectiveness of electronic media for sustainable agricultural development.

The number of agricultural television programmes is increasing day by day. However, the standard of the agricultural television is not beyond questionable. Therefore, the qualities of agricultural programmes should be increased. Farmers marked it as the 13th important solution to overcome the ineffectiveness of agricultural television programmes.

The success of any development activities depends upon the integrated effort of all the related departments either it is government or nongovernment. The national policy can play an important role to increase the effectiveness of electronic media for sustainable agricultural development. Respondents identified it as the 14th important solution. Besides, depiction of live agricultural practices of farmers make them more enthusiastic to watch. So, to increase effectiveness of sustainable agricultural development television should telecast live programmes on agricultural works. A deliberate use of electronic media can increase its effectiveness quickly. It is the 15th important solution identified by the respondents.

Chapter 8

Summary, Conclusion and Recommendations

8.1 Summary of the Key Findings

8.1.1 Introduction

Agriculture is main source of energy to operate the whole economy of Bangladesh. The contribution of agricultural sector to GDP (Gross Domestic Product) was 20.83 percent in FY 2007-08, 20.48 percent in FY 2008-09 and 19.41 percent in FY 2011-12. Only the agriculture sector provides 43.6% of the country's total employment. The fruit of development can easily go to the rural grass root people by developing the agriculture sector. A perpetual food security is also depending upon the development and continuous higher production of agriculture. Awareness about the invented new technology in agriculture is very necessary to continue its growth compared to the population.

Electronic media can create the positive environment and positive attitude of viewers towards development with its audio visual effects. Historically electronic media was established to give entertainment to its audience. It became an important partner of development after a while because of its greater potentiality. Fighting with poverty and over population agricultural production should be increased. To increase the agricultural production traditional agriculture should replace with modernized agriculture. In this case, collaboration with the different parties related to agricultural extension and development, electronic media can play a catalytic role.

Besides, the presentation of the electronic media should be environment friendly to ensure sustainable agricultural development. Only the higher production of agriculture is not enough to ensure sustainable agriculture. Rather higher production should be in a sustainable manner. That means it will never harm the soil, water, air, human health so that, the higher production can be continued year

after year. Considering the above facts the present study is taken to measure the effectiveness of electronic media for sustainable agricultural development.

8.1.2 Objectives

1. To examine the level of effectiveness of electronic media for sustainable agricultural development.
2. To find out the programmes of different television channels related to sustainable agriculture.
3. To determine and describe the farmer's selected Personal, Economic, Social and Psychological characteristics.
4. To explore the relationship between the extent of effectiveness of electronic media for sustainable agricultural development and the selected characteristics of farmers.
5. To find out the contribution of selected characteristics of farmers towards effectiveness of electronic media for sustainable agricultural development.
6. To identify the problems for watching agricultural television programmes and solutions to overcome it.

8.1.3 Hypothesis

The following null hypotheses were formulated to explore the relationship between 22 selected characteristics and effectiveness of electronic media. "Each of the 22 selected characteristics of the farmers has no significant relationship with the effectiveness of electronic media for sustainable agricultural development".

8.1.4 Methodology

Firstly, two television channels Bangladesh television (BTV) and channel *i* were selected purposively to dig out the situation of agricultural programmes which they broadcast. Data were collected through content analysis. Secondly, Six villages from two different Union of Kurigram Sadar and Ulipur Upazila under Kurigram district were selected as the study area. The sample populations were selected from those farmers who have a TV exposure. A total to 187 farmers were selected randomly from a population of 1246 farmers of 6 villages of two different Union of

Kurigram Sadar and Ulipur Upazila under Kurigram district. Data were collected through pretested structured interview schedule by the researcher and 3 trained person during January 2011 to June 2011. The dependent variable of the study was 'effectiveness of electronic media for sustainable agricultural development'. The 22 selected characteristics of farmers were considered as independent variables of the study. The independent variables were—age, gender, education, family size, family education, training experience, mass media exposure, supervision of crop production, agricultural knowledge, knowledge about sustainable agriculture, farm size, annual income, profession, socio-economic status, ownership of agricultural implement, formal group affiliation/organizational participation, cosmopolitaness, peer relationship, innovativeness, attitude, risk orientation and aspiration. Various statistical measures such as range, mean, percentage, standard deviation etc. were used in describing the dependent and independent variables. Coefficient of correlation (r), stepwise multiple regression and path coefficient analysis were used on the basis of the requirements.

8.1.5 Findings

8.1.5.1 Effectiveness of electronic media

Effectiveness of electronic media for sustainable agricultural development was analyzed in the light of four psychological aspects of farmers, namely, 1) Cognitive effectiveness, 2) Emotional effectiveness, 3) Attitudinal effectiveness and 4) Behavioural effectiveness. Effectiveness of agricultural television programmes was judged with the four effects upon the viewers following Huston *et al.* (1998). They used four scales to identify the effect of the content of mass media. In this research the four scales were used to dig out the effectiveness of electronic media for sustainable agricultural development.

Regarding cognitive effectiveness the study indicated that the highest proportion (58.82 percent) of farmers had medium effectiveness compared to 22.46 percent had high effectiveness and 18.72 percent had low cognitive effectiveness. As most of the farmers have previous knowledge about agriculture and sustainable

agriculture so television can play a positive role among the highest proportion (81.28 percent) of farmers regarding cognitive effectiveness.

In case of emotional effectiveness findings found out that the highest proportion (54.01 percent) of farmers had medium effectiveness compared to 27.81 percent had low effectiveness and 18.18 percent had high emotional effectiveness. The above data revealed that more than four-fifths (81.82 percent) of the farmers had medium and low effectiveness. Only 18.18 percent had high emotional effectiveness stimulating by electronic media for sustainable agricultural development.

In case of attitudinal effectiveness study showed that that the highest proportion (57.75 percent) of the respondents had medium effectiveness, while 24.60 percent had low effectiveness and only 17.65 percent had high effectiveness. More than four-fifth (82.35 percent) of the farmers had medium and low attitudinal effectiveness. By the agricultural television programmes of electronic media farmers were influenced moderately concerning attitudinal effectiveness.

Regarding behavioural effectiveness it was found out that 70.05 percent farmers had shown their nod towards medium effectiveness while 21.39 percent shown low effectiveness and only 8.56 percent shown high effectiveness. Data also revealed that majority (91.44 percent) of the respondents had low or medium effectiveness.

Combining the four level of effectiveness the total score showed that the highest proportion (68.45 percent) of the respondents had medium effectiveness, while 13.90 percent had low effectiveness and only 17.65 percent had high effectiveness. More than four-fifths (82.35 percent) of the farmers had medium and low effectiveness. By the agricultural television programmes farmers were influenced moderately. It supported the limited effect theory of mass media.

The computed effectiveness scores of the respondents in the study area ranged from 130 to 281 with mean and standard deviation were 207.2 and 29.46 respectively. Farmers were categorized into three categories such as low effectiveness, medium effectiveness and high effectiveness on the basis of the effectiveness score computed. Maximum respondents had the medium or low (82.35 percent)

effectiveness only 17.65 percent had high effectiveness to exploit electronic media for sustainable agricultural development. Findings indicated that the potentialities of electronic media were exploiting moderately. There could be more room to increase the effectiveness of electronic media.

8.1.5.2 Agricultural programmes telecast by selected television channel

Electronic media broadcasts various agricultural programmes. In this research the agricultural programmes were categorized into 13 categories. The study found out that highest proportion of agricultural programmes were crop, fisheries, forestry/fruit/spices and new technology/invention related. Its covered almost 52.77 per cent space of the total agricultural programmes. On the other hand, chemical fertilizer, marketing of agro product, irrigation and bio-fertilizer/bio-gas/compost related programmes had the lowest coverage in the agricultural television programmes. It occupied only 7.39 percent space of the total agricultural programmes.

8.1.5.3 Characteristics of the respondents

Twenty two characteristics of the farmers were selected as independent variables in the study. Here a summary discussion of the Finding has been presented according to the characteristics of farmers:

1) Age

Age of the farmers ranged from 27-90 years with a mean of 43.36 years, standard deviation of 8.59 and the variance of 73.80. The respondents were classified into three categories as 'young' (up to 35), 'middle aged' (36-50) and 'old' (above 50) based on their age. Maximum farmers (58.29 percent) were middle aged category in this study.

2) Gender

Gender of the farmers was categorized into two categories such as 'male' and 'female'. Farming activities of the research area was mainly dominated by male.

Highest proportion (94 percent) of the farmers were male while only 6 percent farmers were from female.

3) Education

Education scores of the respondents ranged from 0.00 to 16 with a mean of 6.95, standard deviation of 3.62 and variance of 13.11. Based on the education of the respondents they were classified into five categories such as 'illiterate' (00), 'sign only' (0.5), 'primary' (1-5), 'secondary' (6-10) and 'above secondary' (<10). More than half of the respondents (54.01 percent) had secondary education compared to 24.06 percent having primary education and 0.53 percent could sign only. On the other hand, illiterate and above secondary level of educated farmers were same at the number, they were 10.70 percent.

4) Family size

The family size scores of the farmers ranged from 2 to 11 with the mean 5.44, standard deviation 1.74 and variance 3.05. According to the family size scores farmers were categorized into three categories such as 'small family' (up to 4), 'medium family' (5-8) and 'large family' (>8). Highest proportion (62.03 percent) of the family were medium in size while 33.16 percent family were small and only 4.81 percent family were large in size.

5) Family education

Family education scores of the respondents ranged from 1.5 to 12 with the mean of 5.44, standard deviation of 2.08 and variance of 4.33. Based on the family education scores of the farmers, they were classified into three categories such as 'primary' (1-5), 'secondary' (6-10) and 'above secondary' (<10). About two third (62.57 percent) of the respondents family members had secondary level of education while 32.62 percent had primary level of education and only 4.8 percent had above secondary level of education.

6) Training experience

Training experience scores of the farmers ranged from 0.00 to 18 with the mean, standard deviation and variance were 6.02, 4.61 and 21.29 respectively. Based on their training experience scores farmers were separated into four categories as ‘no experience’ (0), ‘low training experience’ (1-5), ‘medium training experience’ (6-10), and ‘high training experience’ (<10). Most of the respondents had medium (48.67 percent) training experience. About one-thirds (28.34 percent) of the farmers did not have any training experience while 9.09 percent had low and 13.90 percent had high training experience.

7) Mass media exposure

The range of the mass media exposure scores from 2 to 16 with the mean value 6.41, standard deviation 3.22 and variance 10.41. Based on the mass media exposure scores of the farmers they were classified into three categories such as ‘low mass media exposure’ (2-6), ‘medium mass media exposure’ (7-11) and ‘high mass media exposure’ (<11). Almost two third (57.22 percent) farmers had low mass media exposure while 35.83 percent had medium and only 6.95 percent farmers had high mass media exposure.

8) Supervision of crop production

Supervision of crop production of the farmers scores from 10 to 45 with the mean of 29.05, standard deviation of 6.83 and variance of 46.71. Based on the supervision of crop production scores of the farmers they were divided into three categories such as ‘low supervision of crop production’ (10-21), ‘medium supervision of crop production’ (22-33) and ‘high supervision of crop production’ (<33). Highest proportion (43.85) of the farmers had the experience of medium crop supervision whereas 39.57 percent respondents answered high level of supervision of crop production and 16.58 percent had low experience of supervision of crop production.

9) Agricultural knowledge

Computed agricultural knowledge scores of the respondents ranged from 20 to 50 against the possible range of 0 to 52. The mean, standard deviation and variance were 34.95, 6.83 and 46.65 respectively. Based on their agricultural knowledge score, farmers were classified into three categories such as 'low agricultural knowledge' (20-29), 'medium agricultural knowledge' (30-39) and 'high agricultural knowledge' (>39). Highest (42.25 percent) proportion of the farmers had medium agricultural knowledge while 25.13 percent had low agricultural knowledge and 32.62 percent had high agricultural knowledge.

10) Knowledge about sustainable agriculture

Computed sustainable agricultural knowledge scores of the respondents ranged from 20 to 48 against the possible range of 0 to 50. The mean, standard deviation and variance were 34.00, 6.57 and 43.22 respectively. Based on their sustainable agricultural knowledge score, farmers were classified into three categories such as 'low sustainable agricultural knowledge' (20-29), 'medium sustainable agricultural knowledge' (30-39) and 'high sustainable agricultural knowledge' (>39). Highest (49.20 percent) proportion of the farmers had medium sustainable agricultural knowledge while 28.34 percent had low sustainable agricultural knowledge and only 22.46 percent had high sustainable agricultural knowledge.

11) Farm size

Farm size of the respondents scores ranged from 0.19 hectare to 2.82 hectare. The mean, standard deviation and variance were 0.86, 0.43 and 0.19 respectively. According to the farm size scores farmers were classified into four categories as 'marginal farmer' (0.02-0.20), 'small farmer' (0.21-1.00), 'medium farmer' (1.01-3.00) and 'large farmer' (>3.00). More than two-thirds of the total respondents were possessed small farm while 31.55 percent had medium farm, 1.07 percent had marginal farm and no farmers had large farm in the research area.

12)Annual income

Annual income of the respondents scores ranged from 20-320 with a mean of 120.94, standard deviation of 62.60 and variance of 3919.00. Based on the annual income scores, farmers were classified into four categories as ‘very low annual income’ (20-50), ‘low annual income’ (51-120), ‘medium annual income’ (121-200) and ‘high annual income’ (>200). Highest proportion (46.00 percent) of the farmers were in low income category whereas 27.81 percent were in medium category, 14.97 percent were in very low category and only 11.22 percent farmers were in high income category.

13) Profession,

profession of the farmers were categorized into four categories such as ‘agriculture’, ‘agriculture and business’, ‘agriculture and service’ and ‘agriculture and others’. Highest proportion (57 percent) of the farmers were depended upon only agriculture as their profession while 21 percent depended upon agriculture and business, 19 percent dependent upon agriculture and service and only 3 percent of the farmers depended upon agriculture and others profession.

14)Socio-economic status

The socio-economic status scores of the farmers ranged from 30 to 285. The mean, standard deviation and variance were 97.44, 48.25 and 2328.59 respectively. Based on the socio-economic status scores farmers were classified into three categories as ‘low socio-economic status’ (30-115), ‘medium socio-economic status’ (116-200) and ‘high socio-economic status’ (>200). Highest proportion (73.79 percent) of the farmers had low socio-economic status compared to 22.47 percent had medium socio-economic status and only 3.74 percent had high socio-economic status.

15)Ownership of agricultural implement

The ownership of agricultural implements scores of the farmers ranged from 3 to 38 with a mean of 15.01, standard deviation of 8.31 and variance of 69.07. According to the ownership of agricultural implement scores farmers were separated into four categories such as ‘very low ownership of agricultural

implements' (up to 6), 'low ownership of agricultural implements' (7-15), 'medium agricultural implements' (16-24) and 'high ownership of agricultural implements' (>24). The highest proportion (40.64 percent) of the farmers possessed low status of agricultural implements while 21.93 percent and 21.39 percent possessed very low and medium status of ownership of agricultural implements. Only 16.04 percent had high level of ownership of agricultural implements.

16) Formal group affiliation/organizational participation

Computed scores of the respondents about formal group affiliation ranged from 0 to 16 with a mean of 5.41, standard deviation of 5.05 and variance of 25.56. On the basis of the score of formal group affiliation farmers were classified into four categories viz. 'no participation' (0), 'low participation' (up to 5), 'medium participation' (6-11) and 'high participation' (>11). Highest percentage (40.64 percent) of farmers had low participation while 27.27 percent had medium participation, 16.58 percent has no participation and 15.51 percent has high participation with the formal groups or organizations.

