



## Livelihood Assessment of the Fish Farmers Converted From Agricultural Farming in Selected Areas of Mymensingh District, Bangladesh

Md. Touhidur Rahman<sup>1</sup>, Md. Asaduzzaman<sup>2</sup>, Shahali Shahana Mitul<sup>3</sup>, Md. Mojurul Islam<sup>4</sup>, Limon Deb<sup>5</sup>

<sup>1</sup>Bangladesh Agricultural University, Mymensingh, Bangladesh

<sup>2</sup>Assistant Professor, Department of Rural Sociology, Bangladesh Agricultural University, Bangladesh

<sup>3</sup>Bangladesh Agricultural University, Mymensingh, Bangladesh

<sup>4</sup>Assistant Professor, Department of Rural Development, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Bangladesh, <sup>5</sup>Scientific Officer, Bangladesh Rice Research Institute, Bangladesh

### Abstract

The study was undertaken to determine the socio-economic impact on agricultural farmers converted to fish farmers of Muktagachha Upazila in Mymensingh district, Bangladesh. Questionnaire survey method was followed to collect data from the sample farmers. From the survey it was found that all 30 fishermen were male. Large portions (34%) of the fishermen were in the age group between 41 and 50. It was also found that 86% of the fishermen families lived in joint families and 57% family consist of 6 to 10 family members. All the fishermen families enjoyed electricity facility. Major portion of the fishermen took their health service from the Upazila Health Complex. Moderate educational status were observed in the study area though 14% possessed no education, 20%, 22%, 14% and 9% were educated up to primary, SSC, HSC and higher education, respectively. Majority of the farmers (50%) used their own land for fish farming. Only 7% fishermen borrowed loan from commercial bank/friends or relatives while 67% used their own money for culturing fish. Only 8 fishermen (27%) had received training on fish culture. About 86 % farmers increased their family income through fish farming. Almost every fisherman expressed that they were happy but not fully satisfied by culturing fish due to some obstacles.

#### Keywords:

Fish farmers,  
Livelihood,  
Social status

### 1. Introduction

Historically Bangladesh is a land of agriculture. Fish and fisheries play an important role in the development of social and economic life of Bangladesh in terms of income, nutrition, employment and foreign exchange earnings. The people of Bangladesh depend on fish as the principle source of animal protein. Fisheries sector contributes 60% of an animal protein to our daily diet (FRSS, 2016). In the year of 2014-2015 the total fish production was 3.68 million metric tons. Culture fisheries contribute 2.06 metric tons and Bangladesh earned \$582.575 million by exporting fish and fisheries products. Fisheries provides livelihood to about 12 million people of the country directly or indirectly. Fisheries sectors contribute around 3.69%

to the GDP and 2.70% to foreign exchange earnings through export. Fish provide 63% of national protein consumption (FRSS, 2016). People used to produce crop from their farms, fish from their ponds and fruits from their homestead areas. With the changes in farming system, social value, economic wellbeing the land use is being changing day by day. Freshwater fish farming plays an important role in the livelihoods of rural people in Bangladesh (Mazid, 2002). It creates diverse livelihood opportunities for a number of people, many of whom living below the poverty level, in the form of farmers, operators, employees, traders, intermediaries, day laborers and transporters (Pravakar, *et al.* 2013). Fish culture has been practiced for thousands of years for regretting protein nutrition, recreational and commercial purpose. Day

by day pond fish farming is getting importance in the fish production and it is more profitable than crop and livestock/poultry production. Now a day's small scale fish farming become very popular to the rural people due to its high profitable and year round production. Pond fish farming has been proved to be a profitable business than rice cultivation. Therefore, many farmers in rural areas are converting their rice field into aquaculture pond (Islam, 2007). So the agricultural farmers are converting fish farming as their principal occupation and by converting their whole possession of farm land into fish farm. On the other hand, many pond fish farmers in rural areas have also taken fish farming activities as their secondary occupation by converting partial agricultural land into fish farm. Most of the people involved in fish farming improved their socioeconomic condition through pond fish farming activities (Ara, 2005). Considering the above situation the study was carried out to identify the livelihood status of the fish farmers and also provide some policy guidelines for the development of modern fish farming in the area as well as the socio-economic conditions of the converted fish farmers.

