

Socioeconomic Conditions, Agricultural Practices and Communication Status of the Vulnerable *Haor* People in Bangladesh

S. M. K. Sarif^{1,*}, M. H. Kabir², S. Sultana³, M. Showkat Mahmud², S. Mahjabun⁴

¹Department of Geometry and Environment, University of Dhaka, Dhaka-1000, Bangladesh

²Animal Health Research Division, Bangladesh Livestock Research Institute, Savar, Dhaka-1341, Bangladesh

³On-Farm Research Division, Bangladesh Agricultural Research Institute, Mymensingh, Bangladesh

⁴Saheed Ziaur Rahman Medical College, Bogra, Bangladesh

*Corresponding author: khaled_bau@yahoo.com

Abstract *Haor* is basin like structure where water remains either stagnant or in flash flooding condition and agricultural activities are limited to four to five months in any year due to inundate on flood water. The main crop *boro* are usually damaged by flash floods nearly every year. So, the present study has been conducted with the specific objectives such as to assess the socio-economic background of the households, their agriculture practices and communication status they enjoy in disaster prone *haor* areas; to investigate reasons of vulnerability in *haor* community. The whole accomplishment process ensured HH questionnaire survey and sampled 150 HHs was from 6 different villages of three *Haors*, Dekar *Haor*, Kalner *Haor* and Karchar *Haor* by name. Two villages from each *haor* were selected at random. The HHs was also selected randomly. Data obtained from the 150 households (HH) undergone simple statistical analysis using MS XL and SPSS for analysing the survey data. The socioeconomic conditions of the peoples of the study area poor as larger family size, smaller income resulting to compensate expenditure according to income, mean land possess are 40.4 decimals only, mean income was 10,346 BDT, 28% are illiterate etc. Agriculture is the main occupation, above 28% are agriculture labor and 56% have secondary occupations. There were 27% who owned livestock, 24% had pond or *haor* share for fishing. They prefer BRRI *dhan* 29 and BRRI *dhan* 28 nearly equally (50% and 48% of them respectively) and duck rearing. Agriculture, livestock and fisheries are ranked as one for choice of occupation by 52%, 36% and 7.3% respectively. Nearly 50% face challenges to get price from their crops. The communication is easy in wet season and good weather by river transport but incurs cost and time consuming. The 100% respondents face floods of varying nature and 98% asked they are not resilient. Therefore, people in *haor* basins are vulnerable due to their current socioeconomic conditions, agriculture practices, health services and communication status making them limitations in cases of access to high-tech agricultural practices for improved production which in turn lead to sound socioeconomic status of those people.

Keywords: socioeconomic conditions, agricultural practices, communication status, *Haor* people

Cite This Article: S. M. K. Sarif, M. H. Kabir, S. Sultana, M. Showkat Mahmud, and S. Mahjabun, "Socioeconomic Conditions, Agricultural Practices and Communication Status of the Vulnerable *Haor* People in Bangladesh." *American Journal of Rural Development*, vol. 4, no. 5 (2016): 100-104. doi: 10.12691/ajrd-4-5-1.

1. Introduction

Haor is basin like structure where water remains either stagnant or in flash flooding condition during the months of June to November. Major portion of their cultivable land are low land. During *Kharif -1*, and *Kharif -2* lands became fallow due to inundate on flood water. In *rabi* season *boro* is the main crop and damaged by flash flood due to unavailability of controlling measures [11]. Therefore, wastage of time and unavailability of agricultural activities are resulting lean period to them every year. In addition, flood, cyclone and storm surge, flash flood, drought, tornado, riverbank erosion and land slide etc. cause the people vulnerable. In 2003, over 80% of rice amounting to 0.6 million tons was completely

damaged due to flashfloods [4]. Therefore, this study was conducted with the objectives such as to assess the socio-economic background of the households, their agricultural practices and communication status in disaster prone *haor* areas and to investigate reasons of vulnerability in the *haor* community.