17) Cosmopolitaness

The cosmopolitaness scores of the respondents ranged from 5 to 19. The mean, standard deviation and variance were found 11.01, 3.52 and 12.45 respectively. According to the observed scores of cosmopolitaness of the farmers they were classified into three categories viz. 'low cosmopolite' (5-8), 'medium cosmopolite' (9-13) and 'high cosmopolite' (>13). Highest (37.43 percent) proportion of the farmers were medium cosmopolite, 30.48 percent were low cosmopolite and 32.09 percent were high cosmopolite.

Table 8.1 Farmer's characteristics profile

Sl No	Characteristics	Measuring unit	Range		Categories	No	%	Mean	SD	
			Poss	Com						
1	Age	Year	.	27-90	Young	40	21.39	43.36	8.59	
					Middle	109	58.29			
					Old	38	20.32			
2	Gender	Type	.	-	Male	175	94	-	-	
					Female	12	6			
3	Education	Scores	.	0.00-16	Illiterate	20	10.70	6.95	3.62	
					Sign only	1	0.53			
					Primary	45	24.06			
					Secondary	101	54.01			
4	Family size	Scores	.	2-11	Small	62	33.16	5.44	1.74	
					Medium	116	62.03			
					Large	9	4.81			
5	Family education	Scores	.	1.5-12	Primary	61	32.62	5.44	2.08	
					Secondary	117	62.57			
					>Secondary	9	4.81			
6	Training	Scores	.	00-18	No	53	28.34	6.02	4.61	
					Low	17	9.09			
					Medium	91	48.67			
					High	26	13.90			
7	Mass media exposure	Scores	.	2-16	Low	107	57.22	6.41	3.22	
					Medium	67	35.83			
					High	13	6.95			
8	Supervision of crop production	Scores	.	10-45	Low	31	16.58	29.05	6.83	
					Medium	82	43.85			
					High	74	39.57			
9	Agricultural knowledge	Scores	0-52	20-50	Low	47	25.13	34.95	6.83	
					Medium	79	42.25			
					High	61	32.62			
10	Sustainable agricultural knowledge	Scores	0-50	20-48	Low	53	28.34	34.00	6.57	
					Medium	92	49.20			
					High	42	22.46			
11	Farm size	Hectare	.	0.19-0.82	Marginal	2	1.07	0.86	0.43	
					Small	126	67.38			
					Medium	59	31.55			
					Large	00	00			
12	Annual income	Scores	.	20-320	Very low	28	14.97	120.94	62.60	
					Low	86	46.00			
					Medium	52	27.81			
					High	21	11.22			
13	Profession	Type	.	-	Agriculture	107	57			
					Agri&Busi	39	21			
					Agri&Ser	35	19			
					Agri&Other	6	3			
14	Socio-economic status	Scores	.	30-285	Low	138	73.79			
					Medium	42	22.47			
					High	7	3.74			
15	Ownership of agricultural implements	Scores	.	3-38	Very low	41	21.93	15.01	8.31	
					Low	76	40.64			
					Medium	40	21.39			
					High	30	16.04			
			.	0	0	No	31	16.58		

16	Formal group affiliation	Scores	.	5-19	Low	76	40.64	5.41	5.05
					Medium	51	27.27		
					High	29	15.51		
17	Cosmopolitaness	Scores	.	18-34	Low	57	30.48	11.01	3.52
					Medium	70	37.43		
					High	60	32.09		
18	Peer relationship	Scores	.	17-45	Low	48	25.67	25.55	3.47
					Medium	107	57.22		
					High	32	17.11		
19	Innovativeness	Scores	.	18-46	Low	48	25.67	31.45	6.67
					Medium	84	44.92		
					High	55	29.41		
20	Attitude toward Sustainable agriculture	Scores	.	20-46	Slight	38	20.32	35.67	4.73
	Moderate				101	54.01			
	High				48	25.67			
20	Attitude toward television	Scores	.	8-44	Slight	14	7.49	32.13	6.15
	Moderate				120	64.17			
	High				53	28.34			
21	Risk orientation	Scores	.	7-39	Low	45	24.06	29.89	5.06
					Medium	112	59.90		
					High	30	16.04		
22	Aspiration	Scores	.	7-39	Low	34	18.18	27.92	4.53
					Medium	124	66.31		
					High	29	15.51		

18) Peer relationship

Observed scores of the respondents about peer relationship ranged from 18 to 34 with a mean of 25.55, standard deviation of 3.47 and variance of 12.04. On the basis of the score of peer relationship, farmers were classified into three categories viz. 'low peer relationship' (18-23), 'medium peer relationship' (24-29) and 'high peer relationship' (>29). Highest percentage (57.22 percent) of farmers had medium peer relationship while 25.67 percent had low peer relationship and only 17.11 percent had high peer relationship with the peers.

19) Innovativeness

The innovativeness scores of the farmers ranged from 17 to 45. The mean, standard deviation and variance were 31.45, 6.67 and 44.49 respectively. Based on the innovativeness status scores farmers were classified into three categories as 'low innovativeness' (17-26), 'medium innovativeness' (27-35) and 'high innovativeness' (>35). Highest proportion (44.92 percent) of the farmers had

medium innovativeness compared to 29.41 percent had high innovativeness and 25.67 percent had low innovativeness.

20) Attitude

a) Attitude toward sustainable agriculture

Computed scores of the respondents about attitude toward sustainable agriculture ranged from 18 to 46 with a mean of 35.67, standard deviation of 4.73 and variance of 37.78. On the basis of the score of attitude toward sustainable agriculture farmers were classified into three categories viz. 'slightly positive attitude toward sustainable agriculture' (18-27), 'moderately positive attitude toward sustainable agriculture' (28-36), 'highly positive attitude toward sustainable agriculture' (>36). Highest percentage (54.01 percent) of farmers had moderately positive attitude toward sustainable agriculture while 25.67 percent had highly positive attitude toward sustainable agriculture and 20.32 percent had slightly positive attitude toward sustainable agriculture.

b) Attitude toward television

Computed scores of the respondents about attitude toward television ranged from 20 to 46 with a mean of 32.13, standard deviation of 6.15 and variance of 22.37. On the basis of the score of attitude toward television farmers were classified into three categories viz. 'slightly positive attitude toward television' (20-28), 'moderately positive attitude toward television' (29-38), 'highly positive attitude toward television' (>38). Highest percentage (64.17 percent) of farmers had moderately positive attitude toward television while 28.34 percent had highly positive attitude toward television and only 7.49 percent had slightly positive attitude toward television.

21) Risk orientation

Observed scores of the respondents about risk orientation ranged from 18 to 44 against the possible range from 0 to 48 with a mean of 29.89, standard deviation of 5.06 and variance of 25.59. On the basis of the score of risk orientation, farmers were classified into three categories viz. 'low risk orientation' (18-26), 'medium

risk orientation' (27-35) and 'high risk orientation' (>35). Highest percentage (59.90 percent) of farmers had medium risk orientation while 24.06 percent had low risk orientation and only 16.04 percent had high risk orientation in agricultural works.

22) Aspiration

The range of the aspiration scores of the farmers was found to be 17 to 39 against the possible range of 0 to 40. The mean, standard deviation and variance were 27.92, 4.53 and 20.48 respectively. Based on the aspiration scores, farmers were classified into three categories as 'low aspiration' (17-24), 'medium aspiration' (25-32) and 'high aspiration' (>32). Highest proportion (66.31 percent) of the farmers had medium aspiration compared to 18.18 percent had low aspiration and only 15.51 percent had high aspiration.

8.1.5.4 Relationships and hypothesis testing

Relationship of education, family education, training experience, mass media exposure, agricultural knowledge, sustainable agricultural knowledge, annual income, formal group affiliation, cosmopolitaness, peer relationship, innovativeness, attitude toward agriculture and attitude toward television were positive and significant with the effectiveness of electronic media for sustainable agricultural development while age were negative and significant and family size, supervision of crop production, farm size, socio-economic status, ownership of agricultural implements, risk orientation and aspiration were not significant.

Table 8.2 Summary of hypothesis testing relating to relationship or the characteristics of the farmers with the effectiveness of electronic media

Sl No	Independent variables	Computed 'r' values	Nature of relationship
1	Age	-0.188*	Significant and negative relationship exist, null hypothesis was rejected
2	Education	0.637**	Significant and positive relationship exist, null hypothesis was rejected
3	Family size	-0.128 ^{NS}	Non significant relationship exist, null hypothesis could not be rejected
4	Family education	0.274**	Significant and positive relationship exist, null hypothesis was rejected
5	Training experience	0.602**	Significant and positive relationship exist, null hypothesis was rejected
6	Mass media exposure	0.216**	Significant and positive relationship exist, null hypothesis was rejected
7	Supervision of crop production	0.128 ^{NS}	Non significant relationship exist, null hypothesis could not be rejected
8	Agricultural knowledge	0.650**	Significant and positive relationship exist, null hypothesis was rejected
9	Knowledge about sustainable agriculture	0.660**	Significant and positive relationship exist, null hypothesis was rejected
10	Farm size	0.137 ^{NS}	Non significant relationship exist, null hypothesis could not be rejected
11	Annual income	0.301**	Significant and positive relationship exist, null hypothesis was rejected
12	Socio-economic status	0.138 ^{NS}	Non significant relationship exist, null hypothesis could not be rejected
13	Ownership of agricultural implement	0.119 ^{NS}	Non significant relationship exist, null hypothesis could not be rejected
14	Formal group affiliation/organizational participation	0.221**	Significant and positive relationship exist, null hypothesis was rejected
15	Cosmopolitaness	0.527**	Significant and positive relationship exist, null hypothesis was rejected
16	Peer relationship	0.214**	Significant and positive relationship exist, null hypothesis was rejected
17	Innovativeness	0.731**	Significant and positive relationship exist, null hypothesis was rejected
18	Attitude towards agriculture	0.508**	Significant and positive relationship exist, null hypothesis was rejected
19	Attitude towards television	0.287**	Significant and positive relationship exist, null hypothesis was rejected
20	Risk orientation	0.60 ^{NS}	Non significant relationship exist, null hypothesis could not be rejected
21	Aspiration	0.88 ^{NS}	Non significant relationship exist, null hypothesis could not be rejected

8.1.5.5 Contribution of the selected independent variables on effectiveness of electronic media for sustainable agricultural development

Examining the contribution of independent variables to dependent variable, stepwise multiple regression was computed. Out of 22 independent variables only 6 variables namely innovativeness, training, education, sustainable agricultural knowledge, peer relationship and agricultural knowledge were finally entered into the stepwise regression equation which jointly accounted for 68.50 percent of the total variation. The first variable to enter the stepwise multiple regression equation was innovativeness. This variable had the highest contribution of 53.3 percent in effectiveness of electronic media for sustainable agricultural development. The second variable to enter was training which contributed 8.0 percent in effectiveness of electronic media. The third variable to enter was education which contributed 3.8 percent in predicting the effectiveness of electronic media. The variables innovativeness, training and education jointly contributed 65.1 percent in the prediction of dependent variable. Sustainable agricultural knowledge contributed 1.7 percent, peer relationship contributed 0.9 percent and agricultural knowledge contributed 0.08 percent to explained variance.

8.1.5.6 Path analysis for measuring direct and indirect effects of selected independent variables on effectiveness of electronic media for sustainable agricultural development

To measure the direct and indirect effect of selected independent variables on the effectiveness of electronic media for sustainable agricultural development path coefficient analysis was computed. Among the independent variables innovativeness had highest positive direct effect (0.368) on effectiveness of electronic media followed by training (0.132), education (0.215), sustainable agricultural knowledge (0.135), peer relationship (0.099) and agricultural knowledge (0.138). Training had the highest total indirect effect (0.600) and innovativeness (0.362) had the lowest total indirect effects.

8.1.5.7 Problems in effectiveness of electronic media for sustainable agricultural development

Important Problem Index Score (IPIS) as obtained from farmers responses ranged from 71.39 to 92.78 percent. From the IPIS scores, the problem of “unfitted broadcasting time of agricultural programmes” was ranked first and “limited number of agricultural programmes” was ranked second. Maximum people treat TV as a medium of entertainment rather than learning equipment, Audience lose attraction toward agricultural programmes for the available other channel and Lack of mechanism to measure feedback to implement sustainable agriculture stood the rank of 3rd, 4th and 5th consecutively.

8.1.5.8 Possible solutions

Important Suggestion Score Index (ISSI) ranged from 79.14 to 94.39 percent. To solve the problems the ISSI was measured according to the responses of farmers. Farmers suggestion “broadcast between 6 PM to 9 PM which is fit for farmer” was ranked first and “increase the number of agricultural TV programmes” was ranked second. Sustainability in agriculture should be emphasized in TV programmes, specialized agricultural TV channels should be established and broadcast agricultural TV programmes repeatedly and counting feedback stood the rank 3rd, 4th and 5th successively.

8.2 Conclusion

According to the findings and their interpretation, the following conclusions were made:

1. The highest proportion (68.45 percent) of the farmers had medium effectiveness while 13.90 percent had low and 17.65 percent had high effectiveness in using electronic media for sustainable agricultural development. The findings lead to the conclusion that regarding effectiveness, electronic media have more scope because the existing situation is not fully dissatisfactory.

2. The mean age of the respondents was 43.36 and a large proportion (79.68 percent) of them belonged to young and middle aged categories. A significant and negative relationship of age of the respondents was found with the effectiveness of electronic media for sustainable agricultural development. It leads to the conclusion that age of the farmers was negatively associated with the effectiveness of electronic media.
3. 94 percent respondents of the study area were male. Only 6 percent were from female. It was proved that the agricultural works were dominated by male in the study area although the association of female was increasing day by day.
4. More than three fourths (78.07 percent) of the respondents had primary to secondary level education. Education of the farmers had moderate significant positive relationship with the effectiveness of electronic media. Educated people are more innovative. They can take more risk and their aspiration level remains high comparatively. Education helps them to make quick decision. So educated people can adopt new technology quickly. Therefore, it may be concluded that increased education level is the key to increase the level of knowledge, attitude, emotion, and practice of the farmers in the sustainable agricultural development.
5. Family education level of the farmers also has the importance to create a favourable condition in the effectiveness of electronic media for sustainable agricultural development. It is found that more than 95 percent family from the research area who possessed television as the agricultural development instrument are either primary or secondary educated. The correlation test indicated a significant positive relationship between the family education and effectiveness of electronic media. These findings may lead to the conclusion that family education is a big factor to make electronic media effective. So it is necessary to increase the family education from every possible ways.
6. Training experience of the respondents was found as an important factor contributing to the effectiveness of electronic media for sustainable agricultural development. Training can increase the knowledge level of

respondents. It can easily bend respondents towards positive and sustainable changes in agriculture specially to the information disseminated by electronic media. The correlation test indicated a positive and significant relationship between training experience and effectiveness of electronic media for sustainable agricultural development. Unfortunately, almost 86.10 percent of respondents had no, low or medium training experience. Among them 28.34 percent had no training experience. The revealed facts lead to the conclusion that continuous training programme on sustainable agriculture could improve the effectiveness of electronic media.

7. The highest proportion (57.22 percent) of farmers had low mass media exposure. 35.83 percent had medium media exposure. So in total 93.05 percent farmers had low or medium mass media exposure. On the other hand, there was positive and significant relationship between mass media exposure and effectiveness of electronic media. The exposure of mass media helps the respondents to enrich their knowledge and broaden the outlook. The same information gained from different sources increases its credibility. However the percentage of mass media exposure was not satisfactory in the study area. These findings lead to the conclusion that effectiveness of electronic media for sustainable agricultural development could be improved by adequate mass media exposure.
8. Agricultural knowledge and sustainable agricultural knowledge both were found very necessary factors contributing to the effectiveness of electronic media. These two independent variables had positive and significant relationship with effectiveness of electronic media. About 67.38 percent farmers had low or medium knowledge about agriculture and more than three fourths (77.38 percent) farmers had low or medium knowledge about sustainable agriculture. Path analysis revealed that sustainable agricultural knowledge had both direct (0.135) and indirect (0.524) effect. On the other hand agricultural knowledge had 0.138 direct and 0.513 indirect effects on effectiveness of electronic media. High level of knowledge ensures increasing level of awareness. Adequate knowledge about agriculture and sustainable

agriculture is the precondition of having sustainable agricultural development successfully. Therefore, it was concluded that to enhance the knowledge level of the farmers they need more and more agricultural and sustainable agricultural orientation through training and television programmes. So, necessary steps should be taken to increase the level of knowledge of the respondents regarding agriculture and sustainable agriculture.

