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Nur Sabrina Siddiqua

Department of Aquaculture,
Sylhet Agricultural University,
Sylhet, Bangladesh

M Shahab Uddin

Professor, Department of
Aquaculture, Sylhet Agricultural
University, Sylhet, Bangladesh

Golam Shakil Ahamed

Department of Aquaculture,
Sylhet Agricultural University,
Sylhet, Bangladesh

MD Tariqul Alam

Professor, Department of
Aquaculture, Sylhet Agricultural
University, Sylhet, Bangladesh

Tanwi Dey

Assistant professor, Department
of Aquaculture, Sylhet
Agricultural University, Sylhet,
Bangladesh

Correspondence

Golam Shakil Ahamed

Department of Aquaculture,
Sylhet Agricultural University,
Sylhet, Bangladesh

Assessment of the livelihood status of fish farmers and aquaculture conditions in Habigonj Sadar Upazila under Habigonj district, Bangladesh

Nur Sabrina Siddiqua, M Shahab Uddin, Golam Shakil Ahamed, MD Tariqul Alam and Tanwi Dey

Abstract

The experiment was conducted to assess the livelihood status of fish farmers and aquaculture conditions in Habigonj Sadar upazila under Habigonj district for a period of six months from January 2018 to June 2018. The study revealed that maximum number of fish farmers (56%) was remaining between age group of 41-60 years, primary educated (38%), lived in joint family (72%) and majority (47%) had 5-6 family members. It was also found that maximum fish farmers had tin shed household (69%), used semi pacca toilet and used to go upazila health complex for treatment. Maximum fish farmers (90%) cultured fish in polyculture system where most of the ponds belong to multi ownership (39%) and the majority pond size was 0.05-0.50 ha (63%). Most of the fish farmers (46%) got their annual income as BDT 50,001-1,50,000 per year. Present study also identifies some important constraints to fish culture system in the study area.

Keywords: Livelihood; aquaculture; fish farmers; habigonj; Bangladesh

1. Introduction

Fisheries activity is a way of life which determines the social identity and relationships (Coulthard *et al.*, 2011) ^[7]. Fisheries sector is one of the major income and employment generating sector in Bangladesh which plays an important role in the socio economic life of the people who are involved in this sector. This sector also represents one of the most productive and dynamic sectors in Bangladesh and contributes 3.65 percent to its national GDP and around one-fourth (23.81 percent) to the agricultural GDP (FRSS, 2017) ^[11]. Total fish production of Bangladesh in 2016-17 was 41.34 lakh MT where aquaculture contributes 56.44% (DoF, 2017) ^[8]. Recently Bangladesh is achieved 5th position in world aquaculture production (FAOSTAT, 2016) ^[10]. Aquaculture practice has become a promising sector to attain food security as well as to alleviate poverty in developing country like Bangladesh (Ahmed, 2003) ^[1]. Aquaculture has been proved to be profitable business than rice cultivation and that's why many farmers in rural areas are converting their rice field into aquaculture ponds (Islam *et al.*, 2017) ^[15]. Regional socio-economic analysis are fundamental to proper understanding of present conditions, identify chances and risks of future developments and indicate possibilities to minimize negative impacts on human life quality (Than, 2011) ^[21]. Lack of adequate and authentic information on socio-economic condition of the target population is one of the serious impediments in the successful implementation of developmental program. The implementation of the developmental program often turns to unsuccessful due to the lack of proper information and socio economic data (Ellis 2000; Hassan *et al.*, 2012) ^[9,12]. Although Habigonj is one of the ideal fish production areas of Bangladesh, no literature was found in regarding of assessment the livelihood status of fish farmers and aquaculture conditions in Habigonj Sadar upazila. Considering the above fact, the present study was carried out to assess the existing livelihood status of fish farmers and aquaculture conditions in Habigonj Sadar upazila under Habigonj district.

