

## Fruit Diversity Related Household Characteristics in a Selected Island of Bangladesh

<sup>1</sup>M.L. Rahman, <sup>2</sup>M.A. Mannan, <sup>3</sup>Mirza Hasanuzzaman and <sup>4</sup>M.K. Islam

<sup>1</sup>Farm Division, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh

<sup>2</sup>Department of Agricultural Extension (DAE), Ministry of Agriculture, Dhaka, Bangladesh

<sup>3</sup>Department of Agronomy, Faculty of Agriculture,

Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh

<sup>4</sup>Horticultural Research Centre, Bangladesh Agricultural Research Institute, Gazipur-1701, Bangladesh

---

**Abstract:** The purpose of the study was to determine the diversity of fruit species in the homestead and to explore the relationship between farmers characteristics and fruit diversity in their homestead. The study covered 80 homesteads from four unions, 20 from each union. The information was collected by using structured questionnaires, formal and informal interviews and field observations. Some information was also gathered by group discussion with the farmers. The findings revealed that age of the farmers has no relationship with the fruit diversity, while education, family size, area of homestead, area under fruit have low and positive relationship with the fruit diversity but not significant. Annual income from fruit and knowledge about fruit has low and negative relationship with the fruit diversity but not significant. Extensions Media contact have a highly significant and negative relationship with the fruit diversity. Total number of species was found highly positively correlated with fruit diversity. The traditional homestead fruit production system and fruit diversity in the study area was found very poor due to management practices. Fruit diversity should be increased to fulfill the nutritional needs as well as to conserve the genetic resources and environmental balance.

**Key words:** Farm Category • Adoption • Fruit • Diversity • Correlation

---

### INTRODUCTION

The people of Bangladesh are directly related to agriculture. We have almost attained self-sufficiency in cereal production. But as regards fruit production, we do still depend on foreign supplies. For balanced nutritional needs sufficient fruit intake is necessary. Fortunately Bangladesh is favorites play ground of nature. It offers a highly congenial environment for the growth of different varieties of fruits like Banana, Papaya, Pineapple, Litchi, Jackfruit etc, which are more nutritious compared to the imported foreign fruits like orange, grape, apple etc. The proverb goes that every season has its special fruits in Bangladesh. Even though having this situation, our fruit production is not sufficient to meet up our domestic need. During last three decades population of Bangladesh increased from 75 million to 129 million, simultaneously food grain production increased from 10 million to about 20 million tons. But fruit production did not increased at the same rate. The minimum dietary requirement of fruit per day per person is 85g, where as our availability is only

30-35g. In view of the fact, the consumption and availability of fruits is very negligible. As a result, imbalanced nutrition and nutrition deficiency diseases are being increased at an alarming rate.

Further they sometimes plant trees other than fruits. Even they keep tree area without planting any trees. Hence a massive extension program needs to be implemented to developed ideal homestead garden and consequently making varieties of fruits for consumption by the family members. Implementation of any such extension program calls for an assessment of the present fruit diversity in the homestead and problems of the farmers. But in case of DAE (Department of Agriculture Extension), possibly there is no assessment of fruit diversity has been done. There are 19.9 million homesteads in our country [1]. Their homesteads are the main source of fruits. Where there is a home, there is a homestead. Every farm families have large or small homestead area where different types of fruits are grown. Practical experience indicates that majority of the farmers cultivates homestead fruits in unplanned way. A large

area of every homestead remain as follows because of poor plant population where as plantation of diversified fruit trees in planned way considering the harvesting period, a farmer can easily get year round fruit supply from his homestead garden and also can get more production of fruit from their garden. So fruit diversity in homestead is necessary [2-5].

However, the main objective of the study is to know the relationship of some selected characteristics of the households with the fruit diversity and identify the problem faced by the farmer to produce fruit in homestead area of the island.

