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Difficulties experienced by fish farm owners in surrounded Dorsha river of Bangladesh

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Abstract

The study's goal was to determine the problems encountered by fish farmers in fish farming and to investigate the relationship between the selected characteristics of the fish farmers and the extent of problems encountered in fish farming. Data were collected from 60 randomly selected fish farmers (out of 200) from three villages in Bangladesh (Baghaitala, Mahishleti, and Akonpara) near the Dorsha River. During September and October of 2019, a pre-tested and structured interview schedule was used to collect data from fish farmers. To assess the severity of the problems, a four-point rating scale with categories of high, medium, low and not at all was used. According to the findings, the majority of respondents (58.3%) had medium problems, 36.7% had low problems, and 5% had high problems. The most common problems in the study area were market price fluctuations, a lack of effective and expensive disease control drugs, high fertilizer and fish feed costs, and a lack of proper training. Out of eleven selected characteristics, three characteristics including annual income, knowledge on fish farming and training exposure showed significant negative relationships with their problems faced in fish farming. The other characteristics had no relationship with the problems faced by the fish farmers. The findings of the study can be helpful for the government, extension workers, researchers and non-government organization for rapid diffusion of solution of problems in fish farming among the fish farmers.

Keywords: Dorsha River, Fish farm owner, problem

Introduction

Bangladesh is a river-irrigated country which stands of mass numbers of rivers, haors, baors, beels and floodplain etc. Fish are obtained from a variety of sources in the abundant fisheries resources that surround this nation (Haque *et al*, 2021) ^[7]. It has almost 800 rivers, comprising 24,140 kilometers in length (Banglapedia 2012; DoF 2013) ^[2]. Dorsha River is an important water route in Halwaghat Upazilla, Mymensingh, Bangladesh. A variety of fishes is caught from these river and sells in the markets. In the boro monsoon the water of these rivers are used for irrigation. Many fish farms have been established in the area around the Dorsha River due to high fish farming. The purpose of this work is to find out what difficulties are faced by the fish farm owners in Dorsha River area. As the river is the hub of trade and communication, if the main problems in fish farming can be eliminated, it is possible to increase the fish production in Darsa River areas and areas surrounded by the others river. In addition to being a significant source of income, employment, and animal protein for Bangladesh's economy, fish farming also contributes significantly to the country's foreign exchange earnings. Currently, there are 4.7 million metric tons of fish produced annually, of which 56% are produced through aquaculture. The primary source of this catch is farming, which provides freshwater fish for aquaculture and landed fisheries. Bangladesh has seen a tremendous increase in fish farming over the past several years as a result of the implementation of many enhanced aquaculture technologies. The absence of high-quality hatchery-produced seeds, a lack of technical knowledge of culture methods, the lack of credit, incorrect culture management, and the low level of fish output are the main obstacles to Bangladesh's expanding trend of aquaculture production.

There are various problems faced by the fish farmers during fish production along with marketing.

Lack of marketing facilities, problems of site selection, poor communication, and high transportation cost, storage cost, low price of fish, disease outbreak, lack of proper management knowledge are main problem etc. (Sahel, 2007)^[19]. Fish production can only be increased if problems are properly identified and minimized. In addition, proper knowledge and technologies of aquaculture should be disseminated to the fish farmers who are engaged in fish farming. As a result, it will be possible to develop a sustainable fish production and to increase fish production. The main focus of the study was to determine the problems faced by fish farmers in fish farming. The findings of the study would be especially applicable to fish farm owner of Dorsha river side area.

Methodology

This chapter explains the methodological approach and design of the study, the study area, sampling design, methods and procedures used for data collection and different variables and their measurement procedures used for data analysis.

Methodological approach and research design of the study

This study contained both qualitative and quantitative research approaches. Thus, a mix method research design was applied to determine the problems of fish farmers.

Study area

Three village (Akonpara, Baghaitala, Mahishlet) beside Dorsha River was selected purposively because no research work has done based on fish farmer's problems on fish culture in this area.

