

**ADOPTION OF RECOMMENDED POTATO
CULTIVATION PRACTICES**

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**ADOPTION OF RECOMMENDED POTATO
CULTIVATION PRACTICES**

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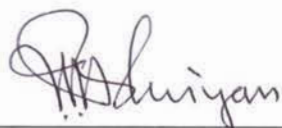
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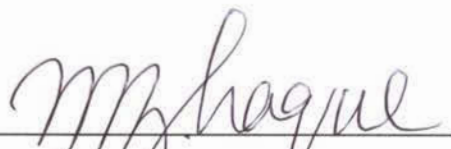
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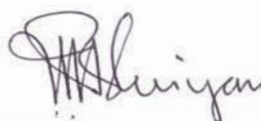


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CERTIFICATE

This is to certify that the thesis entitled, "**Adoption of Recommended Potato Cultivation Practices** " submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE in AGRICULTURAL EXTENSION AND INFORMATION SYSTEM** embodies the result of a piece of *bona fide* research work carried out by **Md. Mazharul Islam, Registration No.01054** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

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



(Prof. Mohammad Hossain Bhuiyan)
Supervisor

Dated: 4. 9. 08
Place: Dhaka, Bangladesh



**DEDICATED
TO MY
BELOVED PARENTS**

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The Author

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ADOPTION OF RECOMMENDED POTATO CULTIVATION PRACTICES

ABSTRACT

The main objective of this study was to determine the extent of adoption of recommended potato cultivation practices and to explore the relationships between the selected characteristics of potato farmers and their adoption of recommended practices. The study was conducted at Gazaria thana of Munshigonj district during 10 November to 29 January 2008. The population of the study was 580 potato farmers from which a sample of 116 potato growers was selected using a simple random sampling method. Correlation of coefficient was to explore the relationship between the concerned variables. The overall adoption of recommended practices by the potato growers showed that 48 percent of the potato farmers fell under medium adoption and 36 percent under high adoption category while 16 percent of potato farmers followed lower rate of adoption of recommended practices in potato cultivation. There was a significant positive relationship between each of the six characteristics such as level of education, farm size, annual income, organizational participation, extension contact and innovativeness of the potato farmers with their adoption of recommended practices in potato cultivation. The cosmopolitaness and farming experience of the potato farmers had no significant relationship with their adoption of recommended practices in potato cultivation.

CHAPTER 1

INTRODUCTION

1.1 GENERAL BACKGROUND:

Due to the ever increasing population of the country the farm holding size of a family is ever decreasing with an alarming rate from 1.69 acres in 1996 to 1.48 acres in 2005 (BBS-2005). This situation is rapidly declining creating acute food deficiency in the country. In this situation a huge quantity of food is required for the teeming millions. In spite of dominance of agriculture in the national economy and the achievement of self sufficiency in food production is the main aim of agricultural development still Bangladesh faces chronic food shortage.

It is evident that only the rice can not meet the required calories for ever growing population. Immediately food habit to be changed. We can think about alternative food production. Potato could be that alternative food crop. Potato is now considered as the third largest food crop in Bangladesh. In many countries of Europe and America such as Netherlands, Poland, and Germany it is considered as staple food.

In Bangladesh rice and wheat cannot meet the food demand. In this moment food habit to be changed. People of Bangladesh eat potato as a vegetable not as a staple food. Farmers cultivate local and HYV varieties. There are many varieties of potato developed by BARI such as Diamont, Multa, Cardinal, Granola etc . Diamont is a famous potato variety. Farmers of Munshigonj cultivate this variety largely. It was evident that HYV yields more than local varieties. However, potato is cultivated in every district of the country.

Bangladesh made a remarkable progress in the production of potato during last decades from 1994-95 to 2003-2004. Area under potato has increased to double and production has increased the same period.

In recent years, potato has occupied an important position because of its highest yield among major food and vegetable crops of Bangladesh. The present potato growing area, production and yield are shown in table 1.1. The total coverage and production amounts to 730000 acres and 4706000 tons (BBS, 2006) respectively.

Table 1.1 Area, production and yield of potatoes of Bangladesh from 1 992-93 to 2003-2004

| Year | Area (,000 acre) | Production (000 tons) | Yield (tons/acre) |
|-----------|------------------|--------------------------|----------------------|
| 1994-95 | 325 | 1468 | 4.516 |
| 1995-96 | 326 | 1492 | 4.567 |
| 1996-97 | 336 | 1508 | 4.555 |
| 1997-98 | 337 | 1553 | 4.612 |
| 1998-99 | 605 | 2762 | 4.565 |
| 1999-2000 | 601 | 2933 | 4.885 |
| 2000-2001 | 616 | 3216 | 5.221 |
| 2001-2002 | 586 | 2994 | 5.099 |
| 2002-2003 | 606 | 3386 | 5.585 |
| 2003-2004 | 669 | 3908 | 5.838 |

Source: BBS (1999,2000, 2001,2004)

However, the policy makers and planners were emphasizing further to increase the coverage and production of potato for long years. To increase the production and quality of potato an amount of effort is being made through research and extension delivery system in the country. Farmers are the main

elements in the process of adoption of recommended potato cultivation practices. The findings of this study can be a key indicator to highlight the adoption of recommended potato cultivation practices in the country. The characteristics of potato farmers on their adoption of recommended potato cultivation practices is essential to plan and execute programme for increasing the yield of potato. With this end in view, the author was keenly interested to undertake the present study.

1.2 Statement of the problems

With a view to have an understanding of the adoption of recommended potato cultivation practices by the potato growers, the researcher was interested to take a piece of research entitled, "Adoption of recommended potato cultivation practices by the potato growers of Gazaria union and Imampur union under Munshigonj district. The purpose of the study was to determine the extent of adoption of recommended practices of potato cultivation and also to ascertain the relationships of the selected characteristics of the potato farmers with their adoption of recommended practices in potato cultivation. Potato research center of BARI continuously develops potato cultivation technologies including varieties, fertilizer doses, insects and disease control measures, irrigation and recommended specific varieties, specific doses of fertilizer, insects and disease control measure for specific region. The DAE as its function disseminate those practices among the potato growers of the country through training, mass communication, inter personal contact etc. Still than per acre production is far below than Netherlands and other countries. The question arises, why? If farmers cultivate potato adopting recommended technologies the production must be higher than present status. So, the answer of the following research questions were sought by the author that lead the study.

1. What are the recommended potato cultivation practices adopted by the farmers?
2. Have the farmers of Gazaria upazila adopted recommended potato

cultivation practices properly?

3. What are the potato cultivation practices being practiced by the farmers of Gazaria upazila?

4. What are the characteristics of potato growers?

5. Is there any relationship between the farmers selected characteristics and their adoption of recommended potato cultivation practices?

1.3 Specific Objectives of the study

Objectives help any researcher to get into the right track. Meaningful, clear cut and achievable objectives are the key factors of research work. The present research work was conducted with the following specific objectives.

1) To determine the extent of adoption of recommended potato cultivation practices by the potato farmers

- a) Adoption of HYV of potato- Diamont
- b) Plant protection measures

2) To determine and describe some selected characteristics of the potato growers. The characteristics are-

- a) Level of education
- b) Farm size
- c) Annual income
- d) Organizational participation
- e) Cosmopolitaness
- f) Extension contact
- g) Innovativeness
- h) Farming experience

3) To explore the relationships of the selected characteristics of the potato farmers with their adoption of recommended practices of potato cultivation.

1.4 Justification of the study

The achievement of self sufficiency in food grain production is the main aim of agricultural development in Bangladesh. To achieve that objective, it is necessary to give thrust to increase food production using recommended practices. The adoption of recommended potato cultivation practices by the farmers can easily overcome this problem. Several research institutes have developed a good number of recommended practices but only a few of them practices are adopted by the farmers. The finding of the study will be specially applicable to the Gazaria and Imampur union of Gazaria thana under the district of Munshigonj. The findings will also have implications and applicability for other areas of the country, having similarities in physical, socio-economic and socio-cultural conditions with the study area. Thus, the findings are expected to be useful to extension workers and planners for their preparation of extension programmers for rapid adoption of recommended potato cultivation practices.

1.5 Assumptions of the study

An assumption is the supposition that an apparent fact on principle is true in light of available evidence. The following assumptions were made in conducting the study:

- a) The respondents included in the sample of the study were able to satisfy all the queries.
- b) The information furnished by the respondents were valid and reliable.
- c) The respondents were more or less conscious about the adoption of recommended potato cultivation practices.
- d) The researcher who acted as interviewer was well adjusted to the environment of the study area.
- e) The adoption of recommended potato cultivation practices were measured by well defined formula.
- f) The categorization of the respondents based on independent variables was normally distributed with their respective means and standard deviation.

1.6 Limitations of the study

The present study was undertaken with a view to have an understanding on the extent of adoption of recommended potato cultivation practices by the potato growers and also to find out the cause of problems. In order to keep the study manageable, more accurate and meaningful from the research point of view, it became necessary to impose some limitations with regard to certain aspects.

1. The study was confined to randomly selected seven villages of Gazaria and Imampur union under Gazaria thana of munshigonj district where potato is grown abundantly by maximum number of potato growers.
2. The characteristics of the farmers are many and varied. But only 8 characteristics were selected for investigation in the study.
3. Only four recommended practices were selected for studying their adoption by the potato farmers.
4. The various data were collected within the shortest possible time considering time constraints of the researcher. So time may be regarded as a limitation of the study.
5. The study was confined mainly to farmers adoption of recommended potato cultivation practices.
6. For collecting necessary information, the researcher had to depend on the data solely on the memory of the respondents of the potato growers because they did not keep written records.

1.7 Definition of terms

Deferent terms used throughout the study are defined and interpreted below for clarity of understanding:

Level of education

Education was defined as the formal education of a farmer. It was operationalized by the number of years spent to acquire formal education.

Farm size

The term was used to refer to the cultivated area either owned by a farmer or cultivated on borga, lease or other means. Farm size was measured in terms of hectare.

Annual income

Annual income refers to the total earnings of a respondent and others members of his family from agriculture and other sources (services, business etc) during a year.

Organizational participation

Organizational participation of a farmer refers to his taking part in different social organization either as an ordinary member, executive member or executive officer within a specified period of time.

Cosmopoliteness

It is defined as the orientation of an individual external to his own social system. It is expressed in numbers.

Extension contact

Extension refers to ones exposure to various types of extension sources through different extension teaching methods during one year.

Innovativeness

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

Farming Experience

It means the practical acquaintance derived from potato cultivation. Farming experience of potato growers was measured in years which he gained through direct involvement in farming activities.

Recommended practices

Recommended practices refers to the technologies recommended by the research institutes after a long trial. In this study, the practices, which were recommended by Bangladesh Agricultural Research Institute(BARI) for potato cultivation were termed as recommended practices.

Adoption of recommended practices

According to Rogers (1983) Adoption is a decision to make full use of an innovation as the best course of action available. When an individual takes up a new idea as the best course of action and practices the phenomenon is known as adoption (Ray, 1991). Here HYV of potato, fertilizer doses, and insect and disease control practices were considered as adoption.