2. Materials and Methods

A questionnaire was developed for the thesis that was submitted to University of Dhaka, for the partial fulfilment of MS in Disaster Management and part of that questionnaire was used for data/information in this paper. The study was done from October, 2014 to March, 2015. The sampled HH number was 150 from 6 different villages of three *Haors*, Dekar *Haor*, Kalner *Haor* and

Karchar *Haor* by name. Two villages from each *haor* and the HHs were selected randomly. Multistage random sampling was attained for the study, which is a sampling method that involves the division of a large geographical space into smaller areas and reaching to groups through crossing the different stages. Large area coverage, climatic variability and vulnerability of communities motivate to select Sunamganj district as study area to explain how the *haor* people are vulnerable. The primary data were collected about the socioeconomic conditions of the HHs', their current agriculture activities, their preferences on different sectors of agriculture, and communication status they enjoy etc. Data obtained from the 150 households (HH) undergone simple statistical analysis and MS XL as well as SPSS were used for analysing the survey data. The primary data in combination with secondary data were used to fulfill the study purpose. According to Bangladesh population and census (2011), here were 29,336 and 49,557 HHs respectively in Sunamganj Sadar and Bishwamvarpur *Upazilla*, from where 100 HHs and 50

HHs were under this study. Although the numbers of HHs are few, the results obtained are expected to serve purpose reasonably.

3. Results

Vulnerability was assessed by poor status in every dominant item such as the socioeconomic status, the agriculture practices, and communication status which are separately presented below.

3.1. Socioeconomic Conditions

There were nearly 90% male-headed HHs and rest were headed by female. The male-female ratio of the observed family members of 150 HHs was 102 (430:421). Some socioeconomic items found in the study area is depicted in the [Table 1](#).

Table 1. Socioeconomic Conditions of the Three Studied *Haors* of Bangladesh

Particulars	Age of HH Heads (years)	Family Members	Land Possessed (acres)	Earnings per Month (BDT)	Expenditures per Month (BDT)
Mean	43.1	5.7	0.404	10,346	8,503
Mode	60	6	0.050	5,000	6,000
Maximum	90	16	5.600	100,000	50,000
Minimum	16	1	0	3,000	2,000

There were none who have informal education, 3 HH heads that have passed S.S.C., only 2 had graduations. The illiterates were 28% and about 62% had primary educations. The highest two (2) B.A. pass family members were observed from two HHs. There were landless (27.3%), 46.7% has upto 0.05 acre, 3.3% has upto 1 acre and 9.3% has over one acre of lands. There were less numbers of mobile users, only 68.7%. The HH income from 150 HHs were very poor, most of them do not meet the minimum requirements for each HH. The correlation between monthly expenditure and monthly earnings was higher ($r=0.504$) at 1% level of significance (2-tailed). Correlations are significant ($r=0.469$) between family members and expenditure at 1% level of significance (2-tailed). The scatter diagram of earning-expenditure showed highly positive correlation between expenditure and earning, as both income amounts and expenditures are closer upto 20,000 BDT.

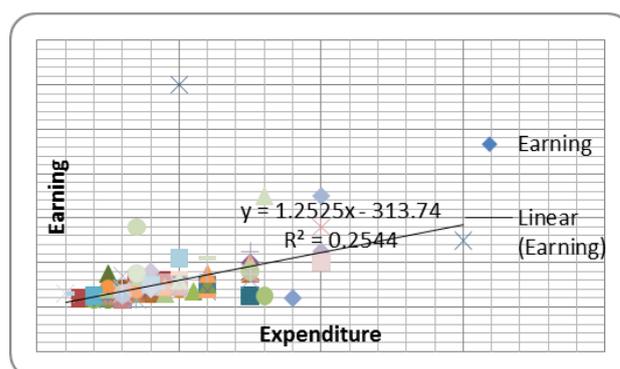


Figure 1. Scatter Diagram of Earning-Expenditure of the Households

The various classes of income and expenditure from the 150 HHs are presented in the [Table 2](#).

Table 2. The Income Groups and the Expenditure Groups of the Respondents' (Showing Frequencies of HHs)

Particulars	<5000	5000-10000	10000-15000	15000-20000	20000-30000	30000-50000	50000 and Above
Income Groups	19	77	27	12	9	3	3
Expenditure Groups	18	85	27	20	5	1	1

Note: Amounts are expressed in BDT.