9. Most of the farmers (60.97 percent) of the study area had very low or low annual income. The correlation test indicated a significant and positive relationship between annual income and effectiveness of electronic media for sustainable agricultural development. So it was concluded that farmer having more annual income were more positive to use the electronic media effectively.
10. Highest proportion (57.22 percent) of the farmers belonged to no or low formal group affiliation categories. In the correlation test there was positive and significant relationship between formal group affiliation and effectiveness of electronic media. One who participated more in the various organization he was more capable of using electronic media for sustainable agricultural development.
11. Most of the farmers (69.52 percent) had medium or high cosmopolitanism. The correlation test indicated a significant positive relationship between cosmopolitanism and effectiveness of electronic media for sustainable agricultural development. The facts lead to the conclusion that farmers having higher the cosmopolitanism had considerable impact on the effectiveness of electronic media for sustainable agricultural development. Higher level of cosmopolitanism gave them opportunity to contact with new environment, technologies, lifestyle, people and ideas which helped to improve knowledge, skill and positive perception to the newly invented technologies and the information of electronic media.
12. Maximum (70.59 percent) farmers of the study area had low or medium innovativeness. In the correlation test it was proved that innovativeness was

highly correlated with the effectiveness of electronic media. There was a positive and significant high relationship between them. The path analysis revealed that innovativeness had the highest direct (0.367) effect on effectiveness of electronic media. It had some indirect (0.362) effect also. Findings of the stepwise regression analysis revealed that innovativeness of the farmers has significant contribution (53.3 percent) to the effectiveness of electronic media for sustainable agricultural development. It is therefore, concluded that farmers having higher innovativeness were considerably more capable of using electronic media for sustainable agricultural development.

13. The correlation test indicated a positive and significant relationship between attitude toward agriculture and the effectiveness of electronic media for sustainable agricultural development. But 74.33 percent of the farmers having low or medium attitude toward agricultural works. Although agriculture is the main source of energy of the whole economy of Bangladesh, the attitude of the farm family head toward agriculture is not favourable. It discourages them to do well in this sphere. Therefore, it can be concluded that we should try to change the attitude of the respondents by broadcasting television programmes.
14. In this study some of the other factors like peer relationship, attitude toward television had positive and significant relationship with the effectiveness of electronic media for sustainable agricultural development. These characteristics of the farmers had also an important influence toward effective electronic media. Therefore, it is suggested that they should be gotten the careful attention.
15. Problems in relation to effectiveness of electronic media for sustainable agricultural development as perceived by farmers were measured through Likert scale. The problem were ranked as follows: 1) Agricultural programmes time schedule in not fit for the farmers, 2) Agricultural TV programmes is so less than other that it cannot make any influence, 3) Maximum people treat TV as a medium of entertainment rather than learning equipment, 4) Audience lose attraction toward agricultural programmes for the available other channel,

5) Lack of mechanism to measure feedback to implement sustainable agriculture. From these responses of the farmers it can be concluded that the impediments are mostly related to the time schedule, number and content of the television programmes. There is a lack of expert personnel in the TV channel also.

16. Probable suggestions for the farmers in relation to the effectiveness of electronic media for sustainable agricultural development were also measured through Likert scale. The rank order of the solutions were as follows: 1) Agricultural programmes should broadcast from 6 to 10 PM which fit for farmer, 2) Increase agricultural TV programmes comparatively, 3) Sustainability in agriculture should be emphasized in TV programmes, 4) Specialized agricultural TV channels should be established 5) Broadcast agricultural TV programmes repeatedly and counting feedback. According to the farmer's responses there was a lack of proper collaboration among different wing of government and non-government organizations, agriculture universities and the mass media. So farmers went of adopt any new technology after watching television programmes but they did not get the necessary input from the market. Therefore, there need a collaborative attempt to enhance the effectiveness of electronic media for sustainable agricultural development.

8.3 Recommendations

Based on the findings and conclusion, the following recommendations were put forward:

1. The level of effectiveness of electronic media for sustainable agricultural development was not found satisfactory. A large proportion (82.35 percent) of the farmers had low or medium effectiveness in using electronic media for sustainable agricultural development. It is therefore recommended that the programmes producer, organizer, channel owner, reporter, presenter, government extension wings and other concerned authority should consider this incapability and reorganize their strategies.

2. Farmers opined that the time schedule is the first important problem to watch the agricultural television programmes. They also suggested airing the agricultural programmes between 6 PM to 10 PM to overcome this problem. Thus, it is recommended that the time schedule of agricultural television programmes should be revised.
3. The numbers of agricultural television programmes were negligible compared to the other programmes. So it could not make the remarkable influence in sustainable agriculture. Therefore, it was recommended to increase the number to agriculture related television programmes. On the other hand, farmers were more enthusiastic to watch the news programme regularly than other. So, it will be more fruitful to include agricultural issues in news content.
4. Almost 90% of agricultural television programmes were documentary based, what mainly focused on the success of the farmers. However, most often television did not telecast the techniques and secrets of successful farmers behind their success. For the qualitative improvements various types of agricultural programmes is necessary. As variations of agricultural television programmes make the viewers interested. Various types of agricultural programmes like documentary, news, plays, advertisement, talk show, live programmes of farmers asking and expert answer, song, tele-film etc. can attract the farmers easily.
5. Among the limited number of agricultural television programmes farmers failed to watch them sometimes because of lack of advertisement about its time schedule and no repeated broadcast. Farmers opined to advertise about the issues and time schedule and repeated show of agricultural programmes. Therefore, it is recommended to take under consideration of repeat broadcast and advertisement of its issues and time schedule.
6. Electronic media, Department of Agricultural Extension (DAE), Agriculture Information Service (AIS), Agriculture universities, agriculture input industries, dealers, sellers etc. were working for sustainable agricultural development in the study area, but there were no collaboration among them.

Because of lack of collaboration farmers get information but they did not get available input for it. Therefore, it is recommended that electronic media should broadcast their programmes with collaboration with the other related organizations.

7. Agricultural knowledge and sustainable agricultural knowledge had a great influence on the effectiveness of electronic media for sustainable agricultural development. However, it was observed that maximum farmers of the study area had low or medium knowledge about agriculture and sustainable agriculture. Hence, the electronic media should take step to increase the knowledge level of the farmers.
8. Training experience of the farmers had significant and positive relationship in effectiveness of electronic media for sustainable agricultural development. However, only 13.90 percent farmers had high training experience and majority (86.10 percent) of them had no, low or medium training experience. Hence, it is recommended to increase the number of training for the farmers. Electronic media can broadcast training programmes of different organizations.
9. Innovativeness had the highest direct and indirect effect on effectiveness of electronic media. It had highly positive and significant relationship with the effectiveness of electronic media. However, the level of innovativeness is not satisfactory. Therefore, it is recommended to increase innovativeness by involving the farmers with various income generating activities in different upazial, zila and even capital city also.
10. Separate autonomous or private specialized agriculture television channel should be established which will focus only the agriculture issues.
11. Agriculture related verses, poetry, myth, slogans and other indigenous sources of agricultural knowledge and information should be emphasized in these television programmes to curb the environmental degradation.

12. Journalists, news presenters, script writers of various television programmes, producers, owners or management of television house and other related personnel should be trained up to develop an agro-friendly environment inside the telecast activities. Besides, agriculture journalism should be introduced in course curriculum of universities and training academies to train up them properly.
13. Develop mechanism to measure the feedback of agricultural television programmes.
14. The study revealed that factors like education, family education, mass media exposure, annual income, formal group affiliation, peer relationship, attitude toward agriculture and attitude toward television had positive and significant influence on effectiveness of electronic media for sustainable agricultural development. Therefore, these factors should be given proper attention to increase effectiveness of electronic media.

8.3.1 Recommendation for further study

Based on the scope and limitation of the study and observations of the researcher the following recommendations are made for the future study:

1. The study was conducted in only six villages of two different Upazial of Kurigram district. Similar study could be carried out in other areas of Bangladesh.
2. This study considered only 22 selected characteristics of the farmers. There might be other characteristics which might have influence on the variation of effectiveness of electronic media for sustainable agricultural development. Further study can be conducted with variables other than these characteristics.
3. In this study only two televisions channel BTV and channel *i* was covered. For conducting further studies regarding this issue, other channels might be included.

4. For measuring the effectiveness of electronic media for sustainable agricultural development researcher depended upon the farmer's opinion. But farmers can collect the information from other sources. Here researcher could not take any control group to measure the exact level of effectiveness of electronic media. Further study can be conducted by using control group.

BIBLIOGRAPHY

- Abubakar, B. Z., A. K. Ango and U. Buhari, 2009. The Roles of Mass Media in Disseminating Agricultural Information to Farmers in Birnin Kebbi Local Government Area of Kebbi State: A Case Study of State Fadama II Development Project. *Journal of Agricultural Extension*, 13 (2): 42-54.
- Ahmed, N. 1976. *Development agriculture of Bangladesh*. Bangladesh Books International Ltd. Dhaka, p 28.
- Ahmed, S. 2011. Urea Fertilizer for Bangladesh: Challenges and Opportunity. *Journal of Chemical Engineering*, 26(1): 22-26.
- AIS. 2011. *Agriculture Diary*. Agriculture Information Service. Ministry of Agriculture, Government of the People's Republic of Bangladesh.
- Akanda, M. A. I. 2008. *Process of Agricultural Development in Bangladesh: Field Studies on the Impacts of Evolving Policies and Land Ownership on the Development of Crop Farming*. Academic Press and Publishers Library, Dhaka.
- Akanda, M. G. R. 2005. Technological Gap in Modern Rice Production at Farmer's Level. Ph.D. Dissertation. Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Akpabio, I., S. Makanjuola and G. Udoma, 2006. Reportage of Agricultural News in the Pioneer Newspaper (2004-ad) Nigeria. *International Journal of Agriculture & Biology*, 8 (3): 406-409.
- Alam, M. K. and M. A. Haque. 2014. Contribution of Television Channels in Disseminating Agricultural information for the Agricultural Development of Bangladesh: A Case Study. *Library Philosophy and Practice* (e-journal), Paper 1048, University of Nebraska-lincoln.
- Alam, M. N. 2008. Farmer's Perception of Soil Quality Degradation Due to Less Use of Organic Materials. MS Thesis. Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh.

- Ban, A. W. and H. S. Hawkins. 2002. *Agricultural Extension*. Second Edition. CBS Publishers & Distributors, New Delhi, pp 28-29.
- Bates, A. W. 1983. Adult learning from educational television: The Open University experience. In Howe M. J. (Ed.), *Learning from television: Psychological and educational research*. Academic Press, London.
- BBS. 2010. *Statistical Year Book*. Bangladesh Bureau of Statistics. Ministry of Planning. Government of People's Republic of Bangladesh.
- BBS. 2011a. *Census of Agriculture 2008*. Zila Series. Kurigram. Statistics Division, Ministry of planning, Government of the People's Republic of Bangladesh.
- BBS. 2011b. *Statistical Year Book of Bangladesh*. Bangladesh Bureau of Statistics. Statistics Division. Ministry of Planning. Government of the People's Republic of Bangladesh.
- BBS. 2011c. *Yearbook of Agricultural Statistics of Bangladesh*. Statistics and Informatics Division. Ministry of Planning. Government of the People's Republic of Bangladesh.
- BES. 2010. *Bangladesh Economical Survey*. Ministry of Finance. Government of the people's Republic of Bangladesh.
- BES. 2013. *Bangladesh Economical Survey*. Ministry of Finance. Government of the people's Republic of Bangladesh.
- Bhuiyan, M. H. 1974. A Study of Radio as a Method of Extension Teaching. M. Sc. Thesis. Dept. of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh, pp 98-106.
- Bonfadelli, H., U. Dahinden and M. Leonarz. 2007. Mass Media and Public Perceptions of Red and Green Biotechnology: A Case Study from Switzerland. *The Public, The Media and Agricultural Biotechnology*. (Ed.) Brossard, D. *et al.* CAB International, UK.
- BTV. 2012. Bangladesh Television Website.
http://192.185.168.156/~btvgov/index.php?option=com_content&view=frontpage&Itemid=1. Accessed on 04-04-2012.

Business Dictionary. 2010. Electronic Version.

<http://www.businessdictionary.com/definition/electronic-media.html>.

Accessed on 02-02-2010.

Carpenter, W. L. 1983. *Communication Handbook*. The interstate Printers and Publishers, Inc., Danville, Illinois.

Chakraborty, D. 1992. A Study on the Importance of the Radio as an Extension Medium among the Farmers. M. Sc. Thesis. Dept. of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh, pp 84-87.

Choudhury, A. R. 2009. Farmer's Perception of Utilizing Nutrient Sources for Integrated Plant Nutrient System towards Sustainable Crop Production. Ph.D. Thesis. Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh.

Choudhury, P. S. 2011. Media in Development Communication. *Global Media Journal*, Indian Ed., 2(2): 7-13.

Chowdhury, K. A. 1987. "Migration and Land Movement from Bangladesh: A Sociological Equary of the Origin, Factors and Extent of Migration with Special Reference to Sylhet District," *The Journal of the Institute of Bangladesh Studies*, X: 109-118.

Cohen, L. and M. Holiday. 1982. *Statistics for Social Scientist: An Introductory Text with Computer Programmes in Basic*. Herper & Row Publishers, London.

DAE. 1996. Agricultural Extension Manual. Department of Agricultural Extension, Khamarbari, Farmgate, Dhaka, Bangladesh.

DAE. 2013. *Annual Report 2012-13*. Department of Agricultural Extension, Kurigram, Bangladesh.

DeFleur, M. L. and E. E Dennis. 1991. *Understanding Mass Communication*. GoylSaab Publishers, New Delhi.

Desherkhobor. 2014. Desherkhobor.net. (An online newspaper) Accessed 20th April, 2014.

- Dewary, A. A. K. 1999. Mass Media and the Growth of Agriculture with reference to Principal Crop in Bangladesh. Unpublished Ph.D. Dissertation. Institute of Bangladesh Studies, University of Rajshahi, Rajshahi,-6205, Bangladesh.
- Dewary, A. A. K. and M. A. K. Azad. 2006. The Role of Private Television Channels for the Development of Agriculture in Bangladesh. *Shomaz Nirikshon*, 99: 62-73.
- Dewary, A. A. K. and M. A. K. Azad. 2007. The Role of Radio and Television to Rejuvenate Jute Industry in Bangladesh. *Shomaz Nirikshon*, 103: 76-85.
- Dominick, J. R. 1993. *The Dynamics of Mass Communication*. McGraw-Hill inc., New Delhi.
- Duesterhaus, R. 1990. Sustainability's Promise. *Journal of Soil and Water Conservation*, 45(1): 4-8.
- Edward, A. L. 1957. *Techniques of attitude scale construction*. Prentice-Hall. New York.
- Edward, A. L. and F. P. Kilpatrick. 1948. A technique for construction of attitude scales. *J. App. Psycho*, 32: 374-384.
- Eicher, C. K. 2007. Agricultural Extension in Africa and Asia. Electronic version <http://www.worldaginfo.org/files/Agricultural%20Extension%20in%20Africa%20and%20Asia2.pdf>. Accessed on 03-09-2010.
- Ellis, F. 2004. *Occupational Diversification in Developing Countries and Implications for Agricultural Policy*. OECD. Electronic Version. <http://www.oecd.org/dac/povertyreduction/36562879.pdf>. [Accessed on 14-05-2013].
- FAO. 1977. Women in Food Production, Food Handling and Nutrition, FAO and Nutrition Paper 8. Rome.
- Faroque, M. A. A., M. A. Kashem and S. E. Bilkis. 2012. Sustainable Agriculture: A Challenge in Bangladesh. *Int. J. Agril. Res. Innov. And Tech.*, 1(1&2): 1-8.
- Gupta, M. and D. Gupta. 2011. *Research Methodology*. PHI Learning Private Ltd. Delhi.

