

**PROBLEM FACED BY THE FARMERS IN VEGETABLE
CULTIVATION IN THE SELECTED AREA OF SARISHABARI
UPAZILLA UNDER JAMALPUR DISTRICT**

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UPAZILLA UNDER JAMALPUR DISTRICT**

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CERTIFICATE

This is to certify that the thesis entitled “PROBLEM FACED BY THE FARMERS IN VEGETABLE CULTIVATION IN THE SELECTED AREA OF SARISHABARI UPAZILLA UNDER JAMALPUR DISTRICT” submitted to the Department of Agricultural Extension and Information System, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in Agricultural Extension and Information System, embodies the result of a piece of authentic research work carried out by Md. Shamim Reza, Registration No. 19-10275 under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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

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**DEDICATED TO
MY
BELOVED PARENTS**

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CONTENTS

CHAPTER	Title	PAGE NO.
	ACKNOWLEDGEMENT	i
	CONTENTS	ii-iv
	LIST OF TABLES	v
	LIST OF FIGURES	vi
	LIST OF APPENDICES	vii
	ABBREVIATIONS	viii
	ABSTRACT	ix
CHAPTER I	INTRODUCTION	1-7
1.1	General Background of the Study	1
1.2	Statement of the Problem	3
1.3	Specific Objectives	4
1.4	Justification of the Study	4
1.5	Assumptions of the Study	4
1.6	Hypothesis Test	5
1.7	Limitations of the Study	5
1.8	Definition of Different Terms	
CHAPTER II	REVIEW OF LITERATURE	8-16
2.1	Literature related to problem faced by the respondents in different aspects of agriculture	8
2.2	Research Gap of the study	16
2.3	Conceptual framework of the study	17
CHAPTER III	METHODOLOGY	18-32
3.1	Locale of the Study	18
3.2	Population and Sampling Procedure	21
3.3	The Research Instrument	21
3.4	Variables and their Measurement	22
3.4.1	Problem Faced by the Farmers in Vegetable Cultivation	22
3.4.2	Measurement of explanatory variables	23
3.4.2.1	Age	23
3.4.2.2	Education	23
3.4.2.3	Family size	23
3.4.2.4	Annual family income	24
3.4.2.5	Vegetable cultivation land	24
3.4.2.6	Income from vegetable cultivation	24
3.4.2.7	Experience in vegetable cultivation	24
3.4.2.8	Training exposure	25
3.4.2.9	Media exposure	25
3.4.2.10	Knowledge on vegetable cultivation technologies	25

3.5	Collection of Data	25
3.5.1	Compilation of Data	26
3.5.2	Categorization of Data	26
3.5.2	Categorization of data	26
3.6	Statistical Analysis	26
CHAPTER IV	RESULTS AND DISCUSSION	27-44
4.1	Problems Faced by the Farmers in Vegetable Cultivation	27
4.2	Comparative Severity Among the Problems Faced by the Farmers in Vegetable Cultivation	28
4.3	Selected Explanatory variables	29
4.3.1	Age	30
4.3.2	Education	31
4.3.3	Family size	31
4.3.4	Annual family income	32
4.3.5	Vegetable cultivation land	34
4.3.6	Income from vegetable cultivation	34
4.3.7	Experience on vegetable cultivation	35
4.3.8	Training exposure	35
4.3.9	Media exposure	36
4.3.10	Knowledge on vegetable cultivation technologies	37
4.4	Relationship between the Selected Characteristics of the Farmers and their Problems Faced in Vegetable Cultivation	38
4.4.1	Age and problems faced by the farmers in vegetable cultivation	39
4.4.2	Relationship between education level of the farmers and their problems faced in vegetable cultivation	40
4.4.3	Family size and problems faced by the farmers in vegetable cultivation	40
4.4.4	Relationship between annual family income of the farmers and their problems faced in vegetable cultivation	41
4.4.5	Relationship between vegetable cultivation land and problems faced by the farmers in vegetable cultivation	41
4.4.6	Relationship between income from vegetable cultivation of the farmers and their problems faced in vegetable cultivation	42
4.4.7	Relationship between experience on vegetable cultivation of farmers and their problems faced in vegetable cultivation	42
4.4.8	Relationship between training exposure of farmers and their problems faced in vegetable cultivation	43
4.4.9	Relationship between media exposure of farmers and their problems faced in vegetable cultivation	44
4.4.10	Relationship between knowledge on vegetable cultivation of farmers and their problems faced in vegetable cultivation	44

CHAPTER V	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	45-50
5.1	Summary of the Findings	45
5.1.1	Problems Faced by the Farmers in Vegetable Cultivation	45
5.1.2	Comparative severity among the problems faced by the farmers in vegetable cultivation	45
5.1.3	Selected characteristics of the vegetable growers	45
5.1.4	Relationship between the selected characteristics of the farmers and their problems faced in vegetable cultivation	47
5.2	Conclusions	47
5.3	Recommendations	48
5.3.1	Recommendations for policy implications	48
5.3.2	Recommendations for further study	49
	REFERENCES	51-55
	APPENDICES	56-60

LIST OF TABLES

Table No.	Title	Page No.
3.1	Distribution of selected vegetables farmers in the study areas	21
4.1	Distribution of the farmers according to problems faced in vegetable cultivation	27
4.2	Rank order of problems faced by the farmers in vegetable cultivation	29
4.3	The salient features of the selected characteristics of the farmers	30
4.4	Distribution of the farmers according to their age	30
4.5	Distribution of the farmers according to their education	31
4.6	Distribution of the farmers according to their family size	32
4.7	Distribution of the farmers according to their annual family income	32
4.8	Distribution of the farmers according to their vegetable cultivation land	33
4.9	Distribution of the farmers according to their income from vegetable cultivation	34
4.10	Distribution of the farmers according to their experience	35
4.11	Distribution of the farmers according to their training exposure	36
4.12	Distribution of the farmers according to their media exposure	37
4.13	Distribution of the farmers according to their vegetable cultivation knowledge	37
4.14	Pearson's product moment co-efficient of the correlation showing Relationship between focus and explanatory variables	39

LIST OF FIGURES

Figure No.	Title	Page No.
2.1	Conceptual Framework of the Study	17
3.1	A Map of Jamalpur district showing Sarishabari Upazila	19
3.2	Map of Sarishabari Upazila showing study areas	20

LIST OF APPENDICES

SL. No.	APPENDICES	Page No.
Appendix -A	An English version of interview schedule	56-59
Appendix-B	Correlations matrix between explanatory variables and focus variable	60

ABBREVIATIONS

Ag. Ext. Ed.	Agricultural Extension Education
Ag. Ext. Info. Sys.	Agricultural Extension and Information System
BBS	Bangladesh Bureau of Statistics
GDP	Gross Domestic Product
DAE	Department of Agricultural Extension
et al.	All Others
SD	Standard Deviation
FAO	Food and Agriculture Organization of the United States
WHO	World Health Organization
GoB	Government of Bangladesh
HIES	Household Income Expenditure Survey
SAAO	Sub Assistant Agriculture Officer
SAU	Sher-e-Bangla Agricultural University
SPSS	Statistical Package for Social Sciences
NGOs	Non-Government Organizations
PFI	Problem Faced Index
FFS	Farmers Field School

**PROBLEM FACED BY THE FARMERS IN VEGETABLE CULTIVATION IN
SELECTED AREA OF SARISHABARI UPAZILLA UNDER JAMALPUR
DISTRICT**

ABSTRACT

Vegetable cultivation is a profitable farming practice in respect of Bangladesh although farmers often face various problems in traditional cultivation. The purposes of the study were to determine the extent of problem faced by the farmers in vegetable cultivation; to compare the severity among the problem faced by the farmers in vegetables cultivation; to describe some selected characteristics of the vegetable farmers and to explore the relationships between the selected characteristics of the vegetable farmers and their extent of problem faced in vegetables cultivation. The study was undertaken purposively in Sarishabari upazila of Jamalpur district. Validated and well-structured interview schedule was used to collect data from 103 vegetable growers during 1st June to 30th, June 2022. The highest proportion (71.84%) of the vegetable farmers faced medium problem faced as compare to 16.51 percent faced low problem and 11.65 percent faced high problem in vegetable cultivation. On the basis of Problem Faced Index (PFI), it was observed that “High cost of labour” ranked first followed by “High cost of seed fertilizer and pesticides” and “Lack of knowledge about market information” were the least problem faced by the farmers in vegetable cultivation. Pearson’s Product Moment Correlation that education, annual family income, income from vegetable cultivation, experience on vegetable cultivation, training exposure and knowledge on vegetable cultivation technologies of the farmers had negative significant relationship with their problem faced in vegetable cultivation. Beside these, rest four characteristics of the farmers (age, family size, vegetable cultivation land and media exposure) had no significant relationship with their problem faced in vegetable cultivation. This study could be helpful for formulation of principle and implementation to eradicate the problems in vegetable cultivation and a reference for future study.

CHAPTER I

INTRODUCTION

1.1 General Background of the Study

Bangladesh is an agriculture based country. The growth and stability of the economy depends largely on the growth of agriculture. Agriculture sector contributes about 13.10 percent to the country's Gross Domestic Product (GDP) and employs more than 41.5 percent of total labour forces (BBS, 2021). The agriculture sector comprises crops, livestock, forestry and fisheries while approximately 8.99 percent of the GDP was derived from crops and horticulture (BBS, 2021). Of the total 13.3 million hectares of arable land in the country, only 6.73 percent is under horticultural crop (BBS, 2021). If potato and spices are excluded, the area comes down to 3.22 percent only (Hossain, 2004). But now-a-day's commercial production of vegetables is becoming popular among some of the farmers.

Vegetables are the most important component of our food and supply vitamins, minerals and fibers essential for human health. A number of vegetables are considered as protective food items which prevent many diseases and ailments like, dislipidemia, cardiac disease, diabetes and constipation. However, the present consumption of vegetables in Bangladesh is 126 g day⁻¹ capita⁻¹ (23 g leafy vegetables, 89 g non-leafy vegetables and 14 g fruit), which is far below the minimum average requirement of 400 g day⁻¹ capita⁻¹ (FAO/WHO, 2003). However, according to HIES (2005), the present consumption of fruits and vegetables including potato are 253 g day⁻¹ capita⁻¹, which indicates a poor dietary status in Bangladesh. The contribution of vegetables is ever important for ensuring food and nutritional security for the people of Bangladesh. Horticultural crops in Bangladesh cover an area of 873 thousand hectares with a total production of 110 lac metric tons (BBS, 2021). Most of the farmers produce vegetable for home consumption. However, commercially produced vegetable after meeting local demand a major part of it is transported to the capital or other cities through different marketing channels (Ahmed, 1992; Hossain, 2000). In Bangladesh the cultivation area is limited and there is a little scope of bringing more land under cultivation. So, it is

necessary to increase the per hectare yield of available land. Realizing the situation the government and other sectors like NGOs, are trying to produce more vegetables, because vegetable cultivation is more profitable than production of most of the field crops. If more vegetables are produced compared to cereals per unit land and per unit time, it could have better food value. The desired level of development of vegetables has not yet been achieved because of a number of constraints such as seed, manures and fertilizers, pesticides, irrigation, agricultural credit, adopting modern agricultural technology and marketing facilities etc. Again, Only a little proportion of total cropped areas of Bangladesh is under vegetables production. Most of the agricultural production in Bangladesh is strenuous in rice, occupying about 75 percent of total cropped areas, whereas only 7 percent of the overall cropped land is employed for horticultural crops, including root and tuber crops (BARI, 2017). The realm under vegetable cultivation accounts for fewer than 2.56 percent of the whole cropped areas. From this small proportion of the cultivable expanse, Bangladesh produces about 1.76 lac metric heaps of vegetables annually, of which about 65 percent are produced in winter and also the rest in summer. Therefore, production isn't well distributed throughout the year and produce for domestic use is comparatively scarce within the off-season (DAE, 2016).