## 2. Materials and methods

The study was conducted at Kumarghata Union under Muktagachha Upazila in Mymensingh District during February to April, 2016. Muktagachha Upazila is known as a major fish culturing area in Mymensingh District and has huge resources for fish culture. Kumarghata Union is one of the developed fish culturing area in Muktagachha Upazila. From the last few years fish culture was rapidly developed in this area because of high demand and profit. As a result, people were involving in fish culture by converting their lands into fish ponds. For collecting data on various aspects of socio-economic conditions of fish farmers, thirty fish farmers were randomly selected and personal interview were applied with different degree of effectiveness by using a structured questionnaire. Primary data were collected both by physically observation and interview with fishermen at home, field, fishing place and market place. Further relevant information on socio-economic conditions of fishermen was collected from books, thesis paper, journals, Govt. and non Govt. organizations and internet. Collected information obtained from the survey was accumulated, grouped and interpreted according to the objectives as well as parameters studied. Some data contained numeric and some contained narrative facts. The collected data were then edited; summarized and graphical representations were made.

## 3. Results and discussion

### 3.1 Fish cultured by the fishermen

In the study area it was found that, most of the fishermen cultured Rui, Catla, Mrigel (locally known as "Bangla fish"), Tilapia, Silver carp, Pangus etc. The study also showed that, Koi (Vietnam or Thai koi), Magur and Shing were also cultured by some fishermen.

### 3.2 Price of the fishes

Market prices of the fishes are depends on the size, species and quality of the fishes. Big fishes have high prices than the medium/small fishes. The following fish prices were found in the study area (Table 1). Due to the need of money maximum fishermen sold their fishes before the expected size. As a result minimum profit was gained by the fishermen.

Table (1). Prices of fishes observed in the study area (During February-March2016)

Name of the fishes	Price of the fishes Tk./Kg
Rui	90-140
Catla	90-130
Mrigel	80-120
Tilapia	70-100
Silver carp	80-100
Shing	250-400
Magur	300-400

### 3.3 Marketing system

From the survey it was found that 70% of the fishermen sold their fishes to "Arat" in the local market, 20% to the Wholesaler (in the market/pond) and rest 10% sold their fishes to consumers directly (Fig 1).

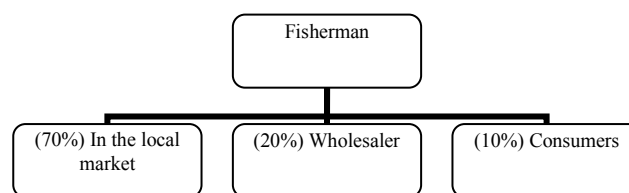


Figure (1). Showing the marketing system in Kumarghata Union

### 3.4 Livelihood Status of Fish Farmers

The survey was conducted among the fishermen of which 30 (100%) were male. Generally, women were involved in household work and they could not afford to go out for fishing due to some social problems. Where, male were free from those barriers and engaged themselves in fishing. In the study area it was found that 30%, 14%, 34%, 22% & 0% of fishermen were belonged to age group of 20-

30, 31-40, 41-50, 51-60 and 61-100 respectively. Result showed that the highest number of fishermen was in between 41-50 age group indicating middle age group was the dominant in fishing (Fig 2). In Mymensingh district majority of the fish farmers 50% belonged to age group of 31 to 40 years (Ali, *et al.* 2010).

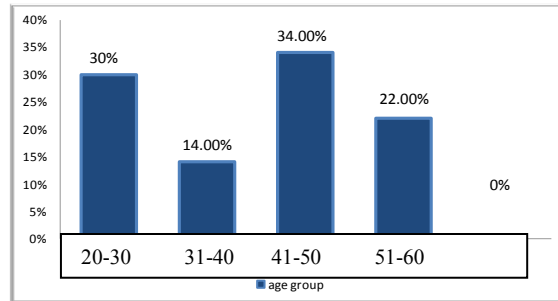


Figure (2). Age group distribution of the studied fishermen

### 3.5 Marital status

The Study was made to see the marital status of the fishermen. The study revealed that a majority of the fishermen 80% were married while the unmarried fishermen represented only 20% of the active fishermen.

### 3.6 Family type

In rural Bangladesh, families are classified into two types: (1) Nuclear family- married couples with children and (2) Joint family – group of people related by blood and/or by law. Nuclear family consists of the members of two generations (parents and children) and joint family consists of three or more generations. In the study area, it was found that 76% of the people lived with joint family and only 24% lived with nuclear family. (Sumi *et al.* 2015) reported that, 62% lived with joint families and 38% of people lived with nuclear family. About 42.5% of the fish farmers lived in nuclear family and the rest 57.5% in joint family in Mymensingh district (Ali, *et al.* 2010).