In this survey, there were 42% HHs have surplus income, 29.3% HHs have balances and 28.7% have deficits. The HHs incomes come from various contribution like single contribution (94 %), dual contribution (3.3%), triple contribution (0.7 %), remittance contribution (2%) and produce per month upto 22000 BDT, 50000 BDT, 100000 BDT, 50000 BDT respectively. There were a diverse group of present primary (main) occupations like agriculture, agriculture labor, vegetable business, rice business, rice mill labor, fishing, fish business (wholesale and dry fish business), fish processing (fish drying, fish cutting, fish oil preparation), boat mechanics, diesel mechanics, brick

labor, workshop labor, rickshaw driver and school teacher etc. among the respondents and very much different in each *haor*. The secondary occupations are negligible according to the answers of the interviewees. There was no definite occupation in the dry period. The primary occupations of the HH heads act as the main occupation and main earning source of the HHs. The highest numbers, 43 of 150 HH heads had agriculture labor as primary occupation (total 28.7%) and the second highest were fishing, 22.7%. As main occupation, agriculture labor was highest (40%) in Dekar *Haor* and fishing (46%) prevalent in Karchar *Haor*. The numbers of HHs which depend on single occupation, dual occupation and have dry period

occupation were 66 (44%), 84 (56%) and 36 (24%) respectively.

3.2. Agricultural Practices

The people are resource poor in terms of agricultural resources. The livestock resources are negligible among the HHs; 120 cattle, 345 chickens, 482 ducks and 6 goats were found in the survey. Only 13 animal owners used to treat their cows once upon a time, 3 had vaccinated their birds. The total numbers of livestock owners were 34% only. From 150 HHs, there was 9.3 % who fish temporarily (including seasonal fishing and secondary occupation) and 22.7 % fish for the year round, as their main occupation is fishing. Only 4 HHs cultivate fish and all those have ponds, i.e. not all of them utilize their own ponds. Fifteen have small, medium and large size ponds need invests and technology to use better. Although the HHs fish in *haor* or other open source water bodies, the significant portion of the interviewed HHs do not rely on it for livelihood, rather they fish for family needs. Fishing as occupation (either primary or secondary) are lower (22.7%, 9.3%) than agriculture (40%, 12.7%) among the HHs. Rice varieties like BRR1 *dhan* 28, BRR1 *dhan* 29 and *Abdul Hashim* etc. are cultivated by the farmers. No other crops except rice grow in the Karchar *Haor* and Dekar *Haor*. More than rice, the other crops also grown are pulses, wheat, ground coconut, potato, tomato, brinjal and bottle gourd which are harvested upon damages of paddy fields by hazardous early flash floods. There were 64% who have cultivated their lands with crops other than rice in Kalner *Haor*.

3.3. Communication Status

Features of Internal and External Communication Obtained from Three Studied *Haors* are- Short distances connected with Sadar *Upazilla* but to cross the river Surma to reach. Its time consuming for external communication either transport through waterways or roads. Not easy communication for 100% in Karchar *Haor* and Kalner *Haor*. It's costly in case of Kalner *Haor* and Karchar *Haor* due to river transport. Fair communication exists during wet season in good weather and trouble communication during dry period. The people also enjoy nearby markets as well as face distant markets for their buying-selling attitudes. The distances of nearby markets is 2 km and distant markets are from 15 km to 20 km.

4. Discussion

Vulnerability depends on opportunities and trends of occupations, frequencies of hazards and perceptions of the HHs contribute to the community. In the present study the *haor* community resembles vulnerable for various reasons. The 68.7% only of the HHs use mobile phones, i.e., still not reached to every HHs in the studied *haors*. People also will not be able to use 16123 for free agriculture information and 10941 at cost for flood forecasting news provided by the AIS and BWDB respectively. The higher average family members with distressed conditions compels single HH to face burdens and aged people are vulnerable in devastating floods as cares for them may be forgotten or impossible. In this survey, 28% are illiterate,