In view of the aforesaid adverse conditions, extension services like DAE or NGOs must render high quality vegetable production program for the commercial and non-commercial farmers. In fact, farmers produce vegetable challenging the probable problems. Compared to other crops vegetable production is problem sensitive. Problems cannot be solved if it is not recognized and addressed at the right time and right way. Although a number of research works were done on problems in vegetable cultivation as perceived by the farmers, however no remarkable impact of such research works had been observed. The government has commitment to nourish people and asks farmers to produce more vegetables to supply required quantity of vitamins, minerals and other nutrients. But farmers are regularly embittered by many recognized and unrecognized problems. Government could fulfill its commitment if it could cordially understand farmers' problem and accord with problem solving assistance. Different research expressed manifold problems. But there will not be any achievement unless and until

these problems have been seriously taken by the extension programmers. An understanding of problem faced by the farmers in vegetable cultivation will be helpful for planning and execution of program.

1.2 Statement of the Problem

Problems of the farmers in vegetables production means the difficulties they faced during the whole production process. Problem may be low price of vegetables, adverse climate, pest attack, lack of high yielding varieties, unavailability of pesticides, fertilizers and irrigation water, unavailability of labor, difficulties of getting loans, high bank interest, lack of training facilities, need high crop management, lack of proper knowledge, lack of marketing facilities, undue flood, high price of pesticides and fertilizers. Vegetables are one of the important that have a great opportunity to keep contribution in the country's economy. Very practically this crop should stay a very sensitive and important consideration in the agricultural fields of Bangladesh. (M.J Azad et al.), (Ismail 2001)

In many cases vegetables farmers are not familiar with modern technologies and management practices of vegetables cultivation. Most of the farmers are unable to understand the behavior and physiology of vegetables. As a result, they failed to take necessary steps in due time of adverse situations as well as management practice. Finally their yield decreases and they begin to lose interest of vegetables cultivation and migrate from bean. It is, therefore, important and essential to acquire clear and good understanding on problems faced by the farmers in vegetables production at field level. Considering the fact a research study entitled, "Problems faced by farmers in vegetables cultivation in selected area of Sarishabari upazilla under Jamalpur district." was undertaken.

Considering the problems faced in vegetable production by the farmers, this study was designed to find out the answer of the following research questions:

1. What were the features of selected characteristics of the vegetables growers?
2. What was the extent of problems faced by the farmers in vegetables cultivation?
3. What are the levels of severities of the different problems faced by the farmers in

vegetables cultivation?

4. Is there any relationship between the farmers' problems faced by the farmers in vegetables cultivation and their selected characteristics?

1.3 Specific Objectives

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

1. To determine the extent of problems faced by the farmers in vegetables cultivation;
2. To compare the severity among the problem faced by the farmers in vegetable cultivation;
3. To describe some selected characteristics of the vegetables growers; and
4. To explore the relationships between the selected characteristics of the vegetables growers and their extent of problem faced in vegetables cultivation.

1.4 Justification of the Study

Problem in vegetables cultivation is an important issue for the vegetable growers. Problem may be technical, economical, marketing and skill oriented. Due to the problems vegetables cultivation is in morbid condition all Bangladesh. In this circumstance, farmers count economic loss with grief. However, there are some innovative and venturesome farmers who confront the problems with the help of extension service and applying their own experiences. They gained knowledge about problem confrontation devices acquired from different sources. Farmers of Jamalpur district confront problems in vegetables cultivation what mechanism is used against what problem? So, the experiences of problem confrontation by vegetables farmers of Jamalpur district could be leaning avenue for other the farmers of other districts. Considering the above mentioned points the researcher because highly interested to conduct research entitled 'Problem faced by farmers in vegetable cultivation in the selected area of Sarishabari upazilla under Jamalpur district'.

1.5 Assumptions of the Study

"An assumption is the supposition that an apparent fact or principle is true in the light of the available evidence" (Goode, 1945). The researcher had the following assumptions in

mind while undertaking this study:

1. The respondents included in the sample for this study were competent enough to furnish proper responses to the queries included in the interview schedule.
2. The researcher who acted as the interviewer was adjusted to social and environmental conditions of the study area. Hence, the data collected by him from the respondents were free from bias.
3. The responses furnished by the respondents were valid and reliable.
4. Views and opinions furnished by the vegetable farmers included in the sample were the representative views and opinions of the whole population of the study area.
5. The findings of the study might have general application to other parts of the country with similar personal, socio-economic and cultural condition of the study area.

1.6 Hypothesis test

A null hypothesis states that there is no relationship between the concerned variable. If a null hypothesis is rejected on the basis of statistical test, it is concluded that there is a contribution with the concerned variables. However, following null hypotheses was formulated for the present study:

There was no relationship between selected characteristics of the farmers with their problems faced in vegetable cultivation.

The selected characteristics are: age, education, family size, annual family income, vegetable cultivation land, income from vegetable cultivation, experience on vegetable cultivation, training exposure, media exposure and knowledge on vegetable cultivation technologies.

1.7 Limitations of the Study

The major purpose of the study was to have an understanding of the problem faced in vegetable cultivation by the vegetable farmers. However, from the research point of view, it was necessary to impose certain limitations as follows:

1. The study was confined to only six selected villages of Sharshabari upazilla under Jamalpur district.
2. Characteristics of the farmers are many and varied but only ten were selected for investigation in this study as stated in the objectives.
3. Population for the present study was kept confined within the heads of the vegetable cultivated farm families. Because they were the major decision makers regarding vegetable cultivation.
4. For information about the study, the researcher depended on the data as furnished by the selected farmers during interview.

1.8 Definition of Different Terms

A concept is an abstract of observed thing; events or phenomenon or in other words, it is a short hand representation of variety of facts. A researcher needs to know the meaning and contents of every term that used for a study. It should clarify the issue as well as explain the fact to the investigator and readers. However, for clarity of understanding, a number of key concepts/terms frequently used throughout the study defined are interpreted as follows:

Age

Age of a respondent is defined as the span of life and is operationally measured by the number of years from his/her birth to the time of interviewing.

Education

Empirically it is defined as the development of desirable changes in knowledge, skill and attitudes in an individual through reading, writing, walking, observation and other selected activities. It was measured on the basis of classes a respondent's has passed from a formal educational institution.

Family size

Family size refers to the number of members including the respondent himself/herself,

his/her wife/husband, children and other permanent dependents, who live together in a family unit.

Family annual income

Annual income of a respondent refers to the total earning by him and other members of his/her family from agricultural (field crop, fish, livestock, poultry, fruits and vegetables and timbers, etc.) and other sources (service, business, etc.) during a year. Annual family income of the respondent also included the cost of maintaining his family. It was expressed in Taka.

Vegetable cultivation land

Vegetable cultivation area means the amount of land brought under vegetable cultivation by the respondents.

Training exposure

It refers to the total number of days attended by a farmer in his or her life to the training courses on various vegetable cultivation related subject matters.

Media exposure

This term refers to an individual's access to or contact with the different communication media and source being used for dispersion of new technologies and for other perspectives.

Knowledge on vegetable production technologies

Literally knowledge means knowing or what one knows about a subject, fact, person etc. Knowledge on vegetable production technologies refers to the understanding of the vegetable farmers about the different aspects of vegetable production technologies

Problem faced in vegetable cultivation

Problems faced in vegetable cultivation means any difficult situation which requires some actions to minimize the gap between "what ought to be" and "what is" The term problem faced in vegetable cultivation refers to extent of different problems faced by the farmers in vegetable cultivation.

CHAPTER II

REVIEW OF LITERATURE

In conducting research the review of literature gives the clear and concise direction of the researcher in various aspect of conducting the research. In this chapter, review of literatures relevant to the study was presented. There was serious dearth of literature with respect to research studies on this aspect. So the directly related literatures were not readily available for this study. Some researchers addressed various aspects of problem confrontation in various crops. A few of these studies relevant to this research are briefly discussed in this chapter under the following three sections:

Section 1 : Literature related to problem faced by the respondents in different aspects of agriculture

Section 2 : Research Gap of the study

Section 3 : Conceptual framework of the study

2.1. : Literature related to problem faced by the respondents in different aspects of agriculture

Alam et al. (2018) the study was conducted in four villages of two unions under Atghoria upazilla of Pabna District. The highest proportion (71.70 percent) of the farmers faced medium overall problem in bean production, while 16.04 percent faced high and 12.26 percent faced low problem. Problem faced in non-availability of pesticides ranked 1st and this was followed by non-availability of fertilizers, lack of capital so on and least one lack of irrigation in bean cultivation ranked 28th.

Arafat (2018) the study was conducted at Atghorkuriana union of Nasarabad upazila under Pirojpur district. Out of ten unions, Atghorkuriana union was purposively selected because of higher guava production. Thereafter, two villages namely, Dholahar and Brahmonkathi were selected randomly from 9 villages of this union. The highest proportion (63.3%) of the farmers faced medium problem while 13.9% percent of the farmers faced low problem. Comparatively few farmers (22.8%) faced high problem in

guava marketing.

Islam (2017) the study was conducted at Raynagar union of Shibganj upazila under Bogura district. Out of twelve unions, Raynagar union was purposively selected because of higher vegetables production. Thereafter, three villages namely, Pareaschili, Tepagari and Binnapara were selected randomly from 11 villages of this union. The highest proportion 68.1 percent vegetable growers belong to the group of medium level marketing constraints and the lowest 15.0 percent in high level marketing constraints followed by low level marketing constraints (16.9) percent by the vegetable grower in marketing constraints.

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Alam et al. (2018) found a significant positive relationship between age and problem faced in bean cultivation whereas Arafat (2018) and Islam (2017) found a non-significant negative relationship between age and problem faced in guava marketing and education and problem faced in bean cultivation and vegetable marketing. Alam et al. (2018) found a significant positive relationship between age and problem while Arafat (2018) and Islam (2017) found a non-significant positive relationship between family size and problem faced. On the otherhand Alam et al. (2018) and Arafat (2018) found a non-significant positive relationship for income while Islam (2017) found a significant positive relationship between vegetable cultivation land and problem faced. Again they all found found a non-significant negative relationship between training and problem faced by the farmers in their studies and each found similar non-significant negative

relationship between knowledge and problem faced by the farmers.

Although there is no significant research gap found in the study of Alam et al. (2018) and Arafat (2018) but such happened for Islam (2017) . No correlation co-efficient data were found for Experience and Vegetable cultivation land in regard of problem faced in vegetable marketing.

Azad et al. (2014) the purpose of this study was to determine the problems perceived by the farmers in vegetable cultivation and to explore the relationship of the selected characteristics of the vegetable growers with their problems. Data were collected from 109 vegetable growers of six villages of Belgachi Union of Alamdanga Upazila under Chuadanga district by using a pretested interview schedule during 15 January to 13 February, 2013. Pearson product moment correlation was used to determine the relationship between the selected characteristics of the vegetable growers with their problems perceived in vegetable cultivation. The findings revealed that majority (79.90%) of the respondents perceived medium to high problem in vegetable cultivation and 21.10% perceived low problem in vegetable cultivation.

Yulafc and Cinemre (2007) conducted a study to explore marketing structures of fresh fruits and vegetables, which are produced in Carsamba plain (Turkey), to determine marketing problems and to put forward solution suggestions. According to brokers, the most important problem of fresh vegetable and fruit marketing was not being able to find quality crops. Producers had only limited power in setting the prices of vegetables and fruits which in the market was estimated around 6-7 percent. The most important problem in the market was said to be not having enough standard size. In addition to this, there were some deficiencies related with infrastructure of the market area.

Nahid (2005) revealed that the highest proportion (91%) of the growers had medium overall problem confrontation in cotton production, while 5 percent had high and 4 percent had low problem confrontation. The problems confronted by the cotton growers were not getting the price at a time after selling the cotton, selling problem of cotton,

non-availability of fertilizer and pesticide in time, low supply of fertilizer and pesticide in time, delay of payment after selling the cotton, difficulty in getting loan, relay crops are not successful, lack of capital, lack of necessary advice from SAAO, lack of necessary advice from Agricultural Extension Officer, adverse climate, high price of fertilizer and pesticide, transport problem in carrying cotton, facing problem in tying cotton, insect and pest attack in cotton crop, late in supply of new varieties, lack of necessary advice and instructions from ACDO, irrigation problem, lack of skilled labor, lack of knowledge about diseases of cotton crop, lack of knowledge about rate of fertilizer and pesticide, absence of sufficient demonstration plots on cotton production, lack of training facility about cotton production and lack of leaflets, posters, etc. about cotton production.