### **MATERIALS AND METHODS**

The study was conducted in Hatiya Island. It is located in the southern part of Noakhali district of Bangladesh. It is located between 22°00' and 22°35' north latitude and between 90°58' and 91°14' East longitude. The population of this island is approximately 345000 and the total household number is 47747. Total area under homestead is 18,118 ha. The average area of homestead is 0.28ha. And the average size of the household is 7.377. Per-head land is 0.25 ha including new "char". The study area is located in the tropical belt and enjoys fairly equitable tropical monsoon climate. The temperature is almost uniform throughout the year. The maximum and minimum temperatures are normally recorded 35°C and 10°C respectively. Mainly three seasons are seen among the six seasons. May to October is Rainy season, November to February is winter and March to April is summer season. The study area is under AEZ-18 [6]. The texture of topsoil ranges from loamy to clay loam. The subsoil texture is mainly clay loam, the sub-stratum is usually clay. The pH of soil of this island ranges from 6.6-8.3, from neutral to basic. The organic matter content ranges from 0.6% to 2.3% in the topsoil, slowly decreased in the sub soil.

The selection of the study site was purposive where natural vegetation was rich compared to the other area of Bangladesh. All households were grouped into five farm categories like marginal (0.15ha), small (0.16-0.25 ha), medium (0.26-0.5 ha), large (0.51-0.75 ha) and very large (0.76-1.00 ha) according to size of homestead area. A sample of 80 households were selected, twenty from each union and five from each category. The collected lists were verified through survey the villages and discussion with the households.

Information was collected from both primary and secondary sources. These were gathered by survey as

well as non-survey methods. The survey sources include interviews through a pre-tested interview schedule; key informant and farmers' group discussion while non-surveys include the information through field survey, direct observations and secondary sources. Both qualitative and quantitative data were collected. The interview schedule was pre-tested with 10 households and then final shape was given to the interview schedule. The study was carried out for a period of 2 months time from October to December 2005. Data for fruit diversity of the homestead were collected using questionnaire. Information was recorded through interviews of family members like head of the family, housewife and others. Data were collected mainly on name and numbers of fruit species, demographical characteristics of the households, socio-economic information.

Twelve characteristics of the growers were selected as independent variables of this study. Procedures followed in measuring the independent characteristics are briefly describe bellow:

**Age:** The age of an individual is one of the important factors pertaining to his personality make up which can play an important role in his adoption behaviour. It was operationally measured in term of actual age in years.

**Education:** Education of a respondent was measured on the basis of classes he had passed in formal educational institution. For example, if a respondent passed class-VII, his education score was 7 where as if a respondent had no reading or writing ability was given a score of zero (0).

**Family Size:** Family size of a respondent was measured in terms of actual number (dependents) of members in his family (including himself) during interview. The scoring was made by the actual number given by the respondent. For example, if a respondent had five members in his family then his score was five (5).

**Homestead Size:** Homestead size of a respondent was determined based on total area of his homestead on which he was living with his family members during the period of this study. It included the area of houses, ponds, gardens, lawns etc.

**Area under Fruit Cultivation:** Varieties of fruits were seen to cultivate at the various part of homesteads. It was measured with the help of family head.

**Annual Income from Fruit:** Annual income from fruit was measured in the amount of taka. From January to December, every farmer can sell some of his or her produced fruits. It may be large or poor amount. The actual amount of money was calculated by information given by the farmers.

**Knowledge about Fruit Cultivation:** For measuring the extent of knowledge about fruit cultivation of a respondent, a knowledge score was calculated. For this, he was asked 15 questions covering different aspects of fruit cultivation. Each question has predetermined score assigned making a total score of 100. For correct responses to all the questions, a respondent could secure a total score of 100. Otherwise, for wrong responses to all the questions he could get a score of 0 (zero). For partial correct responses scores were assigned accordingly. The sum of total scores for all the 15 questions yielded the knowledge score of a respondent.