2 graduated HH heads and two graduated family members only. So, there is hardly any higher education in these *haors* found. These might be due to extensive dropout of them after primary education and no hope to be benefited from education in any form. There were more than one-fourth HHs which is landless. According to definition by [1], the small farm holdings are the most prevalent in those *haor* areas. In this study, 75% of the HHs has cultivable lands 8.5 decimals or less, which is qualitatively similar with [1] records. So a vast majority are either landless or have lands for their homesteads in different *haors*. A high degree positive correlation existing between monthly earnings and monthly expenditures of the HHs may be an indication that if higher incomes, then higher expenses be probable or more likely and they may need to save to meet uncertainty situations. The expenditures were homogenous relatively than earnings by the HHs as the C.V. of expenditures and earnings of the observed HHs were 49.9% and 101.7% respectively. Monthly HH income upto 5,000 BDT were from 38 HHs which have family members' upto eight and monthly HH income upto 10,000 BDT were from 69 HHs which have family members' upto eight. The present study differs few from that by Islam et al. [10] about mean income in Hakaluki *haor* (approximately BDT 6,780), by IUCN [8] was BDT 4,050 and may be the observations by others also similar, which is obvious from the extracts of the data. Then the majority of the observed HHs may force to long-term debts and succeeding vulnerability. The occupations were many among the HHs. The numbers of HHs totally or partially dependent on agriculture were 42%, fisheries 36.7% and 3.33% on duck farming taking account only primary income sources. Of those income sources, none is vital one and act as reference to motivate to that occupation. As primary occupation, agriculture labor has highest frequencies go to the income ranges from over 5,000 BDT to 10,000 per month. As secondary occupation, fish laboring has highest frequencies also go to the income ranges from over 5,000 BDT to 10,000 per month. There are slight to moderate differences in each *haor* in the cases of occupation types and income ranges. Therefore, in every *haor* opportunities and socioeconomic conditions are dynamic in this study. On an average, 44% have single occupation, 56% have dual and 24% can depend on occupations during wet season (61.1% have works readily available and 38.9% try/try hard to avail work opportunities) among the visited HHs. Hasan and Rahman [7] cited lack of opportunities is one of the causes of vulnerability in *haor* basins, found similar in this study. So there need to improve work status for lean period. Although have primary and secondary occupations, income ranges from 5,000 BDT or less and above 5,000 BDT to 10,000 BDT were applicable to 17.3% and 26.7% respectively among the 150 respondents. Such incomes go into expense stream for HHs having medium to large family members in many cases. The income comes through dual or multiple contributions of the HH members are not so available and remittance contributions to HHs are rare and not large enough. So, single contributions to HH incomes predominant (94.0%) in the different villages of the studied *haors*. There were poor livestock resources among the visited HHs, 34% have such resources with very little in numbers and lack of treatment/nutritional support for those per HH. The government assistance in

the livestock sector is very minimal in *haors* [14]. Therefore, livestock resources there are not comparable with the national as well as local ownerships of livestock assets. Only 10% have ponds, highest size of such ponds is 1400 decimals, 14% have *haor* share and 14% of total 150 respondents' fish in river or *haor/beel*. Not all of them depend on those for livelihood. Fishing as occupation (either primary or secondary) are lower (22.7%, 9.3%) than agriculture (40%, 12.7%) among the HHs. Again, Sunamganj is surplus in fish production. So, fishes in large *haors* are decreasing at an increasing rate due to excessive fishing or access to open source reserve continually decreasing or fish cultivated are usually subjected to flood etc. may be the causes of lesser involvement on fisheries. Fifty percent of 150 HHs prefer BRRRI *dhan 29*, 48% BRRRI *dhan 28* and 2% *Abdul Hashim* irrespective of their occupations and of the amount of land owned. Muttaled et al. [13] revealed in a study that BRRRI *dhan 29* ranked first in respect of percent of cultivated farmers (92.20%) and IUCN [8] termed it most profitable crop among the local farmers in Tanguar *Haor*. So both BRRRI *dhan 29* and BRRRI *dhan 28* can be regarded popular in these *haors* but not similar to Muttaled et al. [13]. CCC [4] reported that the market prices of BRRRI *dhan 45* and BRRRI *dhan 29* were higher and production cost was also lower than the other varieties. The findings of that study were also the production of BRRRI *dhan 45*, BRRRI *dhan 29* (popular) and BRRRI *dhan 29* (research) is higher (about 6 ton/ha) than the other varieties (5.5 tons/ha); cost of production was found lower in case of the above mentioned three varieties (average costs Tk.6, 700 per ton) while it was found above Tk.7, 000 for other varieties.

