



## CORRELATION OF DIFFERENT CHARACTERISTICS OF THE FARMERS IN ADOPTING ARTIFICIAL INSEMINATION OF CATTLE

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### Abstract

Cattle are one of the indexes of civilization, sources of wealth, health and prosperity for nation. Cattle provide us food, cash as well as mechanical power. The production of cattle is low due to their poor genetic makeup, indigenous and large incidence of diseases. Artificial Insemination (AI) is the first generation reproductive biotechnology that has made a profound contribution to the genetic improvement as well as recognized breeding tool of the cattle. But farmers in Bangladesh are not yet able to adopt it perfectly. That was why the principle objective of the study was to determine the correlation of different characters of problems faced by the farmers in adopting AI of cattle. The study was conducted at two villages of Kishoreganj Sadar Upazila in Kishoreganj district. Data were collected from a sample of randomly selected 100 farmers out of 340 farmers. The data were collected through personal interview by using an interview schedule. Pearson's product moment correlation co-efficient (r) was used to test the concerned null hypothesis in the relationship between the dependent and the independent variables. Except household size, farm size, farming experience and social mobility, the other seven selected characteristics showed significant negative relationships and age showed significant positive relationship with the extent of problems in adopting Artificial Insemination by the farmers.

**Key words:** Artificial Insemination, Cattle, Correlation, Farmers, Problem in Adoption.

### Introduction

Bangladesh is one of the densely populated countries in the world with a total population of about 156 million. About 73 percent of this population lives in rural areas (BBS 2011). The economy of Bangladesh depends mainly on agriculture including livestock, poultry and fisheries. In Bangladesh there are 22.9 million cattle, most of them are indigenous (80%) along with 20% exotic and graded cattle (DLS 2008). The contribution of livestock plays an important role in the national income. Statistics show that about 6.5% of national GDP is covered by the livestock sector, and its annual rate of productivity is 9%. Livestock resources also play an important role in the sustenance of landless people (DLS 2010). The production of cattle is low because of their poor genetic makeup, about 90% of the total population are *Zebu* type which are non-descriptive and indigenous and large incidence of diseases always hamper their production (BLRI 2007). No specialized breed has yet been developed in our country which could help to gear up quality of cattle to ensure higher production of milk as well as meat.

Reproductive inefficiency in turn, however, affects dairy herd profitability by decreasing milk yield, the number of replacement heifers produced and by increasing culling rate. Maximizing both conception and service rate provides opportunities for management control of reproduction and profitability in dairy herd. Artificial Insemination (AI) is the first generation reproductive biotechnology that has made a profound contribution to the genetic improvement of the cattle. It is

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one of the most effective ways which is now used frequently by the farmers. Failure of cows to become pregnant and the need for repeated AI are usually causes of frustration and economic losses of the cattle farmers (Stevenson *et al.*, 1990).

Although AI is a widely recognized breeding tool but farmers in Bangladesh are not yet able to adopt it perfectly. This is due to facing some problems while practicing AI at farmers' level. Some of the problems are poor ability to adopt services, low pregnancy rate, poor communication, unable to select desired breed and to practice AI in appropriate time etc. (Paul, 2008 and Alam, 2005). Like many other developing countries, poor reproductive efficiency has been considered to the major limiting factors in dairy farming. It is not possible to develop dairying without increasing AI efficiency of cattle. In view of the need for having an idea about the AI problems of the farmers for effective planning and execution of cattle breeding improvement, the investigator undertook the present research to explore the relationships between the extents of problems faced by the farmers and their socio-economic characteristics

## **Methodology**

### **Study Area, Sampling Design and research instrument**

The study was conducted in Gangail and Kot Sholakia village of Mahinanda union of Kishoreganj Sadar upazila in Kishoreganj district. The area was selected due to the reason that a lot of farmers of the area adopt government and non government Artificial Insemination (AI) for their cattle. There were 340 farmer families in Gangail and Kot Sholakia which were considered as population of the study. Thirty percent of the population (total 100 farmers) was randomly selected by using as a sample of the study. A structured interview schedule was carefully prepared keeping the objectives of the research. To prepare the interview schedule and secure in-depth information, focus group discussion (FGD) was also conducted.