**Extension Media Contact:** Extension media contact was measured by extension media contact score. In computing this, six extension media contact with the respondent were included in the measurement. These media were radio, television, Agriculture Extension office, NGOs, local ideal farmer and neighbours. For this the respondents were asked to mention the level of communication with the following media. There were 3(three) options - often, necessarily and never. The score assigned to the above 3 alternatives were 2, 1 and 0 (zero) respectively. The score for all six items were added together to get the "Extension Media Contact Score" of a respondent. The extension media contact score of the respondents could range from 0 to 12, 0 (zero) indicating no extension media contact and 12 indicating very high extension media contact.

**Ttal Species:** Total species was measured by the total number of fruit plant of different species in the homestead. Non-fruitable plants were also included.

**Sources of Fruit Seedlings:** Seedling is a very important component for fruit cultivation. Good seedling can give good plant and as well as fruit. So, sources of seedling were also asked to the respondents. There were 5 (five) alternatives made at own home, collected from another home, collected from local nursery, collected from NGOs and collected from modern nursery.

**Likings of Fruit for Their Homestead:** Respondent's liking was measured by five varieties of fruits, which they like to plant in their home garden. Large canopy fruits are not very easy to plant in a small home garden but most of the house heads were seen to fond of some common fruits.

**Problem Faced by the Farmers:** The farmers were asked about their problems to fruit cultivation in their homestead. The problems were listed from the pre testing of questionnaires. Then it was marked after asking the farmers.

SPSS (Statistical Package for Social Science) software [7] was used to estimate the descriptive statistics of the data. The collected data were compiled, tabulated, coded and analyzed in accordance with the objectives of the study. Qualitative data were quantified by means of suitable scoring techniques. The statistical measures such as number and distribution were used for describing the variables of the study. In order to explore the relationships of the selected characteristics of the farmers with the fruit diversity of their homestead, the Pearson's products moment correlation was computed at five percent (0.05) and one percent (0.01) level of significance.

## RESULTS AND DISCUSSION

### Characteristics of the Profile of the Farmers

**Age:** Age of the homestead fruit growers was found to range from 29 to 71 years. The average age was 50.66 years with the standard deviation of 7.733. Based on their age, the growers were classified in to four categories as shown in Table 1. It was observed that about half (48.75%) of the homestead fruit growers fell in the pre-old age, while 30 percent, 11.25 percent and 10.00 percent belonged to middle age, young and old age categories, respectively. It indicates that 78.75 percent of the growers compressed either the middle or pre-old aged categories. This depicts that decision-making relating to homestead affairs especially in respect of homestead fruit cultivation practices in the study area may be influenced by middle age and pre-old aged respondents.

**Education:** Education of a grower was measured by the levels of his formal education i.e. highest grade (class) passed by him. The education score of the respondents ranged from 0 to 16. The average being 6.83 and the standard deviation was 4.81. On the basis of their education score, the growers were grouped in to four

Table 1: Characteristics of the profile of the farmers

Sl. No.	Selected characteristics	Scoring method	Observed range	Categories	Farmers			
					No.No.	%	Mean	SD
01	Age	Year	29-71	Young (up to 40)	9	11.25	50.66	7.733
				Middle (41 to 50)	24	30.00		
				Pre old (51 to 60)	39	48.75		
				Old (61 to 71)	8	10.00		
02	Education	Year of schooling	0-16	No education (0)	21	26.75	6.83	4.814
				Primary (1 to 5)	10	12.50		
				Secondary(6to 10)	34	42.50		
				Higher edu(above 10)	15	18.75		
03	Family size	No of members	5-12	Small (5-6)	24	30.00	7.21	1.26
				Medium (7-8)	44	55.00		
				Large (9-10)	10	12.50		
				Very large (10-11)	2	2.50		
04	Homestead size	Hectare	0.15-1.00	Small (.15-.25)	22	27.50	.4412	.2236
				Medium (.26-.50)	32	40.00		
				Large (.51-.75)	19	23.75		
				Very large (.76-1.00)	7	8.75		
05	Area under fruit cultivation	Hectare	0.15-0.60	Very small (up to .15)	43	53.75	0.441	0.224
				Small (.16-.30)	24	30.00		
				Large (.31-.45)	11	13.75		
				Very Large (.46-.60)	2	2.50		
06	Annual income from fruit	Earned money (TK)	00-4000	Very low (up to 1000)	52	65.00	1202.50	947.61
				Low (1001-2000)	18	22.50		
				Medium (2001-3000)	8	10.00		
				High (3001-4000)	2	2.50		
07	Knowledge about fruit	Obtained number	0-70	Very low (up to 20)	33	41.25	26.11	12.71
				Low (21-35)	31	38.75		
				Medium (36-50)	13	16.25		
				High (51-70)	3	3.75		
08	Extension media contact	Obtained score	15-50	Low (up to 15)	2	2.50	30.19	8.46
				Medium (16-30)	55	68.75		
				High (31-45)	19	23.75		
				Very high (46-60)	4	5.00		
09	Total Species	Observed species	8-26	Very poor (8-12)	4	5.00	18.20	3.39
				Poor (13-17)	30	37.50		
				Medium (18-22)	37	46.25		
				HHigh (23-26)	9	11.25		