Azad et al. (2014), Yulafc and Cinemre (2007) and Nahid (2005) found similar non-significant relationship between age and problem faced by the farmers. On the other hand Nahid (2005) found that there was no significant relationship for age and family size of the sugarcane growers and their problem confrontation in sugarcane production. Azad et al. (2014), Yulafc and Cinemre (2007) found significant negative relationship between problem and vegetable cultivation land of the vegetable growers. Again Azad et al. (2014) and Nahid (2005) found no significant relationship between training exposure of the vegetable and cotton growers and their problem confrontation in respective production. On the other hand there found no significant relationship between cotton cultivation knowledge of the cotton growers and their problem confrontation in cotton production in the study of Nahid (2005).

No available data found of correlation co-efficient result for family size, vegetable cultivation land ,media exposure and knowledge and their problem faced in vegetable cultivation in the study of Azad et al. (2014). And Nahid (2005) study was lacked by the data for education, annual family income, income from vegetable cultivation and experience in this aspect of research.

Ismail (2001) conducted a study on farm youth of haor area of Mohangonj upazila. Study revealed that there were six top problems in rank order were (i) no arrangement of loan

for the farm youth for fishery cultivation, (ii) lack of government programmes in agriculture for the farm youth, (iii) absence of loan giving agencies for establishing farm, (iv) general people face problem for fishery due to government leasing of Jalmohal, lack of government programmes for establishing poultry farm, (vi) lack of agricultural loan for the farm youth.

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

Parmanik (2001) in a study on landless laborers in Bhabakhali union of Mymensingh district found that there was no relationship between age of the landless laborers and their problem faced. Similar findings were obtained by Ahmed (2002), Hossain (2002) and Salam (2003) in their respective studies. Also there found that education of the farmers had significant negative effect on their problem faced in marketing. Similar findings were obtained by Ahmad (2002), Hossain (2002) Bhuiyan (2002) and Salam (2003) in their respective study

Adequate data was not found for Family size, vegetable cultivation land, income from vegetable cultivation, experience, training exposure, media exposure and knowledge as the independent variables.

Uddin (2004) in his study identified five aspects of constraints in commercial cultivation of vegetables viz. seed constraints, disease and insect infestation constraints, field management constraints, marketing of vegetable constraints and extension work constraints. Among these aspects of constraints they revealed marketing problem severely faced by the farmers.

Salam (2003) in his study identified constraints in adopting environmentally friendly

farming practices. Top six identified constraints according to their rank order were : i) low production due to limited use of fertilizer (ii) lack of organic matter in soil, (iii) lack of Government support for environmentally friendly farming practices, (iv) lack of capital and natural resources for integrated farming practices, (v) lack of knowledge on integrated farm management and (vi) marketing facilities.

Musnicki (2003) showed in Poland that high soil cultivation requirements, low frost resistance, high crop protection costs and a relatively long vegetative season are some of the major constraints.

Uddin (2004), Salam (2003), Musnicki (2003) found similar non-significant positive relationship between age and problem faced by the respondents. Uddin (2004) and Salam (2003) found non-significant negative relationship for experience and problem faced whereas Musnicki (2003) found odd. They all found similar relationship for training and problem which was negatively significant with the variable and also found same for knowledge and problem faced by the farmers.

Uddin (2004) and Salam (2003) studied on only of 5 to 6 variables which was not enough to determine the actual scenario of the problems of the farmers. Again Musnicki (2003) was from different geographical arena which might be contradict or vary from the study of this author. Again some comparative relationship data was missing from their study too.

Erbe and Neubauer (2002) reported that potato production area in Germany increased by 2.1% to 288000 ha in 2002 compared to production area in 2001. The area reduced in 2001 because of marketing problems. The greatest reduction (14%) was in Sachsen-Anhalt. The main varieties are Agria (7.3% of total area), Kuras (5.4%), Cilena (4.1%), Marabel (3.9%) and 20 other varieties. Seventeen new varieties were approved for 2002, including 1 very early, 3 early, 10 semi-early (5 for consumption and 5 for processing), and 3 semi-late and late ripening, while 5 varieties were removed from the German national list.

Yadev *et al.* (2000) conducted a survey during 1996-97 in the Basti district of Uttar Pradesh, India, among farmers of 6 selected villages who were classified based on the size of their farmland: below 1 ha (38 farmers), 1-2 ha (33) and 2 ha and above (19). Three potato disposal channels (I: producer-consumer, II: producer-retailer-consumer and III: producer-wholesaler-retailer-consumer) were used. Under channel III, 3 storage systems were used: without storage, storage by producer and storage by wholesaler. Tabulated data were presented on (1) the pattern of potato disposal by size of farmland, (2) potato price spread in Basti vegetable markets for the 3 channels and (3) inter-channel comparisons as a whole. Potato marketing problems can be overcome by cooperative marketing.

Erbe and Neubauer (2002) and Yadev *et al.* (2000) found no significant relationship between age and problems faced by the farmers. But they found non-significant negative relationship between experience and problems. Erbe and Neubauer (2002) found non-significant positive relationship between training and media exposure. On the otherhand Yadev *et al.* (2000) found non-significant negative relationship among those variables. But they found similar results for knowledge and problem which were negatively significant.

No adequate data found for other variables like family size, income from vegetable cultivation, annual family income. Again the study areas were not alike the author's locale. So there might be socio-economic differences among the study areas.

Pandict *et al.* (2013) conducted a study to identify the relationship between the personal characteristics and constraints facing in vegetable marketing of Trishal Upazila under Mymensingh district found that there was no significant relationship between the age of the farmers and their faced constraints in vegetable cultivation and marketing.

Huque (2006) conducted a study at Ghumchi union of Rampur upazila under Maguradistrict. Out of 14 unions, Ghumchi union was purposively selected because of

higher vegetables production. Thereafter, three villages namely, Islamganj, Depanagar and Nayapara were selected randomly from 12 villages of this union. The highest proportion 69.5 percent vegetable growers belong to the group of medium level marketing constraints and the lowest 17.0 percent in high level marketing constraints followed by low level marketing constraints 16.9 percent by the vegetable grower in marketing constraints.

Basher (2006) conducted a study on farmers attitude and constraints perceived in mushroom cultivation in the selected area of Rupnagar upazila of Narayanganj District. They took seven selected characteristics of the farmers including age, education, family size, experience, training exposure etc and the study was to find problems in the field of i) lack of loan distribution, (ii) lack of market facilities, (iii) lack Technical support from DAE, (iv) lack of availability of pesticide and (v) unwillingness to accept new technology.

Pandict et al. (2013), Huque (2006), Basher (2006) found a similar significant relationship between age and problem faced by the respondents. Pandict et al. (2013) found a positive significant relationship between farm size and problems faced by the farmers on the other hand Huque (2006) and Basher (2006) found a negative significant relationship between the variables. They found a similar result for experience and knowledge of the respondents which were negatively significant at different level of probability.

Study of Haque (2006) and Basher (2006) were limited to some specified characteristics where as Pandict et al. (2013) was confined into a minor variable which was not enough to depict the actual figure of the problems. Again adequate data was not found for annual family income, income from vegetable cultivation and media exposure.

2.2 Research Gap of the Study

Although some of the study gaps have already been stated above, in a broad sense, although several researches have been completed on this topic, sufficient data is not available on some important variables. As a result, there have been a major gap between the problems faced by the farmers in vegetable cultivation and their solution .Specially in the study area of this research there is a huge lack of adequate data on the related issue. Therefore this study highly reflect the need of conducting the operation to find the actual image of the problems in the regarding topic that will be helpful for necessary policy formulation and implementation.

2.3 Conceptual Framework of the Study

In scientific research, selection and measurement of variables constitute an important task. Variables together are the causes and the phenomenon is effect and thus, there is cause effect relationship everywhere in the universe for a specific events or issues.

The conceptual framework of Rosenberg and Hovland (1960) was kept in mind while making structural arrangements for the variables. This study is concerned with the “Problems faced by farmers in vegetables cultivation in selected area of Sarishabari upazilla under Jamalpur district”. Thus, the Problems faced by farmers in vegetables cultivation in selected area of Sarishabari upazilla under Jamalpur district was the focus variable and 10 selected characteristics of the vegetable growers were considered as the explanatory variables. Problems faced by farmers in vegetables cultivation may be affected through interacting forces of many explanatory variables. It is not possible to deal with all of the explanatory variables in a single study. It was therefore, necessary to limit the explanatory variables, which include age, education, family size, family annual income, vegetable cultivation land, income from vegetable cultivation, experience in vegetable cultivation, training exposure, media exposure and knowledge on vegetable cultivation for this study. Considering the above mentioned discussion, a conceptual framework has been developed for this study, which is diagrammatically presented in the following Figure 2.1.

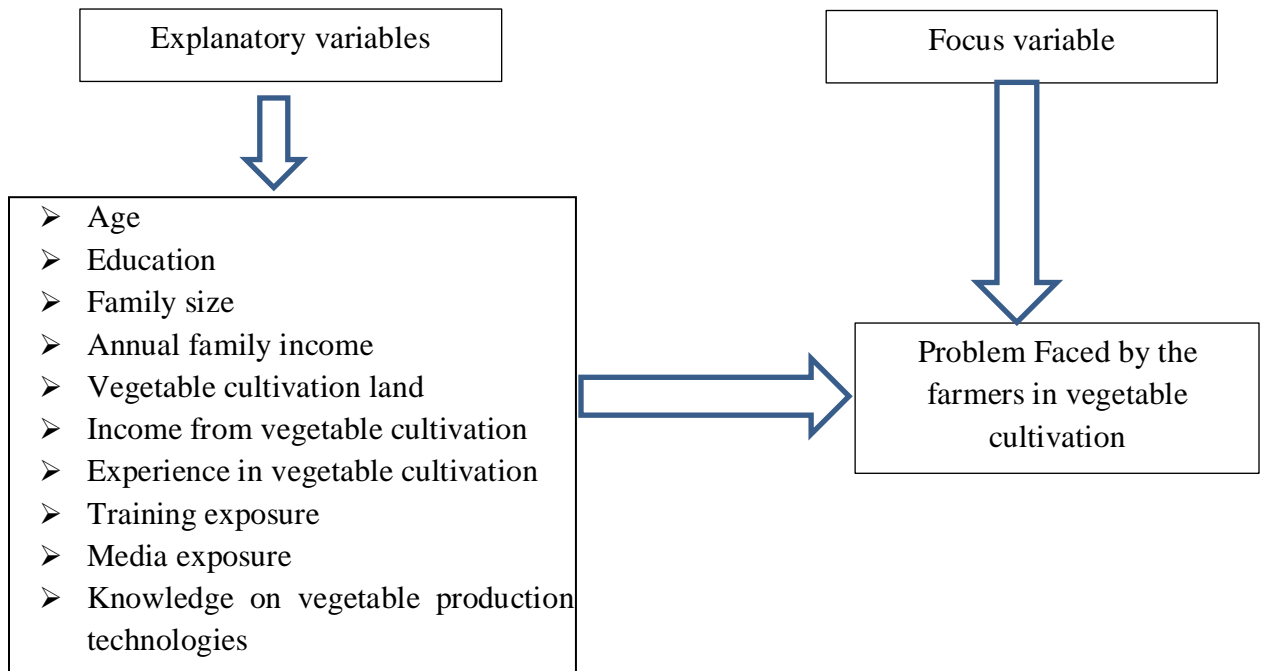


Figure 2.1: Conceptual framework of the study

CHAPTER III

METHODOLOGY

Use of proper methodologies is very important in a scientific investigation. It requires a very careful consideration on the part of the researcher to collect valid and reliable data and to analyze the same properly to arrive a meaningful conclusion. The methods and procedures followed in conducting present study are discussed in this Chapter.