2. Materials and Methods

2.1 Selection of the study area

The present study was conducted to assess the aquaculture condition and livelihood status of

fish farmers in Habigonj Sadar upazila under Habigonj district. Data were collected from randomly selected 80 fish

farmers from four unions (Richi, Teghuria, Lukhra, Poil) of Habigonj Sadar upazila during January 2018 to April 2018.

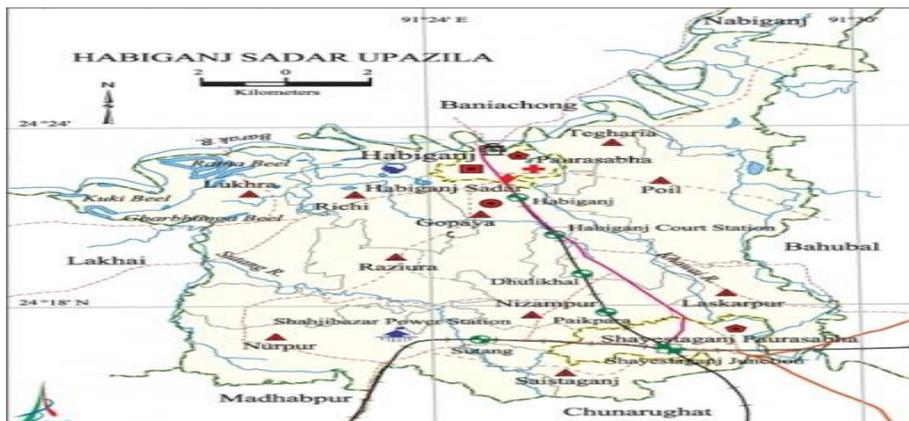


Fig 1: Geographic location of Habigonj Sadar upazila indicating the study area

2.2 Selection of target group

The target group was the fish farmers who are already engaged in fish farming permanently and/or partially for their livelihood. In the study areas most of the farmers depend on fish farming and its associated activities. Only a few farmers were from solvent families and majorities were small and marginal farmers who were generally poor.

2.3 Data Collection Procedures

A set of interview schedule was designed to collect data from the fish farmers using well structured questionnaires. Primary data were collected by means of face to face interview where secondary data were collected from various sources viz., District Fisheries Officer, Upazila Fisheries Officer and NGO workers.

2.4 Processing and analysis of data

All the collected data were accumulated, analyzed and presented in tabular or graphical forms in order to understand the present scenario of the livelihood status of fish farmers and aquaculture conditions in the selected areas.

3 Results and Discussion

3.1 Age distribution

In the present study among all the fish farmers the highest percentage (56%) was remaining between age group of 41-60 years while 31% fish farmers were in age group of 20-40 years and 13% fish farmers were above 60 years (Figure 2).

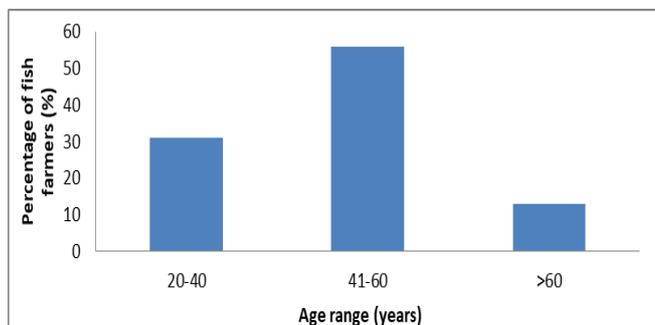


Fig 2: Age structure of the fish farmers of Habigonj Sadar Upazila

Ali *et al.* (2010) [3] found that most of the fish farmers (50%) belonged to age group of 31-40 years in Tarakanda upazila under Mymensingh district. Islam *et al.* (2017) [15] conducted

in a study in Sadar upazila, Meherpur and reported that majority (33.3%) of fish farmers were belongs to 31-40 age group and lowest 3% were found in 10-20 age group. This findings is more or less relevant to the present study.