categories and the distribution of the respondents according to their scores as shown in Table 1. It is evident from Table 1 that about 26.25 percent of the homestead fruit growers had no education, Only 12.5 percent have primary education, 18.75 percent had above secondary education and about half (42.5 percent) of the growers fell under the categories of secondary education. Bashar [4] and Ali [7] also found that the highest number of cane growers in secondary education group. The findings of the study keep consistency with the studies of Haque [8] who also

observed higher literacy rate among the farmers than the national average. Seventy nine percent of the growers were educated that varied from primary to higher levels. The present literacy rate of the country is 65.5 percent [1]. The findings indicate that in the study area, the literacy rate seems to be higher than the national average. Homestead fruit growers need to have some education in order to know about fruit diversity. Education also helps the growers to know the improved methods of cultivation by reading newspaper, leaflets, bulletins and other printing materials.

**Family Size:** The family size of the farmers ranged from 5 to 12 members with an average of 7.21 and standard deviation of 1.26. On the basis of their family size, the farmers were classified in to four categories as shown in Table 1. Data computed that in the Table 1 indicate that 30 percent of the growers belonged to the “small family” category compared 55 percent who belonged to “medium family” category and 12.50 percent to “large family” category. These findings also indicate that about 85 percent of the homestead fruit growers had small to medium families. But Bashar [4] observed that more than 70 percent of the respondents had either medium or large family. Such findings indicate that existence of large family is not encouraged now in the community.

**Homestead Size:** Homestead size of the fruit growers varied from 0.15 to 1.00 hectare. The average homestead size 0.44 hectares with a standard deviation of 0.22. The respondents were classified in to four categories. Data in the Table 1 show that about 40 percent of the growers had medium homestead compared to 8.75 percent having very large and 27.5 percent had small sized homestead. The majority of the growers (67.50 percent) had the small to medium sized homestead. The average farm size of the respondent farmers was 0.44 hectare, which is lower than national average (0.81 hectare). Similar findings (in respect of highest proportion) were also reported by Ali [7] and Bashar [4]. The farm size encourages the respondents for having family income and to utilize newly released high yielding technologies in the homestead for getting higher yield.

**Area under Fruit Cultivation:** The area under homestead fruit cultivation ranged from 0.05 to 0.60 hectare. The average area under homestead fruit cultivation is 0.441 hectare with a standard deviation of 0.224. The growers were classified in to four categories according to their homestead fruit areas as shown in Table 1. More than half (53.75 percent) of the growers had low area for homestead fruit cultivation followed by medium area (30.00 percent), large area (13.75 percent) and very large area (2.5 percent). The majority (83.75 percent) of the growers had either small or medium area for fruit cultivation. Alam *et al.* [9] observed that fifty percent of the pineapple growers had big area for pineapple cultivation followed by media area (35 percent) and small area (15 percent)