3.1 Location of the Study

The study was conducted at Sarishabari upazila under Jamalpur district of Bangladesh where vegetable grown well. Jamalpur district has five upazillas. Sarishabari upazila was purposively selected as the locale of the study. There are 8 unions in Sarishabari Upazila upazila. Among of them Doail and Satpoya unions were selected randomly. Six villages namely, Chaparkona, Rayderpara and Vobanipur from Doail union and Satpoya, Bolardiya and Adra from Satpoya union were randomly selected as the locale of the study. Sarishabari Upazila (Jamalpur district) area 263.48 sq km, located in between 24°34' and 24°50' north latitudes and in between 89°43' and 89°56' east longitudes. The location of the study area is depicted in Fig. 3.1 and Fig. 3.2.

Literacy rate: Average literacy 39.2%; male 42.9%, female 35.3%.

Main sources of income: Agriculture 60.8%, non-agricultural labourer 1.96%, commerce 15.4%, transport and communication 2.0%, service 8.5%, construction 4.1% and others 7.24%.

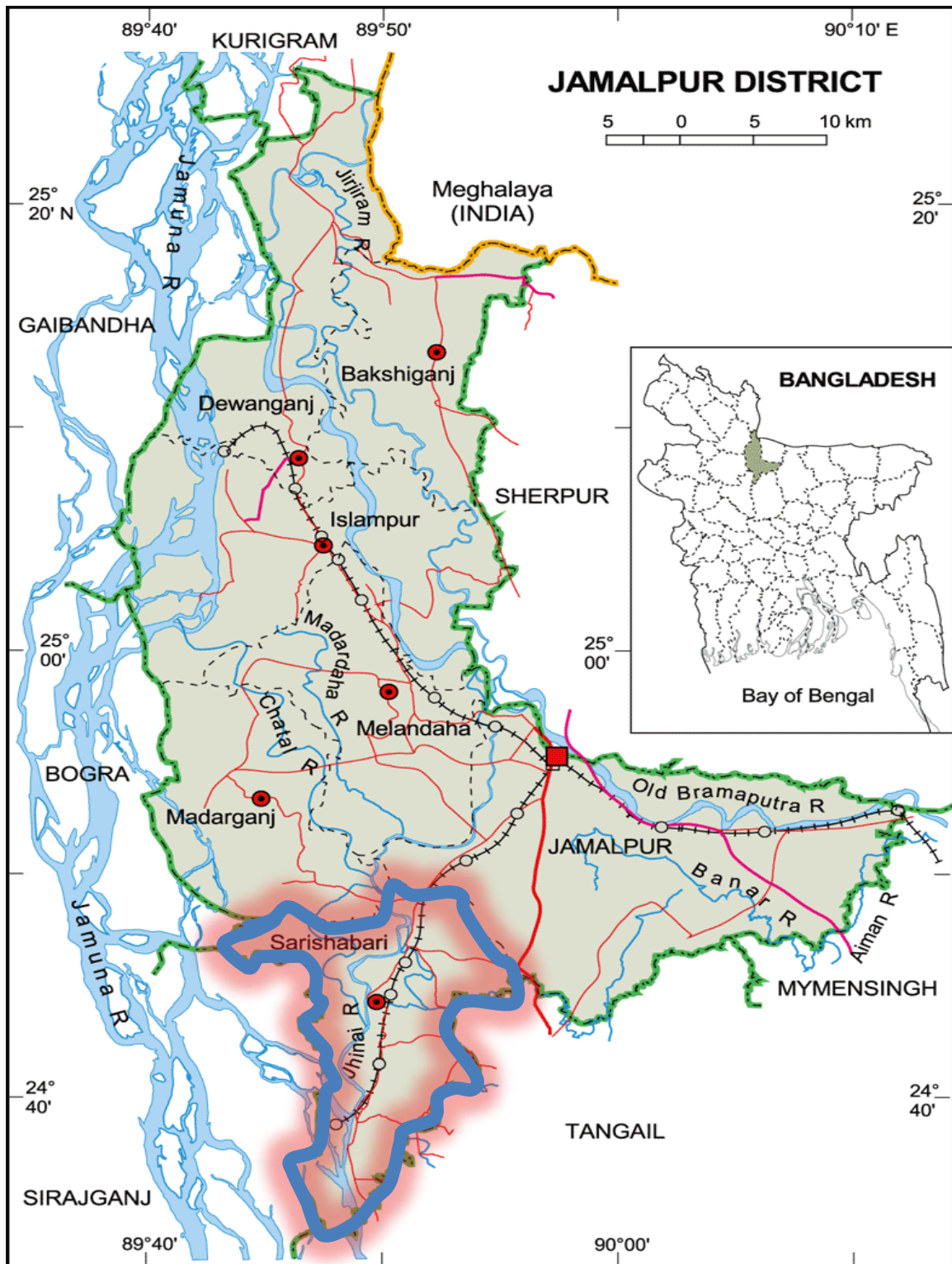


Figure 3.1 A map of Jamalpur district showing Sarishabari upazila

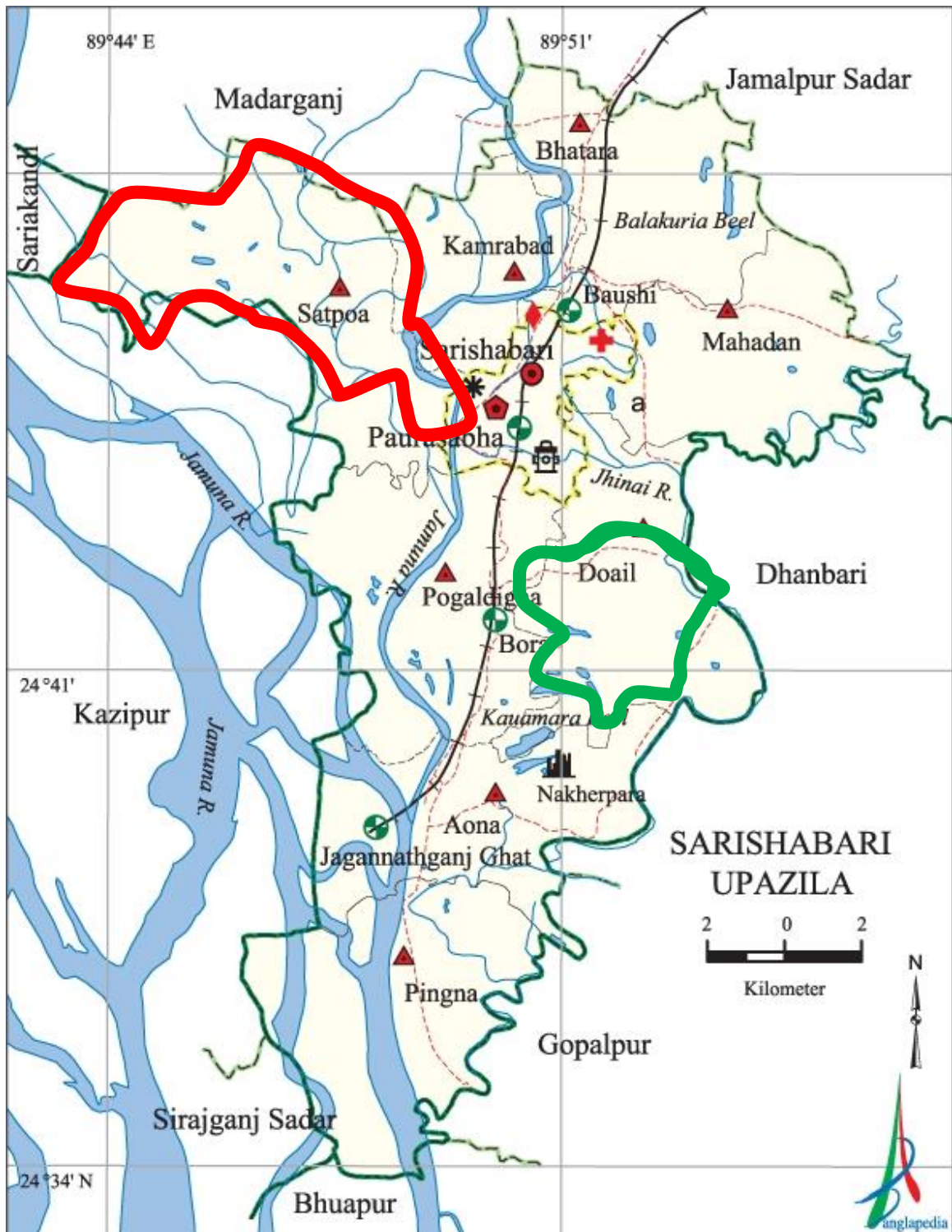


Figure 3.2 A map of Sarishabari Upazila showing study areas

3.2 Population and Sampling Procedure

The numbers of villages of two unions were 32. It was much difficult to conduct on all the farmers of 32 villages within a short period of time. Therefore out of 32 villages 6 villages were selected randomly by taken three (3) from each of the two selected unions and the farmers of these six selected villages constituted the population of the study. The numbers of vegetables growers of these six selected villages were 197, 188, 162, 140, 154 and 193 respectively. Thus, a total of 1034 vegetable growers constituted the population of the study. Out of these 1034 vegetable growers 103 individuals were taken using sample size calculator as the sample of the study which was amount to around 10% of the total population. The village- wise distribution of population and sample of farmers are shown in table 3.1.

A reserved list of 10 vegetable farmers was prepared for use when the vegetable farmers under sample were not available during data collection. The distributions of the selected vegetable farmers with reserve list of the selected villages were shown in the Table 3.1.

Table 3.1 Distribution of selected vegetables farmers in the study areas

Upazila	Unions	Villages	Population	Sample size	Reserved list
Sarishabari	Doail	Rayderpara	197	20	2
		Chaparkona	188	19	2
		Vobanipur	162	16	2
	Satpoya	Satpoya	140	14	1
		Bolardiya	154	15	1
		Adra	193	19	2
Total			1034	103	10

3.3 The Research Instrument

For the purpose of data collection an interview schedule was prepared keeping the objectives of the research in view. The schedule contained both open and closed form questions. Most of the questions were simple and direct, while some scales were included in the schedule to collect data regarding the problem faced by the farmers in vegetable cultivation and relevant matters. The draft schedule was prepared in Bangla and pre-tested before using it for collections of data.

Based on the pre-test experience, necessary corrections, addition, alterations and rearrangements were made in the schedule. Thus the schedule was prepared for final use. The schedule was prepared both in the Bangla and English version. The Bangla version of interview schedule was multiplied as per requirements to collect data from the respondents. An English version of the interview schedule has been presented at Appendix-I.

3.4 Variables and their Measurement

3.4.1 Problem faced by the farmers in vegetable cultivation

This variable was measured by computing the extent of various problems of the respondents with 15 selected items as obtained in response to questions no. 11 of the interview schedule (Appendix A). Each respondent was asked to indicate the extent of his/her problem as 'high', 'medium', 'low' and 'not at all' problem and score was assigned as 3, 2, 1 and 0 respectively.

Finally, the problem faced score of a respondent was determined by summing up his/her scores for all the problems. Thus, possible score could vary from zero (0) to 45, where Zero indicated no problem and 45 indicated the highest problem.

To compare the severity among the problems, Problem Faced Index (PFI) was computed for each problem-item with help of the following formula:

$$PFI = P_h \times 3 + P_m \times 2 + P_l \times 1 + P_n \times 0$$

Where,

PFI = Problem Faced Index

P_h = Number of farmers facing "high problem"

P_m = Number of farmers facing "medium problem"

P_l = Number of farmers facing "low problem"

P_n = Number of farmers facing "no problem"

Thus, the PFI of the problems could range from 0-309, where 0 indicated facing of no

problem and 309 indicated facing of high problem. Rank order was also made with the descending order of the PFI of the problem-items.

3.4.2 Measurement of explanatory variables

For conducting the study in accordance with the objectives it was essential to measure the independent variables. The independent variables for this study are- age, education, family size, annual family income, Vegetable cultivation land, Income from vegetable cultivation, Experience in vegetable cultivation, Training exposure, Media exposure, Knowledge on vegetable cultivation technologies. Procedures followed in measuring the selected variables are described in the subsequent sections.