3.2 Sex composition and religion status

Present study found no female fish farmer in Habigonj Sadar upazila. The main reason of no involvement of female fish farmer was social restrictions. It was recorded that 80 (100%) farmers were Muslim in Habigonj Sadar upazila. Present study supports the findings of Kabir *et al.* (2012) [16] and Sunny *et al.* (2018) [20]. Present study also found 100% fish farmers were Muslim in Habigonj Sadar upazila. Hasan and Ahsan (2014) [13] also observed the similar result in Padma river. Ali *et al.* (2008) [4] reported that maximum fish farmers were muslim (94%) while only 6% were hindu in some selected areas of Bagmara upazila under Rajshahi district.

3.3 Family type

In the study area it was found that 72% fish farmers lived in joint family whereas only 28% lived in nuclear family (Figure 3). Asif and Habib (2017) [5] found the similar result at Jhikargachha upazila in Jessore district that 66% fish farmers lived in joint families and 34% lived in separated families while Ali *et al.* (2008) [4] reported 28% farmers lived with joint families and 72% lived with nuclear families at Baghmara upazila under Rajshahi didtrict.

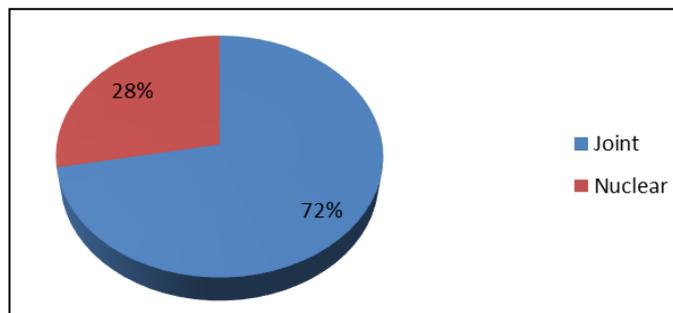


Fig 3: Family type of fish farmers of Habigonj Sadar Upazila

3.4 Family member

It was found that the highest 75% of the respondents had 5-6 family members whereas only 15% had 2-4 and 10% had seven or more family members (Table 1). The result is more or less similar to the findings of Hossain *et al.* (2015) [14].

Table 1: Family size of the fish farmers in the study area

Family size	Number of fish farmers	Percentage of fish farmers (%)
2-4	12	15
5-6	60	75
≥7	8	10

3.5 Educational status of fish farmer

In the study area the education status of the fish farmers were divided into six categories (Figure 4). These are as follows: illiterate 22%, primary level 38%, secondary level 19%, S.S.C. 12%, H.S.C. 6% and bachelor 3%. Khan (1986) [17] had stated that the level of education of the fish farmers is being considered as a significant factor that can affect the utilization of pond for fish farming.

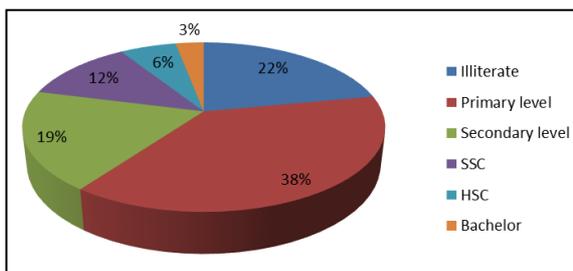


Fig 4: Educational status of fish farmers in the study area

3.6 Occupation in addition to fish culture

Fish farmers had various income sources in addition to fish culture such as agriculture (40%), business (25%), poultry farming (22%), various services (10%) and rest (3%) as others work (Figure 5). Ali *et al.* (2010) [3] reported the more or less similar findings with the present study.

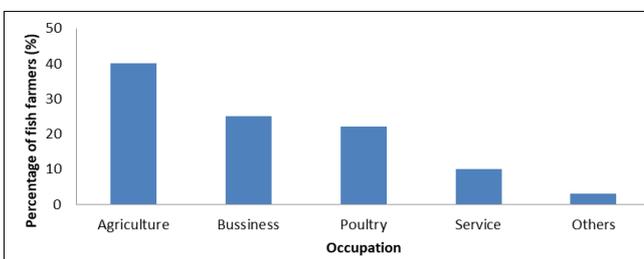


Fig 5: Fish farmers' other occupation status in addition to fish culture

3.7 Housing condition

In the study area most of the houses of fish farmers 69% were made of tin shed whereas 5% katcha, 24% half building and 2% were full building (Figure 6). Ali *et al.* (2008) [4] also found that 50% households of the fish farmers were tin shed, 23% katcha, 23% semi pucca and only 4% of the households were pucca in Baghmara upazila which has more or less similarity with the present study.