### **Variables of the Study**

Various socio-economic characteristics of the farmers like age, level of education, household size, farm size, farming experience, training experience, extension media contact, social mobility, cattle strength, knowledge on adopting AI for cattle, annual family income from crop farming and others, income from livestock and poultry were considered as the independent variables of the study. The dependent variable was Problem confrontation of the farmers in adopting AI for cattle.

### **Data collection, Processing and Analysis**

Data were collected by face-to-face interview method with respondents. The collected data were coded, compiled, tabulated and analyzed. The qualitative data were transferred into quantitative data by appropriate scoring technique. The analyses were performed by using statistical treatment with SPSS (Statistical Package for Social Sciences) computer package. In order to test hypotheses of the study Pearson's Product Moment Correlation Co-efficient ( $r$ ) was used.

## **Results and discussion**

### **Relationship between Selected Characteristics of the Farmers and their Problem Confrontation in Adopting AI**

The correlation matrix of dependent and independent variables has been presented in table 1.

#### **Age and extent of problem in adopting AI**

The relationship between age of the farmer and their extent of problem in adopting AI ( $r = .584^{**}$ ) was significant at 0.01 level of probability and followed a positive trend. The findings indicate that age of farmers had significant relationship with their extent of problem. Pervez (2007), Mamun (2004) also found similar findings in their respective studies. The findings indicate that a person getting more aged was found to have more problems with adoption of AI service because young farmers are comparatively free from religious taboo and more exposed with different communication

media. But older farmers generally have less interest to adopt new technology. Moreover, they are slightly exposed with communication media. So, that the aged farmers faced more problems in adopting AI.

**Table 1.** Correlation co-efficient between selected characteristics of the farmers and their problem

Items	Age	Level of education	Household size	Family income from crop farming and others	Income from livestock and poultry	Farm size	Farming experience	Training experience	Extension media contact	Social mobility	Cattle strength	Knowledge on adopting Artificial Insemination	Problem confrontation of the farmer in adopting AI service for their cattle
Age	1												
Level of education	-.580**	1											
Household size	-.580**	.037	1										
Family income from crop farming and others	-.071	.258**	.226*	1									
Income from livestock and poultry	-.146	.434**	-.144	.429**	1								
Farm size	-.256*	-.183	-.006	-.106	.041	1							
Farming experience	.149	-.124	.237*	.141	-.039	-.004	1						
Training experience	.308**	.649**	.438**	.203*	.245**	-.124	.194	1					
Extension media contact	-.468**	.576**	-.256*	.386**	.390**	-.168	-.054	.504**	1				
Social mobility	-.061	.128	.336**	.024	-.142	-.112	-.106	.217*	.065	1			
Cattle strength	-.151	.392**	-.093	.478**	.658**	-.024	.189	.478**	.620**	.022	1		
Knowledge on adopting Artificial Insemination	-.379**	.703**	.335**	.404**	.446**	-.147	-.111	.378**	.767**	.129	.576**	1	
Problem confrontation of the farmer in adopting AI service for their cattle	-.584**	.774**	-.075*	-.198*	-.389**	0.095	.165	-.661**	-.587**	-.164	-.471**	-.681**	1

\* Correlation is significant at 0.05 level of probability (Tabulated value: 0.197) with 98 d.f

\*\* Correlation is significant at 0.01 level of probability (Tabulated value: 0.257) with 98d.f

**Level of education of the farmers and extent of problem in adopting AI**

The relationship between level of education of the farmer and their extent of problem in adopting AI (r = .774\*\*) was significant at 0.01 level of probability and followed a negative trend. The findings indicate that level of education of the farmer had significant relationship with their extent of problem in adopting AI. Parvez (2007), Alam *et al* (2004), Habib (2000) and Paul (2000) also found similar findings in their respective studies. The findings indicate that a farmer having more education was found to have fewer problems in adopting AI for their cattle. Because, education helps individual to gain knowledge and skill in different cognitive and affective levels of learning and develop positive response. When an individual attains education, and exposed with different communication media, helps a person to develop rationality and knowledge in the concerned field. This would ultimately increase his decision making ability and power of observation. That’s why education was negatively related with extent of problem.

**Household size**

The correlation coefficient between household size of the farmer and extent of problem in adopting AI (r= -.075) was not significant at 0.05 level of probability. The findings indicate that there was no relationship between household size of the farmer and their extent of problem in adopting AI that is

null hypothesis could not be rejected. Parvez (2007), Chowdhury (2003) and Nuruzzaman (2000) also found similar findings.