Recommended variety:

A Recommended variety is one which possesses the potential of better performance in respect of yield, quality, insect and disease resistance etc as advocated by BARI. The varieties considered as recommended varieties of potato included diamont, multa, petrones, cardinal, hira, granola and true potato seed.

Plant protection measures

Plant protection measures refer to those measures which are used to save crop plant from the damage of insects and disease.

Potato farmers

The term Potato farmer refers to those farmers or respondents who cultivated potato in the area during the rabi season of 2006-2007.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this chapter is to present the reviews of researches related to the investigation. The reviews are conveniently presented based on the major objectives of the study. The chapter is divided into three major sections. The first section deals with opinions of innovations and past research findings related to the adoption of innovation. The second section deals with the past research findings relating to the relationships of the farmers adoption of innovations with their selected characteristics. The third section deals with the conceptual framework of the study.

2.1 Opinions and Past Research Findings Related to the Extent of Adoption of innovations

This section is divided into two sub -sections. First sub-section deals with opinions relating to the extent of adoption of innovations. Second sub-section deals with the past research findings relating the extent of adoption innovation.

2.1.1 Opinions relating to the extent of adoption of innovations

Hossain (1987) stated, if technology is to be made adaptable with the joint efforts of scientists, technologists, extension personnel and farmers, participation of concerned peer groups, client groups and their associates are essential. The characteristics of the effective technologies that they are technically sound, they can be disseminated effectively, they economically viable and also socially acceptable.

Kashem and Islam (1990) stated, The technologies are of no use unless they are used by their potential users.

Okoro and Obibuaka (1992) stated, Adoption of the new practices tended to be high for less complex and less readily available ones, while low for relatively more complex and expensive practices.

2.1.2 Past research findings relating to extent of adoption of innovations

Naika and Rao (1989) found that more area was brought under plant protection chemicals after adoption of recommended plant protection chemicals. The area increased from 45.75 acres to 104.75 acres in adoption villages.

Hanchinal et al (1991) conducted study on influence of personal characteristics of farmers on the adoption pattern of recommended cultivation practices in potato in Dharwad. They found that 53 percent of farmers were in the high adoption category. Over 80 percent of farmers adopted practices such as variety, seed rate and time of sowing.

Kashem and Hossain (1992) conducted a research on adoption behavior of sugarcane growers of Zill Bangla Sugar Mill, Dewanganj, Jamalpur, Bangladesh. They found among the respondent growers, 89 percent had high level of adoption recommended practices of sugarcane.

Sing *et al.* (1992) undertook a research study in India on factors affecting the adoption of improved sugarcane production technology. They observed that majority of sugarcane growers had the medium level of adoption and were partial adopter of scientific recommendations of sugarcane production technology.

Nikhade *et al.*(1992) observed in their study on adoption of improved practices of soybean that percent adopted improved varieties. More than 82 percent had complete adoption of package practices like time sowing, soybean growers (74.6 percent) with regard to recommended seed rate.

Akanda (1995) studied the adoption of recommended dose of fertilizer and found that 36.26 percent respondents used recommended dose of urea, 6.93 percent used recommended dose of TSP, 11.88 percent MP and only 2 percent respondent used gypsum in their potato cultivation.

Muttaleb (1995) studied the extent the adoption of improved technologies in potato cultivation by the farmers in Haibatpur union sadar thana of Jessore district. The study revealed that 8.0 percent of potato growers had high adoption of improved technologies, 43.0 percent medium and 49.0 percent low adoption.

Sarker (1997) conducted a study on correlates of selected characteristics of potato growers with their adoption of improved potato cultivation practices in five village of Comilla district. The study revealed that 22 percent of the potato growers had high adoption of improved potato cultivation practices, 55 percent medium and 23 percent low adoption.

Muttaleb *et al.* (1998) conducted a study on adoption level and its constraints of selected recommended potato technology. They found that the level of adoption of modern variety, quality seed, recommended spacing, recommended earthing up and optimum planting time were almost medium. High and low adoption was found in recommended irrigation seed size respectively. Overall adoption of improved technology was medium.

Horne *et al.*(1999) conducted a study on awareness and adoption of IPM by Australian potato growers. The study revealed that the adoption was highest

amongst crisping potato growers. The sources of information on IPM appeared to influence the level of adoption.

Hossain (1999) studied farmer's perception of the effect of agro-chemicals on environment. The study revealed that 64 percent of the farmers had medium adoption 21 percent had low adoption and 15 percent had high adoption of pesticides.

Hussen (2001) found in his study that the highest proportion (91 percent) of the respondents had medium adoption modern sugarcane cultivation practices compared to 7 percent had low and only 2 percent had high adoption.

Rahman (2001) observed in his study that the highest proportion (75percent) of farmers fell under medium adoption category while 18 percent had high adoption and 7 percent had low adoption of Aalok 6201 hybrid rice cultivation.

Islam (2002) conducted a research study on adoption of modern agricultural technologies by the farmers of Sandip. He found that 69 percent of the farmers had medium level of adoption, 18 percent had high level of adoption and 13 percent had low level of adoption.

Zegeye et al.(2002) studied the determinants of adoption of improved maize technologies in major maize growing region of Ethiopia. He found that rate of adoption of improved maize varieties and chemical fertilizer, factors affecting the adoption of improved maize varieties and the determinant factors affecting adoption of chemical fertilizers are also highlighted.

Hossain (2003) found that majority (67 percent) of the Boro rice farmers had medium adoption, 17 percent had low adoption and 16 percent high adoption of modern Boro rice cultivation practices.

Hossain (2006) revealed that the highest proportion (49 percent) of farmers felt under medium adoption category, while 26 percent had high adoption and 25 percent had low adoption of selected high yielding varieties of rice.

2.2 Past Research Findings Related to Relationships of farmers Adoption of innovations with their Selected Characteristics

2.2.1 Education and adoption of innovations

Bavalatti and Sundaraswamy (1990) observed no significant relationship between education of the farmers and their adoption of dry land farming practices.

Okoro and Obibuaka (1992) studied adoption of recommended practices among small holders in IMO state, Nigeria. The findings of the study indicated a positive relationship between education of the respondents and their adoption of recommended management practices.

Muttaleb (1995) studied the relationship of education with adoption of improved potato technologies. The study observed that education had a positive relationship with their adoption potato technologies.

Hasan (1996) conducted a study on adoption of some selected agricultural technologies among the farmers perceived by the frontline GO and NGO workers. He observed that education has no significant relationship with the perceived adoption of selected agricultural technologies. Similar results were found by Kher (1992), Islam (1992) and Hossain (1999).

Sarker (1997) conducted a study to determine the relationship between selected characteristics of potato growers and their adoption of improved potato cultivation practices in five villages of comilla district. He found that

education of potato growers had significant relationship with their adoption of improved potato cultivation practices.

Rahman (2001) conducted a study on knowledge, attitude and adoption of the farmers regarding Aalok 6201 hybrid rice in Sadar upazilla in Mymensingh district. He found that academic qualification of the farmers had a significant and positive relationship with their adoption regarding Aalok 6201 hybrid rice.

Aurangozeb (2002) conducted a study on adoption of integrated homestead farming technologies by the rural women in RDRS. He found that there was positive relationship between education and adoption of integrated homestead farming technologies.

Islam (2002) conducted a study on adoption of modern agricultural technologies by the farmers of Sandwip. He found that education of the farmers had a significant and positive relationship with their adoption of modern agricultural technologies.

Sardar (2002) conducted a study on adoption of IPM practices by the farmers under PETRRA project of RDRS. He found that education of the farmers had a positive significant relationship with their adoption of IPM practices. Similar results were found by Halim (1985), Hoque (1993), Khan (1993), Pal (1995), Alam (1997), Chowdhury (1997), Hossain et al. (1997) and Hussen (2001).

Hossain (2003) concluded that education of the farmers had a significant and positive relationship with their adoption and modern Boro-rice cultivation practices.

Hossain (2006) concluded that the education of the farmers had a significant and positive relationship with their adoption selected of HYV rice. Similar findings were also observed by Humid (1995), Khan (1993) and Haque (1993).

2.2.2 Farm size and adoption of innovations

Gogoi and Gogoi (1989) in their study observed that size of land holding of farmers had a significant relationship and positive effect on their adoption of plant protection practices.

Muttaleb (1995) in his study observed that farm size of the growers had a positive relationship with the adoption of improved potato growers and showed positive significant effect.

Pal (195) conducted a research study on adoption of sugarcane cultivation practices by the farmers. He observed the significant and positive relationship between the farm size of the respondent farmers and their adoption of sugarcane cultivation practices.

Chowdhury (1997) conducted a research study on adoption of research of selected BINA technologies by the farmers of boira union in Mymensingh district. He indicated that farm size had strongly positive significant relationship with the adoption of selected BINA technologies.

Hussen (2000) conducted a study on farmer's knowledge and adoption of modern sugarcane cultivation practices. He found that the farm size of the cane growers had a positive significant relationship with their adoption of modern sugarcane cultivation practices.

Rahman (2001) conducted a study on knowledge, attitude and adoption of the farmers regarding Aalok 6201 hybrid rice in sadar upazila o Mymensingh district. He found that farm size of the farmers had a significant and positive relationship with their adoption of Aalok 6201 hybrid rice.

Aurangozeb (2002) conducted a study on adoption of integrated homestead farming technologies by the rural women in RDRS. He found that there was

no relationship between homestead area and adoption of integrated homestead farming technologies. Similar findings were observed by Hossain (1991), Bashar (1993) and Hoque (1993).

Islam (2002) conducted a study on adoption of modern agricultural technologies by the farmers of Sandwip. He observed that the farm size of the farmers had a positive significant relationship with their adoption of modern agricultural technologies. Similar findings were observed by Alam (1997) and Sarker (1997).

Sardar (2002) conducted a study on adoption of IPM practices by the farmers under PETRRA project of RDRS. He found that the farm size of the farmers and a positive significant relationship with their adoption of IPM practices.

Hossain (2003) concluded that farm size of the farmers had a significant and positive relationship with their adoption of modern Boro rice cultivation.

Hossain (2006) found that the farm size of the farmers had an insignificant relationship with their adoption of selected HYV rice.

2.2.3 Annual income and adoption of innovations

Singh (1991) in a study found that income of the farmers was significantly associated with the level of adoption of plant protection measures.

Hossain and Crouch (1992) revealed that income of farmers had a significant relationship with adoption of improved farm practices in Bangladesh.

Chowdhury (1997) found that the annual income of the respondents had a positively significant relationship with their adoption of selected BINA technologies.

Hussen (2001) conducted a study on farmer's knowledge and adoption of modern sugarcane cultivation practices. He found that annual income of the cane growers had a positive significant relationship with their adoption of modern sugarcane cultivation Practices.

Aurangozeb (2002) conducted a study on adoption of integrated homestead farming technologies by the rural women in RDRS. He found that there was a positive relationship between annual income and adoption of integrated homestead farming technologies.