3.4.2.1 Age

Age of an individual was defined as the period of time from the birth to the time of interview and was operationally measured in terms of years. A score of one (1) was assigned for each year of age. Example, if a respondent is 40 years old, he/she will get 40 score. It was located in the serial no. 1 of the interview schedule.

3.4.2.2 Education

Education of a respondent was measured by the highest grade of formal schooling completed by him or her in any educational institute. If a respondent was found illiterate, he/she was given a score of "0". In case of can sign only the score was given "0.5". A score of 1 was assigned for each class one formally completed or passed. The literate respondents with no formal schooling were assigned scores that seemed appropriate. This variable appears in the serial no. 2 of the interview schedule.

3.4.2.3 Family size

Family size was operationally measured by assigning a score of one for each member of the family who jointly lived and ate together. The members included the respondent himself, his wife, children and other dependent members.

3.4.2.4 Annual family income

Annual family income of farmers was measured in Thousand Taka. The total yearly earning from agricultural (field crops, vegetables, fruits, spices, livestock and fisheries) and nonagricultural sources (service, business, and others) by the respondent himself/herself and other members of his/her family was determined. Thus, yearly earning from agricultural and nonagricultural sources were added together to obtain annual family income of farmers. A score of one was given for each Tk. 1,000 to compute the annual family income scores of the respondents.

3.4.2.5 Vegetable cultivation land

Vegetable cultivation land of a respondent was measured on the basis of the land on which his family carried out vegetable cultivation operations. The data was first recorded in terms of local measurement unit i.e. decimal and then converted into hectare. The total area, thus, obtained is considered as his/her vegetable cultivation land score (assigning a score of one for each hectare of land). This variable appears in item number four (4) in the interview schedule as presented in Appendix.

3.4.2.6 Income from vegetable cultivation

Income from vegetable cultivation of the respondents was measured in thousands taka on the basis of total annual income from vegetable cultivation. It was expressed in Taka. In measuring this variable, total earning of an individual respondent was converted into score. A score of one (01) was given for every one (01) thousand ('000') taka. This variable appears in item number six in the interview schedule as presented in Appendix-A.

3.4.2.7 Experience in vegetable cultivation

Experience in vegetable cultivation was operationalized by counting the number of years a respondent actively involved in vegetable cultivation. For each year of experience in vegetable cultivation of the respondents was assigned by a score of 1 and so on. It was located in the item number 5 of the interview schedule.

3.4.2.8 Training exposure

Training exposure of the farmers was measured by the total number of days he/she participated in different training programmes. A score of one (1) was assigned for each day of training received.

3.4.2.9 Media exposure

The extension contact of a respondent was measured with seven selected extension media. A scale was developed arranging the weights for 0, 1, 2, 3 and 4 for the responses for not at all, rarely, occasionally, frequently and regularly contact with these media respectively. Extension contact score of the respondents could range from 0 to 28, while '0' indicating no extension contact and '28' indicating very high extension contact (Appendix-A).

3.4.2.10 Knowledge on vegetable cultivation technologies

A scale consisting of 20 questions was used to determine the knowledge score of the respondents. The questions were selected from different dimensions of knowledge on vegetable cultivation technologies after thorough consultation with the relevant experts and review of relevant literatures as shown in Appendix A. The score allotted for each question was 2. A respondent could get 2 score against each question for correct response and 0 for wrong or no response and partial score was assigned for partially correct answer. Thus, knowledge score of the respondents could range from 0 to 40, where 0 indicated no knowledge on vegetable cultivation technologies and 40 indicated high knowledge on vegetable cultivation technologies. This variable appears in item number ten (10) in the interview schedule as presented in Appendix-A.

3.5 Collection of data

Data were collected by the researcher himself during 1st June to 30th 2022. Valid pertinent information the researcher made all possible efforts to explain the purpose of the study to the respondents.

Interviews were conducted with the respondents in their homes and farms. While starting interview with respondent, the researcher look all possible care to establish rapport with him/her so that she/he did not feel hesitant or hesitate to furnish proper response to the questions and statements in the schedule. The questions were clearly explained wherever any respondent felt difficulty in understanding properly.

3.5.1 Compilation of data

After completion of field survey data from all the interview schedules were compiled, tabulated and analyzed according to the objectives of the study. In this process, all the responses in the interview schedule were given numerical coded values. Local units were converted into standard units. The responses to the questions in the interview schedules were transferred to a master sheet to facilitate tabulation. Tabulations and cross tabulations were done on the basis of categories developed by the investigator himself.

3.5.2 Categorization of data

For describing the various explanatory and focus variables the respondents were classified into various categories. In developing categories, the researcher was guided by the nature of data and general consideration prevailing on the social system. The procedures have been discussed while describing the variable in the sub-sequent sections of next chapter.

3.6 Statistical Analysis

Data collected from the respondents were analyzed and interpreted in accordance with the objectives of the study. The analysis of data was performed using statistical treatment with SPSS (Statistical Package for Social Sciences) computer program, version 24. Statistical measures as a number, range, mean, standard deviation were used in describing the variables whenever applicable. Pearsons Product Moment Coefficient of Correlation (r) was used in order to explore the relationships between the concerned variables. Throughout the study the 0.01 and 0.05 levels of probability was used as the basis of rejection or accepting a null hypothesis.

CHAPTER IV

RESULTS AND DISCUSSION

In this chapter the findings of this study have been discussed in relation to the present findings and also to those found in other studies. The study investigated the problems faced by the farmers in vegetable cultivation. In accordance with the objectives of the study, presentation of the findings has been made in three sections. The first sections deals with the extent of problems. The second deals with the severity of the problems faced by the farmers in vegetable cultivation, third section deals with the selected characteristics of the farmers and the fourth section deals with relationship between selected characteristics of the farmers with their problems.

4.1 Problem Faced by the Farmers in Vegetable Cultivation

Problem faced by the vegetable farmers was the focus variable of this study. Problem faced by the vegetable farmers was measured by computing problems faced scores according to extent of problems faced in 15 selected problem items in vegetable cultivation. Problem faced by the vegetable farmers range from 22 to 38 against the possible range of 0 to 45 with the mean and standard deviation of 30.53 and of 4.10 respectively. On the basis of problem faced scores, the respondents were classified into three categories namely, low, medium and high problem. The distribution of the respondents according to problem faced by the vegetable farmers under the study is given in Table 4.1.

Table 4.1 Distribution of the farmers according to problems faced in vegetable cultivation

Categories (scores)	Respondents farmers		Mean	SD
	Number	Percent		
Low problem (<Mean-SD i.e. <26)	17	16.51	30.53	4.10
Medium problem (Mean± SD i.e. 26-35)	74	71.84		
High problem (>Mean+ SD i.e. >35)	12	11.65		
Total	103	100.00		

Table 4.1 indicates that among the respondents the highest proportion (71.84%) of the vegetable farmers had medium problem faced as compare to 16.51 percent faced low problem and 11.65 percent faced high problem in vegetable cultivation. This means that

most of the vegetable farmers (88.35%) had low to medium problem faced in vegetable cultivation. It may be due to being from same geographical area and average level of knowledge and experience gathered by the farmers of the locale.

For example, less educated farmers faced more problems which was 9.71% of the total population and it had a negative significant relationship with the focus variable. And this was supported by the study of Pramanik (2001) and Haque (2001) those found significant negative relationship between education and problem in their respective research. Again Experience, Training exposure, knowledge on vegetables cultivation also had negative significant relationship with the problems and the overwhelming proportion of the respondents faced medium problems in their respective characteristics. According to Islam (2008), Alam et al. (2018), Islam (2017) respectively, the characteristics faced negative significant relationship with problem and the majority of the population faced low to medium problem which was 56.31%, 47.57% and 67.96% respectively.

4.2 Comparative severity among the problems faced by the farmers in vegetable cultivation

The observed Problem Faced Index of the problems ranged from 160 to 273 against the possible range of 0-309. Problem Faced Index (PFI) of the selected problems is shown in Table 4.2.

On the basis of PFI, it was observed that “high cost of labour” ranked first followed by “high cost of seed, fertilizer and pesticides”, “lack of quality seed”, “lack of storage facilities”, “lack of fair price”, were the top problems and “lack of irrigation facilities”, “poor knowledge about irrigation management” and “lack of knowledge about market information” were the least problems faced by the farmers in vegetable cultivation.

For example High cost of labour was ranked first with the majority of 79 farmers among 103 and the PFI value was 273. Accordingly High cost of seed, fertilizers and pesticides ranked second which was faced by 76 farmers bearing a PFI value of 269. Lack of quality seed, lack of storage facilities ranked third, fourth and fifth respectively which got 248, 244, 228 PFI value and the number of farmers was 65, 62 and 58. Lack of irrigation

facilities, poor knowledge about irrigation management were in second and third last position with PFI value of 176 and 165 respectively. In this list the last one ranked was lack of knowledge about market information which bore a 160 PFI value and constituted by 26 farmers only.

Table 4.2 Rank order of problems faced by the farmers in vegetable cultivation

Problems	Numbers of farmers				PFI	Rank order
	High	Medium	Low	Not at all		
High cost of labour	79	12	12	0	273	1
High cost of seed, fertilizer and pesticides	76	15	11	1	269	2
Lack of quality seed	65	20	13	5	248	3
Lack of storage facilities	62	23	12	6	244	4
Lack of fair price	58	17	18	10	228	5
Costly transportation facilities	62	10	21	10	227	6
Lack of knowledge about high yielding vegetables varieties	51	23	15	14	214	7
Lack of knowledge about post-harvest technologies	51	20	20	12	213	8
Lack of quality fertilizer	43	21	21	18	192	9
Lack of quality pesticides	32	32	21	18	181	10
Lack of knowledge about recommended seed rate	37	24	19	23	178	11
Lack of knowledge about recommended dose of chemical fertilizer	37	26	14	26	177	12
Lack of irrigation facilities	34	21	32	16	176	13
Poor knowledge about irrigation management	29	28	22	24	165	14
Lack of knowledge about market information	26	33	18	26	160	15

4.3 Selected Explanatory variables

The selected explanatory variables of the farmers include: age, education, family size, annual family income, vegetable cultivation land, income from vegetable cultivation, experience on vegetable cultivation, training exposure, media exposure and knowledge on vegetable cultivation technologies. Some descriptive statistics of these features are given in Table 4.3. Data contained in the Table 4.3 reveal the salient features of the characteristics of the farmers in order to have an overall picture of these characteristics at

a glance. However, for ready reference, separate tables are provided while presenting categorizations, discussing and /or interpreting results concerning each of the characteristics in this chapter.

Table 4.3 The salient features of the selected explanatory variables

Categories	Measuring Unit	Range		Mean	S D
		Possible	Observed		
Age	Years	Unknown	24-70	44.24	10.71
Education	Year of schooling	”	00-16	5.63	3.75
Family size	Number	”	2-9	5.23	1.408
Annual family income	‘000’ Tk.	”	60-310	160.63	55.08
Vegetable cultivation land	Hectare	”	0.12-0.76	0.43	0.15
Income from vegetable cultivation	‘000’ Tk.	”	20-235	103.50	36.34
Experience on vegetable cultivation	Years	”	4-40	15.95	9.44
Training exposure	Score	”	0-24	9.57	5.10
Media exposure	Score	0-28	5-16	10.44	2.27
Knowledge on vegetable cultivation technologies	Score	0-40	14-36	26.88	5.12

4.3.1 Age

Age of the farmers ranged from 24 to 70 years, the average being 44.24 years and the standard deviation, 10.71. All the variables were categorized on the basis of their possible scores except age was categorized based on the classification provided by the Ministry of Youth and Sports, Government of the People’s Republic of Bangladesh. The distribution of the farmers according to their age is shown in Table 4.4.