### **Annual family income from crop farming**

The relationship between annual family income from crop farming and others of the farmer and their extent of problem in adopting AI ( $r = -.198^*$ ) was significant at 0.05 level of probability and followed a negative trend. This means that the more annual income of farmers lead to acquire more knowledge about new technologies. Similar findings were obtained by Rahman (2008) and Sarker (2005).

### **Income from livestock**

The relationship between income from livestock and poultry of the farmer and their extent of problem in adopting AI ( $r = -.389^{**}$ ) was significant at 0.01 level of probability and followed a negative trend. The findings indicate that income from livestock and poultry of farmers had significant relationship with their extent of problem. Similar findings were obtained by Sarker (2005). The findings indicate that having higher income from livestock and poultry may concern farmers to become more careful about their cattle and poultry. This is because income from livestock will be high if cattle number of the farmer will be high. Thus, farmers with a good amount of cattle are likely to be exposed with communication media especially with mass media so that any information or necessary steps to secure his cattle couldn't be missed away. Actually in that case farmer does not want to lose his great income source and as a result income from livestock and poultry may concern farmers are negatively involved with problem confrontation.

### **Farm size**

The correlation coefficient between farm size of the farmer and extent of problem in adopting AI ( $r = .095$ ) was not significant at 0.05 level of probability. The findings indicate that the null hypothesis could not be rejected. Hossain (2007) also found similar findings.

### **Farming experience**

The correlation coefficient between farming experience of the farmer and extent of problem in adopting AI ( $r = 0.165$ ) was not significant at 0.05 level of probability. There was no relationship between farming experience of the farmer and their extent of problem in adopting AI. Chowdhury (2009) and Akanda (2005) also found similar findings.

### **Training experience**

The relationship between training experience of the farmer and their extent of problem in adopting AI ( $r = -.661^{**}$ ) was significant at 0.01 level of probability and followed a negative trend. The findings indicate that training experience of the farmer had significant relationship with their extent of problem in adopting AI. Akanda (2005), Habib (2000), Paul (2000) also found similar findings in their respective studies. It may be due to the reason that the farmers having training experience are more concern about their cattle and they know how to maintain their cattle. As a result, trained and experience farmer's faced problems confrontation was minimum.

### **Extension media contact**

The relationship between extension media contact of the farmer and their extent of problem in adopting AI ( $r = -.587^{**}$ ) was significant at 0.01 level of probability and followed a negative trend. The findings indicate that extension media contact of the farmer had significant relationship with their extent of problem in adopting AI. Sharmin (2010), Sarker (2004), also found similar findings in their respective studies. It is assumed that extension media contact of the farmers changes their attitude towards the adoption of improved farming practices. As a result problem faced by them in adopting technologies become less. Thus, it could be said that, extension media contact of the farmer could play a significant role in adopting AI for cattle.

### **Social mobility**

The correlation coefficient between household size of the farmer and extent of problem in adopting AI was ( $r = -.164$ ) was not significant at 0.05 level of probability. There was no relationship between social mobility of the farmer and their extent of problem in adopting AI. Parvez (2007), Chowdhury (2003), also found similar findings.

### **Cattle strength**

The relationship between cattle strength of the farmer and their extent of problem in adopting AI ( $r = -0.471^{**}$ ) was significant at 0.01 level of probability and followed a negative trend. It may be due to the reason that, with the increasing number of their cattle, farmers become more careful about their management, as cattle become the great income source for farmer. Moreover, with the increasing number of cattle, experience and awareness about rearing cattle also increased. Thus, cattle strength plays a significant role in problem confrontation in adopting cattle quality.

### **Knowledge about AI**

The relationship between knowledge of the farmer and their extent of problem in adopting AI ( $r = -.681^{**}$ ) was significant at 0.01 level of probability and followed a negative trend. The findings indicate that a farmer having more knowledge was found to have less problem in adopting AI for their cattle. Because, knowledge will increase awareness, and decision making ability in any condition. Thus, knowledge plays a significant role in decreasing problem confrontation of the farmer in adopting cattle quality.

Pearson's product moment correlation co-efficient ( $r$ ) was used to test the concerned null hypothesis in the relationship between the dependent and the independent variables. Except household size, farm size, farming experience and social mobility, the other 7 selected characteristics showed significant negative relationships and age showed significant positive relationship with the extent of problems in adopting Artificial Insemination by the farmers.

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