Islam (2002) conducted a study on adoption of modern technologies by the farmers of Sandwip. He observed that the annual income of the farmers had a significant relationship with their adoption of modern agricultural technologies. similar findings were observed by Hoque (1984), Al-Mogel (1985), Pal (1995), Alam (1997), Sarker (1997) and Rahman (2001).

Sardar (2002) conducted a study on adoption of IPM practices by the farmers under PETRRA project of RDRS. He found that the annual income of the farmers had no significant relationship with their adoption of IPM practices. Similar findings were found observed by Hossain (1981), Hossain (1991)

2.2.4 Organizational participation and adoption of innovations

Balasubbramanian and Kaul (1984) studied adoption of improved practices by fish trawler owners in Kerala. The study indicated no relationship between organizational participation and adoption of improved practices.

Cowdhury (1997) conducted a research study on the adoption of selected BINA technologies by the farmers. He found that there was significant positive relationship between the farmers organizational participation and their

adoption of selected BINA technologies. Halim (1985), Bashar (1993) and Pal (1995) observed the similar findings.

Sarker (1997) conducted a study on correlates of selected characteristics of potato growers with their adoption of improved potato cultivation practices in five village of Comilla district. He observed that organizational participation of the potato growers had no relationship with their adoption of improved potato cultivation practices.

Mostafa (1999) conducted a study on adoption of recommended mango cultivation practices by the mango growers of Nawabganj sadar thana. He found that organizational participation of mango growers had a significant positive relationship with their adoption of recommended mango cultivation practices.

Hussen (2001) conducted a study on the farmers knowledge and adoption of modern sugarcane cultivation practices. He found that organizational participation of the growers had a significant positive relationship with their adoption of modern sugarcane cultivation practices.

Rahman (2001) conducted a study on knowledge attitude and adoption of the farmers regarding Aalok 6201 hybrid rice in sadar upazila of Mymensingh district. He found that organizational participation of the farmers had a significant and positive relationship with their adoption regarding Aalok 6201 hybrid rice. Similar findings were observed by Hossain (1981), Hoque (1984) and Islam (1993).

Sardar (2002) conducted a study on adoption of IPM practices by the farmers under PETRRA project of RDRS. He observed that organizational participation of the farmers had no significant relationship with their adoption of IPM practices.

Hossain (2003) concluded that organizational participation of the farmers had no significant relationship with their adoption of modern Boro rice cultivation.

Hossain (2006) revealed that organizational participation of the farmers had no significant relationship with their adoption of HYV rice.

2.2.5 Cosmopolitanism and adoption of innovations

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

Pal (1995) conducted a research study on adoption of recommended sugarcane cultivation practices by the farmers. He observed that the cosmopolitanism of the farmers had significant positive relationship with their adoption of recommended sugarcane cultivation practices.

Chowdhury (1997) conducted a study on the adoption of selected BINA technologies by the farmers of Boira union in Mymensingh district. He found that there was no significant relationship between the cosmopolitanism of the farmers and their composite adoption of selected BINA technologies. Similar findings were observed by Mannan (1972), Muhammad (1974), Sobhan (1975) and Islam (1996).

Mostafa (1999) conducted a study on adoption of recommended mango cultivation practices by the mango growers of Nawabganj sadar thana. He observed that cosmopolitanism of the mango growers had a positive significant relationship with their adoption of fertilizers.

Rahman (2001) conducted a study on knowledge, attitude and adoption of farmers regarding Aalok 6201 hybrid rice in sadar upazila of Mymensingh

district. He found that cosmopolitanism of the farmers had a significant and positive relationship with their adoption of regarding Aalok 6201 hybrid rice.

Islam (2002) conducted a study on adoption of modern agricultural technologies by the farmers of Sandwip. He found that cosmopolitanism of the farmers had significant positive relationship with their adoption of modern agricultural technologies.

Sardar (2002) conducted a research study on adoption of IPM practices by the farmers under PETRRA project of RDRS. He found observed that cosmopolitanism of the farmers had significant and positive relationship with their adoption of IPM practices. Similar findings were observed by Halim (1985), Hoque (1993), Hossain (1999), Hussen (2001) and Aurangozeb (2002).

Hossain (2003) revealed that cosmopolitanism of the farmers had a significant and positive relationship with their adoption of modern Boro rice cultivation practices.

Hossain (2006) concluded that cosmopolitanism of the farmers had no significant relationship with their adoption of selected HYV rice.

2.2.6 Extension media contact and adoption of innovation

Slade *et al.* (1998) stated that adoption rates amongst the farmers receiving one or more VEW visits per month were generally higher than those farmers who were not visited by VEWS; contact farmers were better adopter of some technologies than non-contact farmers.

Heong (1990) observed that the lack of adoption of IPM technologies in rice was frequently attributed to lack of sufficient extension contact.

Islam (1993) studied adoption of improved practices of potato cultivation by the potato farmers of Sonatola union under Bogura district. The findings of the study indicated a positive relationship between extension contact and adoption of improved practices of potato.

Sarker (1997) found that extension contact of potato growers had a positive significant relationship with their adoption of improved potato cultivation practices.

Hossain (1999) conducted a study to determine the farmer's perception of the effect of agro-chemicals on environment. He found that there was no relationship between the farmers media exposure with adoption of agro-chemicals.

Hussen (2001) conducted a study on farmer's knowledge and adoption of modern sugarcane cultivation practices. He found that extension contact of the growers had significant relationship with their adoption of modern sugarcane cultivation practices.

Aurangozeb (2002) conducted a study on adoption of integrated homestead farming technologies by the rural women in RDRS. He found that there was significant relationship between contact with extension media and adoption of integrated homestead farming technologies.

Islam (2002) conducted a study on adoption of modern agricultural technologies by the farmers of Sandwip. He found that extension media contact of the farmers had no significant relationship with their adoption of modern agricultural technologies. Similar findings were observed by the Halim (1982), Ali et al. (1986) and Bashar (1993).

Sarder (2002) conducted a study on adoption of IPM practices by the farmers under PETRRA project of RDRS. He observed that contact with RDRS personnel of the farmers had positive significant relationship with their adoption of IPM practices. Similar findings were observed by the Rahman (1986), Kashem and Islam (1990), Pathak and Sasmal (1992), Hoque (1993) and Rahman (2001).

Haque (2003) concluded that extension contact of the farmers had a significant positive relationship with their adoption of modern maize cultivation technologies.

Hossain (2003) concluded that communication exposure of the farmers had a significant and positive relationship with their adoption of modern Boro rice cultivation.

Hossain (2006) concluded that the extension contact of the farmers had positive significant relationship with their adoption of selected HYV rice.

2.2.7 Innovativeness and adoption of innovations

Rahman (1997) found a positive relationship between modernism and adoption of farm practices. He defined modernism as leading for experience or opener to innovation. So, modernism as used by him is synonymous with the innovativeness of the present study.

Hossain (1999) found a positive significant relationship between innovativeness of the farmers and their adoption of fertilizers and also observed no relationship with adoption of pesticides.

Mostafa (1999) conducted a research study on adoption of recommended mango cultivation practices by the mango growers of Nawabganj sadar thana.

He found that innovativeness of the mango growers had a significant positive relationship with their adoption of pesticides.

Podder (1999) conducted a research study on adoption of mehersagar banana by the farmers of Gazaria union under Shakhipur thana of Tangail district. He observed that innovativeness of the farmers had significant relationship with their adoption of mehersagar banana.

Aurangozeb (2002) conducted a study on adoption of integrated homestead farming technologies by the rural women in RDRS. He found that there was a significant relationship between innovativeness and adoption of integrated homestead farming technologies.

Islam (2002) conducted a research study on adoption of modern agricultural technologies by the farmers of Sandwip. He found that innovativeness of the farmers had significant and positive relationship with their adoption modern agricultural technologies.

2.2.8 Farming experience and adoption of innovations

Hoque (1993) in his study found that farming experiences had negative significant relationship with their adoption of improved practices in sugarcane cultivation.

Sarker (1995) in his study observed that farming experience had no relationship with their use of communication media for receiving agricultural information.

Khan (1996) reported insignificant relationship between rice farming experience and (a) initial rice knowledge, (b) final rice knowledge and (c) knowledge gain respectively.

Alam (1996) in his study observed that there was no relationship between the farming experience of the farmers and their awareness regarding homestead deforestation.

Sarker (1997) found that farming experience of potato growers had no significant relationship with their adoption of improved potato cultivation practices.

2.3 The Conceptual Framework of the Study

Adoption is a decision to make full use of innovation as the best course of action available (Ray, 1991). When an individual takes up a new idea as the best course of action and practices, this phenomenon is known as adoption. The present study tried to focus two concepts: first adoption of recommended potato cultivation practices by the farmers and the second their selected characteristics. A dependent variable may be influenced and affected through interacting forces of many characteristics in his surrounding. It is impossible to deal with all characteristics in a single study.

The conceptual framework of Rosenberg and Hovland (1960) was kept in mind while framing the structural arrangement for the dependent and independent variables.

This study expected that farmers' adoption of recommended potato cultivation practices as dependent variable, which was influenced by selected characteristics of the farmers as independent variables viz. education, innovativeness, farm size, Annual income, cosmopolitaness, organizational participation, farming experience and extension contact.