Table 4.4 Distribution of the farmers according to their age

Categories	Farmers		Mean	SD
	Number	Percent		
Young aged (up to 35)	29	28.15	44.24	10.71
Middle-aged (36-50)	43	41.75		
Old (>50)	31	30.10		
Total	103	100		

Table 4.4 showed that the highest proportion 41.75 percent of the farmers were "middle

aged" category, while 30.10 percent of them were "old aged" category and 28.15 percent of the farmers were "young aged" category. The findings indicate that a large proportion (71.85) of the farmers were middle to old aged. It may due to middle to old aged people have more land ownership than young aged people.

4.3.2 Education

The education scores of the farmers ranged from 0 to 16. The average was 5.63 and the standard deviation was 3.75. On the basis of their educational scores, the farmers were classified into four categories, namely "illiterate (0-0.5), primary (1-5), secondary (6-10) and above secondary (above 10). This distribution was supported by Hoque (2016) and Masud, (2007) and shown in the Table 4.5.

Table 4.5 Distribution of the farmers according to their education

Categories	Farmers		Mean	SD
	Number	Percent		
Illiterate(0-0.5)	10	9.71	5.63	3.75
Primary level(1-5)	40	38.83		
Secondary level(6-10)	44	42.72		
Above secondary level(>10)	9	8.74		
Total	103	100		

Similar result was observed by Nasreen *et al.* (2013) where highest numbers of respondents were completed up to secondary education level. Table 4.5 indicated that the majority (42.72 percent) of the farmers had secondary level of education compared to 8.74 percent of them having above secondary. About 9.71 percent of the farmers were illiterate, while 38.83 percent had primary level of education. Thus, the overwhelming majority (81.55 percent) of the farmers were primary to secondary level of education. The findings thus, indicate that the current literacy rate in the study area is higher than that of the national average of 72.60 percent (BBS, 2020).

4.3.3 Family size

To describe the family size of the respondents, the category has been followed as represented by

Poddar (2015). Family size scores of the fanners ranged from 2 to 9 with an average of 5.23 and standard deviation of 1.41. According to family size, the respondents were classified into three categories (Mean±SD) as shown in Table 4.6.

Table 4.6 Distribution of the farmers according to their family size

Categories	Farmers		Mean	SD
	Number	Percent		
Small family (up to 4)	32	31.07	5.23	1.41
Medium family (5-6)	56	54.37		
Large family (above 6)	15	14.56		
Total	103	100		

Data contained in Table 4.6 indicates that (54.37%) of the farmers had medium family while 14.56 percent of them had large family and 31.07 percent of them had small family. Thus, the overwhelming majority (85.44 percent) of the farmers were small to medium family size which is consistent with national scenario.

The analysis result showed that there is no significant relationship between problems and family size of the farmers. The similar result was found in the study of Alam et al. (2018) and Arafat (2018). They found a non-significant negative relationship between family size and problems in bean cultivation and guava marketing. It seems that the family contribution in farming is declining now-a-days and dependency on machinery is increasing. It also may be due to the increased financial capability of maintaining medium to large family of the farmers.

4.3.4 Annual family income

Annual income score of the respondents ranged from 60 to 310 with an average of 160.63 and standard deviation 55.08. On the basis of the observed scores, the respondents were classified into three categories (Mean ±0.5SD) as shown in Table 4.7.

Table 4.7 Distribution of the farmers according to their annual family income

Categories	Farmers		Mean	SD
	Number	Percent		
Low income (<Mean-SD i.e. <105.55)	17	16.50	160.63	55.08
Medium income (Mean±SD i.e.105.55-215.71)	67	65.05		
High income (>Mean+SD i.e. >215.71)	19	18.45		
Total	103	100		

Data presented in Table 4.7 indicate that the highest proportion (65.05 percent) of the respondent had medium annual family income, while (16.50 percent) had low annual income and (18.45 percent) had high annual family income. Overwhelming majority (81.55 percent) of the farmers had low to medium annual family income. Dominance of low income farmers may due to poor socio-economic condition, small and medium farm size of the majority farmers. As well as average annual income of the locale was lower than the national average of \$2824 USD (Economic survey 2021-22). It may due to more involvement of the farm families in business, service and getting foreign remittance.

Analysis showed that there is a negative significant relationship between annual family income and problem faced by the farmers. Arafat et al.(2018) and Azad et al.(2014)that income from vegetable cultivation of the vegetable growers has significant negative relationship with problem faced in vegetable cultivation.

4.3.5 Vegetable cultivation land

The vegetable cultivation land of the respondents varied from 0.12 to 0.76 hectares. The average vegetable cultivation land was 0.43 hectare with a standard deviation of 0.15. The respondents were classified into two categories based on their vegetable cultivation land as followed by DAE (DAE, 1999): "marginal farm" (upto 0.2 ha) and "small farm" (0.21 – 1.0 ha). The distribution of the farmers according to their vegetable cultivation land is shown in Table 4.8.

Table 4.8 Distribution of the farmers according to their vegetable cultivation land

Categories	Farmers		Mean	SD
	Number	Percent		
Marginal farm (up to 0.2 ha)	7	6.80	0.43	0.15
Small farm (0.21-1.0 ha)	96	93.20		
Total	103	100		

Table 4.8 indicated that the majority (93.20 percent) of the farmers possessed small vegetable land and 6.80% of the farmers having marginal vegetable cultivation land. The average farm size of the farmers of the study area (.43 hectares) was lowerthan that of national average (0.60 hectare) of Bangladesh (BBS, 2020).

According to the correlation result there is no significant relationship between vegetable cultivation land and problems. This statement is supported by Alam et al. (2018) and

Haque (2006) who demonstrated that there is non-significant relationship between vegetable cultivation land and problems. It may be due to the majority of the farmers own almost similar amount of land. Although Islam (2017) found a significant positive relationship with problems and vegetable cultivation land.

4.3.6 Income from vegetable cultivation

Income from vegetable cultivation of the respondent farmers ranged from 20 to 235 thousand taka with a mean and standard deviation of 103.50 and of 36.34 respectively. The farmers were classified into three categories, viz. low, medium and high income on the basis of mean \pm 0.5 SD. The distribution of the farmers according to income from vegetable cultivation is presented in Table 4.9.

Table 4.9 Distribution of the farmers according to their income from vegetable cultivation

Categories (000 taka)	Farmers		Mean	SD
	Number	Percent		
Low income (<Mean-SD i.e. <67.16)	11	10.68	103.50	36.34
Medium income (Mean \pm SD i.e. 67.16-139.84)	78	75.73		
High income (>Mean+ SD i.e. >139.84)	14	13.59		
Total	103	100.00		

Data reveal that the farmers having medium income from vegetable cultivation constitute the highest proportion (75.73%) followed by low income (10.68%) and high income (13.59%). Overwhelming majority (86.41%) of the farmers has low to medium income from vegetable cultivation. It may be due to the fragmentation of lands and decreasing the rate of participation of the educated families in farming activities .

Analysis showed that there is a negative significant relationship between income from vegetable cultivation and problems at 1% significant level of probability which means that when the income from vegetables cultivation increases problem decreases. Similar result found in the study of Azad et al. (2014) and Pandit et al. (2013) who showed a significant negative relationship between income from vegetable and problem faced in vegetable cultivation and marketing whereas Ahmed et al. (2018) found the odd.

4.3.7 Experience on vegetable cultivation

Computed scores of the farmers about experience ranged from 4 to 40 years with a mean of 24.58 and standard deviation of 13.49. On the basis of farming experience, the respondents were classified into three categories as follows in Table 4.10.

Table 4.10 Distribution of the farmers according to their experience

Categories	Farmers		Mean	SD
	Number	Percent		
Low experience ($< \text{Mean} - \text{SD}$ i.e. < 11.09)	41	39.81	24.58	13.49
Medium experience ($\text{Mean} \pm \text{SD}$ i.e. $11.09 - 38.07$)	58	56.31		
High experience ($> \text{Mean} + \text{SD}$ i.e. > 38.07)	4	3.88		
Total	103	100		

Data contained in Table 4.10 showing that 56.31 percent of the farmers had medium experience in vegetable cultivation, whereas 39.81 percent had low experience in vegetable cultivation and only 3.88 percent had high experience in vegetable cultivation. Experience in vegetable cultivation is helpful to increase knowledge, improve skill and change attitude of the farmers. It also builds confidence of the farmers for making appropriate decisions at the time of need. The findings of the present study again revealed that majority (56.31%) of the farmers in the study area had low to medium experience in vegetable cultivation. It may be due to their involvement in other crops cultivation previously or facing constraints in cultivating vegetable.

It was found that there is a negative significant relationship between experience and problems faced by farmers in vegetable cultivation. It means when experience increases problems will be decreased. Islam (2008) found that similar findings on vegetable production by woman members in homestead area under world vision project.

4.3.8 Training exposure

The score of training exposure of the farmers ranged from 0 to 24 days, the mean being 9.57 and standard deviation of 5.10. Based on training exposure, the farmers were classified into three categories namely 'no', 'low', 'medium' and 'high'. The distribution of the farmers according to their training exposure is presented in Table 4.11.

Table 4.11 Distribution of the farmers according to their training exposure

Categories according to training (no. of days)	Respondents farmers		Mean	Standard deviation
	Number	Percent		
No training (0)	9	8.74	9.57	5.10
Low training (1-8)	39	37.86		
Medium training (9-16)	49	47.57		
High training (above 16)	6	5.83		
Total	103	100.00		

Data contained in Table 4.11 indicate that majority (47.57%) of the farmers had medium training exposure; while 8.74 percent of the farmers had no training exposure, 37.86 percent had low training and 5.83 of the farmers had high training exposure. It means that an overwhelming majority (85.43%) of the farmers had low to medium training exposure. Training increases knowledge and skills of the farmers in a specific area. Individuals who gain high training exposure are likely to be more competent in performing in different activities. But the fact of worry is that the vegetable farmers of the locale received low training, therefore there needs attention of the authorities of extension services (GOs and NGOs) in the country.

Analysis revealed that there is a significant negative relationship between training exposure and problems in vegetable cultivation at 1% level of probability which means when training exposure increases problems will be decreased significantly. Basher (2006) found that training exposure of the farmers had high significant negative relationship with their problem confrontation in mushroom cultivation.

4.3.9 Media exposure

Media exposure scores of the farmers ranged from 5 to 16 and the possible range was 0-28 with an average of 10.44 and standard deviation of 2.27. On the basis of their media contact, the respondents were classified into three categories (Mean \pm SD) namely, low, medium and high. The scale used for computing the media exposure score of a respondent is given Table 4.12.

Table 4.12 Distribution of the farmers according to their media exposure

Categories (Scores)	Farmers		Mean	SD
	Number	Percent		
Low (<Mean-SD i.e. <8)	22	21.36	10.44	2.27
Medium (Mean± SD i.e. 8-13)	67	65.05		
High (>Mean+ SD i.e. >13)	14	13.59		
Total	103	100		

Data contained in the Table 4.12 indicated that the highest proportion (65.05%) of the respondents had medium media exposure as compared to (21.5%) and (13.59%) having low and high media exposure respectively. The majority (86.41%) of the respondents had low to medium extension contact.

According to correlation co-efficient value media exposure had no significant relationship between media exposure and problems . Ismail (2001) found similar result in their study of farm youth's extension contact and their agricultural problem confrontation.

4.3.10 Knowledge on vegetable cultivation technologies

The computed knowledge on vegetable cultivation technologies scores of the farmers ranged from 14 to 36 against the possible range of 0 to 40, the mean being 26.88 and standard deviation of 5.13. Based on their vegetable cultivation knowledge scores, the farmers were classified into three categories namely 'low, 'medium' and 'high' as shown in Table 4.13.

Table 4.13 Distribution of the farmers according to their vegetable cultivation knowledge

Categories (scores)	Respondents farmers		Mean	SD
	Number	Percent		
Low (Mean-SD i.e. <22)	20	19.42	26.88	5.13
Medium (Mean S± D i.e. 22-32)	70	67.96		
High (>Mean +SD i.e. >32)	13	12.62		
Total	103	100.00		

Data presented in the Table 4.13 indicates that majority (67.96%) of the farmers had medium vegetable cultivation knowledge as compared to 12.26 percent had high and 19.42 percent had low vegetable cultivation knowledge. This means that most of the vegetable farmers (67.96%) had low to medium vegetable cultivation knowledge. It may

be due to conventional practice of farming amongst the medium to old aged farmers for years.