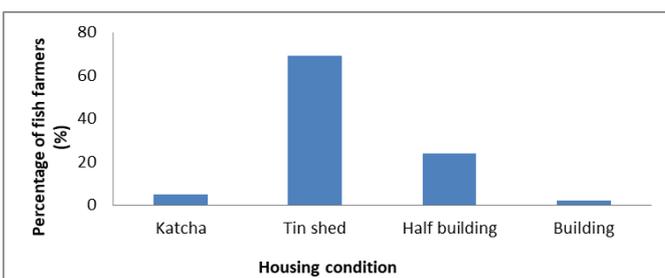


Fig 6: Housing condition of fish farmers in the study area

3.8 Sanitary condition

Present investigation found that 16%, 49%, 35% of fish farmer used katcha, semi pucca and pucca toilet respectively (Figure 7). The result is closely similar to the findings of Ali *et al.* (2010) [3].

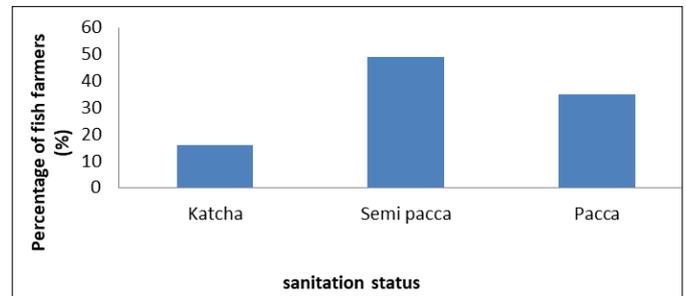


Fig 7: Sanitary condition of fish farmers' household

3.9 Health status

Present study found that 51 (64%) fish farmers were used to go upazila health complex where 29 (36%) fish farmers were used to go MBBS doctor for treatment (Figure 8). An different findings are found from Pravakar *et al.* (2013) [18] that 70% of the fish farmers dependent on village doctors, while 20% and 10% got health service from upazila health complex and MBBS doctors respectively in Shahrasti upazila under Chandpur district.

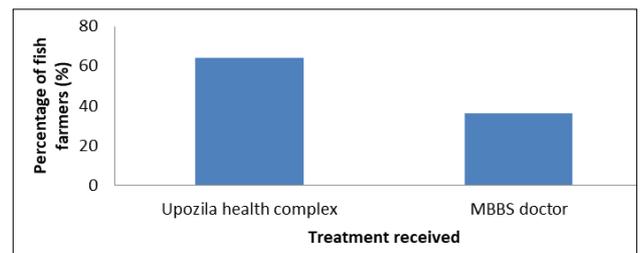


Fig 8: Health status of fish farmers in Habigonj Sadar upazila.

3.10 Ownership of cultured pond

In the study area 27% of the farmers had their single ownership of their cultured pond whereas 39% had multi ownership, 21% had leased ponds with multiple persons and only 13% had leased ponds of single ownership (Figure 9). Opposite scenery is observed by Asif and Habib (2017) [5] that 76% of the farmers had single ownership ponds, 14% had multiple ownership ponds, and remaining 10% farmer had leased based ponds in Jhikargachha upazila under Jessore district.