**Annual Income from Fruit:** The annual income from fruit of a respondent was determined by adding his income

from different types of fruit. The score was expressed in the amount of money. The range of annual income from fruit score was 0 to 4000 with an average of 1202.50 taka and standard deviation 947.61. On the basis of annual income, the respondents were divided in to four categories as shown in Table 1. More than half (65.00 percent) of the growers had very lower annual income from fruit, where as only 2.50 percent as high income group 10 percent respondent under medium income group and about 22.50 percent respondent under lower income. Bashar [4] found that majority of the sugarcane farmers and Banana farmers, respectively belonged to the medium income group. Where as in the study area, it was observed that almost 87.50 percent respondent were in the group of lower and very lower income from fruit.

**Knowledge about Fruit:** The knowledge scores of homestead fruit growers could range from 0 to 100. But the observed knowledge score of the growers ranged from 06 to 70. Based on the observed knowledge about fruit score, the growers were classified in to four categories as shown in Table 1. Near about half (41.25 percent) of the growers have very low-knowledge, 38.75 percent low knowledge, 16.25 percent have medium knowledge and only 3.75 percent respondents have excellent knowledge. The findings of my study area indicate that the majority of the growers were in low and very low knowledge regarding the growing of diversified homestead fruit.

**Extension Media Contact:** Observed Extension Media Contact score of the farmers ranged from 15 to 50 against the possible range of 0 to 60. The average extension media contact score was 30.19 with the standard deviation of 8.46. On the basis of their extension contact scores, the farmers were classified in to three categories as shown in Table 1 which indicated that 2.5 percent of the growers had lower extension contact, while 68.75 percent had medium and 23.75 percent had high extension contact. The remaining 5 percent of the farmers were found to have very high extension contact. The findings of the study indicate that about 97.5 percent of the respondent had medium to high extension media contact with various information sources. Islam [10] found that almost half (50.64 percent) of the farmers maintained contact with interpersonal media compared to 37.56 percent and 11.80 percent of the farmers using group and mass media, respectively. Extension Media is very important for receiving information from various sources. Practically there is very little extension programme for homestead

Table 2: Sources of seedlings used by the households

Sl. No.	Sources	Total Homestead	Observed Homestead	Percentage (%)
01	Home made	80	80	100
02	From others home	80	78	97.5
03	Local nursery	80	43	53.75
04	NGOs	80	7	8.75
05	Modern Nursery	80	4	5.00

Table 3: House head's liking frequency of different fruit species

Sl. No.	Name of fruit species	Total house heads	Frequency	Percentage (%)
01	Mango	80	80	100.00
02	Banana	80	62	77.50
03	Jack fruit	80	57	71.25
04	Guava	80	46	57.50
05	Coconut	80	33	41.25
06	Papaya	80	33	41.25
07	Black berry	80	31	38.75
08	Jujube	80	28	35.00
09	Carambola	80	20	25.00
10	Amla	80	12	15.00
11	Custard apple	80	3	3.75
12	Hog palm	80	2	2.50
13	Olive	80	2	2.50
14	Wax jambu	80	1	1.25
15	Monkey jack	80	1	1.25

fruit growers in my study area. The situation is changing through the interventions of government organization and NGOs but more attention is needed.

**Total Species:** The total species of fruit range from 8 to 26 in the homestead. Based on the observed species of fruits in the homestead, the growers were classified in to four categories as shown in Table 1. Near about half (46.25 %) of the growers have medium (48-22) fruit species, followed by poor number (37.5 %), high number (11.25 %) and very poor number (5.00 %) of fruit species. The findings of the study area indicate that the majority of the growers have in poor to medium number of species.

**Sources of Fruit Seedlings:** Homestead fruit growers collect the fruit seedlings from various sources. Most of the cases, they collect seedlings from local sources like- homemade seedling, seedlings collect from other home, Local nursery, local NGOs etc. Some inspired household collects seedlings from modern nursery. The frequencies of those seedling-sources in the study area were presented in Table 2.