The Conceptual model of the study has been presented in figure 2.1

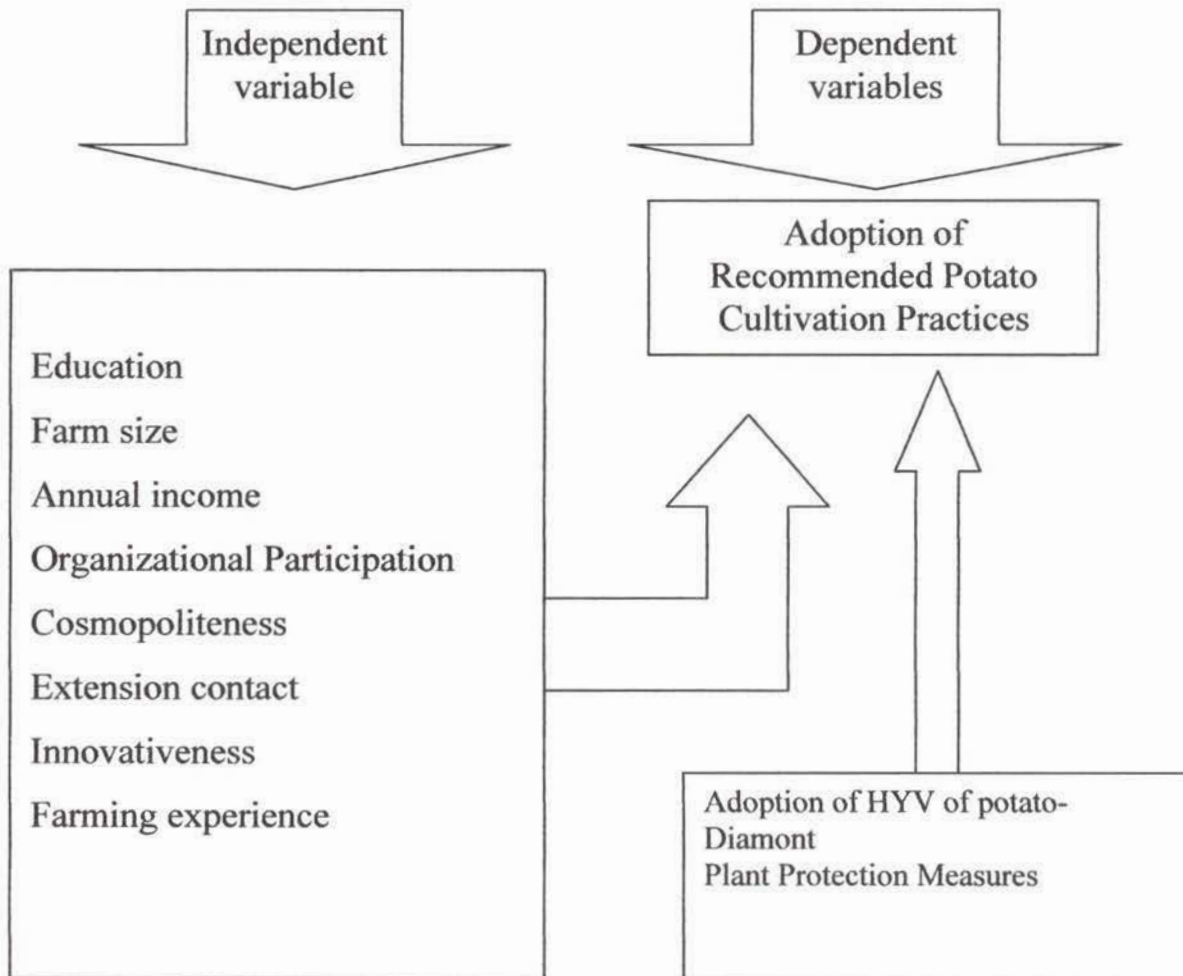


Fig. 2.1 The conceptual model of the study

CHAPTER 3

METHODOLOGY

Methodology deserves a very careful consideration in scientific research. The methods and procedures followed in conducting this study has been described in this chapter.

3.1 Locale of the study area

Gazaria upazilla of Munshigonj district consists of eight unions namely, Gazaria, Imampur, Hoshendi, Vaberchar, Baoshia, Baluakandi, Guagachhia and Tengerchar union. Out of these upazilla Gazaria and Imampur unions were selected purposively as the locale of the study area. Then Six villages were randomly selected by using simple random sampling method. The selected villages were Nagerchar, Prodhanerchar, Bairabdi, Uttar Fuldi, Karimkha and Rasulpur.

Two maps have been presented in fig. 3.1 and 3.2 showing selected unions of Gazaria upazila and Munshigonj district.

3.2 Population and Sampling Design

All potato growers of Gazaria and Imampur union under Gazaria upazila constituted the population of the study. An Update list of 585 potato growers from the selected villages were prepared with the help of Sub-Assistant Agriculture officer. Twenty (20%) percent of the population were randomly selected as the sample of the study by using random number table. Thus, 116 farmers constituted the sample of the study. A reserve list of ten farmers was also prepared by the same method so that the respondents of this list could be used for interview if the respondents included in the original sample were not available at the time of data collection. The distribution of the population sample and number of farmers in the reserve list are shown in Table 3.1

Table 3.1 Distribution of population and sample of respondents in two selected union of Gazaria upazila.

| Name of the unions | Name of the of villages | No. of potato growers | No. of potato growers included in the sample | No.of potato growers in the reserve list |
|--------------------|-------------------------|-----------------------|--|--|
| GAZARIA | Nager char | 104 | 21 | 2 |
| | Prodhaner char | 127 | 25 | 3 |
| | Bairabdi | 32 | 6 | 1 |
| | Uttar fuldi | 109 | 22 | 2 |
| IMAMPUR | Karimkha | 183 | 36 | 4 |
| | Rasulpur | 30 | 6 | 1 |
| | Total | 585 | 116 | 13 |

3.3 Development of the Instrument

In order to collect relevant information from the respondents interview schedule was carefully designed focusing the objectives of the study. Both open and close form, simple and direct questions were inserted in the interview schedule. The simple and direct questions were simple and systematically arranged for the sake of comprehensive understanding of the respondents. Scales were developed for collecting information required for measuring the selected characteristics.

3.4 Validity and reliability

An instrument is considered as valid when it measures what it claims to measure. It is usually deemed to be valid when the objectives of the study are reflected in the instrument. Validity as "Descriptive term used for a measure that accurately reflects the concept that is included to measure"(Bobbie, 1986). A test or scale is reliable if it yields consistent results when repeated measurements are taken on the same subjects under the similar condition. In the present study adequate care was taken to prepare the data collecting instruments in general and the scales in particular. Based on the comments and suggestions made by the experts, the interview schedule was modified and used for pilot testing.

3.5 Pilot Testing and Final Version

Borg and Gall (1979) indicated that before going to data collection the instruments to be tested in the study area a pilot study programme. Accordingly interview schedule initially developed was tested within a similar group of farmers excluding respondent farmers. Fifteen potato growers were interviewed by using the instrument. The pretest helped to examine the suitability of different questions and statements of the instrument in general. Necessary corrections, additions, alterations and rearrangements were made in the schedule on the basis of the experience of the pretest. Thus, the final version of the instrument was developed for collation of data from intended respondents.

3.6 Data Collection

Data were collected personally by the researcher himself by interviewing the potato growers with the help of interview schedule. The researcher made all possible efforts to explain the purpose of the study to the farmers. Rapport was established with the farmers prior to interview and the objectives were clearly explained by using local language as far as possible. As a result, the respondents did not hesitate to furnish proper responses to the questions and statements which were collected during the period from 10 December to 29 January 2008. The researcher sought the help from the local leaders and the Sub-Assistant Agricultural officer for this purpose. Excellent co-operation was obtained from the respondents, the concerned local leaders and the Sub-Assistant Agricultural officers.

3.7 Data Coding and Tabulation

A detailed coding plan was prepared. Data were coded into a coding sheet. These were then compiled, analyzed in accordance with the objectives of the study by using computer system. Qualitative data were converted into quantitative form by means of suitable scoring techniques for the purpose of analysis.

3.8 Variables of the Study

Selection and measurement of variables is an important task in any descriptive research. A research hypothesis contains at least two variables independent variable and a dependent variable. An Independent variable is the factor which is manipulated by the experimenter to ascertain its relationship to an observed phenomenon. A dependent variable is the factor which appears, disappears or varies as the experimenter introduces, removes or varies the independent variable (Townsend, 1953). Measurement of the variables of the study is discussed below:

3.9.1 Measurement of independent variables

The independent variables of this study were eight (8) selected characteristics of the potato growers such as education, farm size, annual family income, organizational participation, cosmopolitanism, extension contact, Innovativeness, farming experience were selected as independent variables.

3.9.1.1 Education

Education was measured by the number of classes passed by an individual. Zero (0) for no schooling, A score half (0.5) was assigned to those respondents who could sign only, One (1) score was assigned for each year of schooling. For example, if a respondent passed SSC his education score was 10.

3.9.1.2. Farm size

Farm size was measured on the basis of nature of possession of land on which he continued his farm operations during the period of study. It included the area of farm owned by him as well as those obtained from others as sharecropping, lease or mortgage. The area was being estimated in terms of full benefit to the growers in term of hectare. The farm size of a respondent was measured by using the following formula:

$$Fs = A_1 + A_2 + \frac{1}{2} (A_3 + A_4) + A_5$$

Where,

Fs = Farm size

A_1 = Homestead area (with kitchen garden and pond)

A_2 = Own land under own cultivation

A_3 = Land taken from other on *borga*

A_4 = Own land given to others on *borga*

A_5 = Land taken from others on lease

3.9.1.3. Annual family income

Annual income of a respondents was determined on the basis of his earnings from agriculture and other various sources of his family during 2006-2007. For calculation of income score, one(1) was assigned for each one thousand taka income.

3.9.1.4. Organizational participation

Organizational participation of the respondents was measured on the basis of participation by the respondent in different organizations during last years. Score were assigned for participation of a respondent in an organization in the following manner.

$$OP= Np+ Om+ Em+ EO$$

| Nature of participation | Score |
|---|-------|
| No participation (Np) | 0 |
| Participation as ordinary member (Om) | 1 |
| Member of the Executive committee (Em) | 2 |
| Participation in executive committee officer (EO) | 3 |

Where,

OP = Organizational participation

Np= No participation

Om= Participation as an ordinary member

Em= Participation as an Executive member

EO = Participation as an Executive officer

The possible range 0-30 where 0 indicate no organizational participation and 30 high organizational participation.

3.9.1.5. Cosmopolitaness

Cosmopolitaness of the respondents was measured on the basis of their visit to eight different places out side his own social system. The respondents were asked to indicate the nature of visit to eight selected places as Regularly,

frequently, occasionally, and not at all basis and scores were assigned as 3, 2, 1 and 0 for the alternative responses respectively. The Cosmopolitanism score of a respondent was determined by adding the scores obtained for his visits to each eight types of places as shown in item no. five in the interview schedule. The cosmopolitanism scores of individuals could range from 0- 24 where 0 indicate no cosmopolitanism and 24 indicated very high cosmopolitanism.

3.9.1.6. Extension contact

This term refers to one's becoming accessible to the influence of extension programme through different communication media and sources. Here the score was measured as 0 for not at all, 1 for rarely, 2 for occasionally, 3 for oftenly and 4 for frequently of the contact respectively. Logical frequencies of contacts were assigned to those alternative responses as indicated in question number 6 of the interview schedule.

Respondent's extension contact score was obtained by adding the weights for his responses to all sources listed in the instrument. The extension contact scores of individuals could range from 0-44. where 0 indicates no extension contact and 44 indicates very high extension contact.

3.9.1.7 Innovativeness

Innovativeness of the respondent was measured on the basis of their adoption of seven new technologies related to agriculture and others. Score was assigned on the basis of earliness in the use of a practice by a respondent. The score of innovativeness was assigned as 3, 2, 1, 0 for the adoption within one year, after 2 years, after 3 years, after 4 years and 0 for no adoption respectively.

3.9.1.8 Farming experience (year)

Farming experience was measured assigning score one (1) for each year of working experience of a respondent either in his own farm or in others farms.

3.3.2. Dependent variable

Adoption of recommended potato cultivation practices by the farmers was the dependent variable of this study. From the many fold recommendations only two recommendations were considered for the investigation of this study namely of adoption of HYV of potato-diamont and Plant protection measures. The researcher selected this recommended practices which were considered in this investigation.

3.3.2.1 Measurement of dependent variable

Extent of adoption of technology could measures in many ways. For this study adoption of different recommended practices were measured by different techniques. The techniques are stated below:

Adoption of HYV of potato-Diamont

Adoption of variety was measured by using the formula developed by Wahab (1979).