### 3.7 Family members

The family members include husband, wife, son, daughter, brother sister, and parents. Data on family members of fishermen in the study area were presented in (Fig-3). In the study area it was found that, 40% of the fishermen family consists of 1 to 5 members, 57% consisting 6 to 10 family members and 3% having more than 11 family members. (Ali, *et al.* 2010) found that, most of the fish farmer family 45% in Mymensingh district belonged in the 4 to 5 members.

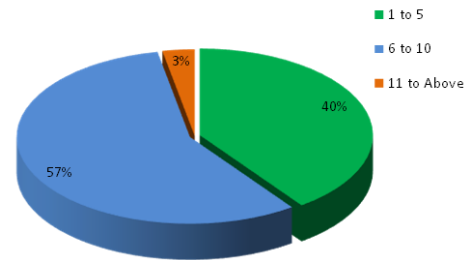


Figure (3). Showing the family members of the fishermen

### 3.8 Educational status of the fishermen

The environment of education in the study area was moderate. The level of education of the fishermen is shown in (Fig-4), which reveals that, 14% possessed no education, 22% were capable of signing their name only, 20% fishermen were educated up to primary level, 20% were educated up to S.S.C level, 14% fishermen were educated up to H.S.C and 9% fishermen were Highly educated. (Ali, *et al.* 2008) found that, 50 % of the fish farmers had education up to S.S.C level, while 22% had H.S.C level and 6% of the farmers were illiterate.

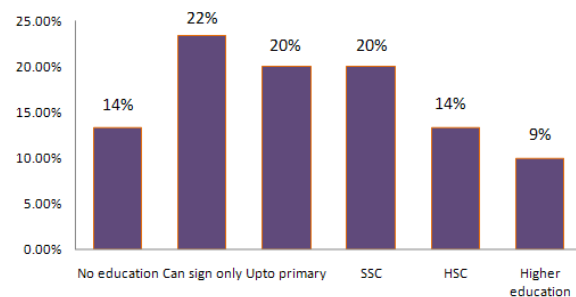


Figure (4). Educational status of the fishermen

### 3.9 Training in fish farming

A very few members of fishermen community of the study area received training on fish culture and attended workshop(s). It was found that only 20% (6 fishermen) had received training on fish culture and rest of the 80% (24 fishermen) had not received any training on fish culture or they did not attend any workshop. (Sarwer, *et al.* 2016) studied that, only 18% farmers received formal training.

### Natural Capital

### 3.10 Land possessed by the fishermen

In the study area it was found that majority of the farmers had their own land, of which 14% owned 0-50 decimals land, 20% owned 51-100 decimals land, 26% owned 101-200 decimals land, 36% owned 201-500 decimals land and 4% owned above 500 decimals land for pond aquaculture (Fig 5).

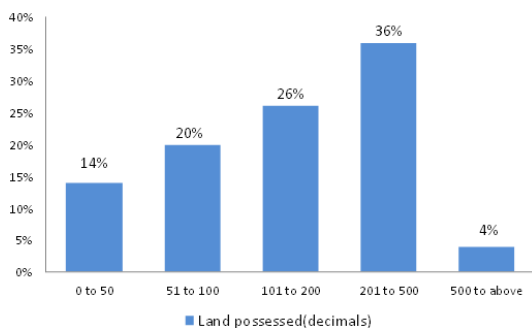


Figure (5). Land possessed by the fishermen

### 3.11 Ownership pattern of the land

The study was conducted among 30 fishermen of the study area. It was revealed that, 50% farmers were their own land and 7% farmers were their land leased from the others. The study also showed that, 43% fishermen were both (own and lease) types of land for fish culture.

### 3.12 Financial capital

#### Funding source

It was found that 67% of the fishermen of the study area used their own money for culturing fish. 7% fishermen borrowed loan from commercial bank/friends or relatives. The study also resulted that, 26% fishermen of the study area access to both (own and loan) funding source for their fish culture.

#### Occupational Status

Most of the fish farmer in the study area was involved in fish farming as their primary occupation. The present study revealed that 65% of fish farmer were engaged in fish farming as their main occupation while 15% was in business, 14% agriculture and 6% in service.