Although BRRRI *dhan 29* is flood tolerant and in that study also it has been proved such popularity of BRRRI *dhan 29* based on different advantages found by researches of CCC [4]. Thirty-two percent of the HHs has no agriculture resources meaning that they do own neither livestock nor fish pond nor cultivable lands etc. Not all of them have multiple agriculture resources. There were 32% HHs having two types of agriculture assets, 30% have single and 6% have all the said triple agriculture assets, depicting the very poor status of the owners. So they need financial assistances or technical supports for their access to agriculture deeply. The livestock resources possess by 34%, fisheries by 24% and agriculture by 54% of the HHs. There are various spheres of agriculture resources by the owners. The agriculture instruments related to cultivation and fishing found to be possessed deep tubewell by 8%, spray machine by 14.7%, tractor by 4.7% and fishing nets by 82% respectively of the respondents. These do not necessarily mean that the farmers depend on nature, rather they use or utilize and/want to utilize the instruments. They rent for those which are added to the costs of production. Sometimes they prefer businesses and market intermediations related to the previous sectors. Someone's preference for agribusiness, not cultivation, not production showed different agricultural activities are not profitable, rather its business. So their arguments may be existed as cultivation practicing farmers are deprived from price of their outputs and motivate not to involve in such practices only. The HHs ranked different agriculture sectors and such rankings match with existing opportunities, not necessarily compatible with their present occupations in the Table 3.

Table 3. Ranking of the Agriculture Sectors by the HHs

Agriculture Sectors	Rank-1	Rank-2	Rank-3	Rank-4
Agriculture	78 (52.0)	24 (16.0)	40 (26.7)	8 (5.3)
Livestock	54 (36.0)	65 (43.3)	23 (15.3)	8 (5.3)
Fisheries	11 (7.3)	53 (35.3)	63 (42.0)	23 (15.3)
Related Others	7 (4.7)	8 (5.3)	24 (16.0)	111 (74.0)
Total	150 (100.0)	150 (100.0)	150 (100.0)	150 (100.0)

Note: Rank-1= most, Rank-4= least.

Agriculture was ranked one by 52%, livestock by 36%, fishing by 7.3% of the respondents. There were ranking livestock sector as one and two by higher numbers of the HHs without neglecting others. So combined access to all the three sectors anyhow and at a time will be the better answer. From 150 HHs, 102(68%) had opinions on agriculture sector as feasible, 119(79.3%) had preferences on fisheries, 64(≈42%) for livestock and 15(10%) on related agriculture sectors. So there tend to be dual agriculture sectors preferences by the community. It can then be assumed every sector of agriculture is profitable and integrating more than one sector will be further profitable. Sixty percent of the HHs answered that they go to markets for selling their agricultural products and 5.3% can usually gain, 8% gain by better understanding of the price fluctuations, 28% try hard to gain, 18% cannot win the fair price and 2% are the loser in many cases. The Department for Agricultural Marketing can take initiatives for the farmers to get fair prices upon selling. The interviewed HH heads emphasized on their grass storage for cattle feed by 28% and on their price of their products by 10.7%, also 22% expressed to improve transport for their transfer of their produces and 30% expected to

reexcavate the internal ponds. The HHs expressed dissatisfactions on the existing time consuming, costly and laborious transport. The people cannot spend enough for comfortable transport of their goods in cases of roads transport available. Also it is costly in boat transport perceived by the HHs. Such cases had also reported in case of Tanguar *Haor*, where people generally walk a long distance on foot and bear costs of BDT 4500 on an average for hiring boats by the HHs and a fixed cost of BDT 8,000 incurred by boat owners stated by IUCN [8]. Thus, people in *haors* face burdens in transport costs which can be regarded universal. The lengths of metalled, semi-metalled and unmetalled roads according to District Statistics [6] were 49 km, 48 km and 170 km respectively in Bishwamvarpur *Upazila* and 85, 15 and 80 respectively in Sadar *Upazila* of Sunamganj district. People are to communicate through water travels for 7 to 8 months usually in *haors*. Gradually communicating through boats are increasing, which is manifested by time consuming transportation, restricted access to social services, detached from social networks IUCN [8]. So there are less availability of required traffic facilities for the *haor* community and alternate communication through mobile

phones (68.7% availability among the studied *haors*) cannot also provide solutions to such problems. DDM [5] ranked Sunamganj for its high vulnerability and Flood Response Preparedness Plan (2013) was updated to FRPP (2014) by MoDMR. The crops damages by 80%, Islam and Suman [9] and upto 100% in many cases CCC [4] were reported. The HHs also responded nearly same in terms of frequent hazards causing crop damages of them. The remote places, backward travelling and the very vast areas, also HHs resemble untouched or less linked with government institutions like Department of Livestock Services (DLS), Cooperative Department (DOC), Department of Fisheries (DOF), Department of Agricultural Extension (DAE), Agriculture Information Services (AIS) and Bangladesh *Haor* and Wetland Development Board (BHWDB) etc. To improve productivity more extension, more technology, more marketing channels, communication facilities and development projects with definite goals etc. are needed for the development of *haor* areas. The whole study, thereby, reflects that the *haor* people due to their poor socioeconomic status, communication status and incomplete agricultural practices with proper health services especially maternal and child health trends them to illiteracy, poor sanitation, malnutrition and various types of diseases resulting succeeding vulnerability.