Analysis revealed that there is a highly significant negative relationship between knowledge and problems faced by the farmers that happened at 1% level of probability which means when the knowledge of the farmers increases problems will definitely decrease. Alam et al. (2018) found a significant negative relationship between knowledge and problems faced in bean cultivation.

4.4 Relationship between the Selected Variables of the Farmers and their Problems Faced in Vegetable Cultivation

Coefficient of correlation was computed in order to explore the relationship between the selected characteristics of the farmers and their problems faced in vegetable cultivation. The selected characteristics constituted the independent variables and problems faced in vegetable production by the farmers constituted the focus variable.

In order to determine the relationship between eleven selected characteristics (explanatory variables) of the farmers viz. age, education, family size, annual family income, vegetable cultivation land, income from vegetable cultivation, experience on vegetable cultivation, training exposure, media exposure, knowledge on vegetable cultivation technologies and the focus variable i.e., problems faced by the vegetable farmers Pearson's Product Moment Correlation was used. Co-efficient of correlation (r) has been used to test the null hypothesis concerning the relationship between the variables. To reject or accept the null hypothesis at 0.05 and 0.01 level of probability was used. A statistically significant and non-significant relationship was observed when the computed value of " r " was greater or smaller than the tabulated value, respectively.

From this correlation test, it was found that education, annual family income, income from vegetable cultivation, experience on vegetable cultivation, training exposure and knowledge on vegetable cultivation technologies of the farmers had negative significant relationship with their problems faced by the farmers in vegetable cultivation. Beside

these four (4) characteristics, rest four characteristics of the farmers (age, family size, vegetable cultivation land and media exposure) had no significant relationship with their problems faced by the farmers in vegetable cultivation. Interco-relation among all the variables may be seen in Appendix-B.

The summary of the results of the Co-efficient of Correlation indicating the relationship between the selected characteristics of the farmers and their problems faced in vegetable cultivation are shown in Table 4.14.

Table 4.14 Pearson’s product moment co-efficient of the correlation showing Relationship between focus and explanatory variables

Focus variable	Explanatory variables	Tabulated value		Value of coefficient correlation with 101 df
		0.05	0.01	
Problems faced by the farmers in vegetable cultivation	Age	0.192	0.251	-0.151 ^{NS}
	Education			- 0.200*
	Family size			-0.061 ^{NS}
	Annual family income			-0.512**
	Vegetable cultivation land			-0.162 ^{NS}
	Income from vegetable cultivation			-0.443**
	Experience on vegetable cultivation			- 0.375**
	Training exposure			-0.325**
	Media exposure			-0.176 ^{NS}
	Knowledge on vegetable cultivation technologies			-0.402**

* = Significant at 0.05 level of probability

** = Significant at 0.01 level of probability

4.4.1 Age and problems faced by the farmers in vegetable cultivation

The computed value of “r” (-0.151) was smaller than that of the tabulated value (r=0.192) with 101 degrees of freedom at 0.05 level of probability as shown in Table 4.14. Hence, the concerned null hypothesis was accepted and it was concluded that age of the farmers had no significant relationship with their problems faced by the farmers in vegetable cultivation.

4.4.2 Relationship between education level of the farmers and their problems faced in vegetable cultivation

The coefficient of correlation between level of education and problem faced by the farmers in vegetable cultivation is presented in Table 4.14. The coefficient of correlation between the concerned variables was found to be -0.200. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study:

- a. The observed value between the concerned variables “ r ” (-0.200) was found to be greater than the tabulated value ($r = 0.192$) with 101 degrees of freedom at 0.05 level of probability.
- b. The null hypothesis could be rejected.
- c. The relationship between the concerned variables was statistically significant at 0.05 level of probability.
- d. The relationship showed a negative trend between the concerned variables.

Based on the above findings it was concluded that level of education had significant negative relationships with the problem faced by the farmers in vegetable cultivation. This represents that level of education of the farmers was an important factor in problem faced and with the increases of education problem faced by the farmers in vegetable cultivation decreases.

4.3.3 Family size and problems faced by the farmers in vegetable cultivation

The computed value of “ r ” (-0.061) was smaller than that of the tabulated value ($r=0.192$) with 101 degrees of freedom at 0.05 level of probability as shown in Table 4.14. Hence, the concerned null hypothesis was accepted and it was concluded that family size of the farmers had no significant relationship with their problems faced by the farmers in vegetable cultivation.

4.4.4 Relationship between annual family income of the farmers and their problems faced in vegetable cultivation

The coefficient of correlation between annual family income and problem faced by the vegetable farmers is presented in Table 4.14. The coefficient of correlation between the concerned variables was found -0.512. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study:

- a. The observed value between the concerned variables “r” (-0.512) was found to be greater than the tabulated value ($r = 0.251$) with 101 degrees of freedom at 0.01 level of probability.
- b. The null hypothesis could be rejected.
- c. The relationship between the concerned variables was statistically significant at 0.01 level of probability.
- d. The relationship showed a negative trend between the concerned variables.

Based on the above findings it was concluded that annual family income had significant negative relationship with the problem faced by the farmers in vegetable cultivation. This represents that annual family income of the farmers was an important factor in problem faced and with the increases of annual family income problem confrontation of farmers in vegetable cultivation also decreases.

4.4.5 Relationship between vegetable cultivation land and problems faced by the farmers in vegetable cultivation

The computed value of “r” (-0.162) was smaller than that of the tabulated value ($r=0.192$) with 101 degrees of freedom at 0.05 level of probability as shown in Table 4.14. Hence, the concerned null hypothesis was accepted and it was concluded that vegetable cultivation land of the farmers had no significant relationship with their problems faced by the farmers in vegetable cultivation.

4.4.6 Relationship between income from vegetable cultivation of the farmers and their problems faced in vegetable cultivation

The coefficient of correlation between income from vegetable cultivation and problem faced by the vegetable farmers is presented in Table 4.14. The coefficient of correlation between the concerned variables was found -0.443. The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study:

- a. The observed value between the concerned variables “r” (-0.443) was found to be greater than the tabulated value ($r = 0.251$) with 101 degrees of freedom at 0.01 level of probability.
- b. The null hypothesis could be rejected.
- c. The relationship between the concerned variables was statistically significant at 0.01 level of probability.
- d. The relationship showed a negative trend between the concerned variables.

Based on the above findings it was concluded that income from vegetable cultivation had significant negative relationship with the extent problem faced by the farmers in vegetable cultivation. This represents that income from vegetable cultivation of the farmers was an important factor in problem faced and with the increases of income from vegetable cultivation problem confrontation of farmers in vegetable cultivation also decreases.

4.4.7 Relationship between experience on vegetable cultivation of farmers and their problems faced in vegetable cultivation

The coefficient of correlation between experience on vegetable cultivation and problem faced by the farmers in vegetable cultivation is presented in Table 4.14. The coefficient of correlation between the concerned variables was found (-0.375). The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study:

- a. The observed value between the concerned variables “r” (-0.375) was found to be greater than the tabulated value ($r = 0.251$) with 104 degrees of freedom at 0.01 level of probability.

- b. The null hypothesis could be rejected.
- c. The relationship between the concerned variables was statistically significant at 0.01 level of probability.
- d. The relationship showed a negative trend between the concerned variables.

Based on the above findings it was concluded that experience on vegetable cultivation had significant negative relationships with the problem faced by the farmers in vegetable cultivation. This represents that experience on vegetable cultivation of the farmers was an important factor in problem faced and with the increases of experience on vegetable cultivation problem faced by the farmers in vegetable cultivation decreases.

4.4.8 Relationship between training exposure of farmers and their problems faced in vegetable cultivation

The coefficient of correlation between training and problem faced by the farmers in vegetable cultivation is presented in Table 4.14. The coefficient of correlation between the concerned variables was found (-0.325). The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study:

- a. The observed value between the concerned variables “r” (-0.325) was found to be greater than the tabulated value ($r = 0.251$) with 101 degrees of freedom at 0.01 level of probability.
- b. The null hypothesis could be rejected.
- c. The relationship between the concerned variables was statistically significant at 0.01 level of probability.
- d. The relationship showed a negative trend between the concerned variables.

Based on the above findings it was concluded that training had significant negative relationships with the extent of problem faced by the farmers in vegetable cultivation. This represents that training exposure of the farmers was an important factor in vegetable production and with the increase of training exposure, the extent of problems confrontation of the farmers in vegetable cultivation decreases.

4.4.9 Relationship between media exposure of farmers and their problems faced in vegetable cultivation

The computed value of “r” (-0.176) was smaller than that of the tabulated value ($r=0.192$) with 101 degrees of freedom at 0.05 level of probability as shown in Table 4.14. Hence, the concerned null hypothesis was accepted and it was concluded that media exposure of the farmers had no significant relationship with their problems faced by the farmers in vegetable cultivation.

4.4.10 Relationship between knowledge on vegetable cultivation of farmers and their problems faced in vegetable cultivation

The coefficient of correlation between knowledge on vegetable cultivation and problem faced by the farmers in vegetable cultivation is presented in Table 4.14. The coefficient of correlation between the concerned variables was found (- 0.402). The following observations were made on the basis of the value of correlation coefficient between the two concerned variables of the study:

- a. The observed value between the concerned variables “r” (-0.402) was found to be greater than the tabulated value ($r = 0.251$) with 101 degrees of freedom at 0.01 level of probability.
- b. The null hypothesis could be rejected.
- c. The relationship between the concerned variables was statistically significant at 0.01 level of probability.
- d. The relationship showed a negative trend between the concerned variables.

Based on the above findings it was concluded that knowledge on vegetable cultivation had significant negative relationships with the problem faced by the farmers in vegetable cultivation. This represents that knowledge on vegetable cultivation of the farmers was an important factor in problem faced and with the increases of knowledge on vegetable cultivation problem faced by the farmers in vegetable cultivation decreases.

The relation provides the statement that if the knowledge of the respondents increase their problems will be decreased. Because knowledge increases the skill and practice of the individuals which will help them to mitigate the constraints.

CHAPTER-V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings

5.1.1 Problems Faced by the Farmers in Vegetable Cultivation

Problem faced by the vegetable farmers range from 22 to 38 against the possible range of 0 to 45 with the mean and standard deviation of 30.53 and of 4.10 respectively. The respondents the highest proportion (71.84%) of the vegetable farmers had medium problem faced as compare to 16.51 percent faced low problem and 11.65 percent faced high problem in vegetable cultivation.

5.1.2 Comparative severity among the problems faced by the farmers in vegetable cultivation

The observed Problem Faced Index of the problems ranged from 160 to 273 against the possible range of 0-309.

On the basis of PFI, it was observed that “high cost of labour” ranked first followed by “high cost seed, fertilizer and pesticides”, “lack of quality seed”, “lack of storage facilities”, “lack of fair price”, “were the top problems and “lack of irrigation facilities”, “poor knowledge about irrigation management” and “lack of knowledge about market information” were the least problems faced by the farmers in vegetable cultivation.

5.1.3 Selected characteristics of the vegetable growers

Age: The highest proportion 41.75 percent of the farmers were "middle aged" category, while 30.10 percent of them were "old aged" category and 28.15 percent of the farmers were "young aged" category.

Education: The majority (42.72 percent) of the farmers had secondary level of education compared to 8.74 percent of them having above secondary. About 9.71 percent of the farmers were illiterate, while 38.83 percent had primary level of education.

Family size: The majority (54.37%) of the farmers had medium family while 14.56 percent of them had large family and 31.07 percent of them had small family.

Annual family income: The highest proportion (65.05 percent) of the respondent had medium annual family income, while (16.50 percent) had low annual income and (18.45 percent) had high annual family income.

Vegetable cultivation land: The majority (93.20 percent) of the farmers possessed small vegetable land and 6.80% of the farmers having marginal vegetable cultivation land.

Income from vegetable cultivation: The farmers having medium income from vegetable cultivation constitute the highest proportion (75.73%) followed by low income (10.68%) and high income (13.59%).