According to Wahab (1979) the adoption quotient is the ratio scale designed to quantify the adoption behavior of an individual. The method of adoption quotient is more accurate as it involves all the related concepts like potentiality, extent of time consistency and weightage. However, adoption practices adoption quotient in this study was computed by using the following formula:

$$AQ = \frac{T_3 - (T_3 - T_2)}{T_3} \times \frac{T_3 - (T_3 - T_1)}{T_3} \times \frac{e}{p} \times 100$$

Where,

AQ = Adoption Quotient

T₁ = Year since the practice under study was introduced

T₂ = Year since the user became aware of the practice

T₃ = Year since the practice was adopted by the user

e = Average actual area (acre/ha) under the practice during the surveyed year.

p= Average potential area ((acre/ha) under the practice during the surveyed year.

(Source: Kashem-2004.)

The adoption quotient (AQ) is expressed in percentage.

The possible score of adoption could from 0 to 100 indicated in percentage.

Where 0 indicated no adoption and 100 indicated high adoption.

Plant protection measures

Plant protection measure was computed to ascertain the extent of pest control measures adopted by the farmers to protect potato crop whenever necessary.

The plant protection measure score of the potato growers was computed on the basis of using pest management practices and score was calculated by using the following procedure:

- Not at all 0
- Occasionally1
- According to necessity2

The score could range 0 to 12. Zero (0) indicating no use and 12 indicating high use of practices regarding plant protection measures. The adoption score of plant protection was measured by using following formula recommended by M. H. Bhuiyan (2007)

$$\text{Extent of Adoption} = \frac{\text{Obtained score}}{\text{Highest Possible score}} \times 100$$

Overall adoption of recommended potato cultivation practices

The adoption score of recommended varieties and adoption score of plant protection practices of each individual respondent was summated and mean score was calculated. Thus the possible range of score remain same i.e. 0-100. According to the adoption score the respondents were categorized into low, Medium and high adoption.

CHAPTER IV

RESULT AND DISCUSSION

Data received from 116 potato growers were compiled, tabulated and analyzed in the line of the objectives. Procedures of using data for the measurement needed some discussion for clarity of understanding. Data obtained from respondents by interview were measured, analyzed, tabulated and statistically treated according to the objectives of the study. This chapter deals with the findings of the study which have been discussed under the following headings: Socio-economic characteristics of farmers, extent of adoption of recommended potato cultivation practices by the farmers and relationships between the selected characteristics of the farmers and their extent of adoption of recommended potato cultivation practices.

4.1 Selected Characteristics of the Potato Farmers

In this section the findings of the potato farmers selected characteristics have been discussed. The selected characteristics are (i) education, (ii) farm size (iii) annual income (iv) organizational participation (v) cosmopolitaness (vi) extension contact (vii) Innovativeness and (viii) Farming experience. Descriptive statistics were used to describe potato farmers eight selected characteristics and these are presented below :

4.1.1 Education

Education scores of farmers ranged from 0 to 14. The average score was 4.18 with the standard deviation of 4.80. Based on their education score, the farmers were classified into five categories as shown in Table 4.1

Table 4.1 Distribution of farmers according to their education

| Categories | Number | Percentage | Mean | SD |
|----------------------------|--------|------------|------|------|
| Illiterate | 63 | 54 | 4.18 | 4.80 |
| Primary education (1-5) | 13 | 11 | | |
| Secondary education (6-10) | 28 | 24 | | |
| Higher secondary or above | 12 | 11 | | |
| Total | 116 | 100 | | |

It is evident from Table 4.1. that a large proportion (54 percent) of the farmers were illiterate compared to 11 percent having primary education and 24 percent having above secondary education. Bashar (1993) and Ali (1993) also found similar findings among the cane growers. The present literacy rate of the country is 56 percent (BBS, 2000), the findings indicate that in the study area, the literacy rate seems to be lower than the national average.

4.1.2 Farm size

The farm size of the farmers in the study area varied from 0.49 to 10.08 hectares . The average farm size was 1.90 ha with the standard deviation of 1.35. Based on their farm size, the farmers were classified into three categories as shown in Table 4.2.

Table 4.2 Distribution of farmers according to their farm size

| Categories | Number | Percentage | Mean | SD |
|-----------------------|--------|------------|------|------|
| Small (up to 0.99 ha) | 25 | 22 | 1.90 | 1.35 |
| Medium (1.00-1.99 ha) | 51 | 44 | | |
| Large (> 1.99 ha) | 40 | 34 | | |
| Total | 116 | 100 | | |

The Table 4.2 shows that the highest proportion (44 percent) of the farmers belonged to medium farm size compared to 22 and 34 percent having small and large farm size respectively. Thus, most of the farmers were in possession of medium and large farm.

4.1.3 Annual family income

Annual family income of the farmers ranged from 70 to 1688 ('000'Taka) with the mean of 288.80 and standard deviation 186.12. On the basis of the annual income, the farmers were classified into three categories as shown in Table 4.3.

Table 4.3 Distribution of farmers according to annual family income

| Categories | Number | Percentage | Mean | SD |
|------------------|--------|------------|--------|--------|
| Low (up to 200) | 28 | 24 | 288.80 | 186.12 |
| Medium (201-400) | 78 | 67 | | |
| High > 400 | 10 | 9 | | |
| Total | 116 | 100 | | |

Data presented in Table 4.3. show that the highest proportion (67 percent) of the farmers had medium annual family income, while only 24 percent had low income and 9 percent had high income. As a result, more than three fourth 76%of the respondents in the study area had medium to high annual income.

The average income of the farmers in the study area was much higher than the average per capita income of the country i.e. 520 U.S. dollar (BBS, 2006). This might be due to the fact that the farmers in the study area were not only engaged in agriculture. They also earn from other sources, such as service, business etc. Farmers with low income generally hesitate to adopt innovations in their own farms because of their lower risk bearing ability and their inability to make necessary financial investment. It is, therefore, likely that a considerable proportion of the farmers might face difficulties in adopting modern agricultural technologies.

4.1.4 Organizational participation

The observed organizational participation scores of the farmers ranged from 0 to 14 against the possible range of 0-30 with an average 4.03 and standard deviation 3.60. Depending on the organizational participation scores, the farmers were classified into three categories as shown in Table 4.7.

Table 4.4 Distribution of farmers according to their organizational participation

| Categories | Number | Percentage | Mean | SD |
|----------------|--------|------------|------|------|
| Very Low (< 3) | 52 | 45 | 4.03 | 3.60 |
| Low (3-6) | 41 | 35 | | |
| Medium (> 6) | 23 | 20 | | |
| Total | 116 | 100 | | |

Data contained in Table 4.4 revealed that the highest proportion (45 percent) of the farmers had very low organizational participation as compared to, 35 percent low and 20 percent medium organizational participation. It reveals that the majority of the farmers in the study area were in low to medium organizational participation category. No high organizational participation category was found.

4.1.5 Cosmopolitaness

The observed cosmopolitaness scores of the farmers ranged from 1 to 13 against the possible range of 0 to 24. The mean score was 6.37 with the standard deviation 2.71. Based on the observed cosmopolitaness scores, the farmers were classified into three categories as shown in Table 4.5.

Table 4.5 Distribution of farmers according to their cosmopolitaness

| Categories | Number | Percentage | Mean | SD |
|--------------------|--------|------------|------|------|
| Very Low (up to 4) | 26 | 22 | 6.37 | 2.71 |
| Low(5-8) | 51 | 51 | | |
| Medium (>8) | 31 | 27 | | |
| Total | 116 | 100 | | |

Data contained in the Table 4.5. show that 51 percent of the farmers had low cosmopolitaness as compared to 22 percent having very low and 27 percent medium cosmopolitaness. However, most of the respondents had low to medium cosmopolitaness having score 5-13.

4.1.6 Extension contact

Observed Extension contact scores of the farmers ranged from 0 to 20 against the possible range of 0 to 44. The average extension contact score was 6.69 with the standard deviation 3.81. On the basis of their extent contact score, the farmers were classified into three categories as shown in Table 4.9.

Table 4.6 Distribution of farmers according to their extension contact

| Categories | Number | Percentage | Mean | SD |
|--------------------|--------|------------|------|------|
| Very Low (up to 5) | 54 | 46 | 6.69 | 3.81 |
| Low (6-10) | 47 | 41 | | |
| Medium (>10) | 15 | 13 | | |
| Total | 116 | 100 | | |

Data presented in Table 4.6. indicate that 46 percent of the farmers had very low extension contact, while 41 percent had low and 13 percent had medium extension contact. However more than fifty four percent (54%) of the respondents had low to medium extension contact.

The findings of the study indicate that most of the respondents had low and medium extension contact with various information sources for getting necessary agricultural information. Bashar (1993), Pal (1995), Hussen (2001) and Islam (2002) observed almost the similar findings for getting necessary agricultural information.

4.1.7 Innovativeness

The innovativeness of the respondents ranged from 1 to 9 against the possible score 0-28 with an average of 4.33 and the standard deviation was 2.09. Based on the innovativeness, the respondents were classified in three categories as shown in Table 4.7.

Table 4.7 Distribution of farmers according to their innovativeness

| Categories | Number | Percentage | Mean | SD |
|--------------------|--------|------------|------|------|
| Very Low (up to 3) | 58 | 50 | 4.33 | 2.09 |
| Low (4-6) | 38 | 33 | | |
| Medium (> 6) | 20 | 17 | | |
| Total | 116 | 100 | | |

Data contained in Table 4.7. revealed that half (50 percent) of the respondents had very low level of innovativeness of their produced crop while 33 percent had low and 17 percent had medium innovativeness.

4.1.8 Farming Experience

Farming experience of the farmers ranged from 10 to 30 (in year) with the mean of 19.87 and standard deviation of 5.71. On the basis of the farming experience, the farmers were classified into three categories as shown in Table 4.8.

Table 4.8 Distribution of farmers according to farming experience

| Categories | Number | Percentage | Mean | SD |
|----------------|--------|------------|-------|------|
| Low (up to 10) | 11 | 9 | 19.56 | 5.79 |
| Medium (11-20) | 72 | 62 | | |
| High > 20 | 33 | 29 | | |
| Total | 116 | 100 | | |

Data presented in Table 4.8 show that the highest proportion (62 percent) of the farmers had medium farming experience, while only 29 percent had high and 9 percent had low farming experience. As a result, the most (91 percent) of the farmers in the study area had medium to high potato growing experience

4.2 Extent of adoption of selected improved practices by the potato farmers.

Four recommended practices namely, adoption of recommended variety, recommended dose of fertilizer, use of irrigation and use of plant protection measures were selected for investigation in this study. Due to unavoidable circumstances recommended doses of fertilizers, use of irrigation water were excluded from the calculation of adoption score. Potato growers of the study were asked about what types of varieties they cultivated and to what extent. They mentioned four types of recommended varieties namely diamante, cardinal, granola and multa. But most of the farmers cultivated diamante and cardinal. However, their extent of adoption was calculated according to the formula developed by Wahab (1979). Adoption of recommended potato

cultivation practices are described in this section as follows. Among the four recommended practices, farmers can not follow two practices. All farmers are apply over dose fertilizer and they use only one irrigation. So it can not be measured.