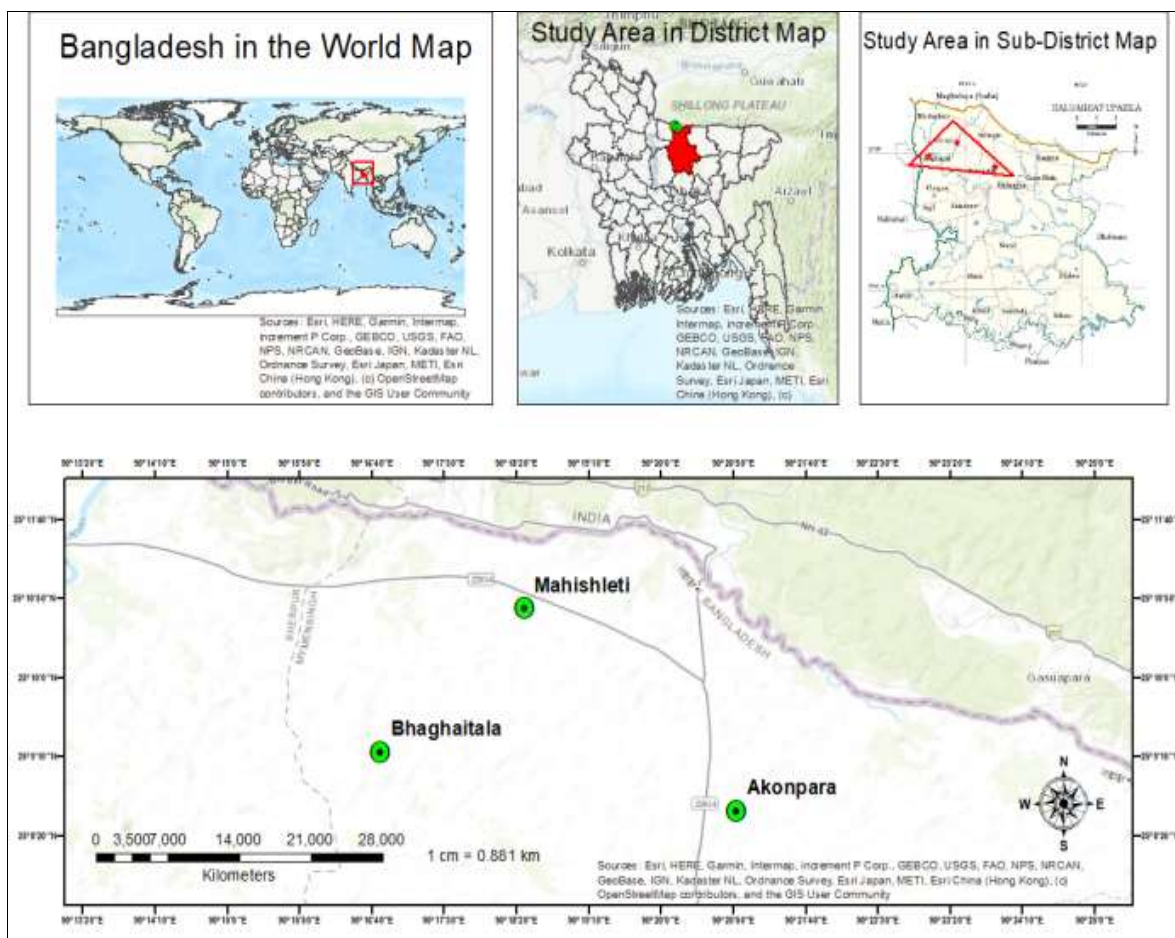


Fig 1: Study area beside Dorsha River of Bangladesh

Population and sampling

From the total number of fish farmers in these three villages, 200 were purposively selected which constituted the population. A list of all these (200) fish farmers was prepared to make it a sample frame. In the second step, 30% of the fish farmers were selected as sample by using a table of random numbers. 60 fish farmers were selected in this way and constituted the sample for the study.

Data Collection

Data were collected by using questionnaire survey. In the survey, two trained enumerators along with the researcher herself collected data from 60 fish farmers through personal interviewing.

Data processing

Collected data obtained from the survey was accumulated, grouped, summarized, arranged and also coded, compiled, categorized, tabulated and analyzed according to the objectives of the study. Qualitative data were converted to numerical data by means of suitable scoring techniques and were transferred to a master sheet for entering into the computer. Local units were also converted into standard units.

Data analysis

Finally arranged data were analyzed by the SPSS 20 version (Statistical Package for Social Sciences) computer program, and then interpreted according to the objectives as well as parameters. Various statistical measures such as range, mean,

number percentage, standard deviations and rank order were used to describe the selected characteristics of the respondents of the study area. Pearson's Product Moment Correlation Coefficient (r) was calculated for testing the relationship between dependent and independent variables.

Result and Discussion

Problems faced by the fish farmers in farming

The respondents' problems facing scores in all 20 selected problems could range from 0 to 60, where '0' indicating no problem and '60' indicating very high problem faced. Observed score of problems of the respondents in fish farming ranged from 13-34. The average score of problems of the respondents in fish farming was 22.30 and standard deviation was 4.82 have been shown in table 1.