- Haider, M. R. 2001. Factors Contributing to Communication Fidelity in Relation to Modern Rice Production Programme. Ph.D. Dissertation. Dept. of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Hardin, L. and Others. 1991. Toward Sustainability: A Plan for Collaborative Research on Agriculture and Natural Resource Management. National Academy Press. Washington D. C.
- Hassanullah, M., M. Ahmed, H. G. A. Siddiqui and S. Huq. 1996. *Performance of Agricultural Extension Organizations of Bangladesh*. University Press Ltd., Dhaka.
- Hills, J. R. 1955. The measurement of level of aspiration. *The Journal of Social Psychology*, 41(2): 221-229.
- Hossain, M. M. 1996. Usefulness of Television as an Agricultural Information Medium among the Farmers. M. Sc. Thesis Paper. Dept. of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Hossain, M. M. 1999. Farmer's Perception of the Effects of Agro-chemicals on Environment. MS Thesis. Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Hossain, M. M. 2008. Farmer's Attitude towards Using Agri-chemical in Rice Cultivation. Ph.D. Thesis. Institute of Bangladesh studies, University of Rajshahi.
- Husain, S. 2011. *History of Ancient Bengal: Selected Essays on State, Society and Culture*. Institute of Bangladesh Studies. Rajshahi, p 149.
- Huston, A. C., E. Wartella and E. Donnerstein. 1998. Measuring the effects of sexual content in the media: A report to the Kaiser Family foundation. California. US. Electronic version- kff.org/hivaid/s/report/measuring-the-effects-of-sexual-content-in/. [Accessed on 04-01-2010].
- Irfan, M., S. Muhammad, G. A. Khan and M. Asif. 2006. Role of Mass Media in the Dissemination of Agricultural Technologies Among Farmers. *International Journal of Agriculture and Biology*, 8 (3): 417-419.

- Islam, M. A. 1987. Rainfall Characteristics and Agriculture in Bangladesh. *The Journal of Institute of Bangladesh Studies*, X: 15-48.
- Islam, M. A. 2000a. "Consequence of Increase pesticide Use". In Huq, S., A. A. Rahman and G. R. Conway. *Environmental Aspects of Agricultural Development in Bangladesh*, The University Press Limited.
- Islam, M. K. 2001. Role of Communication to Protect Environment: Bangladesh Perspectives. *Rajshahi University Studies*, 9: 165-175.
- Islam, M. K. 2002. Present Situation of the Use of Folk Media in Development Communication: Analyzing Bangladesh Perspective. *Somaj Nirikson*, 84: 60-84.
- Islam, M. R. 1995. Use of Communication Media by the Farmers in Receiving Information on Wheat Technologies. M. Sc. Thesis. Dept. of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh, pp 103-105.
- Islam, M. S. 2000. Farmers' Perception of the Harmful Effects of Using Agrochemicals in Crop Production with regard to Environment Pollution. Ph.D. Thesis. Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Islam, N. and P. Thompson. 2001. Farmers' Knowledge of Aquaculture: A Case Study from Narail. *Grassroots Voice: Journal of Indigenous Knowledge & Development*, 3 (4): 69-79.
- Islam, S. 1988. Use of Communication Media by the Farmers in the Adoption of Selected Improved Farm Practices in Rice Cultivation. M. Sc. Thesis. Dept. of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh, pp 71-72.
- Kabir, S. M. H. 2012. Crop. *Banglapadea*. 2nd ed. National Encyclopedia of Bangladesh. Asiatic Society of Bangladesh.
- Kabir, S. M. H. 2012a. Agriculture. *Banglapadea*. 2nd ed. National Encyclopedia of Bangladesh. Asiatic Society of Bangladesh.

- Kamaly, M. H. K. 2011. Farmer's Perception on the Harmful Effects of Using Agrichemical in Rice Production. Ph.D. Thesis. Institute of Bangladesh Studies (IBS), University of Rajshahi, Rajshahi-6205, Bangladesh.
- Karim, A. M. A. 1965. Information Media Used by Cotton Farmers in Producing Cotton in a Ten County Area of North Central Texas. M. Sc. Thesis. Graduate College, Texas A & M University, p 61.
- Katz, E. 1957. The Public Opinion Quarterly. From Schramm, Wilbur. 1969. *Mass Communications*. Ed. University of Illinois, Chicago.
- Khalil, M. E. 2012. Adaptation Technique of the Sea Shore Farmers of Bangladesh on the Perspective of World Climate Change. *The Journal of Institute of Bangladesh Studies*, 19: 223-232.
- Khan, G. A., S. Muhammad, K. Mahmood Ch. And M. A. Khan. 2013. Information Regarding Agronomic Practices and Plant Protection Measures Obtained by the Farmers Through Electronic Media. *The J. of Animal and Plant Sci.*, 23(2): 647.
- Khanna, D. S. 1995. *Planning for Sustainable Agricultural Development*. Discovery Publishing House, New Delhi, p 71.
- Klapper, J. T. 1960. *The Effects of Mass Communication*. The Free Press, New York.
- Kothari, C. R. 2003. *Research Methodology: Methods and Techniques*. Wishwa Prakashan, New Delhi, India.
- Lasswell, H. D. 1927. *Propaganda Technique in the World War*. Kegan Paul, Trench, Trubner & Co. Ltd., London.
- Lasswell, H. D. 1948. The Structure and Function of Communication in Society. In Bryson, L. *The Communication of Ideas: A Series of Addresses*. The Institute for Religious and Social Studies, New York, pp 215-228.
- Lazarsfeld, P. F., B. Berelson and H. Gaudet. 1944. *The People's Choice: How the Voter Makes Up His Mind in a Presidential Campaign*. Columbia University Press, New York.
- Likert, R.A. 1932 . *A technique for the measurement of attitude*. Arc. Psycho.

- Madeley, J. 2002. *Food for All: The Need for A New Agriculture*. University Press Ltd. Dhaka, p 160.
- Majdyan, R. 1996. Perception of the Effectiveness of Selected Communication Media Used by the BAUEC Farmers. M. Sc. Thesis Paper. Dept. of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Mancha, S. 2012. Role of Media in Tribal Agriculture Development: A Study of Khamman District Agency Tribes. *International J. of Soc. Sci. and Interdisciplinary Research*, 1(10): 244-252.
- Mathews-Njoku, E. C. and E. U. Onweremadu. 2007. Adoptability of Planted Fallows and Efficacy of Natural Types in Fertility Regeneration of a Typic Paleudult. *Nature and Science*, 5(3): 12-19.
- McCombs, M. and D. L. Shaw. 1972. The agenda-setting function of mass media. *Public Opinion Quarterly*, 36: 176–187.
- McQuail, D. 1998. *Mass Communication Theory: An Introduction*. Third Edition. Sage Publication, New Delhi, India.
- Miah, M. A. M. 2002. Flow of Agricultural Information to the Farmers in Two Selected Areas of Bangladesh. Ph.D. Dissertation. Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Moeller, B. 1996. *Learning from Television: A Research Review*. Center for Children and Technology (CCT Reports). Issue No. 11. Electronic version: <http://www.dcmp.org/caai/nadh175.pdf>. [Accessed on 24-05-2014].
- MOI, 2014. List of private television channels. http://www.moi.gov.bd/TV/List_of_channels.pdf. Accessed 11 November, 2014.
- Mokwatlo, A. M. 2005. A Usability Study of Printed Pamphlets of the Agricultural Research Council (ARC) in the Rural Community of Ga-Matlala. M. A. Thesis Paper. University of Pretoria, pp 57-60.
- Muhammad, S., S. A. Butt and I. Ashraf. 2004. Role of Television in Agricultural Technology Transfer. *Pakistan J. of Agri. Sci.*, 41(3&4):158-161.

- NAP. 2013. National Agriculture Policy. Ministry of Agriculture, Government of the People's Republic of Bangladesh.
- NFP. 1994. National Forest Policy. Ministry of Environment and Forests, Government of the People's Republic of Bangladesh.
- NFP. 2006. National Food Policy. Ministry of Food and Disaster Management, Government of the People's Republic of Bangladesh.
- Nian, Y. Y., X. Li, J. Zhou and X. Hu. 2014. Impact of land use change on water resource allocation in the middle reaches of the Heihe River Basin in northwestern China. *Journal of Arid Land*, 6(3): 273-286.
- NIEHS. 2015. Pesticides. National Institute of Environmental Health Sciences. In <http://www.niehs.nih.gov/health/topics/agents/pesticides/>. Accessed on 01-01-2015.
- NLDP. 2007. National Livestock Development Policy. Ministry of Fisheries and Livestock. Government of the People's Republic of Bangladesh.
- Nooripoor, M., M. Shahvali and K. Zarafshani. 2008. Integration of Communication Media for Horticultural Sustainability: The Application of Multiple Criteria Decision Making (MCDM). *American-Eurasian Journal of Agriculture and Environmental Science*, 3 (1): 137-147.
- Oladosu, I. O. 2006. Implications of Farmers' Attitude Towards Extension Agents on Future Extension Planning in Oyo State of Nigeria. *Journal of Social Science*. 12(2). Department of Agricultural Economics and Extension, Ladoke Akintola University of Technology, Ogbomoso, Nigeria, pp 115-118.
- Opara, U. N. 2008. Agricultural Information Sources Used by Farmers in Imo State, Nigeria. *Information Development*, 24(4): 289-295.
- Ott, B. L. 2007. *The Small Screen: How Television Equips Us to Live in the Information Age*. Blackwell Publishing, Malden, USA.
- Pandey, M. and D. Tewari. 2004. *Rural & Agriculture Marketing Opportunities, Challenges & Business Strategies*. International Book Distributing Co., Lucknow, p 291.

- Panneerselvam, R. 2011. *Research Methodology*. Ninth Ed. PHI Learning Private Ltd., New Delhi.
- Parvez, M. A. Q. 1977. Farmer's Exposure to Agricultural Radio Programme and its Related Aspects. M. Sc. Thesis. Dept. of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh, pp 146-160.
- Rahman, D. G., A. Dasgupta and M. K. Kabir. 2012. (Ed.) *Krishi Sanbadikata* (Agriculture Journalism), Chandrabati Academy, Dhaka, p 58.
- Rahman, M. H. and M. J. B. Alam. 1997. Risk Assessment of Pesticides Used in Bangladesh. *Journal of civil Engineering*, 25(1): 97-106.
- Rahman, M. M. 2008. Attitude of Rice Cultivating Farmers' Towards Integrated Pest Management Practice in a Selected Barind Area under Rajshahi District. PhD Thesis, Department of Agronomy and Agricultural Extension, University of Rajshahi, Rajshahi, Bangladesh.
- Reddy, K. V. 2003. Sustainable Development: The Gandhian approach. From *Dynamics of Sustainable Rural Development*. (Ed.) G. R. Raghava, and P. Subrahmanyam. Seriala Publications, New Delhi.
- Reuters. 2015. <http://www.reuters.com/article/2015/01/30/us-france-pesticides-idUSKBN0L316220150130>, Accessed on 01-02-2015.
- Reza, M. S. 2001. Using Pattern of Fertilizer in the Northern Zone of Bangladesh. *Rajshahi University Studies*, 9: 151-159.
- Rivera, W. M. 2001. Cited in *Agricultural and Rural Extension Worldwide: Options for Institutional Reform in the Developing Countries Report and Census*. Food and Agriculture Organization (FAO) of the United Nations.
- Rogers, E. M. 1966. *Physics for the Inquiring Mind*. Princeton University Press, Princeton, NJ.
- Rogers, E. M. 1995. *Diffusion of innovations*. (4th ed.), Free Press, New York.
- Rogers, E. M. and D. L. Kincaid. 1981. *Communication networks: Toward a new paradigm for research*. Free Press, New York.
- Rumi, S. R. A. 1987. Under development and Agrarian Structure in Bangladesh, 1880-1970. *The Journal of Institute of Bangladesh Studies*. X: 49-67.

- Sagar, R. L. 1983. Study of Agri-Economic Socio-Psychological farmers Productivity of Major field crops in Haringhala Block. Ph.D. Thesis. Department of Agricultural Extension. Bidhan Chandra Krishi Biswa Bidyalaya, West Bengal, India.
- Sarker, M. M. R. 1996. Effectiveness of Agricultural Information Disseminated to the Farmers through Agricultural Radio Programmes. M. Sc. Thesis Paper. Dept. of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh, Bangladesh.
- Schramm, W. 1964. *Mass Media and National Development*. Stanford University Press and UNESCO, Paris.
- Schramm, W., L. M. Nelson and M. Betham. 1981. *Bold Experiment: The story of Educational Television in American Samoa*. Stanford. CA: Stanford University press.
- Sciencedaily. 2007. Bangladesh to Dramatically Expand Technology That Doubles Efficiency of Urea Fertilizer Use. In <http://www.sciencedaily.com/releases/2007/12/071218192026.htm>. Accessed on 01-01-2015.
- Sulaiman, F. (2002). Communication Approach for Agricultural Technology Transfer in Various Agro-ecosystem Zone: A Case Study in South Sumatra Province. *Indonesian J. of Ag. Sci.*, 3(2): 43-51.
- Thurstone, L. and E. J. Chave. 1929. *The measurement of attitude*. Chicago University Press, USA. pp 39-40.
- Uddin, A. B. M. S. 2012. Farmers' perception of Modern Variety Potato Production Technologies in Selected Areas of Northwest Bangladesh. Ph.D. Thesis. Institute of Bangladesh Studies (IBS), University of Rajshahi, Rajshahi-6205, Bangladesh.
- EPA. 2012. Environmental Protection Agency, USA, Sources: <http://www.epa.gov/opp00001/factsheets/ipm.htm>. [Accessed on 14-03-2014.
- Wimmer, R. D. and J. R. Dominick. 2003. *Mass Media Research: An Introduction*. Seventh Ed. Thomson-Wadsworth.

- WCED. 1987. *Our Common Future*. World Commission on Environment and Development, Oxford University Press, Oxford, UK, p 43.
- Zillmann, D. 1982. Transfer of excitation in emotional behavior. In J. T. Cacioppo & R. E. Petty (Eds.), *Social psychophysiology*. Guilford, New York.

Appendix-I

English Version of the Interview Schedule

Institute of Bangladesh Studies

University of Rajshahi, Rajshahi

Interview schedule for a research study on “Effectiveness of Electronic Media for Sustainable Agricultural Development: An Investigation into TV programmes

Serial No..... Date.....
Name of Respondent..... Father's
Name.....
Village.....
Union.....
Upazila.....
District.....

(Please answer the following questions)

1. AgeYears

2. Gender: 1.Male 2. Female

3. Education

a. Cannot read and write

b. Can read only

c. Can read and write only

d. Year of Schooling.....

4. Profession

a) Agriculture,

b) Agriculture and Business,

c) Agriculture and Service,

d) Others.