4.2.1 Adoption of HYV of potato-Diamont

Adoption score of recommended variety of the farmers ranged from 19.22 to 98.79 with the mean of 71.94 and standard deviation 19.14. On the basis of adoption of recommended variety, the farmers were classified into three categories as shown in Table 4.5.

Table 4.9 Distribution of farmers according to their adoption of recommended variety .

| Categories | Number | Percentage | Mean | SD |
|-----------------|--------|------------|-------|-------|
| Low (up to 40) | 7 | 6 | 71.94 | 19.14 |
| Medium (41-60) | 26 | 22 | | |
| High > 60 | 83 | 72 | | |
| Total | 116 | 100 | | |

Data presented in Table 4.5. show that the highest proportion (72 percent) of the farmers had high adoption, while 22 percent had medium adoption and only a negligible 6 percent had low adoption . As a result, the most (94 percent) of the farmers in the study area had medium to high adoption to the improved variety.

4.2.2 Adoption of plant protection measures

Potato growers of the study area were asked about how they prevent crops from the infestation of insect and diseases and to what extent. They mentioned about use of insecticide, Seed treatment, Soil treatment, modern cultivation practices, light trap and seed sorting. Their extent of adoption was calculated by using a formula developed by M. H. Bhuiyan in his class lecture.

$$\text{Extent of Adoption} = \frac{\text{Obtained score}}{\text{Highest possible score}} \times 100$$

The obtained score was calculated adding score of all the items divided by highest possible score and expressed in percentage by multiply one hundred .

Adoption of plant protection scores of the farmers ranged from 0 to 66.66 against the possible range of 0 to 100. The average and standard deviation were 36.35 and 19.64 respectively. Based on the observed scores, the farmers were classified into three categories as shown in Table 4.10. Distribution of the farmers According to their Adoption of plant protection measures

Table 4.10 Distribution of farmers according to their adoption of plant protection measures

| Categories | Number | Percentage | Mean | SD |
|-----------------|--------|------------|-------|-------|
| No adoption (0) | 13 | 11 | 36.35 | 19.64 |
| Low (1- 20) | 13 | 11 | | |
| Medium (21-40) | 31 | 27 | | |
| High > 40 | 59 | 51 | | |
| Total | 116 | 100 | | |

Data presented in Table 4.10 revealed that the highest proportion (51 percent) of the farmers fel under the high adoption category while 27 percent medium adoption. Thus, majority (78 percent) of the farmers had high to medium adoption of plant protection measures.

4.2.3 Overall Adoption of Recommended potato cultivation practices

Observed Adoption of recommended potato cultivation practices scores of the farmers ranged from 9.61 to 80.54 against the possible range of 0 to 100. The average and standard deviation were 54.14 and 14.54 respectively. Based on the observed scores, the farmers were classified into three categories as shown in Table 4.11.

Table 4.11 Distribution of farmers according to their overall adoption of recommended potato cultivation practices .

| Categories | Number | Percentage | Mean | SD |
|-------------------------|--------|------------|-------|-------|
| Low adoption (up to 40) | 19 | 16 | 54.14 | 14.54 |
| Medium adoption (41-60) | 55 | 48 | | |
| High adoption >60 | 42 | 36 | | |
| Total | 116 | 100 | | |

Data presented in Table 4.11 revealed that the highest proportion (48 percent) of the farmers fell under the Medium adoption category while 36 percent high adoption. Thus, the over all percent of the farmers had medium to high adoption.

4.3 Relationship between the selected characteristics of potato growers and their adoption of recommended potato cultivation Practices

Table 4.12 Co- efficient of correlation showing relationship between Potato farmers selected characteristics and their adoption of recommended potato cultivation practices (N=116)

| | Farmers' selected Characteristics | Value of 'r' with 114 df | Tabulated value of 'r' | |
|--|-----------------------------------|--------------------------|------------------------|------------|
| | | | 0.05 level | 0.01 level |
| Adoption of recommended potato cultivation practices | Education | 0.298** | 0.171 | 0.226 |
| | Farm size | 0.428** | | |
| | Annual income | 0.356** | | |
| | Organizational participation | 0.269** | | |
| | Cosmopolitaness | 0.141 ^{NS} | | |
| | Extension contact | 0.384** | | |
| | Innovativeness | 0.257** | | |
| | Farming experience | 0.163 ^{NS} | | |

*= Significant at 0.05 level

**= Significant at 0.01 level

^{NS}= Not significant (Non significant)

4.3.1 Education and adoption of Recommended potato cultivation practices

The relationship between education of the farmers and their adoption of recommended Potato cultivation practices was examined by testing the concerned null hypothesis.

Co-efficient of correlation between the concerned variables was found to be 0.298** as shown in Table 4.11. This led to the following observations regarding the relationship between the two variables under consideration:

- * The relationship showed a positive trend.
- * The computed value of 'r' (0.298**) was larger than the tabulated value with 114 degrees of freedom at 0.01 level of probability.

On the basis of above findings, the null hypothesis was rejected and hence, it can be concluded that education of the farmers had a significant and positive relationship with their adoption of recommended potato cultivation practices.

Also the findings indicated that more education of the farmers leads to a tendency towards more adoption of recommended potato cultivation practices. Hossain (1971), Hoque (1993), Khan (1993), Pal (1995) and many others also found positive and significant relationship between the farmers' education and their adoption of modern technologies.

4.3.2 Farm size and adoption of recommended potato cultivation practices

The relationship between farm size of the farmers and their adoption of recommended potato cultivation practices was examined. Co-efficient of correlation between the concerned variables was found to be 'r'=0.428** as shown in Table 4.11. This led to the following observations regarding the relationship between the two variables under consideration:

- The relationship showed a positive trend between the concerned two variables.
- The computed value of 'r' (0.428**) was larger than the tabulated value with 114 degrees of freedom at 0.01 level of probability.

On the basis of above findings, the null hypothesis was rejected and hence, the researcher concluded that farm size of the farmers had a significant and positive relationship with their adoption of recommended potato cultivation practices. It means that farmers with large farm size were more likely to have more adoption.

Many researchers (Haque, 1993; Khan, 1993; Pal, 1995 and Chowdhury, 1997) also observed the similar significant positive relationship between these two variables.

4.3.3 Annual income and adoption of recommended potato cultivation practices.

The relationship between annual income of the farmers and their adoption of recommended potato cultivation practices was examined by testing the concerned null hypothesis.

Co-efficient of correlation between the concerned variables was found to be 'r' = 0.356** as shown in Table 4.11. This led to the following observations regarding the relationship between the two variables under consideration:

- * The relationship showed a positive trend between the concerned two variables
- * The computed value of 'r' (0.356**) was larger than the tabulated value with 114 degrees of freedom even at 0.01 level of probability.

On the basis of above findings, the null hypothesis was rejected. Hence, the researcher concluded that annual income of the farmers had a significant relationship with their adoption of recommended potato cultivation practices.

Khan (1993), Pal (1995) and Chowdhury (1997) also found the similar findings.

4.3.4 Organizational participation and adoption of recommended potato cultivation practices.

The relationship between organizational participation of the farmers and their adoption of recommended potato cultivation practices was examined. Co-efficient of correlation between the concerned variables was found to be 'r' (0.269**) as shown in Table 4.11. This led to the following observations regarding the relationship between the two variables under consideration:

- The relationship showed a positive trend.
- The computed value of 'r' (0.269**) was smaller than the tabulated value with 114 degrees of freedom at 0.05 level of probability.

On the basis of above findings, the null hypothesis could not be rejected. Hence, the researcher concluded that organizational participation of the farmers had no significant relationship with their adoption of recommended potato cultivation practices.

Hossain (1983), Amin (1983), Balasubramanian and Kaul (1985) and Alam (1997) also observed similar relationship between the concerned variables.

4.3.5 Cosmopolitaness and adoption of recommended potato cultivation practices.

The relationship between cosmopolitaness of the farmers and their adoption of recommended potato cultivation practices was examined.

Co-efficient of correlation between the concerned variables was found to be ' r ' = 0.141Ns as shown in Table 4.11. This led to the following observations regarding the relationship between the two variables under consideration:

- The relationship showed an insignificant trend.
- The computed value of ' r ' (0.141Ns) was larger than the tabulated value with 114 degrees of freedom at 0.05 level of probability.

On the basis of above findings, the null hypothesis could not be rejected. Hence, the researcher concluded that cosmopolitaness of the farmers had no significant relationship with their adoption of recommended potato cultivation practice.

4.3.6 Extension contact and adoption of recommended potato cultivation practices.

The relationship between communication exposure of the farmers and their adoption of recommended potato cultivation practices was examined by testing the concerned null hypothesis.

Co-efficient of correlation between the concerned variables was found to be ' r '= 0.384** as shown in Table 4.11. This led to the following observations regarding the relationship between the two variables under consideration:

- The relationship showed a positive trend.
- The computed value of ' r ' (0.384**) was larger than the tabulated value with 114 degrees of freedom even at 0.05 level of probability.

On the basis of above findings, the null hypothesis was rejected. Hence, the researcher concluded that extension contact of the farmers had a significant and positive relationship with their adoption of recommended potato cultivation practices.

Farmers become aware of the improved agricultural practices through the various extension communication media. Farmers having no or low extension contact are expected to be low in adoption of improved cultural practices because of their unawareness about the practices. It is likely that I with high extension contact received more information on farm affairs which strengthened the base of their agricultural knowledge. Such knowledge was probably conducive to motivate the farmers towards adoption of BR 29 production technologies. Kashem *et al.* (1990), Bashar (1993), Pal (1995), Chowdhury (1997) and Sarker (1997) also found the similar results.

4.3.7 Innovativeness and adoption of recommended potato cultivation practices.

The relationship between innovativeness of the farmers and their adoption of recommended potato cultivation practices was examined by testing the concerned null hypothesis.

Co-efficient of correlation between the concerned variables was found to be ' r ' = 0.257** as shown in Table 4.11. This led to the following observations regarding the relationship between the two variables under consideration:

- The relationship showed a positive trend.
- The computed value of ' r ' (0.257**) was larger than the tabulated value with 114 degrees of freedom even at 0.05 level of probability.

On the basis of above findings, the null hypothesis was rejected. Hence, the researcher concluded that extension contact of the farmers had a significant

and positive relationship with their adoption of recommended potato cultivation practices.

4.3.8 Farming experience and adoption of recommended potato cultivation practices

The relationship between farming experience of the farmers and their adoption of recommended potato cultivation practices was examined. Co-efficient of correlation between the concerned variables was found to be 'r' (0.163 Ns) as shown in Table 4.11. This led to the following observations regarding the relationship between the two variables under consideration:

- The relationship showed a positive trend.
- The computed value of 'r' (0.163 Ns) was smaller than the tabulated value with 114 degrees of freedom even at 0.05 level of probability.