Experience in vegetable cultivation: Most 56.31 percent of the farmers had medium experience in vegetable cultivation, whereas 39.81 percent had low experience in vegetable cultivation and only 3.88 percent had high experience in vegetable cultivation.

Training exposure: The majority (47.57%) of the farmers had medium training exposure; while 8.74 percent of the farmers had no training exposure, 37.86 percent had low training and 5.83 of the farmers had high training exposure.

Media exposure: The highest proportion (65.05%) of the respondents had medium media exposure as compared to (21.5%) and (13.59%) having low and high media exposure respectively

Knowledge on vegetable cultivation technologies: The majority (67.96%) of the farmers had medium vegetable cultivation knowledge as compared to 12.26 percent had high and 19.42 percent had low vegetable cultivation knowledge.

5.1.4 Relationship between the selected Variables of the farmers and their problems faced in vegetable cultivation

Coefficient of correlation was computed in order to explore the relationship between the selected characteristics of the farmers and their problems faced in vegetable cultivation. From this correlation test, it was found that education, annual family income, income from vegetable cultivation, experience on vegetable cultivation, training exposure and knowledge on vegetable cultivation technologies of the farmers had negative significant relationship with their problems faced by the farmers in vegetable cultivation. Beside these four (4) characteristics, rest four characteristics of the farmers (age, family size, vegetable cultivation land and media exposure) had no significant relationship with their problems faced by the farmers in vegetable cultivation.

5.2 Conclusions

Following conclusions were drawn on the basis of findings, logical interpretation and other relevant facts of the study.

1. Overwhelming majority (71.84 percent) of the vegetable growers faced medium problems in vegetable cultivation. Pearson product moment correlation also revealed that problems faced in vegetable cultivation. Therefore, it may be concluded that individuals having more knowledge faced low problems in vegetable.
2. About half (47.57%) of the vegetable farmers can sign only or had primary level education. There existed a negative significant relationship between education of the vegetable farmers and their problems faced. Therefore, it may be concluded that an appreciable proportion of the vegetable farmers will not continue to face problems in bean cultivation, if suitable steps are taken to remove illiteracy from the vegetable farmers.
3. Most of the vegetable farmers (85.43%) had low training to medium training. Findings expressed that training exposure had significant negative relationship with their problems faced in vegetable cultivation. So, it may be concluded that any attempt to increase training exposure would ultimately decrease problems in

case of vegetable cultivation.

4. Almost 65.05% of the farmers had low to medium income. Again 19.42% of the farmers had no to low knowledge on vegetable cultivation technologies. Findings expressed that both income and knowledge on vegetable cultivation technologies of the farmers had significant negative relationship with their problems faced in vegetable cultivation. So, it may be concluded that if the farmer come in more contact of extension provider, electronics, printed media and extends their knowledge on vegetable cultivation technologies they will face less problems in vegetable cultivation.
5. On the basis of PFI, the farmers faced serious problems in high cost of labour, seed fertilizer and pesticides are costly input, lack of quality seed and lack of storage facilities. Therefore, it may be concluded that necessary steps should be taken by the concerned authorities to minimize these problems with priority.

5.3 Recommendations

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

5.3.1 Recommendation for policy implication

1. The findings indicated that an overwhelming majority (87.74%) of the vegetable farmers faced medium to high problem. So, it may be recommended that necessary steps should be taken by concerned authority to remove these problems so that they can make their vegetable cultivation profitable by increasing vegetable yield with less production cost.
2. The findings of the study indicated that education had significant negative relationship with problems faced by the vegetable farmers in vegetable cultivation. Therefore, it may be recommended that the concerned authorities should take the special mass education program for the illiterate and low literate vegetable farmers for solving their problems.
3. The findings revealed that the training exposure had a significant negative relationship with the problems faced by the vegetable farmers in vegetable cultivation. So, it may be recommended that the concerned authority should increase training facilities to develop

skills of the vegetable farmers technologically so that they can minimize their problems.

4. The findings indicated that annual family income had a negative significant relationship with the problems faced by the farmers in vegetable cultivation. Therefore, it may be recommended that the extension provider of concerned authority should target those farmers in formation of common interest group, IPM club to increase their annual family income.

5. The findings revealed that experience on vegetable cultivation had a significant negative relationship with the problems faced by the farmers in vegetable cultivation. So, it may be recommended that the extension workers of the concerned authority should increase their contact with farmers personally and motivate them to be connected with electronic and printed media that can help them to exchange related information which will reduce their problems.

6. The findings indicated that vegetable cultivation knowledge had significant negative relationship with the problems faced by the vegetable farmers in vegetable cultivation. Thus, it may be recommended that the extension provider of concerned authority should take the necessary steps to increase their vegetable cultivation knowledge through motivation, group discussion, group meeting, day training program, demonstration, etc to decrease their vegetable cultivation problems.

5.3.2 Recommendations for the future study

The following recommendations are made for the future study:

1. The present study conducted on the population of the farmers of 5 villages of two unions under Sarishabari Upazilla of Jamalpur district. The findings of the study need to be verified by undertaking similar research in other vegetable growing zones of the country.
2. The study investigated the relationships of the ten selected characteristics of the farmers with their problems faced in vegetable cultivation. But farmer's problems into vegetable cultivation might be affected by other various personal, social, psychological, cultural and situational factors of the farmers. It is, therefore, recommended that further study should be conducted involving other

characteristics in this regard.

3. In addition to problems in vegetable cultivation, the farmers also faced other problems such as social, economic, housing, sanitation, nutrition and domestic etc. Therefore, it may be recommended that research should be conducted relation to other problems of the farmer.
4. The research was conducted to find out the problems faced by the farmers in vegetable cultivation. Further research should be taken related to other issues like inter cropping, other crop cultivation problems etc.

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APPENDIX-A
THE INTERVIEW SCHEDULE
Department of Agricultural Extension and Information System
 Sher-e-Bangla Agricultural University Dhaka-1207

An Interview Schedule for the Study Entitled

**PROBLEM FACED BY THE FARMERS IN VEGETABLE CULTIVATION IN
 THE SELECTED AREA OF SARISHABARI UPAZILLA UNDER JAMALPUR
 DISTRICT**

Serial No:.....

Name of the respondent:.....

Village:.....

Union:

Upazila:.....

District:.....

Mobile No:.....

(Please answer the following questions put tick wherever necessary)

1. Age: How old are you?. years

2. Education: Please mention your educational status.

- (a) Can't read or write----
- (b) Can sign only-----
- (c) Read up to class -----
- (d) Others (specify).....

3. Family size: Please mention the members of your family members (including yourself)

A. Male numbers

B. Female.numbers

Total A+B=.....

4. Annual family income:

Please indicate your annual income (Thousand Taka) from the following different sources

SL No.	Source of Income	Total price (Tk)
Agricultural Source		
01	Crop	
02	Livestock	
03	Poultry	
04	Fisheries	
Sub-Total (A)		
Non-agricultural source of income		
01	Business	
02	Service	
03	Labor	
04	Others (If any)	
Sub-total (B)		
Total (Sub-Total A + Sub-Total B)		

5. Please mention your vegetables cultivation land

Season	Name of vegetables	Types of land			
		Main land	Decimal	Homestead	Decimal
Rabi	1				
	2				
	3				
	4				
Kharif	1				
	2				
	3				
	4				
	5				

6. Income from vegetable cultivation: Please mention your annual income from vegetable cultivation.

..... (Thousand Taka)

7. Experience in vegetable cultivation: How many years have you been involved in vegetable cultivation? year(s).

8. Training exposure: Have you received any training related to vegetables cultivation? Yes/No
If yes, please mention the name the following ones:

SL. No.	Name of the training course	Name of the organization	Days
01			
02			
03			

9. Media exposure: Please indicate the nature of your contact with the following information media.

SL. No	Media of Sources	Nature of visit				
		Regularly	Often	Occasionally	Rarely	Not at all
01	Progressive farmers/Neighbors	More than 7-8times/ month	5-6times/ month	3-4 times/ month	1-2 times / month	
02	Input dealers	More than 4 times/ month	3 times/ month	2 times/ month	1 time/ month	
03	Sub- Assistant Agriculture Extension Officer	More than 5 times /month	4-5 times /month	2-3 times/ month	1 time /month	
04	Agriculture extension officer	More than 6 times/year	5-6times/ year	3-4 times/ year	1-2 time/ year	
05	NGO workers	More than 5 times /month	4-5 times/ year	2-3 times/ year	1 time/ year	
06	Listening vegetables production programmed in Radio	More than5 times /month	4-5 times/ month	2-3 times/ month	1 time/ month	

07	Watching vegetable production programmed in TV	More than 5 times / month	4-5 times/ month	2-3 times/ month	1 time/ month	
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10. Knowledge on vegetable cultivation technologies

Please answer the following questions:

Sl. no.	Questions	Total Marks	Marks obtained
1	How do you prepare land during potato cultivation?	2	
2	Mention the procedure of seedbed preparation in tomato cultivation	2	
3	Mention the seed rate in potato cultivation	2	
4	Mention one harmful insect of brinjal	2	
5	Mention one disease of Tomato	2	
6	Mention the name of two winter vegetables	2	
7	Mention two name of summer vegetables	2	
8	Mention two green manuring crops	2	
9	What do you mean by organic fertilizer?	2	
10	Mention the rate of urea fertilizer for one hectare in tomato cultivation	2	
11	Mention the management procedure of earthing up for potato cultivation	2	
12	Mention damaging the nature of late blight of potato	2	
13	Mention the damaging nature of wilting of brinjal	2	
14	Mention the damaging nature of brinjal fruit and shoot Borer	2	
15	How do you control late blight of potato?	2	
16	Mention maturity symptom of cabbage	2	
17	What is integrated pest management?	2	
18	Mention two insecticides used in vegetables cultivation	2	
19	Mention the name of vegetables that can be stored in Home	2	
20	How can you prepare vegetables seedling during flood?	2	

11. Problem faced by the farmers in vegetable cultivation

Mention the extent of your problems in vegetable cultivation in the following cases

Sl no.	Type of problem	Extent of problem			
		High (3)	Medium (2)	Low problem (1)	Not at all (0)
1	Lack of quality seed				
2	Lack of quality fertilizer				
3	Lack of quality pesticides				
4	Unavailability of fertilizer and pesticides				
5	Lack of irrigation facilities				
6	high cost of seed fertilizer and pesticides				
7	High cost of labour				

8	Lack of knowledge about post-harvest technologies				
9	Lack of knowledge about high yielding vegetables varieties				
10	Lack of knowledge about recommended dose of pesticides				
11	Poor knowledge about irrigation management				
12	Lack of storage facilities				
13	Costly transportation facilities				
14	Lack of knowledge about market information				
15	Lack of fair price				

Thanks for your kind co-operation.

Dated:

(Signature interviewer)

APPENDIX-B

Correlations matrix between explanatory variables and focus variable

Variables	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	Y
X ₁	1										
X ₂	-.637**	1									
X ₃	.435**	-.347**	1								
X ₄	-.007	.225*	.034	1							
X ₅	-.207*	.255**	-.132	.376**	1						
X ₆	-.065	.290**	-.112	.775**	.484**	1					
X ₇	.728**	-.372**	.327**	.158	-.087	.031	1				
X ₈	-.003	.218*	.017	.143	.276**	.300**	.132	1			
X ₉	-.159	.188	-.186	.202*	.120	.175	-.098	.224*	1		
X ₁₀	.052	.211*	-.133	.333**	.335**	.467**	.249*	.371**	.296**	1	
Y	-.151	-.200*	-.061	-.512**	-.162	-.443**	-.375**	-.325**	-.176	-.402**	1
	**. Correlation is significant at the 0.01 level (2-tailed).										
	*. Correlation is significant at the 0.05 level (2-tailed).										

<p>X₁=Age X₂= Education X₃= Family size X₄= Annual family income X₅= Vegetables cultivation land X₆= Income from vegetable cultivation</p>	<p>X₇= Experience in vegetable cultivation X₈= Training received X₉= Media exposure X₁₀= Knowledge on vegetable cultivation technologies Y= Problem faced in vegetable cultivation</p>
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