5. Family Size

Sl. No	Male/ Female	Up to 5 Years of Age (Number)	5 Years and Above (Effective Family Size)	Total Number
1.	Male			
2.	Female			
3.	Total			

6. Family Education (Year of schooling)

SL. No	Family member	Level of Education	Sl. No	Family member	Level of Education
1.	Self		7.	5 th Son/daughter	
2.	Husband/wife		8.	6 th Son/daughter	
3.	1 st Son/daughter		9.	7 th Son/daughter	
4.	2 nd Son/daughter		10.	8 th Son/daughter	
5.	3 rd Son/daughter		11.	Other dependent member	
6.	4 th Son/daughter		12.	Other dependent member	

7. Farm Size

Please mention the area of land in your possession

Sl. No	Nature of land	Land area		
		Local unit	Decimal	Hectare
1.	Homestead area with pond and garden			
2.	Self cultivated own land			
3.	Land taken from others on lease			
4.	Land given to others on lease			
5.	Land taken from others on Barga			
6.	Land given to others on Barga			
7.	Others (Please mention specifically)			
8.	Total (1-7)			

8. Annual Income

a. Income from non-agricultural source

Sl. No	Sources	Monthly income Tk	Annual income Tk
1.	Business		
2.	Service		
3.	Labour		
4.	Others		

b. Income from agricultural sources (Crops)

Sl. No	Agriculture product	Production (Kg)	Price per kg	Total price
1.	Rice			
2.	Wheat			
3.	Maze			
4.	Jute			

Sl. No	Agriculture product	Production (Kg)	Price per kg	Total price
5.	Tomato/Brinjal/Pionted gourd			
6.	Potato			
7.	Cereal			
8.	Oil seed			
9.	Vegetables			
10.	Others			
11.	Total			

c. Income from other agricultural sources

Sl. No	Other agricultural source	Production (Kg)	Price per kg	Total price
1.	Livestock			
2.	Poultry			
3.	Fishery			
4.	Others			
11.	Total			

Total Annual Income (a+b+c)=.....Taka

9. Socio-economic status

Please tell about the following assets you belongs to—

1. Description of house

Sl. No	Type of house	Number	Score of each	Total Score
1.	Thatched/kancha house			
2.	Kancha house with tin shed			
3.	Tin shed			
4.	Brick built with tin shed			
5.	Brick built with pucca roof			
6.	Total score			

2. Ownership of farm animals

Sl. No	Farm animal	Number of animal ownership	Score of each	Obtained score
1.	Goat/sheep			
2.	Calf			
3.	Bullock/Bull			
4.	Buffalo			
5.	Milking cow			
6.	Total score			

3. Material possess

Sl. No	Type	Number	Score of each	Obtained number
1.	Chair			
2.	Chowki			
3.	Alna			
4.	Table			

Sl. No	Type	Number	Score of each	Obtained number
5.	Khat			
6.	Almirah			
7.	Dressing table			
8.	Show case			
9.	Gun			
10.	Bi-cycle			
11.	Motor cycle			
12.	Black/white TV			
13.	Color TV			
14.	Total score			

10. Training Experience

Did you receive any kind of training on agricultural activities during your farming career?

a. Yes b. No

If yes, please furnish the following information

Sl. No	Issues of Training	Duration	Place of Training	Name of the organization which conducted the training programme
1				
2				
3				
4				

11. Agricultural knowledge

Answer the following questions—

Sl. No	Questions	Correct (2)	Partially correct (1)	Incorrect (0)
1.	Mention two name of modern variety rice			
2.	Mention two name of HYV wheat			
3.	Mention two name of HYV Jute			
4.	Mention two name of HYV potato			
5.	Mention two name of harmful insects in agriculture			
6.	Mention two name of green manure crop			
7.	Mention two name of useful insects in agriculture			
8.	Mention two name of fish which cultivable with rice			
9.	Mention two ways to identify quality seed			
10.	What do you mean by IPM			
11.	What is Urea Mega Granule? Mention usages of it.			
12.	What do you mean by Alternating Wetting and Drying (AWD) system?			
13.	How much time needed to harvest after usages of pesticides			

Sl. No	Questions	Correct (2)	Partially correct (1)	Incorrect (0)
14.	Mention two malpractices in agriculture in the field level in your locality			
15.	Mention two problems to preserve food grain			
16.	Mention two ways to increase soil fertility			
17.	Indicate two policy by which the farmers adopt agricultural technology easily			
18.	Mention two problems to adopt HYV in your area			
19.	Indicate the proper crop cycle in your locality			
20.	Mention two ways to curb insecticides except using pesticides			
21.	Mention two qualities of good seed			
22.	What is the symptom of nitrogen scarcity in paddy field?			
23.	What is the difference between organic and inorganic fertilizer			
24.	What is ribbon rating?			
25.	Mention two diseases of cow which attack repeatedly in your locality			
26.	Describe the usage of LCC			

12. Knowledge about sustainable agriculture

Sl. No	Questions	Correct (2)	Partially correct (1)	Incorrect (0)
1.	Mention two crops which are environment friendly			
2.	Mention two harmful effects of pesticide on air			
3.	Mention two harmful effects of fertilizer			
4.	Mention two natural fertilizers that is locally available			
5.	Mention two harmful effects of application of excessive use of pesticide on soil			
6.	Mention two causes of the death of domestic fishes			
7.	Mention two causes of the water pollution for agriculture			
8.	Mention two causes of failure of homemade seed			
9.	Mention two ways how we can decrease the water pollution			
10.	Mention two ways to use less water for agriculture			
11.	Mention two ways how we can lessen the dependency of corporate seed			

Sl. No	Questions	Correct (2)	Partially correct (1)	Incorrect (0)
12.	Mention two benefit of using organic matter			
13.	Why IPM is more fruitful than using pesticides			
14.	Mention two ways to maintain the quality of pond water for fish culture			
15.	Explain compost making process			
16.	Mention two beneficial insects which is decreasing for using pesticide			
17.	How we can make environment friendly pesticide by using seed, leaves and bark of Margosa tree			
18.	What is the main element to make compost			
19.	Between burn and decompose what is good to follow for wastage after harvest			
20.	Is Margosa leaves healthful in preserving rice			
21.	How excessive using of chemical fertilizer affect fertility of land			
22.	Is it necessary to protect bio-diversity for sustainable agricultural development			
23.	Is it true that using power tiller and pesticide is the cause of distinction of natural plough worm			
24.	Is there any relationship between damage of bio diversity and seasonal diversity, how?			
25.	Mention two ways of protecting environment in spite of agricultural development			

13. Ownership of agricultural implement

Sl. No	Type of agricultural implements	Number	Score of each	Obtained number
1.	Country plough			
2.	Hand spray			
3.	Weeder			
4.	Paddle Thresher			
5.	Foot lift pump			
6.	Shallow tube-well/power pump			
7.	Power tiller			
8.	Deep tube-well			
9.	Tractor with harrow and plough			

14. Formal group affiliation/organizational participation

Please indicate your extent of involvement with the following organization—

Sl No	Name of organization	Not involved	Nature of involvement			Duration of involvement		
			Ordinary member	Executive member	President or secretary	Regularly	Occasionally	Never
1.	Farmer's co-operative society (KSS)							
2.	School committee							
3.	Mosque committee							
4.	Madrasha committee							
5.	Business society							
6.	Union council							
7.	NGO committee							
8.	Village defense party							
9.	Local government organization							
10.	Political organization							
11.	Others (Indicate)							

15. Supervision of Crop Production

Please mention number of farmers you have supervised for crop production regarding the following farming activities during the last cropping season.

Sl. No	Agricultural advice	Regularly	Occasionally	Randomly	Not at all
1.	Less use of chemical fertilizer in order to maintain perpetual fertility of land				
2.	Limited use of pesticides to protect air and water pollution				
3.	Decrease the unlimited use of water				
4.	Increase compost and green manure instead of using chemical fertilizer				
5.	Building awareness against adulterated fertilizer				
6.	Inform marketing time, place and price for agriculture product				
7.	Inspiring to use UMG instead of USG				
8.	Increase ribbon rating than older system of jute decomposing				

Sl. No	Agricultural advice	Regularly	Occasionally	Randomly	Not at all
9.	Increase Integrated Pest Management (IPM)				
10.	Increase use of modern agricultural technology				
11.	Inspire using environment friendly method to control weed instead of herbicide				
12.	Inspire decomposing remaining waste after harvest instead of burning				
13.	Increase parching method to control insects				
14.	Inspire to follow proper crop cycle instead of same crop				
15.	Inspire to seek expert advice if any problem face in agriculture				

16. Mass Media Exposure

Which mass media you use in your home to collect agricultural information?

Radio/Television/Newspaper/Film/Magazine/Mobile/Others

Please indicate the exposure of mass media regarding the collection of agricultural information-

Sl. No	Name of Mass Media	Exposure of the mass media				
		Most often (4)	Often (3)	Sometimes (2)	Rarely(1)	Never (0)
1	Radio	1/day	1/week	1/month	1/season	0
2	Television	1/day	1/week	1/month	1/season	0
3	Newspaper	1/day	1/week	1/month	1/season	0
4	Film	1/Season	1/2Season	1/Year	1/2Year	0
5	Magazine	1/week	1/month	1/Season	1/Year	
6	Mobile	1/day	1/week	1/month	1/season	0
7	Others					

17. Cosmopolitans

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

Sl. No	Place of visit	Extent of visit (number)			
		Often	Occasionally	Rarely	Never
1.	Other villages (per month)	10 or more	6-9	1-5	0
2.	Other union (per month)	8 or more	5-7	1-4	0
3.	Own upazila sadar (per month)	5 or more	3-4	1-2	0
4.	Other upazila sadar (per month)	6 or more	3-5	1-2	0
5.	Own district sadar (per month)	5 or more	3-4	1-2	0
6.	Other district sadar (per year)	3 or more	2	1	0
7.	Capital or other cities (per year)	3 or more	2	1	0

18. Peer relationship

Please mention the following information about your close friends with whom you consult exchange and share agricultural information and idea—

Sl. No	Name	age	Education (year of passing)	Farm size	No. of contact/month	Remarks
1.						
2.						
3.						
4.						

19. Innovativeness

Please furnish the following information about the adoption of farming practice/innovations and its duration of adoption after your first hearing of the same—

Sl. No	Farming practice/innovations	Never used	Adoption period and area covered				
			Within 1 year	Within 2 year	Within 3 year	Within 4 year	Within 5 year
1.	Parching method to control insects						
2.	Use of IPM in agriculture						
3.	Use of alternate wetting and dry (AWD) system						
4.	Use of organic manure in crop production (compost/green manure etc.)						
5.	Use of modern agricultural machineries tractor/power tiller						
6.	Pest control by using domestic eco-friendly techniques						
7.	Green manure instead of chemical fertilizer						
8.	Use of Urea Mega Granule (UMG)						
9.	Ribbon rating method to decompose jute						
10.	Planting North to South row						

20. Attitude

1. Attitude towards sustainable agricultural issues

Sl. No	Statements	Extent of attitude				
		Strongly agreed	Moderately agreed	No opinion	Dis agreed	Strongly disagreed
1. +	Urea Mega Granule is more environment friendly than Urea Super Granule.					
2. -	It is better to use pesticide to control insects rather than using IPM.					
3. +	Green manure should be used for increasing soil fertility.					
4. -	Compost is not fruitful for High Yielding Variety crops.					

Sl. No	Statements	Extent of attitude				
		Strongly agreed	Moderately agreed	No opinion	Dis agreed	Strongly disagreed
5. +	Balanced dose of chemical fertilizer increase crop production.					
6. -	There is no alternative to use chemical fertilizer for high productivity in agriculture.					
7. +	The long term use of chemical fertilizer damage the fertility of land.					
8. -	Pesticide is not harmful for environment and human health.					
9. +	The indiscriminate use of pesticide is harmful for the bio-diversity.					
10. -	The present irrigation system is more fruitful than the Alternative Wetting and Drying (AWD) system.					
11. +	Decomposing the wastage of crops is more eco-friendly than burn					
12. -	More production in agriculture is necessary than protect environment					

2. Attitude towards television

Sl. No	Statement	Extent of attitude				
		Strongly agreed	Moderately agreed	No opinion	Dis agreed	Strongly disagreed
1. +	The agricultural programmes of TV has a great impact in the development of agriculture					
2. -	To protect the bio-diversity agricultural TV programmes have no effectiveness					
3. +	The agricultural programmes presented by Shaikh Seraj made a positive change in agriculture					
4. -	It is unnecessary to watch television for acquiring agricultural knowledge.					
5. +	Using UMG is a success of agricultural television programmes					
6. -	Watching television is nothing but a wastage of time					

Sl. No	Statements	Extent of attitude				
		Strongly agreed	Moderately agreed	No opinion	Dis agreed	Strongly disagreed
7. +	Learning is strengthened by watching agricultural television programmes as the viewer can see and hear simultaneously.					
8. -	There is a great possibility of losing or confusing indigenous knowledge by watching agricultural television programmes					
9. +	Television should not watch only for entertainment, it should watch to collect agricultural knowledge also					
10. -	Farmers never watch the agricultural TV programmes, because it is meaningless.					
11. +	There is no alternative of using TV to disseminate agricultural information					
12. -	Agricultural TV programmes can increase awareness but it is ineffective in adoption of new practice					

21. Risk orientation

Please mention your opinion regarding the following statement—

Sl. No	Statements	Opinion on the extent of risk orientation				
		Strongly agreed	Agree	No opinion	Dis agreed	Strongly disagreed
1. +	Although the sustainable ways of agriculture decrease the short term productivity but it is better for long term productivity. So farmers should follow it.					
2. -	Only to think about sustainability in agriculture is unwise, because it may hamper the food security					
3. +	Farmers have to take risk if he wants to save his environment					
4. -	Environment friendly thinking of farmers cause the national food insufficiency. So farmers should avoid this type of thinking.					