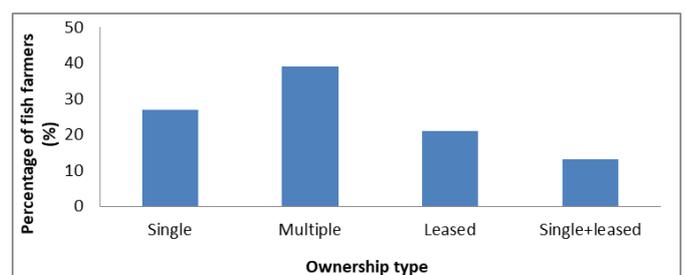


Fig 9: Ownership of cultured ponds in Habigonj Sadar Upazila

3.11 Pond size

Among the 80 fish farmers most of them 50 (63%) had ponds with size of 0.05-0.50 ha while 13 (16%) had less than <0.05

ha size ponds, 10 (12%) had 0.51-1.0 ha size ponds, and 7 (9%) had above 1 ha size ponds (Table 2). Rahman *et al.* (2018) [19], Pravakar *et al.* (2013) [18] and Azad *et al.* (2018) [6] also found the result that more or less similar to the present study.

Table 2: Size of ponds used by the fish farmers in Habigonj Sadar Upazila

Pond size (ha)	Number of farmers, n=80	Percentage of farmers (%)
<.05	13	16
.05-.50	50	63
.51-1.0	10	12
>1.0	7	9

3.12 Source of credit

Present study found that 52 (65%) fish farmers used their own fund for fish farming whereas 22 (27%) borrowed money from bank and 6 (8%) from other sources (Figure 10). Asif and Habib (2017) [5] also found the similar result that 64% fish farmer used to invest their own credit in Jhikargachha upazila while Ali *et al.* (2010) [3] reported that 90% of the fish farmers used their own money for fish farming in Tarakanda upazila.

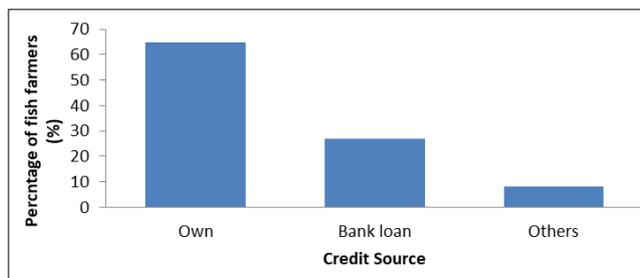


Fig 10: Credit source of fish farmers in the study area

3.13 Annual income from fish culture

In the study area 37 (46%) fish farmers got their annual income as BDT 50,001-1,50,000 per year where 18 (22%) fish farmers got less than BDT 50,000 per year, 19 (24%) fish farmers got BDT 1,50,001-2,50,000 per year and only 6 (8%) fish farmers got BDT 2,50,001-3,50,000 per year (Figure 11). Pravakar *et al.* (2013) [18] stated that the highest percentage 34% fish farmers earned BDT 75,000-1,00,000 per year in Shahrasti upazila of Chandpur district which is closely similar to the present study.

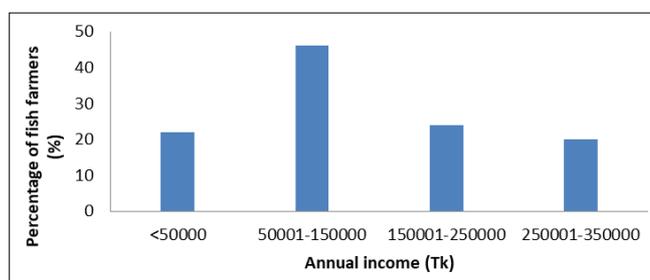


Fig 11: Annual income of fish farmers in the study area

3.14 Fish stocked by farmers

It was found that 90% fish farmers carried out polyculture system where only 9% and 1% fish farmers were practiced monoculture and integrated fish culture system respectively (Table 3). The major cultured species were mainly Indian major carps such as Rui (*Labeo rohita*), Catla (*Catla catla*),

Mrigal (*Cirrhinus cirrhosus*) and Exotic species such as Silver carp (*Hypophthalmichthys molitrix*), Grass carp (*Ctenopharyngodon idella*), Common carp (*Cyprinus carpio var communis*), Bighead carp (*Hypophthalmichthys nobilis*), Pangas (*Pangasius hypophthalmas*) and Monosex Tilapia in the study area.