In the study area, it was observed that almost cent percent (100 percent) respondents make seedlings in

their own home. They also vastly use (97.50 percent) the seedlings collected from others home. Almost half (53.75 percent) of respondents also collect fruit seedlings from local nursery. But only 8.75 percent and 5.00 percent growers collect their seedlings from NGOs and modern nursery. It indicated that modern technologies of fruit cultivation are not well known to the household of the study area.

**Likings of fruit:** Fruit diversity of homestead mostly depends on households liking. The fruits that are liked by everyday are widely cultivated. The most popular fruits of Bangladesh are Mango, Jackfruit, Banana, Guava, Jujube, Litchi, etc. In the study area, it was measured by the name of five fruits that were mentioned by individual respondent. In the study, it was seen that Mango is the only fruit which is preferred by the cent percent respondents, followed by Banana had 77.5 %, Jackfruit had 71.25 %, Guava had 57.5 percent, Coconut and Papaya had 41.25 percent each, Black berry had 38.75 percent and Jujube had 35 percent likings from the respondents. The likings of fruits of the households were presented in Table 3. Some other fruits like Carambola, Amla, Custard apple, Hog palm, Olive, Wax jambu and Monkey jack are also mentioned by the respondents, but in very low frequency.

Table 4: Problem faced by the farmers

Sl. No.	Problems	Frequency	Percentage	Rank
01	Lack of good seeds and seedlings for fruit cultivation	68	85.00	1
02	Lack of sufficient chemical and organic fertilizers	40	50.00	5
03	Lack of area in homestead to cultivate fruits	30	37.50	7
04	Lack of activities by the agriculture officers on fruit cultivation	8	10.00	9
05	Not to get the proper price of their produced fruits	51	63.75	2
06	Lack of enough storage capacity to store the fruits in peak season	29	36.25	8
07	Lack of manpower to care take the fruit garden	37	46.25	6
08	Attack of insects and diseases in fruit garden	50	62.50	3
09	Attack of natural calamities in the fruit garden	47	58.75	4

**Problem Faced by the Farmers:** The respondents were asked about the problem faced by them in fruit cultivation. Various kinds of problems were identified. Among these problems, some are mostly dominant to others. On the basis of the statement of the respondents, nine problems were recorded to be the barrier of fruit cultivation. Problem in each item has been presented with frequency distribution of farmers in percent and also ranked according to their importance in the Table 4.

Lack of good seeds and seedlings was the most serious problem as cited by the growers. Almost 85 percent respondents indicated it as a great problem. From the study it was observed that there is no modern nursery in Hatiya Upazila. For this most of the people make seedlings in own home or collect from other local sources. Not to get the proper prices was also serious problem (63.75 %) to the growers. The households don't get the proper price of their perishable fruits because of bad communication. Attack of insect and disease was identified as another serious problem by the respondents. Especially Mango, Guava etc are mostly attacked by the insect and disease. For this reason, farmers don't want to cultivate this fruits as commercial purposes. Attack of natural calamity was also identified as a common problem (58.75 %) for the area. Hatiya Island is situated at the coastal area. For this Hatiya is attacked by the cyclone and flood for several times in every year. Fruits especially Banana, Papaya etc are damaged by these natural calamities. Lack of sufficient chemical and organic fertilizer was also seen as a problem. About half (50 %) of the respondents express it as a problem. Lack of manpower was seen as the problem that was ranked sixth (46.25 %). Most of the cases households were seen to be busy in field crop cultivation. For this, they don't have enough time to take care the fruit garden. Lack of area was also a big problem (37.50 %) in fruit cultivation. Most of the areas of the homesteads are used as houses, ponds, dairy, poultry etc. These animals usually destroy the fruit trees.

Farmers get quick return from these animals. For this they keep importance in these purposes. Lack of enough storage capacity was also seen a important problem for the study area. There is no modern cold storage to preserve the fruits. For this, fruits cannot be stored in off-season. Lack of activities by the agricultural officers was also mentioned as a problem. They spend most of their times in field crop cultivation. They don't have any special program for fruit cultivation.