Sl. No	Statements	Opinion on the extent of risk orientation				
		Strongly agreed	Agree	No opinion	Disagreed	Strongly disagreed
5. +	To have the seed self sufficiency and to avoid the corporate seed dependency, we should take measures to return the lost variety of domestic crops.					
6. -	IPM acts slowly, so farmers should use pesticides to have the sudden/speedy action.					
7. +	Although the preparing and using process of organic manure is complex, farmers should use it					
8. -	It is better for a farmer not to adopt new farming method unless watching others success					
9. +	Proper crop cycling should be followed, although at the risk of economic loss. Because it is inevitable to maintain the soil fertility.					
10. -	The price of agricultural product is very unstable and the preservation may lose its quality, so farmers should sell it immediately after harvest.					
11. +	Although the use of eco-friendly bio fertilizer is complex but for the sustainable development of agriculture its use should increase					
12. -	Adopting ribbon rating may decrease the quality of fiber so it should avoid					

22. Aspiration

Please indicate your level of aspiration with respect to the following statements—

Sl. No	Statements	Level of aspiration				
		0	1	2	3	4
1.	What level you expect your sons to reach in their education?	No education	Primary	Secondary	Higher secondary	Graduate/ post graduate
2.	What level you expect your daughters to reach in their education?	No education	Primary	Secondary	Higher secondary	Graduate/ post graduate
3.	What level you expect your sons to reach in their occupation?	Farm Labour	Traditional cultivation /caste occupation	Improved cultivation	Business	Government service/ respectable job
4.	What is your expectation to increase land property in next three years?	None	Less than 25%	25 to 50%	51 to 75%	More than 75%

Sl. No	Statements	Level of aspiration				
		0	1	2	3	4
5.	What is your aspiration to increase crop production in next three years?	None	Less than 25%	25 to 50%	51 to 75%	More than 75%
6.	What is your expectation to purchase agricultural implements/machine in next three years?	None	Rice weeder	Hand sprayer	Shallow tube well	Power tiller
7.	What is your aspiration in respect of increasing income in next three years?	None	Less than 25%	25 to 50%	51 to 75%	More than 75%
8.	What is your aspiration with regard to house construction in next three years?	None	Minor repair	Construction of one tin house	Construction of one pucca house	Construction of two or more house
9.	What level you expect your general contentment to reach in next three years?	None	Somewhat better	Better	Monthly better	Certainly better

23. Effectiveness of mass media

a. Cognitive effectiveness

Please indicate your opinion on the following statements related to the effectiveness of electronic media

Sl. No	Statements	Opinion on the extent of effectiveness of electronic media			
		Very effective	Less effective	Not effective	Not effective at all
1.	To inform about environment friendly agricultural crop				
2.	To inform about harmful effect of pesticide on air				
3.	To inform about harmful effect of chemical fertilizer				
4.	To introduce natural fertilizer and their usages				
5.	To inform about harmful effect of pesticide on land				
6.	To create awareness about declination of indigenous fishes				
7.	To make aware of the relationship between water pollution and agricultural activities				
8.	To inform about the causes of lower productivity of homemade seed				
9.	To inform about the way of protecting water pollution because of agriculture				
10.	To inform about the way of agricultural work using limited water				

Sl. No	Statements	Opinion on the extent of effectiveness of electronic media			
		Very effective	Less effective	Not effective	Not effective at all
11.	To make awareness about the pathways to decrease dependency on commercially produced seed				
12.	To inform about the convenience to use organic fertilizer				
13.	To make understand that IPM is better than using pesticide				
14.	To tell about the importance of protecting water quality to cultivate fish				
15.	To learn how to make compost				
16.	To inform about the impact of decreasing useful insects because of using pesticides				
17.	To learn the method to make environment friendly pesticide by using neem leaves				
18.	To aware about the health risk of food adulteration				
19.	To encourage decomposing wastage of crop rather than burn				
20.	To inform about latest process of decomposing jute				
21.	To popularize the publicity that excessive use of chemical fertilizer affects the fertility of land				
22.	To make understand that protecting bio-diversity is compulsory for sustainable development of agriculture				
23.	To create consciousness that natural plough 'earthworm' is declining because of using power tiller and pesticides				
24.	To increase awareness that the seasonal diversity is damaged because of damaging bio-diversity				
25.	To build up awareness to follow agricultural modernization and environmental protection at the same time				

b. Emotional effectiveness

Please indicate your opinion on the following statements related to the effectiveness of electronic media

Sl. No	Statement	Opinion on the extent of effectiveness of electronic media			
		Very effective	Less effective	Not effective	Not effective at all
1.	To believe the environment friendly agricultural crop informed by TV programmes				
2.	To make disagreed towards using pesticide by knowing that it has negative impact on air				
3.	To become agree for decreasing chemical fertilizer after knowing its harmful impact				
4.	To become more curious after knowing the name and usage of natural fertilizer				
5.	To make negative emotion toward using pesticide after knowing its negative impact on soil				
6.	To create positive emotion toward indigenous fishes which are declining				
7.	Stunned farmers by knowing the relationship between water pollution and agricultural activities				
8.	To believe the causes of lower productivity of homemade seed				
9.	To agree with the way of protecting water pollution because of agriculture				
10.	To agree with the way of agricultural work using limited water				
11.	To nod about the pathways to decrease dependency on commercially produced seed				
12.	To make positive emotion toward the convenience to use organic fertilizer				
13.	To concur that IPM is better than using pesticide				
14.	To accept the importance of protecting water quality to cultivate fish				
15.	To bow the making process of compost				

Sl. No	Statement	Opinion on the extent of effectiveness of electronic media			
		Very effective	Less effective	Not effective	Not effective at all
16.	To accept the impact of decreasing useful insects because of using pesticides				
17.	To believe the method to make environment friendly pesticide by using neem leaves				
18.	To accept the health risk of food adulteration				
19.	To make a positive emotion toward decomposing the wastage of crop rather than burn				
20.	To have positive emotion about latest process of decomposing jute				
21.	To grant that excessive use of chemical fertilizer which affect the fertility of land				
22.	To make emotion that protecting bio-diversity is compulsory for sustainable development of agriculture				
23.	To create credibility that natural plough 'earthworm' is declining because of using power tiller and pesticides				
24.	To allow that the seasonal diversity is damaged because of damaging bio-diversity				
25.	To build up positive emotion to follow agricultural modernization and environmental protection at the same time				

c. Attitudinal effectiveness

Please indicate your opinion on the following statements related to the effectiveness of electronic media

Sl. No	Statements	Opinion on the extent of effectiveness of electronic media			
		Very effective	Less effective	Not effective	Not effective at all
1.	To make positive attitude toward environment friendly agricultural crop informed by TV programmes				
2.	To make hatred towards using pesticide by knowing that it has negative impact on air				
3.	To become enthusiastic decreasing chemical fertilizer after knowing its harmful impact				
4.	To become more positive toward natural fertilizer after knowing the name and usage of it				
5.	To make negative attitude toward using pesticide after knowing its negative impact on soil				
6.	To create positive attitude toward indigenous fishes which are declining				
7.	To grow positive attitude by knowing the relationship between water pollution and agricultural activities				
8.	To find out the causes of lower productivity of homemade seed and build up a positive attitude toward it				
9.	To have a positive attitude toward the way of protecting water pollution because of agriculture				
10.	To make a positive attitude toward the way of agricultural work using limited water				
11.	To make positive attitude toward the pathways to decrease dependency on commercially produced seed				
12.	To convince about the convenience of using organic fertilizer				
13.	To make a positive attitude toward IPM than using pesticide				
14.	To make positive attitude toward protecting water quality to cultivate fish				
15.	To make positive attitude toward compost				
16.	To become more alert toward decreasing useful insects because of using pesticides				

Sl. No	Statements	Opinion on the extent of effectiveness of electronic media			
		Very effective	Less effective	Not effective	Not effective at all
17.	To have a positive mind toward environment friendly pesticide by using neem leaves				
18.	To make a negative attitude toward food adulteration because of its health risk				
19.	To encourage decomposing the wastage of crop rather than burn				
20.	To make enthusiastic about latest process of decomposing jute				
21.	To make negative attitude toward excessive use of chemical fertilizer				
22.	To permit that protecting bio-diversity is compulsory for sustainable development of agriculture				
23.	To create negative attitude toward using chemical fertilizer and pesticide because it damages natural plough 'earthworm'				
24.	To made positive attitude that the seasonal diversity is damaged because of damaging bio-diversity				
25.	To build up mind to follow agricultural modernization and environmental protection at the same time				

d. Behavioural effectiveness

Please indicate your opinion on the following statements related to the effectiveness of electronic media

Sl. No	Statements	Opinion on the extent of effectiveness of electronic media			
		Very effective	Less effective	Not effective	Not effective at all
1.	To increase the cultivation of environment friendly agricultural crop informed by TV programmes				
2.	To lessen the usages of pesticide by knowing that it has negative impact on air				
3.	To decrease chemical fertilizer using after knowing its harmful impact				
4.	To increase the usages of natural fertilizer after knowing the name and usage of it				
5.	To stop using pesticide after knowing its negative impact on soil				
6.	To cultivate more indigenous fishes which are declining				
7.	Doing agricultural activities which causes less water pollution				
8.	To take action removing causes of lower productivity of homemade seed				
9.	To protect water pollution because of agriculture				
10.	To use limited water for agricultural work				
11.	To take action for decreasing dependency on commercially produced seed				
12.	To use more organic fertilizer				
13.	To follow IPM than using pesticide				
14.	To protect water quality to cultivate fish				
15.	To increase the usage of compost				
16.	To decrease the usage of pesticide to protect useful insects				
17.	To make environment friendly pesticide by using neem leaves				
18.	To stop food adulteration because of its health risk				
19.	To decompose the wastage of crop rather than burn				
20.	To follow the latest process of decomposing jute “Ribbon Rating”				
21.	To lessen the excessive use of chemical fertilizer which affect the fertility of land				

Sl. No	Statements	Opinion on the extent of effectiveness of electronic media			
		Very effective	Less effective	Not effective	Not effective at all
22.	To protect bio-diversity for sustainable development of agriculture				
23.	To decrease the usage of chemical fertilizer and pesticide to protect natural plough 'earthworm'				
24.	To protect bi-diversity take measure to protect seasonal diversity				
25.	To follow agricultural modernization and environmental protection at the same time				

24. Problems in effectiveness of electronic media for sustainable agricultural development as opined by the farmers

Sl No	Problems	Extent of opinion		
		Very important (2)	Important (1)	Not important (0)
1.	Broadcasting time is not fit for farmer			
2.	Agricultural TV programmes is too few to make any influence			
3.	Maximum people treat TV as a medium of entertainment rather than learning equipment			
4.	Audience lose attraction toward agricultural programmes for the available other channel			
5.	Lack of mechanism to measure feedback			
6.	Lack of collaboration with other agricultural organization			
7.	TV does not depict the real life agricultural practices of farmer			
8.	Television buying capacity of farmers is very limited			
9.	Concept of disseminating information using TV is not followed nationally			
10.	Ineffectiveness causes for the language barrier			
11.	Lack of skilled media personnel			
12.	Commercial TV fails to live up to its responsibilities as public service			
13.	Watching agricultural TV programmes is the cause of losing indigenous knowledge			
14.	TV programmes are not standard enough to positive change in agriculture			
15.	Lack of trustworthiness of agricultural TV programmes			

25. Probable ways to overcome the problem

Sl No	Solutions	Extent of opinion		
		Very important (2)	Important (1)	Not important (0)
1	Agricultural programmes should broadcast from 6 to 10 PM which fit for farmer			
2	Increase the number of agricultural TV programmes comparatively			
3	Sustainability in agriculture should be emphasized in TV programmes			
4	Specialized agricultural TV channels should be established			
5	Broadcast agricultural TV programmes repeatedly and count the feedback			
6	Broadcast agricultural TV programmes with understandable Language			
7	Electronic media should work with collaboration with other agricultural organizations			
8	To make skilled manpower agriculture journalism course should introduce			
9	TV should treat as a medium of learning rather than an entertainment box			
10	Audience attraction should increase toward agricultural programmes by publicity and advertisement			
11	Information of agricultural TV programmes should have conformity to indigenous knowledge			
12	Affordable Price of television to farmers			
13	Increase the standard of agricultural TV programmes			
14	Concept of disseminating information using TV should be followed by nationally			
15	Depict time befitting real life agricultural practices of farmer to increase effectiveness			

Thank you for your cooperation

Signature of the interviewer
Date.....

Appendix-II

Fourteen Criteria Suggested by Edward (1957) for Editing Scale Items

1. Avoid statements that refer to the past rather than to the present.
2. Avoid statements that are factual capable of being interpreted as factual.
3. Avoid statements that may be interpreted in more than one way.
4. Avoid statements that are irrelevant to the psychological object under consideration.
5. Avoid statements that are likely to be endorsed by almost everyone or by almost no one.
6. Select statements that are believed to cover the entire range of the affective scale of interest.
7. Keep the language of the statements simple, clear and direct.
8. Statements should be short, rarely exceeding 20 words.
9. Each statement should contain only one completed thought.
10. Statements containing universal such as all, always, none and never often introduce ambiguity and should be avoided.
11. Words such as only, just, merely and others of a similar nature should be used with care and moderation in writing statements.
12. Whenever possible, statements should be in the form of simple sentences rather than in the form of compound or complex sentences.
13. Avoid the use of words that may not be understood by those who are to be given the complete scale.
14. Avoid the use of double negative.

Appendix III

A Layout of Final Scale of Effectiveness of Electronic Media with ‘t’ and ‘r’

Values

‘t’ values of item analysis on effectiveness of electronic media statements (≥ 1.75)

(on the basis of pretest data)

A. Cognitive effectiveness scale

Sl. No	r value	t value	Statements	Extent of Effectiveness			
				VE	LE	NE	NEA
1.	0.561*	2.46	To inform about environment friendly agricultural crop				
2.	0.431*	1.79	To inform about harmful effect of pesticide on air				
3.	0.466*	2.11	To inform about harmful effect of chemical fertilizer				
4.	0.531*	1.89	To introduce natural fertilizer and their usages				
5.	0.516*	2.63	To inform about harmful effect of pesticide on land				
6.	0.476*	2.16	To create awareness about declination of indigenous fishes				
7.	0.488*	2.89	To make aware of the relationship between water pollution and agricultural activities				
8.	0.416*	1.99	To inform about the causes of lower productivity of homemade seed				
9.	0.563*	2.33	To inform about the way of protecting water pollution because of agriculture				
10.	0.579*	2.17	To inform about the way of agricultural work using limited water				
11.	0.513*	1.75	To make awareness about the pathways to decrease dependency on commercially produced seed				
12.	0.509*	1.93	To inform about the convenience to use organic fertilizer				
13.	0.510*	2.23	To make understand that IPM is better than using pesticide				
14.	0.423*	2.71	To tell about the importance of protecting water quality to cultivate fish				
15.	0.418*	2.43	To learn how to make compost				
16.	0.486*	2.11	To inform about the impact of decreasing useful insects because of using pesticides				

Sl. No	r value	t value	Statements	Extent of Effectiveness			
				VE	LE	NE	NEA
17.	0.499*	2.16	To learn the method to make environment friendly pesticide by using neem leaves				
18.	0.463*	1.91	To aware about the health risk of food adulteration				
19.	0.476*	1.86	To encourage decomposing wastage of crop rather than burn				
20.	0.489*	1.78	To inform about latest process to decompose jute				
21.	0.561*	1.78	To popularize the publicity that excessive use of chemical fertilizer affects the fertility of land				
22.	0.601*	1.83	To make understand that protecting bio-diversity is compulsory for sustainable development of agriculture				
23.	0.561*	2.56	To create consciousness that natural plough 'earthworm' is declining because of using power tiller and pesticides				
24.	0.498*	2.41	To increase awareness that the seasonal diversity is damaged because of damaging bio-diversity				
25.	0.481*	2.11	To build up awareness to follow agricultural modernization and environmental protection at the same time				

B. Emotional effectiveness

Sl. No	r value	t value	Statement	Extent of effectiveness			
				VE	LE	NE	NEA
1.	0.576*	2.75	To believe the environment friendly agricultural crop informed by TV programmes				
2.	0.693*	2.45	To make disagreed towards using pesticide by knowing that it has negative impact on air				
3.	0.454*	1.78	To become agree for decreasing chemical fertilizer after knowing its harmful impact				
4.	0.402*	2.13	To become more curious after knowing the name and usage of natural fertilizer				
5.	0.556*	2.19	To make negative emotion toward using pesticide after knowing its negative impact on soil				
6.	0.426*	1.91	To create positive emotion toward indigenous fishes which are declining				

Sl. No	r value	t value	Statements	Extent of Effectiveness			
				VE	LE	NE	NEA
7.	0.679*	2.61	Stunned farmers by knowing the relationship between water pollution and agricultural activities				
8.	0.438*	2.57	To believe the causes of lower productivity of homemade seed				
9.	0.518*	2.39	To agree with the way of protecting water pollution because of agriculture				
10.	0.458*	1.83	To agree with the way of agricultural work using limited water				
11.	0.426*	1.91	To nod about the pathways to decrease dependency on commercially produced seed				
12.	0.467*	1.98	To make positive emotion toward the convenience to use organic fertilizer				
13.	0.398*	2.11	To concur that IPM is better than using pesticide				
14.	0.418*	2.13	To accept the importance of protecting water quality to cultivate fish				
15.	0.561*	2.57	To bow the making process of compost				
16.	0.488*	2.61	To accept the impact of decreasing useful insects because of using pesticides				
17.	0.567*	1.79	To believe the method to make environment friendly pesticide by using neem leaves				
18.	0.416*	1.78	To accept the health risk of food adulteration				
19.	0.579*	1.75	To make a positive emotion toward decomposing the wastage of crop rather than burn				
20.	0.489*	2.13	To have positive emotion about latest process of decomposing jute				
21.	0.679*	1.98	To grant that excessive use of chemical fertilizer which affect the fertility of land				
22.	0.459*	2.43	To make emotion that protecting bio-diversity is compulsory for sustainable development of agriculture				
23.	0.402*	1.75	To create credibility that natural plough 'earthworm' is declining because of using power tiller and pesticides				
24.	0.458*	2.57	To allow that the seasonal diversity is damaged because of damaging bio-diversity				
25.	0.438*	1.91	To build up positive emotion to follow agricultural modernization and environmental protection at the same time				