#### Annual income of the fishermen

The annual income of the fishermen of Kumarghata Union was not so good. The only source of income of fishermen was selling fish. There are very limited options for non-fishery related activities such as, vegetable growing, small shop trading, day laboring etc. (Kostori, 2012) notated monthly income of the majority of the fishermen ranged from 25-45\$ per month. From the interviews, it was found that, 34% fishermen's yearly income lies between 375 to 1249\$; 40% fishermen annually earned between 1250 to 2499\$; 15% fishermen's year income was between 2500 to 3749\$ ; 7% and 4% fishermen annually earned between 3750 to 4999\$ and more than 5000\$ respectively. The above amounts are showing very big figure, but their annual expenditure was so high that the big amounts did not satisfy them by culturing fish.

### 3.13 Physical capital

#### Housing condition

In the study area houses of fishermen were of three main types, (1) Kacha houses made of jute

sticks wall or bamboo wall, straw shed and with mud flooring, (2) Semi-Pacca houses made of tin/bamboo wall, tin shed and brick flooring and (3) Pacca houses made of brick wall (half/full), tin shed and brick flooring. The study found that, 10% of housing structures were Kacha, while 67% were Semi-Pacca and rest 23% were Pacca.

#### Sanitary condition

It was observed that sanitary condition of fishermen was moderate. The study found that, 23% fishermen possessed Pacca latrine, 67% possessed Semi-Pacca latrine and rest 10% possessed Kacha latrine where (Ali *et al.* 2010), in his study found that 62.5% of the farmers had semi-pucca, 25% had kancha and 12.5% had pucca latrine.

#### Health facilities

The health facilities enjoyed by the fishermen were not at all satisfactory. Generally fishermen take health service from nearby dispensary. The owner or salesmen of dispensary are known as village doctor to the fishermen. A major portion of the fishermen community also took their health service from the Upazila Health Complex. (Rahman, 2007), found that 44% of the farmers received health service from village doctors, 29% from Upazila health complex and 27% from MBBS doctors.

#### Drinking Water Sources:

Clean and safe drinking water is one of the most important element in the society. The study showed that majority of the fish farmers (96%) used tube-well water for drinking purposes. It indicates a positive sign for health facilities in the study area. 90% of them had own tube-well and 10% of them collected drinking water from neighbors tube-well. (Kabir, *et al.* 2012) also found that 100% fishermen's household used tube-well water for drinking purposes, among them 40% had their own tube-well, 50% used shared tube-well and remaining 10% used neighbors tube-well.

### 3.14 Social capital

#### Social Status of Fish Farmers

Most the fish farmers (80%) had ordinary social status, 4% were local leaders and 16% were respectable persons in the society.

#### Changes in socioeconomic conditions

It is found that, after converting from agricultural farming to fish farming the socioeconomic condition of the farmers were improved. Most of the changes was seen in family income, expenditure, toilet facilities and food consumption. In case of family income and family expenditure 100% farmers says they increased (Table 2).

Table (2). Changes occurred due to get conversion

Types of changes	Degree of change		
	Little change	Medium change	No change
Increased child education	10 (33.33)	15 (50.00)	5 (16.67)
Improved health care	8 (26.67)	18 (60.00)	4 (13.33)
Increased family income	13 (43.33)	17 (56.67)	0 (0.00)
Increased family expenditure	13 (43.33)	17 (56.67)	0 (0.00)
Increased savings	12 (40.00)	12 (40.00)	6 (20.00)
Increased food consumption	10 (33.33)	14 (46.67)	6 (20.00)
Awareness	6 (20.00)	18 (60.00)	6 (20.00)
Development of petty business	7 (23.33)	21 (70.00)	2 (6.67)
Improved toilet facilities	6 (20.00)	23 (76.67)	1 (13.33)

Figure in the parentheses indicate percentage. Source: Field survey 2016

### 3.15 Problems faced by the fish farmers

Fishermen faced different problems during fish culture. Almost all of the fishermen were found want of money for culture. Low quality feed fetched with high prices are also major problems during fish culture. In the study area it was also found that low market price due to lack of proper market development, Govt. monitoring of the market as well as promotional support are demanding to mitigate the losses in fish culture. In the interviews, problems such as lack of training on fish culture, disease, poor water quality and lack of knowledge on good management practice were also found. Saha (2004) reported that high price of various inputs; lack of money, lack of technical knowledge; theft and poisoning were the constraints for fish production. Rahman (2003) stated in his report that the major constraints of carp farming were lack of money and production cost.