Table 3: Fish culture system in the study area

Culture system	Number of farmers, n=80	Percentage of fish farmers (%)
Polyculture	72	90
Monoculture	7	9
Integrated fish culture	1	1

3.15 Use of feed

It was found that 77% fish farmers applied commercial pelleted feed produced by different feed company where 23% fish farmers used homemade feed (Figure 12). Rahman *et al.* (2018) [19] reported that artificial feed (63%), farm made feed (3%), and both artificial and home-made feed (34%) were supplied to the cultured species.

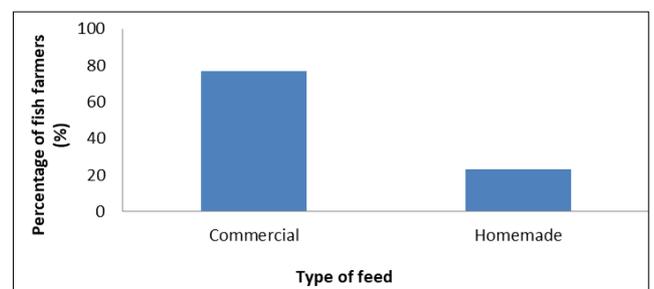


Fig 12: Feed used in fish farms in the study area

3.16 Use of fertilizer

Present study also found that 49% fish farmers used both organic and inorganic fertilizer while 26% used inorganic fertilizer, 19% used organic fertilizer and only 6% used no fertilizer into their fish farm. Rahman *et al.* (2018) [19] also found the similar result that 96% farmers applied different organic and inorganic fertilizers in the integrated farming systems.

Table 4: Use of fertilizer into fish farm

Type of fertilizer	Number of farmers, n=80	Percentage of fish farmers (%)
Inorganic	21	26
Organic	15	19
Both organic and inorganic	39	49
No fertilizer	5	6

3.17 Fish marketing system

Present study found that 15% of fish farmers sold their catch to the consumer directly in the local market whereas 79% sold their catch to retailer or whole seller and only 6% sold to other fishermen or neighbor. Akter *et al.* (2016) [2] found most of the fish farmers (83.33%) sell their fish in upazila market while only 16.67% farmers sell in local markets. Pravakar *et al.* (2013) [18] found that 80% fish were sold by the farmers to local paikers and the rest 20% consumed by the households and given to the relatives.

3.18 Problems faced by the fish farmers

A number of problems were reported by fish farmers in the study area. According to the survey 32% of farmers reported

non-availability of fish fry during stocking period as the single most important problem for fish farming. Another problems mentioned by fish farmers were: poor technical knowledge 26%, lack of money 30%, lack of credit source 16%, low price of the product 8%, fish disease 12%, insufficient water during dry season 8%, overflow water during rainy season 20% and poaching 8% (Figure 13).

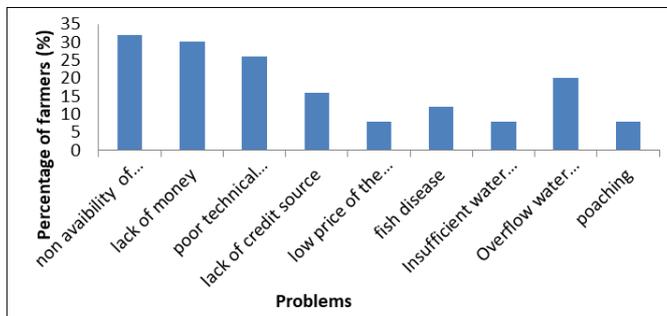


Fig 13: Problems faced by the fish farmers in the study area

4. Conclusion

Fish farming can play a vital role in the uplifting of the life style and socio-economic condition of fish farmers in Habigonj Sadar upazila under Habigonj district. As a principal source of animal protein, fish production has to be increased manifold to meet the requirement in study area as well as country need. In the study area aquaculture is rapidly spreading in recent years although fish farmers suffer from various problems. If the farmers are given sufficient training, economic support on easy terms and conditions, more profit would be come up.

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