C. Attitudinal effectiveness

Sl. No	r value	t value	Statements	Extent of effectiveness			
				VE	LE	NE	NEA
1.	0.498*	2.16	To make positive attitude toward environment friendly agricultural crop informed by TV programmes				
2.	0.481*	1.91	To make hatred towards using pesticide by knowing that it has negative impact on air				
3.	0.561*	1.86	To become enthusiastic decreasing chemical fertilizer after knowing its harmful impact				
4.	0.431*	2.71	To become more positive toward natural fertilizer after knowing the name and usage of it				
5.	0.466*	2.43	To make negative attitude toward using pesticide after knowing its negative impact on soil				
6.	0.531*	2.11	To create positive attitude toward indigenous fishes which are declining				
7.	0.513*	1.78	To grow positive attitude by knowing the relationship between water pollution and agricultural activities				
8.	0.509*	1.78	To find out the causes of lower productivity of homemade seed and build up a positive attitude toward it				
9.	0.510*	1.83	To have a positive attitude toward the way of protecting water pollution because of agriculture				
10.	0.423*	2.56	To make a positive attitude toward the way of agricultural work using limited water				
11.	0.561*	2.41	To make positive attitude toward the pathways to decrease dependency on commercially produced seed				
12.	0.561*	2.11	To convince about the convenience of using organic fertilizer				
13.	0.476*	2.16	To make a positive attitude toward IPM than using pesticide				
14.	0.488*	2.89	To make positive attitude toward protecting water quality to cultivate fish				
15.	0.416*	1.99	To make positive attitude toward compost				
16.	0.563*	2.33	To become more alert toward decreasing useful insects because of using pesticides				
17.	0.579*	2.17	To have a positive mind toward environment friendly pesticide by using neem leaves				

Sl. No	r value	t value	Statements	Extent of Effectiveness			
				VE	LE	NE	NEA
18.	0.418*	1.75	To make a negative attitude toward food adulteration because of its health risk				
19.	0.486*	1.93	To encourage decomposing the wastage of crop rather than burn				
20.	0.499*	2.23	To make enthusiastic about latest process of decomposing jute				
21.	0.463*	2.46	To make negative attitude toward excessive use of chemical fertilizer				
22.	0.476*	1.79	To permit that protecting bio-diversity is compulsory for sustainable development of agriculture				
23.	0.489*	2.11	To create negative attitude toward using chemical fertilizer and pesticide because it damages natural plough 'earthworm'				
24.	0.561*	1.89	To made positive attitude that the seasonal diversity is damaged because of damaging bio-diversity				
25.	0.601*	2.63	To build up mind to follow agricultural modernization and environmental protection at the same time				

D. Behavioural effectiveness

Sl. No	r value	t value	Statements	Extent of effectiveness			
				VE	LE	NE	NEA
1.	0.488*	1.89	To increase the cultivation of environment friendly agricultural crop informed by TV programmes				
2.	0.456*	2.43	To lessen the usages of pesticide by knowing that it has negative impact on air				
3.	0.431*	1.98	To decrease chemical fertilizer using after knowing its harmful impact				
4.	0.511*	2.31	To increase the usages of natural fertilizer after knowing the name and usage of it				
5.	0.411*	2.68	To stop using pesticide after knowing its negative impact on soil				
6.	0.431*	1.84	To cultivate more indigenous fishes which are declining				
7.	0.516*	2.89	Doing agricultural activities which causes less water pollution				
8.	0.561*	1.96	To take action removing causes of lower productivity of homemade seed				
9.	0.468*	1.83	To protect water pollution because of agriculture				
10.	0.401*	1.78	To use limited water for agricultural work				

Sl. No	r value	t value	Statements	Extent of Effectiveness			
				VE	LE	NE	NEA
11.	0.568*	2.15	To take action for decreasing dependency on commercially produced seed				
12.	0.481*	1.93	To use more organic fertilizer				
13.	0.489*	2.11	To follow IPM than using pesticide				
14.	0.561*	2.46	To protect water quality to cultivate fish				
15.	0.601*	1.79	To increase the usage of compost				
16.	0.501*	1.89	To decrease the usage of pesticide to protect useful insects				
17.	0.431*	2.63	To make environment friendly pesticide by using neem leaves				
18.	0.468*	2.23	To stop food adulteration because of its health risk				
19.	0.401*	1.98	To decompose the wastage of crop rather than burn				
20.	0.486*	1.81	To follow the latest process of decomposing jute “Ribbon Rating”				
21.	0.561*	1.89	To lessen the excessive use of chemical fertilizer which affect the fertility of land				
22.	0.463*	1.82	To protect bio-diversity for sustainable development of agriculture				
23.	0.476*	2.43	To decrease the usage of chemical fertilizer and pesticide to protect natural plough ‘earthworm’				
24.	0.398*	2.16	To protect bi-diversity take measure to protect seasonal diversity				
25.	0.499*	1.96	To follow agricultural modernization and environmental protection at the same time				

Appendix IV

A Layout of Final Scale of Attitude with ‘t’ and ‘r’ Values

‘t’ values of item analysis on attitude statements (≥ 1.75)

(on the basis of pretest data)

A. Attitude toward sustainable agricultural issues

Sl. No	r value	t value	Statements	Extent of attitude				
				SA	MA	NO	DA	SDA
1.	0.401*	1.83	Urea Mega Granule is more environment friendly than Urea Super Granule.					
2.	0.483*	1.78	It is better to use pesticide to control insects rather than using IPM.					
3.	0.501*	1.89	Green manure should be used for increasing soil fertility.					
4.	0.431*	2.43	Compost is not fruitful for High Yielding Variety crops.					
5.	0.482*	1.98	Balanced dose of chemical fertilizer increase crop production.					
6.	0.456*	2.31	There is no alternative to use chemical fertilizer for high productivity in agriculture.					
7.	0.511*	2.15	The long term use of chemical fertilizer damage the fertility of land.					
8.	0.411*	2.68	Pesticide is not harmful for environment and human health.					
9.	0.431*	1.84	The indiscriminate use of pesticide is harmful for the bio-diversity.					
10.	0.468*	1.93	The present irrigation system is more fruitful than the Alternative Wetting and Dry (AWD) system.					
11.	0.489*	2.89	Decomposing the wastage of crops is more eco-friendly than burn					
12.	0.499*	1.96	More production in agriculture is necessary than protect environment					

B. Attitude toward television

Sl. No	r value	t value	Statements	Extent of attitude				
				SA	MA	NO	DA	SDA
1.	0.583*	1.91	The agricultural programmes of TV has a great impact in the development of agriculture					
2.	0.481*	1.75	To protect the bio-diversity agricultural TV programmes have no effectiveness					
3.	0.501*	1.88	The agricultural programmes presented by shaikh seraj made a positive change in agriculture					
4.	0.456*	1.93	It is unnecessary to watch television for acquiring agricultural knowledge.					
5.	0.431*	1.98	Using UMG is a success of agricultural television programmes.					
6.	0.531*	3.13	Watching television is nothing but wastage of time.					
7.	0.438*	2.43	Learning is strengthen by watching agricultural television programmes as the viewer can see and hear simultaneously.					
8.	0.681*	2.10	There is a great possibility of losing or confusing indigenou knowledge by watching agricultural television programmes					
9.	0.599*	2.17	Television should not watch only for entertainment, it should watch to collect agricultural knowledge also					
10.	0.489*	2.86	Farmers never watch the agricultural TV programmes, because it is meaningless.					
11.	0.456*	1.93	There is no alternative of using TV to disseminate agricultural information					
12.	0.568*	2.11	Agricultural TV programmes can increase awareness but it is ineffective in adoption of new practice					

Appendix V

A Layout of Final Scale of Risk Orientation with ‘t’ and ‘r’ Values

‘t’ values of item analysis on risk orientation statements (≥ 1.75)

(on the basis of pretest data)

Sl. No	r value	t value	Statements	Extent of attitude				
				SA	A	NO	DA	SDA
1.	0.688*	2.81	Although the sustainable ways of agriculture decrease the short term productivity but it is better for long term productivity. So farmers should follow it.					
2.	0.567*	2.14	Only to think about sustainability in agriculture is unwise, because it may hamper the food security.					
3.	0.478*	1.79	Farmers have to take risk if he wants to save his environment.					
4.	0.486*	1.81	Environment friendly thinking of farmers cause the national food insufficiency. So farmers should avoid this type of thinking.					
5.	0.531*	1.98	To have the seed self sufficiency and to avoid the corporate seed dependency, we should take measures to return the lost variety of domestic crops.					
6.	0.469*	2.43	IPM acts slowly, so farmers should use pesticides to have the sudden/speedy action.					
7.	0.481*	2.16	Although the preparing and using process of organic manure is complex, farmers should use it					
8.	0.511*	1.89	It is better for a farmer not to adopt new farming method unless watching others success					
9.	0.611*	1.96	Proper crop cycling should be followed, although at the risk of economic loss. Because it is inevitable to maintain the soil fertility.					
10.	0.587*	1.82	The price of agricultural product is very unstable and the preservation may lose its quality, so farmers should sell it immediately after harvest.					
11.	0.417*	2.17	Although the use of eco-friendly bio fertilizer is complex but for the sustainable development of agriculture its use should increase					
12.	0.483*	1.85	Adopting ribbon rating may decrease the quality of fiber so it should avoid					

Appendix VI

Agricultural Programme list of BTV and Channel i

Episode	On Air	Subjects
1	2004-02-21	Bird Flu, date-palm cultivation in Mymensingh, Vegetable production Vs farmers' income.
2	2004-02-28	Spray on tomato, Chemical in Gur, Nursery of three brothers in Tangail, Apiculture in mustard plot.
3	2004-03-06	Mango bud, Crab fattening of DFID, Collecting paddy seedling from plot, Lives in Char land in Sirajgonj
4	2004-03-13	Nurul Haq's fish farm in Mymensingh, Market prospect of Dinajpur's flavoured 'Chira'.
5	2004-03-20	Barinds of Rajshahi.
6	2004-03-27	LG Immunization of livestock, Meer Hossain's fish farm In Mymensingh, Production, preservation and marketing of Munshiganj's potato.
7	2004-04-03	10kg lace in Chapainawabganj, Tomato cultivation in Sylhet
8	2004-04-10	BARI DG with tomato spray, Rearing Duck in paddy field, LG Immunization of livestock, 'Katarivog' rice in Dinajpur.
9	2004-04-17	Apiculture in Litchi Garden, Shrimp farming in floating crate, Two to two and half times acceleration in Rice production in three decades.
10	2004-04-24	Rearing Rabbit in Mymensingh, Condition if Silk industry.
11	2004-05-01	Pure potato seeds, fish farm of Nazrul Islam Arju in Chittagong, Agro-labour on the May day.
12	2004-05-15	Pure potato seeds, LCC – PETRA, Conditions of Poultry Industry, Ganga–Kopatakshaya Irrigation project.
13	2004-05-22	Mixed fertilizer regarding crop variety in Dinajpur, Cow-dung, Lemon farmer Ibrahim Sarker of Mymensingh, Spawn-fetch in Halda River
14	2004-05-29	Litchi of Afzal, Duck farming in Sylhet, Kartik Pramanik, the Great tree-lover
15	2004-06-05	Betel leaf cultivation in Kushtia, Nursery of Kismot, Fish farming in the right way.
16	2004-06-12	Tomato preserving in farmers' house, Nursery of Ujjal, Dried Fish (shutki).
17	2004-06-19	Birds in Shrimangal, Healthy seeds IRRI & PETRA.
18	2004-06-26	Midway Scientific Hatchery in Cox's Bazar, Chapainawabganj LC cultivation

Episode	On Air	Subjects
19	2004-07-03	Alam's nursery in Chittagong, Sobhan's fish farm in Mymensingh, Massajo in Philippines
20	2004-07-10	Chirata cultivation in Tangail, Aqua fish farm in Mymensingh, Mushroom Cultivation
21	2004-07-17	Soil test of BRAC, Balsam apple cultivator Habibullah in Tangail, Integrated crop management
22	2004-07-24	Amropoli Matrijat Garden of Sylhet, Poultry diseases diagnosis lab of BARC, pineapple marketing of Tangail
23	2007-07-31	Floating Seedling plot, damaged poultry farm in Savar, Formation of the whole Agriculture system regarding the natural disasters.
24	2004-08-07	Damages of livestock in the flood, preparing vegetable seedling in soil made tubs, poultry farm management after flood, Dapog Seedling plot system regarding crisis, damages of fish sector due to flood.
25	2004-08-14	Post-flood disease & care of Livestock, techniques of healthy seed selection, production and marketing of gourd in Comilla, fish farming in the flood plain.
26	2004-08-21	Post-flood agriculture rehabilitation, Selecting original mother carp fishes, sands in Sirajganj.
27	2004-08-28	Pearl cultivation in cockle, Milk farms of Sirajganj, PETRA family Systems
28	2004-09-04	PCR Lab in Cox's Bazar, Rubber Dam on Kakra river in Dinajpur; Fine, flavoured, and sticky rice in Sylhet.
29	2004-09-11	Prosperity of poultry industry in Sirajganj; Apple plum in Moharajpur, Chapainawabganj; Sand-areas of Jamalpur.
30	2004-09-18	Raw Biogas plant in Sirajganj; Rice Research (Bangladesh and Philippines)
31	2004-09-25	Molla Dairy Farm, the biggest in Chittagong; Sea-Fish centre in Cox's Bazar, Mushroom production and marketing.
32	2004-10-02	Blanket made of Sheep-wool; Farming Telapia with Vetki fish-DFID.
33	2004-10-09	Shrimp Farming Success in Mymensingh, Orchid farming & Marketing
34	2004-10-16	DG's Speech on World Food Day, Agro-knowledge for Future Farmers; Celebrating International Rice Year
35	2004-10-23	Vegetable Nursery of Marginal Farmers in Barisal; Advanced Impregnation of Livestock.
36	2004-10-30	Multi-sectoral Fish Farm of Kabir Hossain in Jhalokathi; Lifestyle of Alluvial People of Greater Noakhali
37	2004-11-06	Greater Coconut Research Centre in Barisal; Granule Urea (PETRA programme)
38	2004-11-13	Rubber Dam on Eidgah River in Cox's Bazar, Drum Seeder (Philippines)
39	2004-11-20	Social Forest of Bogra; Fish Farming on Pond-Bank in Banaripara
40	2004-11-27	Khaleda Khanom's Nursery in Jhenaidah, Fish Farming in Flood-plains in Comilla

Episode	On Air	Subjects
41	2004-12-04	Tomato Ripening through Spraying, Advanced Quality Spices Production Centre in Sylhet, Fish Farming Programme Saghanno Baor in Jhenaidah
42	2004-12-11	Orange Production In Jaitapur, Shylhet; Tomato Ripening through Spraying Immune.
43	2004-12-18	Haripado Kapali's Horidhan (Rice named Horidhan) invented by Horipodo Kapali.
44	2004-12-25	Black peeper Research lab in Sylhet, Bean cultivation in Pabna.
45	2005-01-01	Betuli Banyan Tree in Jhenaidah
0	2005-01-02	Special Programme
46	2005-01-08	IFAT Fishing Co-operatives in Jhenaidah, High Yielding onion production in Pabna
47	2005-01-15	Activities of Chandpur River Centre, Banana Production of Proshika through Tissue Culture.
48	2005-01-29	Chirata Cultivation in Tangail, Flower Production In Jhenaidah.
49	2005-02-05	Jessore Ali Khan's Coconut Plum Production in Khulna; Kajoli Date-juice in Magura.
50	2005-02-12	Making coir rope from Coconut-fiber in Khulna; Reducing inter-begetting of Fish in Jessore
51	2005-02-19	Bid; Floating Vegetable cultivation in Barisal
0	2005-02-21	Special programme on Bengali Mass Media in Mainstream Forerunning
52	2005-02-26	Strawberry Cultivation; Carrot of Pabna.
53	2005-03-05	Taking care of Mango-bud; GK Irrigation Programme in Kushtia.
54	2005-03-12	Fish farming of the land-less people in Pabna; Mixed crop cultivation on the River-side of Shangkho in Chittagong.
55	2005-03-19	Rice winnowing in Vietnam; Round the Jackfruit.
0	2005-03-26	Special programme.
56	2008-04-02	Shrimp farming in Pabna; Using Drum seeder in Vietnam.
57	2005-04-09	Pepe (Papaya) Badshah; LCC Using in Vietnam.
58	2005-04-16	Poultry Industry in Pabna; Mushroom Cultivation in Vietnam.
59	2005-04-23	Present and Future of Shrimp Farming.
60	2005-04-30	Agriculture in Alluvial land of Sirajgonj.
61	2005-05-07	Rabindranath's Agriculture Concept, Mohitosh's Dairy Farm in Khulna; Fish farming in Paddy-field in Vietnam.
62	2005-05-14	Agor Cultivation in Moulovibazar.
63	2005-05-21	Field-day on Drum Seeder in Pabna.