### 4. Discussion and Conclusion

The present study will help in providing a picture of the benefits and costs of fish into pond fish farming and a vivid picture of socio-economic condition. The fish farming plays an important role in the uplifting of the socio-economic condition of Muktagacha Upazilla of Mymensingh district as it is opportunity for increasing fish production which to alleviate poverty. From the results of the study, it can be said that fish farming has significant socio-economic benefits for the fish farmers rather than agricultural farming. The farmers were needed appropriate training, financial credit on easy terms and conditions for better production. Income and expenditure of the fish farmers were increased due to fish farming. Thus it can be concluded that fish culture can help the farmers to improve their livelihood status and able to contribute for the development of the economy. The results may be helpful to the extension workers to learn about various problems related to fish production and

suggest farmers for practicing with the problems in their fields.

### References

1. Ali, H., Azad, M. A. K., Anisuzzaman, M. R., Chowdhury, I., & Shariful, A. (2010). Livelihood status of the fishfarmers in some selected areas of Tarakanda upazila of Mymensingh district. *J. Agrofor. Environ.*, 3(2), 85–89.
2. Ali, M. H., Hossain, M. D., Hasan, A. N. G. M., & Bashar, M. A. (2008). Assessment of the livelihood status of the fish farmers in some selected areas of Bagmara upazilla under Rajshahi district. *J. Bangladesh Agril. Univ.*, 6(2), 367–374.
3. Ara, Y. (2005). Assessment of Small Scale Fresh Water Fish Farming for Sustainable Livelihoods of the Rural Poor Farmers. Unpublished MS Thesis, Bangladesh Agricultural University.
4. FRSS. (2016). Fisheries Statistical Report of Bangladesh (Vol. 32). Bangladesh: Fisheries Resources Survey System (FRSS).
5. Kabir, K. M. R., Adhikary, R. K., Hossain, M. B., & Minar, M. H. (2012). Livelihood status of fishermen of the old Brahmaputra river, Bangladesh. *World Applied Sciences Journal*, 16(6), 869–873.
6. Kostori, M. F. (2012). Socio- Economic Condition of Fishermen of the Chalan Beel Under Tarash Thana of Sirajgonj in Bangladesh. *Bangladesh Research Publications Journal*, 6(4), 393-402.
7. Islam, M. S., Murshed, S. M. M., Moniruzzaman, M and Baree, M. A. (2002). Rice-cum Fish Farming in Selected Areas of Mymensingh District, *Online J. Biol. Sci.*, 2 (10): 715-718.
8. Mazid, M. A. (2002). Development of fisheries in Bangladesh: Plan and strategies for income generation and poverty alleviation. Dhaka, Bangladesh: Nasima Mazid.
9. Pravakar, P., Sarker, B. S., Rahman, M., & Belal, H. M. (2013). Present Status of Fish Farming and Livelihood of Fish Farmers in ShahrastiUpazila

of Chandpur District, Bangladesh. *American-Eurasian J. Agric. & Environ. Sci.*, 13(3), 391–397.

10. Rahman, M. M. (2003). Socio-economic aspects of carp culture development in Gazipur, Bangladesh. Unpublished MS Thesis. Bangladesh Agricultural University.

11. Rahman, M. M. (2007). Studies on Pond Fish Farming and Livelihoods of Rural Fish Farming in Some Selected Areas of Kurigram District. Unpublished M.S. Thesis, Bangladesh Agricultural University.

12. Saha, S. K. (2004). Socio-economic aspects of Aquaculture in Tangail sadar upazila. Unpublished MS Thesis. Bangladesh Agricultural University.

13. Sarwer, M. G., Ali, M. Y., Bhowmik, S., Asadujjaman, M., & Sharmin, M. S. (2016). Pond Farming and Livelihood Status of Fish Farmers in Subarnachar, Noakhali, Bangladesh. *Agriculture and Biology Journal of North America*, 7(3), 134–139. <https://doi.org/10.5251/abjna.2016.7.3.134.139>

14. Sumi, K. R., Sharker, M. R., Ali, M. L., Pattader, S. N., Ferdous, Z., & Ali, M. M. (2015). Livelihood status of Gher farmers of Beel Dakatia in Khulna district. *International Journal of Aquatic Science*, 6(1), 2008–8019.