**Relationship Between the Selected Characteristics of the Households and Fruit Diversity in Their Homestead:** Co-efficient of correlation was computed in order to explore the relationship between the selected characteristics of the households and fruit diversity in their homestead. As mentioned earlier, the 9 (nine) characteristics of the household were included in the independent variables of the study. The Characteristics were: age, education, family size, area of homestead, area under fruit cultivation, annual income from fruit, knowledge about fruit, extension media contact and total fruit species. The dependent variable was fruit diversity in homestead.

To explore the relationships, Pearson's Product Moment Correlation Co-efficient ( $r$ ) was used to test the null hypothesis concerning the relation between any two variables. Five percent (0.05) level of probability was used as the basis of rejection of a null hypothesis. The relationship between selected characteristics of the households and fruit diversity in their homesteads was presented in Table 5.

**Age and Fruit Diversity at Homestead:** The relationship between age of the house head and fruit diversity in their homestead was examined. Coefficient of correlation between the concerned variables was found to be ' $r$ ' = 0.000 as shown in Table 5. The findings demonstrated that the age of the house head had no relationship with the fruit diversity in their homestead.

Table 5: Correlation between dependent and independent variable

Dependent variables	Independent variables	Fruit diversity in homestead
Fruit diversity of homestead	Age	0.000 NS
	Education	0.063 NS
	Family size	0.043 NS
	Area of homestead	0.095 NS
	Area under fruit	0.050 NS
	Annual income	-0.029 NS
	Knowledge about fruit	-0.009 NS
	Extension Media Contact	-0.299**
	Total species	0.454**

\*=Significant at P<0.05; \*\*=Significant at P<0.01; NS = Not Significant

**Education and Fruit Diversity at Homestead:** The relationship between education of the house head and fruit diversity in their homestead was examined. The co-efficient of correlation between the concerned variables were found to be 0.063 as shown in Table 5. The findings indicate that the education of the house head had positive significant relationship with fruit diversity of their homestead. The growers who had higher education had a tendency to grow various kinds of fruits in their homestead. This might be due to their knowledge about the nutritious value of different fruits and their importance for human health and environment.

**Family Size and Fruit Diversity at Homestead:** The relationship between family size and fruit diversity in their homestead was examined. Computed value of the co-efficient of correlation between the family size and fruit diversity at homestead was found to be 0.043 as shown in Table 5. The findings imply that the researcher concluded that the family size of the farmers had no significant relationship with fruit diversity in their homestead.

**Homestead Size and Fruit Diversity of Homestead:** The relationship between homestead size and fruit diversity in homestead was examined. Computed value of the coefficient of correlation between homestead size of the farmers and fruit diversity in their homestead was found to be 0.095 as shown in Table 5. The findings imply that the researcher concluded that the homestead size of the farmers had no significant relationship with fruit diversity in their homestead. The findings also indicate that farmers of a large homestead also don't have enough tendencies to grow various types of fruit in their homestead. Most of the cases, they liked to cultivate some common fruit in their homestead to get more benefit. But they didn't want to understand that the cultivation of various types of fruit in their homestead is more beneficial in respect of commercial and nutritional value.

**Area under Fruit Cultivation and Their Fruit Diversity:**

The relationship between area under fruit cultivation and their fruit diversity was examined. Computed value of the co-efficient of correlation between area under fruit cultivation and their fruit diversity was found to be 0.050 as shown in Table 5. The findings imply that the researcher concluded that the area under fruit cultivation had no significant relationship with the fruit diversity in homestead. The findings also indicate that a large area under fruit cultivation cannot ensure a good fruit diversity.