Table 1: Categorization of respondents on the basis of their overall problems faced in fish farming (N=60)

Aspects of problem	Score Range		Respondents (n=60)			Mean	SD
	Possible	Observed	Category	Number	Percent		
Problems of fish farming	0-60	13-34	Low (13-20)	22	36.7	22.30	4.82
			Medium (21-30)	35	58.3		
			High (above 30)	3	5		

Data in Table 1 show that majority of the respondents (58.3%) faced medium problem, while 36.7% faced low problem and 5% faced high problem in fish culture. The mean value 22.30 clearly indicated that the fish farmers in average faced medium problem but nearest to low level in fish culture. The major focus of this study is to describe and determine the problems faced by the farmers in fish farming. There are many problems in fish farming which have a negative effect on fish production. However, the findings would also have application for the other areas of the country having similarities with the study area. Rahman (2014) [14] conducted a study on problems faced by fish farmers in pangas culture

which was less similar to the present findings. Findings of Rahman (2014) [14] revealed that the largest proportion 91.4 percent of the farmers had moderate level problem, 0 percent had low level problem and 8.6 percent farmers had severe problems faced in culturing pangus.

Problems in different aspects of fish farming

Total of 20 problems were categorized in three aspects *i.e.* General problems, problems in culture period and problems after fish harvesting. A summary of findings on this regard has been shown in Table 2.

Table 2: Categorizations of respondents based on their problems in different aspect

Aspects of problem	Observed range (possible)	Categories and score range	Respondents		Mean	Standard deviation
			No.	%		
General problems	2-19 (0-24)	Low problem (2-8)	28	46.7	8.93	3.10
		Medium problem (9-16)	30	50		
		High problem (Above 16)	2	3.3		
Problems in culture period	3-18 (0-24)	Low problem (3-8)	26	43.3	9.36	3.20
		Medium problem (9-16)	31	51.7		
		High problem (Above 16)	3	5		
Problems after fish harvesting	1-11 (0-12)	Low problem (up to 4)	23	38.3	5.08	2.20
		Medium problem (5-8)	31	51.7		
		High problem (Above 8)	6	10		

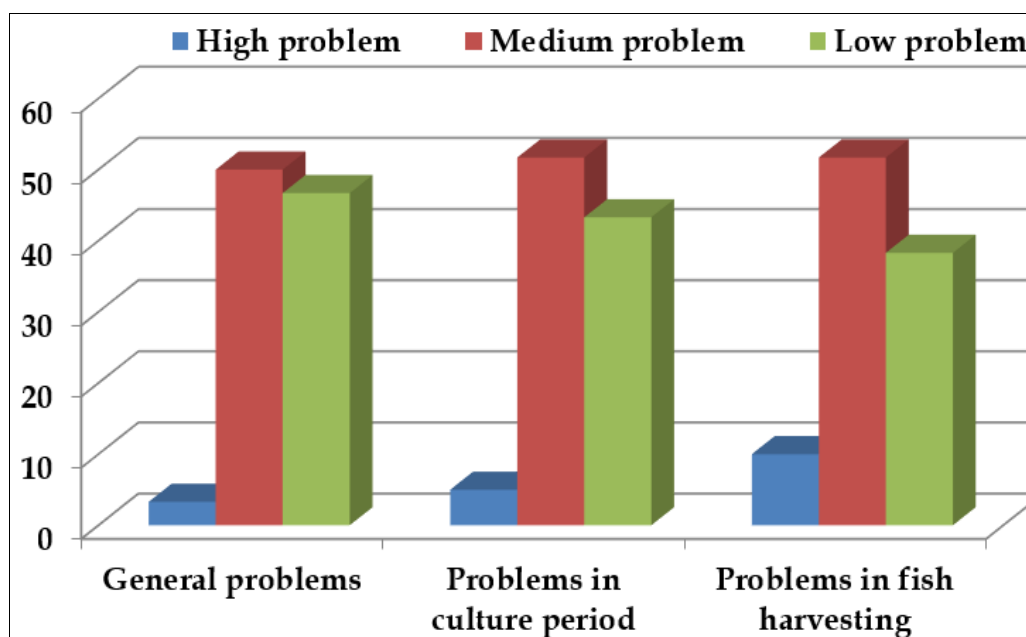


Fig 1: Percentage of problems in different aspects

Data in table 2 show that majority of the respondents (50%) faced medium problem under general problems. The mean value 8.93 was clearly indicated. 51.7% faced medium problems in Culture period. The mean value was 9.36 and standard deviation was 3.20. About 51.7% faced medium problems during after harvesting period. The mean value was 5.08 and standard deviation was 2.20. Present findings have a number of similarities with Hossain *et al.* (2013) [8] conducted a study on problems faced by fish farmers in practicing aquaculture management. Findings revealed that 11.2 percent of the fish farmers faced high problem while majority 87.5 percent of the fish farmers had medium problem confrontation.