Episode	On Air	Subjects
64	2005-05-28	Poultry situation in Sirajgonj
65	2005-06-04	Agriculture Budget
66	2005-06-11	Fish farming in Paddy field in Kushtia, Universal Poultry in Pabna, Floating Market in Vietnam
67	2005-06-18	Tree Plantation of Kartik Pramanik
68	2005-06-25	Drum seeder
69	2005-07-02	Green House in Japan, Ahsan Jan's Multi-sectoral Farm in Pabna
70	2005-07-09	Fruit & Herb Tree garden of Police Officer in Rangamati, Successful Village of vegetable production in Khulna
71	2005-07-16	Jahangir's Cattle Farm in Pabna; MACH Programme.
72	2005-07-23	Guava in Narsingdi; Nurul Haq's Fish Farm.
73	2004-07-30	Integrated Fish Farming in Dumuria of Khulna; Poultry Processing and Chicken Nugget Production.
74	2005-07-13	Younus' Integrated Farm in Chittagong; Water purifying Technology of Japan.
75	2005-08-20	Silver Medal in Telapia Farming; Drum Seeder Production & Import.
76	2005-09-03	Habibullah's Balsam Apple in Tangail; Doimoi Policy & Agricultural Development of Vietnam
77	2005-09-10	Professor Yuan Longping-Life & Activities;
78	2005-09-17	Flower Cultivation & Marketing in Yunan; Agriculture Research of the Student Studying in Abroad.
79	2005-09-24	Situation of Package Agriculture Technology Usage, Hybrid In China.
80	2005-10-08	Testing Agriculture Package Technology in BRII's Plot, Hybrid Rice & Seed production in Changsha of Hunan Province of China.
81	2005-10-15	Drum Seeder, LCC & IPM in Sirajgonj, Tea Cultivation & Integrated Cultivation System in Panchogarh.
82	2005-10-22	Activities of Naya Krishi Andolon (New Agriculture Movement)
83	2005-10-29	Activities & Comments of Omega Poultry Farm
84	2005-11-12	Jakir & Salam's Duck Farming in Dolkar Bil
85	2005-11-19	Orange Production in Moulovibazar
86	2005-11-26	Farmer Horipodo Kapali & Follow-up of Horidhan
87	2005-12-03	Tissue Culture Library of BRAC Agriculture Development Centre, Cultivation of Super-Hybrid Rice and life of The Men
88	2005-12-10	Flower Cultivation in Jhainadah (Follow-up)
89	2005-12-17	Elephant Attack in Hill Tracts & Elephant Control In Zambia
90	2005-12-24	ATDP-SSOQ Shrimp Seal of Quality

Episode	On Air	Subjects
0	2005-12-31	Special Programme- Present & Future Of Our Agriculture.
91	2006-01-07	Chalan Bill (Marshland) Pabna
92	2006-01-21	Bean Cultivation In Pabna
93	2006-01-28	Banana Cultivation in Jhinaidah
94	2006-02-04	Meghna-Dhonagoda Irrigation Project
95	2006-02-11	Successful Farmer Moyez Uddin's Farm
96	2006-02-18	Special Programme on 2nd Anniversary
0	2006-02-21	Special Programme on 2nd Anniversary- Culture From Agriculture
97	2006-02-25	Fish Farming in the Crate, Irrigation Crisis in North-Bengal
98	2006-04-04	Extension of Strawberry Cultivation, Integrated Agriculture Farm of Rabiul Islam
99	2006-11-03	East-West Seed (Bangladesh) Ltd.
100	2006-03-18	Apple Kul Extension in Natore, Electricity Crisis in North-Bengal
101	2006-03-25	Agriculture and Farmer- The Heart of Bangladesh
102	2006-04-01	Bird Flu & Our Concern
103	2006-04-08	Potato Cultivation in North-Bengal & Flamingo Agro-Tech Ltd.
104	2006-04-15	The Six Seasons & Bangladesh of Today
105	2006-04-22	Insect attacks in Rice Field in Bangladesh
106	2006-04-29	Neglected Agro-Labour
107	2006-05-06	Fish Farming in Chalan Bill (Marshland) through Private initiative, Carrot Seed Production
108	2006-05-13	Agriculture Budget, Farmers' Budget-1 at Manikgonj
109	2006-05-20	Agriculture Budget, Farmers' Budget-2 at Jessore
110	2006-05-27	Agriculture Budget, Farmers' Budget-3 at Comilla
111	2006-06-03	Agriculture Budget, Farmers' Budget-4 at Sirajgonj
112	2006-06-10	Economist's Reaction after Budget, Hybrid Rice Cultivation in Bajitpur of Kishoreganj
113	2006-06-17	Rice Threshing Technology in Bajitpur of Kishoreganj, Anowar Firoj's Flower Cultivation in Jhenaidah
114	2006-06-24	Tomato without cultivation, Natore; MUCH project-2, Moulvibazar
115	2006-07-01	Bhai Bhai Poultry Farm In Pabna; Mushroom Cultivation in Vietnam
116	2006-07-08	Farmers' World Cup (Football)
117	2006-07-15	Azizul's Fish Farm In Jhenaidah, Saudi-date Cultivation of Motaleb (2nd Follow-up)
118	2006-07-22	Commercial Industrialization of Agro-product (Pran Group)

Episode	On Air	Subjects
119	2006-07-29	Saudi-date Cultivation of Motaleb (3rd Follow-up), Pasona & Non-govt. agro-production activities in Japan
120	2006-08-05	Rabindranath of Agriculture & Farmer
121	2006-08-12	Basil Village if Mymensingh, 'Potka' Fish of Japan
122	2006-08-19	Elephant Attack in Hill Tracts & Elephant Controle In Zambia, Aftab Poultry Hatchery
123	2006-08-26	Commercial rearing of 'Koel' Bird, Japan's Vegetable Businessman Oska
124	2006-09-02	Golden Hens in Joypurhat
125	2006-09-09	Almost obliterated 'Tarabime's Artificial reproduction, Betel-leaf cultivation in Jhenaidah
126	2006-09-16	The Largest Fruit-Achievement of the Country
127	2006-09-23	Puffed-rice & Chemical ingredients in it
128	2006-09-30	Puffed-rice & Chemical ingredients in it
129	2006-10-07	Vegetable Market in the 'Ramadan'
130	2006-10-14	BR-33, the Initiative to lessen Poverty in the North-Bengal
131	2006-10-21	Dr. Muhammad Yunus and Grameen Bank
132	2006-11-04	Research Project of Plant Diseases Department of Bangladesh Agriculture University, Fish Farming in the Lagoon in Hunan Province of China
133	2004-11-11	Zinedine Zidane in the villages of Gazipur, Seed production and Marketing in China
134	2004-11-18	"Nobannya" Festival, Vegetable Market in China
135	2004-11-25	Regional adaptability of 'Horidhan'-BRRI
136	2006-12-02	Steps taken to accelerate wheat production, China's research & training to develop hybrid rice
137	2004-09-12	Agricultural production & market management in Japan
138	2006-12-16	Farmers' File — 01
139	2006-12-23	Scientist's concern for the rising of food Crisis due to population growth
140	2006-12-30	Golden Rice
141	2007-01-13	Farmers' income Vs production cost (Follow Up)
142	2007-01-20	Cultivation & extension of Baukul selected by Bangladesh Agricultural University
143	2007-01-27	Fertilizer crisis all over the country: causes & way to solution
144	2007-02-03	Research on Bio-fertilizer, Farmers' Awareness and Production Technology
145	2007-02-10	Chirakuthipara in Dinajpur

Episode	On Air	Subjects
146	2007-02-17	Kholabaria- the Biggest Herbal village of the Country
0	2007-02-24	Special Programme- Farmers' File — 02
147	2007-02-24	Extension of granule urea
148	2007-03-03	Anowar Sadat's kul farming in Natore
149	2007-00-10	The condition of potato production over the Country
150	2007-03-17	Irrigation hampered due to electricity problem in Chandpur, Integrated agenda on Jatka protection week
151	2007-03-24	Bird Flu : Awareness and Prevention
152	2007-03-31	Inquiry on fertilizer crisis and reformation of the distribution system
153	2007-04-07	Sugarcane production and sugar industry of Bangladesh, 'Chittah' in some Districts- Vicissitude of the Farmers
154	2007-04-14	Special Programme on 1st Baishakh- Farmers' File — 03
155	2007-04-21	Agriculture Production and Market of those in Japan (Re-telecast)
0	2007-04-26	Special Porgramme on the 3rd Anniversary of Hridoye Mati O Manush- Nagorik Aloy Alokito Krishi (Enlightened Agriculture in the Urban light)
156	2007-04-28	Bengal Meat: World-class meat processing industry in Bangladesh
157	2007-05-05	Dairy industry of Bangladesh and the activities of Pran Dairy
158	2004-05-12	Syed Keramat Ali: The founder of shrimp farming in the South Bengal.
159	2007-05-19	Salt Industry of Cox's Bazar
160	2007-05-26	Agriculture Budget- Farmers' Budget at Mymensingh
161	2007-06-02	Agriculture Budget- Farmers' Budget at Natore
162	2007-06-09	Agriculture Budget- Farmers' Budget at Chandpur
163	2007-06-16	Agriculture Budget- Farmers' Budget (Compile)
164	2007-06-23	Agriculture Budget- Farmers' Budget at Tangail
165	2007-06-30	21 Recommendations presented to the Economic Adviser
166	2007-07-07	Recommendations presented to the Chief Adviser and (Compile)
167	2004-07-14	Bio-Fertilizer factory of Shafiqul Islam in Comilla
168	2007-00-21	Handing Over three technologies In Sirajgonj
169	2007-07-28	Flood-1; Three Package Technologies in Comilla
170	2007-04-08	Flood in Manikgonj
172	2007-08-18	Damages in Sirajgonj due to flood, Miseries of flood affected people of Sirajgonj
173	2007-08-25	Miseries due to a Road in Jessore's Avoynogor
174	2007-09-01	Hatcheries and Trout Market in Jessore

Episode	On Air	Subjects
175	2004-09-08	Post flood assistance to the Farmers
176	2007-09-15	Chemicals in Muri (Puffed-rice) Follow-up
177	2007-09-22	River erosion in Bangladesh
178	0200-09-29	Setting a National standard of Muri (Puffed-rice) & the activities of science laboratory
179	2007-10-06	Outrageous weather at the coastal area of Bangladesh, Fishermen's risk and the contemporary issue
180	2007-10-20	World Food Day and FAO Report
180	2007-10-20	World Food Day and FAO Report
181	2007-10-27	Flower Industry in China
182	2007-11-03	Piranha and our fisheries industry
183	2004-11-10	Hybrid in China-01
184	2007-11-17	Hybrid in China -02
185	2007-11-24	Cyclone SIDR and a village Rayenda
186	2007-12-01	SIDR and damages in the Sundarbans
187	2007-12-08	Revolution of potato cultivation and fertilizer crisis in Lalmonirhat
188	2007-12-15	Farmers' File — 04
189	2007-12-29	Cassava production in Lalmonirhat
190	2008-01-05	Farmers' market in Bogra
191	2008-01-12	Disaster due to Saline-shrimp farming in Dakop, Khulna
192	2008-01-19	Interview of Selim Al Din, Agriculture Adviser in Tangail to launch new agro-technology to get exemption from food crisis
193	2008-01-26	Jota Bashful And Randhunipagol rice in Chapainawabganj, Launching the Farmers' Health Services
194	2008-02-02	Bird Flu, Milon's success in Baukul Cultivation
195	2008-02-09	Farmers' Health Services, Bird Flu
196	2008-02-16	Flower Market at Jhikorgacha, Jessore
0	2008-02-21	Farmers' File — 05, 'Bhabadaho's Sufferings' (Miseries of Bhabadaho)
197	2008-02-23	5th year Anniversary (Saltamami)
198	2008-03-01	Meghna-Dhonagoda Irrigation Project
199	2008-03-08	Special Programme on the International Women's Day, "Dhankholar Narider Duhkho". (Miseries of the Rice Processing Factory Women-labours)

Episode	On Air	Subjects
1	2007-08-13	Flood in Bangladesh: The Changing Situation
2	2007-08-20	Post-flood Agricultural Situation
3	2007-08-27	Hamida's Success in Jessore, Mushroom Cultivation in Vietnam
4	2007-09-03	Amon Seedling Market: Price is highest than ever
5	2007-09-10	Uprise of Jessore: Success of Abdul Malek
6	2007-09-17	Puffed-rice production, market, problems & possibilities
7	2007-10-10	Second Flood: The Distress of Farmers
8	2007-10-08	Falatita's Keramat Ali
9	2007-10-22	Vietnam's 3R Technology
10	2007-10-29	Producing food & medicine from the mountain-plants of China, Abdul Malek's aerator in shrimp-gher
11	2007-11-05	Dry Seeder in Rangpur, Boat-race in Gopalganj, Oska- the vegetable trader of Japan
12	2007-11-12	Orange Gardening in Moulavibazar
13	2007-11-19	Gazipur Machine Tools Factory, Bangladesh Atomic Agriculture Research Institute (Beena 7)
14	2007-11-26	Cyclone Sidr: Relief Programme, Environment Calamity and others
15	2007-12-03	Water Purification Technology in Japan, Young-fish Market in Jessore's Chanchra
16	2007-12-10	Agricultural Farm of the Non-residents in Barisal's Muladi, Shafiqul's Worm-fertilizer in Comilla's Budichang
17	2007-12-17	Special Programme on Victory Day (Farmers' File — 01)
18	2007-12-31	Hybrid China-01
19	2007-01-07	Flower Market in China
20	2008-01-14	Floating Cultivation Method in Gopalganj (Tungipara, Mitradanga)
21	2008-01-21	Hybrid China-02 (Milling Systems), Beneficial sides of implementing Granule Urea
22	2008-01-28	Bio-fertilizer production in various districts, Gasoline-run Rice Threshing Machine in China
23	2008-02-04	DoiMoi Policy of Vietnam, Barison's success in flower cultivation in Jessore
24	2008-02-11	Agor Cultivation in Moulavibazar
25	2008-02-18	Fish Cultivation & Project in Rice Field, 'Kataribhog' rice in Dinajpur
26	2008-02-25	Livelihood of the Kishoreganj Haor region
27	2008-03-03	Nimsha Market in Comilla
28	2008-03-10	Agricultural Training for the Imams