**Annual Income from Fruit and Fruit Diversity:**

The relationship between annual income from fruit and fruit diversity was examined. Computed value of the co-efficient of correlation between annual income from fruit and fruit diversity was found to be -0.029 as shown in Table 5. The findings imply that the researcher concluded that the annual income from fruit had no significant relationship with the fruit diversity in homestead. The findings also indicate that large income cannot ensure a good fruit diversity.

**Knowledge about Fruit and Diversity of Fruit:**

The relationship between Knowledge about fruit and fruit diversity was examined. Computed value of the co-efficient of correlation between knowledge about fruit and fruit diversity was found to be -0.009 as shown in Table 5. The findings imply that the researcher concluded that the knowledge about fruit had no significant relationship with the fruit diversity in homestead. The findings also indicate that knowledge about fruit cannot ensure a good fruit diversity.

**Extension Media Contact and Fruit Diversity:**

The relationship between Extension Media Contact and fruit diversity was examined. Computed value of the co-efficient of correlation between knowledge about fruit and fruit diversity was found to be -0.299 as shown in Table 5. The findings imply that the researcher concluded that the extension media contact had significant negative relationship with the fruit diversity in homestead. This might be due to the extension media they themselves are not aware about the diversity, its importance. Rather they advocate for 2-3 fruits like mango, banana etc. but not for kawphal, tamarind or others. The findings also indicate that knowledge about fruit cannot ensure a good fruit diversity.



**Total Species of Fruit and Fruit Diversity:** The relationship between Total fruit species and fruit diversity was examined. Computed value of the co-efficient of correlation between knowledge about fruit and fruit diversity was found to be (0.454) as shown in Table 5. The findings imply that the researcher concluded that the extension media contact had strong significant relationship with the fruit diversity in homestead. The findings also indicate that species of fruit in the homestead ensure a good fruit diversity.

### REFERENCES

1. BBS (Bangladesh Bureau of Statistics), 2004. Statistical Year Book of Bangladesh, Bangladesh Bureau of Statistics. Ministry of Planning, Dhaka.
2. Deshmukh, I., 1986. Ecology and Tropical Biology. Palo Alto, California: Blackwell Scientific Publications.
3. Cristanty, L., 1985. Homegardens in tropical Asia. A special reference to Indonesia. Paper presented at the First International workshop on Tropical Homegardens. Institute of Ecology Padjadjaran University, Bandung, Indonesia.
4. Bashar, M.K., 1993. Adoption of Intercropping in Sugarcane Cultivation. M.Sc. (Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
5. Sellathurai, P., 1997. Homegarden Agroforestry and sustainability in Kandy district, Srilanka. M.Sc. Thesis. Agricultural University of Norway.
6. Brammer, H., 1971. Soil Resources. Soil Survey Project Bangladesh. Agril. St. Pak. 6. Technical Reports. UNDP/FAO.
7. Ali, M.K., 1993. Farmers Responses to Spaced Transplanting Technology of Sugarcane. M.Sc. (Ag. Ext. Ed.) Thesis, Department of Agriculture Extension Education, Bangladesh Agricultural University, Mymensingh.
8. SPSS (Statistical Package for Social Sciences), 2006. SPSS (Computer based software package) v. 16. SPSS Inc., New York.
9. Haque, M.M., 1993. "Adoption of Improved Practices in Sugarcane Cultivation by Sugarcane Growers of Sripur Thana under Gazipur District". M.S.(Ag. Ext. Ed.) Thesis, Department of Agricultural Extension Education. Bangladesh Agricultural University, Mymensingh.
10. Alam, M.S., M.F. Haque, M.Z. Abedin and S. Akter, 1990. Homestead trees and household fuel uses in and around the farming system research site, Jessore. In: Abedin *et al.* (Eds.), Homestead plantation and agroforestry in Bangladesh. Processing of a national workshop held 17-19 July, 1988 in Joydebpur, Bangladesh. BARI/RWEDP/WINROCK, pp: 106-119.
11. Islam, N.M., 1998. Homegarden Agroforestry in Bangladesh. A case study in Rangpur district. M. Sc. thesis, Agricultural university of Norway.