On the basis of above findings, the null hypothesis could not be rejected. Hence, the researcher concluded that family size of the farmers had no significant relationship with their adoption of recommended potato cultivation practices. Similar findings were observation by Haque (1993), Hossain (1991) and Islam (1993) but Shiper (1995) and Muttaleb(1995) found significant relationship

CHAPTER V
SUMMARY OF FINDINGS, CONCLUSION AND
RECOMMENDATIION

5.1 SUMMARY

The adoption of recommended potato cultivation practices among the potato growers depends upon a numbers of factors including farmer's characteristics. An understanding of the factors influencing this adoption behavior of the farmers is necessary to study to know the adoption and diffusion process in the country. Therefore, the present study was conducted in Gazaria upazila under Munshigonj district to attain the following specific objectives:

- 1) To determine and describe the extent of adoption of recommended practices of potato cultivation by the potato farmers.

- 2) To explore the relationships of the selected characteristics of the potato farmers with their adoption of recommended practices potato cultivation.

- 3) To determine and describe the some selected characteristics of the potato growers. The characteristics are-
 - a) Level of education
 - b) Farm size
 - c) Annual income
 - d) Organizational participation
 - e) Cosmopolitaness
 - f) Extension contact
 - g) Innovativeness
 - h) Farming experience

The study was conducted in two union of Gazaria upazilla under Munshigonj district. From a population of 585, a total number of 116 potato growers were

selected for interview. Data were collected by using an interview schedule. Collected Data were decoded, compiled, tabulated and analyzed in accordance with the objectives of the study. Statistical measures such as percentage distribution, range, rank order, average, standard deviation and adoption index were used to determine the extent of adoption of recommended potato cultivation practices by the farmers and their selected characteristics. Coefficients of correlation were calculated to explore the relationship between the selected characteristics and the extent of adoption of recommended potato cultivation practices.

5.1.1 Major findings

According to the objectives of the study, the findings were summarized as follows:

Selected characteristics of potato growers

Education

Education of the farmers ranged from 0 to 14 years of schooling. The average score was 4.18 and the standard deviation was 4.80. Large proportion (54 percent) of the farmers had no education (scores 0 – 0.5) compared to 11 percent having primary education 24 percent secondary education and 11 percent had above secondary education.

Farm size

Farm size of the farmers ranged from 0.49 to 10.08 hectares with an average of 1.90 hectares and standard deviation 1.35. The highest proportion (44 percent) of the respondent farmers belonged to medium farm size compared to with small farm size (22%) and large farm size (33%) respectively.

Annual income

Annual income scores of the farmers ranged from 70 to 1688.00 thousand with an average of 288.80 thousand and the standard deviation 186.12. The

highest proportion (67 percent) of the farmers had medium annual income compared to low annual income and having high annual income. Nine percent of the respondent had high income and 24% had low income.

Organizational participation

Organizational participation scores of the farmers ranged from 0 to 14. The average score being 4.03 with the standard deviation 3.60. The highest proportion (45 percent) of the farmers had very low organizational participation compared to 20 percent having medium participation and 35 percent having low participation.

Cosmopolitaness

Cosmopolitaness scores of the farmers ranged from 1 to 13 against the possible range of 0 to 28. The average cosmopolitaness score was 6.37 with the standard deviation 2.71. The highest proportion (51 percent) of the farmers had low cosmopolitaness compare to 27 percent having medium cosmopolitaness and 22 percent having very low cosmopolitaness.

Extension contact

The extension contact scores of the farmers ranged from 0 to 20, against the possible ranged of 0 to 44. The average communication exposure was found to be 6.69 with the standard deviation of 3.81. The highest proportion (46 percent) of the respondents had very low extension contact compared to 41 percent having low and 13 percent with high communication exposure. None had high communication exposure.

Innovativeness

The innovativeness score of the farmers ranged from 0 to 9, against the possible ranged of 0 to 28. The average innovativeness score was found to be 4.33 with the standard deviation of 2.09. The highest proportion (50 percent)

of the respondents had very low innovativeness compared to 33 percent having low and 17 percent with medium innovativeness. None had high innovativeness.

Farming experience

The farming experience scores of the farmers ranged from 10 to 30. The average farming experience was found to be 19.56 with the standard deviation of 5.79. The highest proportion (62 percent) of the respondents had medium farming experience compared to 9 percent having low and 29 percent with high farming experience.

5.1.2 Relationship of the selected characteristics of the farmers with their adoption of recommended potato cultivation practices

Education and adoption

The null hypothesis was rejected on the basis of estimated 'r' value at 0.01 level of probability with 114 degrees of freedom. Hence, education of the farmers had significant relationship with their adoption of recommended potato cultivation practices.

Farm size and adoption

The null hypothesis was rejected on the basis of estimated 'r' value at 0.01 level of probability with 114 degrees of freedom. Hence, farm size of the farmers had significant and positive relationship with their adoption of recommended potato cultivation practices.

Annual income and adoption

The null hypothesis was rejected on the basis of estimated 'r' value at 0.01 level of probability with 114 degrees of freedom. Hence, annual income of the farmers had significant relationship with their adoption of recommended potato cultivation practices.

Organizational participation and adoption

The null hypothesis was rejected on the basis of estimated 'r' value at 0.01 level of probability with 114 degrees of freedom. Hence, organizational participation of the farmers had significant relationship with their adoption of recommended of potato cultivation practices.

Cosmopolitaness and adoption

The null hypothesis could not be rejected on the basis of estimated 'r' value at 0.05 level of probability with 114 degrees of freedom. Hence, organizational participation of the farmers had no significant relationship with their adoption of recommended potato cultivation practices.

Extension contact and adoption

The null hypothesis was rejected on the basis of calculated 'r' value at 0.01 level of probability with 114 degrees of freedom which was found to be higher than table value. Hence, communication exposure of the farmers had significant and positive relationship with their adoption of recommended potato cultivation practices.

Innovativeness and adoption

The null hypothesis was rejected on the basis of calculated 'r' value at 0.01 level of probability with 114 degrees of freedom which was found to be higher than table value. Hence, innovativeness of the farmers had significant and positive relationship with their adoption of recommended potato cultivation practices.

Farming experience and adoption

The null hypothesis could not be rejected on the basis of calculated 'r' value at 0.05 level of probability with 114 degrees of freedom which was found to be higher than table value. Hence, farming experience of the farmers had no

significant and positive relationship with their adoption of recommended potato cultivation practices.

5.2 Conclusions

Findings of the study and the logical, interpretations of their meaning in light of other relevant facts prompted the researcher to draw the following conclusions:

1. The adoption of HYV of potato-Diamont and adoption of plant protection measures were not so high to the expected level. The extent of adoption of recommended two practices was not also satisfactory to the expected level. There were no participants in high adopters. Majority (80 percent) of them were medium adopters. Twenty percent were low adopters. The findings lead to the conclusion that efforts of extension agency has to be intensified to convince the farmers about the need for the full adoption of all recommended potato cultivation practices to get the expected result.
2. Findings of the study showed a significant relationship of education with the adoption of recommended potato cultivation practices. Education is a contributory factor of gaining knowledge and skill and has created positive attitude in an individual towards good things. There is a need to enhance the educational level of the farmers. It may, therefore, be concluded that enhancement of non-formal education like extension to be strengthen among the farmers so that they form positive attitude towards the adoption recommended potato cultivation practices.
3. Farm size of the potato grower showed positive and significant relationship with their adoption of recommended potato cultivation practices. The farmers having large farms are generally economically solvent and they are able to adopt the potato cultivation modern and are comparatively higher than any other crops. Seventy eight percent of the land is occupied by middle and large farm. Remaining 22% land is occupied by small farm.

4. Annual income of potato growers was significantly and positively associated with adoption. High annual income was possessed by the farmers to maintain higher economic and social status, and they were generally respected in the society. They had risk bearing ability and could undertake a venture if they were motivated. It may, therefore be concluded that farmers having more income will be in a better position to get more adoption regarding potato cultivation.
5. Organizational participation had significant relationship with their adoption. Unfortunately, the level of participation of the respondents was found to be quite low. This is evident from the fact that 80 percent of the potato growers had low participation. Hence, it may be concluded that there is need for higher participation of the potato growers and necessary steps may be taken by extension agencies to increase their organizational participation.
6. Cosmopolitaness of the farmers had no significant positive relationship with their adoption of recommended potato cultivation practices. Through cosmopolitaness an individual becomes aware of the recent information and consequently they become motivated to adopt the recommended potato cultivation practices due to influenced by others. The findings of the study lead to the conclusion that for successful adoption of recommended potato cultivation practices, the farmers need to be cosmopolite for their better awareness on recommended practices.
7. Extension contact of the farmers had a significant and positive relationship with their adoption of recommended potato cultivation practices. This means that higher the farmer's extent of exposure with different extension teaching methods, the higher was their adoption of recommended practices. Such relationship might be due to the fact that grower with higher exposure to extension people received more useful information and acquired more motivated to adapt the recommended practice.

8. Extension contact of the farmers had a significant and positive relationship with their adoption of recommended potato cultivation practice
9. Farming experience of the potato growers was found to have no significant relationship which was a bit unrealistic. However, the findings indicated that more than two-third of the potato growers had either low or medium experience respectively.

5.3 Recommendations

5.3.1 Recommendations for policy implications

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

1. Education of the potato growers had moderate and highly significant relationship with their adoption. It indicates the importance of education of the potato growers for rapid adoption of recommended practices. The findings also indicate that 54 percent of the farmers have illiterat or can sign only. Under the above situation, it may be recommended that arrangements should be made for increasing the literacy of the potato growers by the concerned authorities through the establishment of night school, adult education program and other extension methods.
2. Farm size had positive significantly relationship with their adoption of recommended potato cultivation practices. In the study, 66 percent of the potato farmers had small to medium farms. These farmers could give more attention to their farming operation as they generally work on their farm. Hence, the extension workers should utilize the medium farmers in their extension activities to introduce improved farm practices on a significant scale.
3. The annual income of the farmers had significant positive relationship with their adoption of recommended potato cultivation practices. It leads to the recommendation that extension service should provide adequate farm

management advice to the farmers for increasing their farm income. It is the real fact that if income be increased, farmers receptive capacity to adopt improved technologies will be increased and thereby production will be increased.

4. Since organizational participation had positive significant correlation with adoption of recommended potato cultivation practices , it is recommended that the concerned authorities should take necessary steps to mobilize the local organizations for the potato farmers. This will facilitate them to solve their problems collectively to adopt the new ideas and practices.
5. Cosmopolitaness of the potato farmers was not so high to the expected level. Persons with cosmopolite orientation come in contact with new people, new ideas and things. So extension workers should try to utilize the potato farmers with cosmopolite orientation in their extension educational programme.
6. Extension contact of the farmers in the study area has been found to be quite low though such contact is very necessary for high adoption of innovation by the farmers. It was observed that 87 percent of the potato growers of the study sample had very low to low extension contact. Hence, the concerned authorities should take cognizance of these facts and should take necessary steps to increase the extension contact of the farmers. That means the extension worker should maintain a close link with the farmers.
7. Farming experience of the potato growers was found to have no significant relationship which was a bit unrealistic. However, the findings indicated that more than two-third of the potato growers had either low or medium experience respectively.