5. Conclusion

From this study it has been found that the people in the *haors* are vulnerable by poor agricultural assets, occupations and income status etc. They are more vulnerable than previous as natural hazards are regular and their agricultural practices are severely affected. Healthcare facilities are not satisfactory for them in still now. They get little assistances from government institutions and NGO activities are still lower than other areas. Flash flood is a major problem traced by 100% of the respondents, which now come earlier than previous. Their transport system is not well developed and to meet up this problem it is needed high concrete roads and developed ports with launches in rainy season. Management practices of the farmers for BRRI *dhan 29*, also new flash flood tolerant varieties and duck farming by close supervision of DAE and DLS officials respectively are time demand to cope with recurrent hazards there and utilize highly the *haor* basins. To ensuring their economic development, light of education, healthcare facilities, it must be taken the initiatives on strengthening embankments, well-established water

transports, making concrete roads etc. by the Government and Non-Government organizations collectively.

Competing Interests

Authors have declared that no competing interests exist.

References

- [1] Bangladesh Bureau of Statistics (BBS) Statistical Year book of Bangladesh. Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh. 2013.
- [2] Bangladesh Population and Housing Census. Community Report. *Zila*: Sunamganj. Published in July 2013.
- [3] Bangladesh Bureau of Statistics, Statistics and Informatics Division, Ministry of Planning, Government of Bangladesh. 2011.
- [4] CCC. Adaptive Crop Agriculture Including Innovative Farming Practices in *Haor* Basin. Climate Change Cell, Department of Environment, Ministry of Environment and Forest. 2009.
- [5] Department of Disaster Management. Flood Response Preparedness Plan of Bangladesh. Department of Disaster Management and Relief. Ministry of Disaster Management and Relief, Government of Bangladesh. 2014.
- [6] District Statistics. District: Sunamganj. Published in June, 2013. Bangladesh Bureau of Statistics, Statistics and Informatics Division, Ministry of Planning, Government of Bangladesh. 2011.
- [7] Hasan, Z. and Rahman, S. Climate Friendly Interventions under *UNNOTI* Project: Experience from *Haor* Areas. Zahid Hasan (HSI) and Saidur Rahman (SHIREE) Lesson Learning Workshop, Organized by EEP/SHIREE. 27 April, 2014.
- [8] IUCN Bangladesh Country Office. DRR: A Case Study of Tanguar *Haor*. International Union for Conservation of Nature, Dhaka, Bangladesh; Pp.x+89. 2011.
- [9] Islam, M. A. and Suman, M. R. Climate Change; Adapting to early floods in Bangladesh. Resource Library, Oxfam Hong Kong. 2014. Available on [www.oxfam.org.hk/Home/Resource Library](http://www.oxfam.org.hk/Home/Resource%20Library).
- [10] Islam, M, Saha, N and Rahman, M. Economic Activities Decrease Biodiversity in Hakaluki *Haor*, the Largest Inland Fresh Water Ecosystem in Bangladesh. International Journal of Environmental Sciences. 2011. 2(2): 946-957.
- [11] IUCN. International Union for conservation of Nature. www.iucn.org/bangladesh. 2009.
- [12] Khan, M. N. H., Mia, M. Y. and Hossain, M. R. Impacts of Flood on Crop Production in *Haor* Areas of Two *Upazilas* in Kishoreganj. *J. Environ. Sci. & Natural Resources*; 2012. 5(1): 193-198.
- [13] Muttaleb, M. A., Jalil, M. A., Paul, A. K., Habib S. M. E. and Hossain M. M. Diversity of Rice Varieties in Some Selected *Haor* Areas of Sunamganj District. *Int. J. Sustain. Crop Prod*; 2008. 3(5):31-34.
- [14] Rahman, S. and Salam, S. A. Essential services for *Haor* Areas and Way Forward. Draft Final Report, Development Wheel, Dhaka, Submitted for POPI (Peoples Oriented Program for Implementation). 2008. Available on dewbd.org/report/Final%20Report%20on%20Essential%20Services%20.