Comparison among the individual problems according to PFI: For having a better concept about the extent of problems

Table 3: Rank order of 20 identified problems faced by the fish farmers in farming

Sl. No.	Name of the problems	Extents of problems				PFI	Rank order
		High (3)	Medium (2)	Low (1)	Not at all(0)		
1	Lack of proper training	17	13	15	15	51.11	4
2	Fluctuation of market price	16	28	14	2	65.56	1
3	Lack of effective and high price drug for disease control	15	26	13	6	61.11	2
4	High cost of fertilizer and fish feed	14	22	17	7	57.22	3
5	Lack of modern technological knowledge	7	20	25	8	47.78	5
6	Lack of knowledge on fish processing and preservation	7	15	33	5	46.67	6
7	Lack of enough capital to invest	4	10	29	17	33.89	11
8	Lack of skilled worker	4	10	27	19	31.11	13
9	Disease culture in fish culture	3	25	18	14	42.78	7
10	Lack of availability of quality feed	3	9	33	15	33.33	12
11	Unavailability of quality seed and species	2	22	16	10	36.67	10
12	Lack of knowledge on species selection	1	17	31	10	37.78	9
13	Lack of knowledge on application of fish feed and fertilizer	1	13	29	17	32.22	14
14	Lack of financial support	1	9	26	24	26.11	16
15	Lack of marketing facility	1	8	24	27	23.89	17
16	Security problem	1	2	16	41	12.77	19
17	Problem of site selection	0	20	29	11	38.33	8
18	Water crisis in dry season	0	11	26	23	26.67	15
19	Lack of access to local market	0	4	32	24	22.22	18
20	Natural calamities like flood	0	1	13	46	8.33	20

Table 4: Relationship between the selected characteristics of the fish farmers and their problems in fish farming

Problems	Selected characteristics	Computed value of 'r'	Table value of 'r' of 68 degree of freedom	
			0.05	0.01
Extent of problems faced by the fish farmers in fish farming	Age	0.105	0.197	0.257
	Education	0.139		
	Family size	-0.025		
	Area under fish farming	-0.222		
	Annual income	-0.273*		
	Experience in fish farming	-0.138		
	Knowledge on fish farming	-0.337**		
	Credit received	-0.207		
	Training exposure	-0.269*		
	Organizational participation	-0.118		
Extension media contact	-0.188			

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Relationship between the selected characteristics of the fish farmers and their problems in fish farming

The purpose of this section is to explain the relationship between the independent and dependent variables. Pearson's product moment correlation of coefficient (r) was used to test the concerned null hypothesis in the relationship between the dependent and the independent variables. The summary of the result of correlation test is showed in Table 4 and the

in fish farming, it was necessary to get an idea about the comparative problem facing for 20 selected problems. For 60 respondents, the total score received for each problem issue could range from 0 to 180 (60×0 to 60×3). Problem Facing Index (PFI) was calculated and the rank order accordance with PFI value of 20 selected problems has been shown in the Table 3. The calculated PFI of the 20 problems varied from 8.33 to 65.56 with the possible range of 0-100. They were arranged in rank order according to their PFI value and had been shown in Table 3. Results in Table 3 showed that, fluctuation of market price was the first ranked problem of fish farming. In the study area, 16 respondents out of 60 faced this problem at high and 28 respondents faced at medium extent, 14 respondents faced low problem and 2 respondents face no problem on this topic.

correlation matrix appears in the (Appendix-B). Similar findings were obtained by Hossain (1985) [10], Rahman (1995) [1], Pramanik (2001) [13], Hossain (2002) [9], Ahmed (2002), Salam (2003) [17] and Halim (2003) [6] in their respective studies. Raihan (2014) [15] found that there is no relationship between age of the rural youth and their problems in commercial fish farming. Robiul (2015) [16] in his study found insignificant positive relationship with their problems faced in

pen culture. Raihan (2014) ^[15] found no significant relationship between family size of the farmers and problems in commercial fish farming. He concluded that family size of the farmers had no direct relationship with their problems in commercial fish farming. Salam (2003) ^[17], Karmakar (2004) ^[11], Bhuyian (2002) ^[3] and Halim (2003) ^[6] also found similar result in their respective studies. Parvez (2009) ^[12] found positively significant relationship between family size and constraints faced in small scale aquaculture.

Conclusion

The major focus of this study is to describe and determine the problems faced by the farmers in fish farming. There are many problems in fish farming which have a negative effect on fish production. Fish production can only be increased if problems are properly identified and minimized. In addition, proper knowledge and technologies of aquaculture should be disseminated to the fish farmers who are engaged in fish farming. As a result, it will be possible to develop a sustainable fish production and to increase fish production.

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