8. The level of adoption of recommended potato cultivation practices was encouraging. However, there is need for all out efforts for wide adoption of recommended potato cultivation practices by the potato growers.

9. The extent of adoption of recommended practices by the potato farmers was not found up to the expected level. It is therefore, recommended that the extension services should take appropriate steps to motivate farmers as well as search for recommended practices suitable to potato farmers under the existing socio-economic condition, so that the farmers can use their resources efficiently to grow potato.

5.3.2 Recommendations for further study

A small piece of study as has been conducted cannot provide all information for the proper understanding of the farmers towards recommended potato cultivation practices. Therefore, the following recommendations were made for further study:

1. The present study was concerned with the farmers of the Imampur and Gazaria union under Gazaria upazilla of Munshigonj district. Similar studies should be replicated in other parts of the country.
2. This study investigated the relationship of eight characteristics of the farmers with their adoption of recommended potato cultivation practices as dependent variables. Therefore, it is recommended that further study be conducted with other independent and dependent variables.
3. Extent of adoption of HYV of potato-Diamont and the adoption of plant protection measures was very low. Further studies should be undertaken to identify the factors causing hindrance to follow recommended dose.
4. Studies need to be undertaken to ascertain the principles and procedures for establishment and maintenance of nursing organization in the rural areas of Bangladesh.
5. This study has investigated the relationships of recommended practices of the potato farmers in potato cultivation with their eight characteristics. Further research should be conducted to explore the relationships of different characteristics with the adoption of different recommended practices of potato cultivation separately.

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Appendix-A
Department of Agricultural Extension and Information
system
Sher-e-Bangla Agricultural University
Dhaka-1207

INTERVIEW SCHEDULE FOR A RESEARCH STUDY ON **ADOPTION OF**
RECOMMENDED POTATO CULTIVATION PRACTICES

Serial no.....

Name of the respondent.....

Date.....

Union.....

Upazila.....

District.....

Please answer the following question

1.Level of education

What is your education level?

- a) Can not read and write.....
- b) Can sign only.....
- c) Have passed class.....

2. Farm size

Please mention your farm size

| Sl.No. | Types of land | Land area | |
|--------|-----------------------------------|------------|---------|
| | | Local unit | Hectare |
| 1 | Homestead (including pond) | | |
| 2 | Own land under own cultivation | | |
| 3 | Land taken from others on lease | | |
| 4 | Land taken from others on borga | | |
| 5 | Own land given to others on borga | | |
| 6 | Others | | |
| | Total | | |

3. Annual Family income

Please mention your family income from each of the following sources (last year)

| Sources of income | | | | Amount of Taka |
|--------------------------|------|------------|--------|----------------|
| A. Agriculture | | | | |
| | Area | Production | Income | |
| 1.Aus | | | | |
| 2.Aman | | | | |
| 3.Boro | | | | |
| 4.jute | | | | |
| 5. Wheat | | | | |
| 6.Potato | | | | |
| 7.Pulses | | | | |
| 8.Oils | | | | |
| 9.Vegetables | | | | |
| 10.Spices and condiments | | | | |
| 11.Fruits | | | | |
| B.Livestock (no.) | | | | |
| 1.milk | | | | |
| 2.Meat | | | | |
| C.Poultry(no.) | | | | |
| 1.Egg | | | | |
| 2.Meat | | | | |
| D.Fisheries | | | | |
| E.Business | | | | |
| F.Services | | | | |
| G.Others(specify) | | | | |
| Grand Total | | | | |

4. Organizational participation

Please state the nature of your participation in the following organization

| Sl. no. | Name of the organization | Not involved | Nature of participation (year) | | |
|---------|---|--------------|--------------------------------|----------------------------|----------------------|
| | | | As an ordinary member | Executive committee member | President /Secretary |
| 1. | Farmers co operative association | | | | |
| 2 | IPM club | | | | |
| 3 | Poverty alleviation committee | | | | |
| 4 | School/College/Madrassa committee | | | | |
| 5 | Bazaar committee | | | | |
| 6 | Youth club | | | | |
| 7 | NGO Association | | | | |
| 8 | Fair organizing committee | | | | |
| 9 | Seed fertilizer pesticide dealers association | | | | |
| 10 | Others (specify) | | | | |

5. Cosmopolitaness

Please mention your frequency of visits to the following places

| Sl.no. | Places of visit | Frequency of visit | | | |
|--------|-------------------------------------|-------------------------|-----------------|-----------------|------------|
| | | Regularly | Frequently | Occasionally | Not at all |
| 1. | Relatives and friends home | 10 times or more/month | 6-9 times/month | 1-5 times/month | |
| 2. | Own union Parisad | 8times or more/month | 5-7 times/month | 1-4 times/month | |
| 3. | Visit to Upazila Agril.office. | 4 times or more/month | 2-3 times/month | 1 time/month | |
| 4. | Visit to Other Upazila Agril.office | 5 times or more/month | 3-4 times/month | 1-2 times/month | |
| 5. | Own district sadar | 6 times or more/year | 3-5 times/year | 1-2 times/year | |
| 6. | Other district sadar | 5 times or more/year | 3-4 times/year | 1-2 times/year | |
| 7. | Visited near by Research station | 3 times or more/year | 2 times/year | 1 time/year | |
| 8. | Attended in Agril.fair | 3 times or more in life | 2 times in life | 1 time in life | |

6. Extension contact

How frequently on your contact with the following agricultural information media?

| Name of the media | Frequentl y | Oftenly | Occasionally | Rarely | Not at all |
|---|-----------------|-----------------|------------------|------------------|---------------|
| a) Contact with SAAO | >3 times /month | 3 times /month | 2 times/month | 1 time /month | 0 time /month |
| b) Contact with AEO/AO | >6 times /year | 5-6 times /year | 3-4 times /year | 1-2 times /year | 0 times /year |
| c) Conducted result demonstration | >5 in life | 4-5 in life | 2-3 in life | 1 in life | Not at all |
| d) Participation in agril.training | >4 times /year | 2-3 times /year | 1-2 times /2year | 1times /4year | 0 times /year |
| e) Attend method demonstration meting | >7 times /year | 6-5 times /year | 4-5 time/year | 1-3 times /2year | 0 time/year |
| f) Contact with NGO officer | >4 times /month | 3 times /month | 2 times /month | 1 time /month | 0 time /month |
| g) Listening Krishi radio programme | >4 times /month | 3times /month | 2 times /month | 1 time /month | 0 time /month |
| h) Watching Mati-O-Manush/Channel I/RTV krishi programme | >4 times /month | 3 times /month | 2 times /month | 1 time /month | 0 time /month |
| i) Visit agricultural .exhibition | >2 times /year | 2 times /year | 1 time /year | 1 time /2year | 0 time /year |
| j) Read krishikatha ,krishi magazine ,leaflet, booklet, bulletine etc | >7 times /year | 5-6 times /year | 3-4 times /year | 1- 2time /year | 0 time /year |
| k.Attend agril.group meeting | >6 times /year | 5-6 times /year | 3-4 times /year | 1-2 times /year | 0 times /year |

7. Innovativeness

If you use the following technologies, please indicate duration of its use from first hearing.

| Sl.no. | Name of the Practices | Do not use | Extent of use | | | |
|--------|---|------------|--------------------|---------------------|---------------------|--------------------|
| | | | Used within 1 year | Used within 2 years | Used within 3 years | Used after 3 years |
| 1 | Cultivation of Diamont/Cardinal/Granola/Multa variety of potato | | | | | |
| 2 | Use of bio-fertilizer | | | | | |
| 3 | Use of IPM method | | | | | |
| 4 | Use of power tiller | | | | | |
| 5 | Use of true potato seed (TPS) | | | | | |
| 6 | Use of green manure | | | | | |
| 7 | Use of gypsum | | | | | |

8. Farming experience(year)

How long do you have Potato cultivation Experience?.....

9. Adoption of recommended potato cultivation practices

a) Adoption of HYV of potato –Diamont

Please state your opinion regarding the cultivation of following potato varieties

| Sl.no. | Name of variety | No cultivation | | | | | |
|--------|-----------------|----------------|----------------------|-------------------|------------------|----------------|-----------------|
| | | | Year of introduction | Year of awareness | Year of adoption | Area | |
| | | | | | | Potential area | Cultivated area |
| 1 | Diamont | | | | | | |

b) Plant protection measures

Please give your opinion of plant protection measures in the potato

| Sl.No. | Preventive measure | Extent of Prevention | | |
|--------|--------------------|------------------------|--------------|-------|
| | | According to necessity | Occasionally | Never |
| 1 | Seed treatment | | | |
| 2 | Soil treatment | | | |
| 3 | Insecticides | | | |
| 4 | Modern varieties | | | |
| 5 | Light trap | | | |
| 6 | Seed sorting | | | |

Thank for your kind cooperation and help.

.....
 Signature of the interviewer
 Date.....

Appendix-B

CORRELATION MATRIX AMONG THE VARIABLES OF THE STUDY

| VARIABLE | X1 | X2 | X3 | X4 | X5 | X6 | X7 | X8 | X9 | X10 | X11 |
|----------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|--------------------|--------|-----|
| X1 | 1 | | | | | | | | | | |
| X2 | .390** | 1 | | | | | | | | | |
| X3 | .348** | .890** | 1 | | | | | | | | |
| X4 | .229* | .288** | .219* | 1 | | | | | | | |
| X5 | .240** | .247** | .221* | .401** | 1 | | | | | | |
| X6 | .322** | .474** | .375** | .418** | .566** | 1 | | | | | |
| X7 | .349** | .266** | .293** | .262** | .044 ^{NS} | .180 ^{NS} | 1 | | | | |
| X8 | .075 ^{NS} | .102 ^{NS} | .037 ^{NS} | .065 ^{NS} | .260** | .202* | .105 ^{NS} | 1 | | | |
| X9 | .233* | .302** | .306** | .211* | -.017 ^{NS} | .150 ^{NS} | .341** | -.012 ^{NS} | 1 | | |
| X10 | .215* | .340** | .229* | .193* | .225* | .423** | .048 ^{NS} | .254** | .124 ^{NS} | 1 | |
| X11 | .298** | .428** | .356** | .269** | .141 ^{NS} | .384** | .257** | .163 ^{NS} | .742** | .757** | 1 |

^{NS} = Correlation is not significant

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

X1 = EDUCATION

X2 = FARM SIZE

X3 = ANNUAL INCOME

X4 = ORGANIZATIONAL PARTICIPATION

X5 = COSMOPOLITENESS

X6 = EXTENSION CONTACT

X7 = INNOVATIVENESS

X8 = FARMING EXPERIENCE

X9 = CULTIVATION OF RECOMMENDED VARIETY (DIAMOND)

X10 = PLANT PROTECTION MEASURES

X11 = OVERALL ADOPTION OF RECOMMENDED POTATO CULTIVATION PRACTICES