

## Assessment of the livelihood status of the fish fingerling traders in some selected areas of northern Bangladesh

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**Abstract:** The present investigation was carried out to assess the livelihood status of the fish fingerling traders in northern Bangladesh for a period of nine months and the study was conducted through the use of well structured questionnaire. Seventy five fingerling traders were interviewed for this study. Average pond size of the fingerling traders was 0.25 ha with 52 and 48% having single and multiple ownerships and about 89% of the ponds were seasonal. Most of the fingerling traders belonged to the age category of 31 to 40 years and average education level is moderate, represented by 72% Muslims and 28% Hindus. About 60% of the farmers have tin shed house while 8% and 32% of the farmers have half-building and kacha house, respectively. Average annual income was 167250 Tk. It was found that 28% of the farmers used semi-pucca sanitary, 4% used pucca sanitary while 67% used katcha sanitary. About 83% of the farmers had electricity facilities with own tube-well while 17% did not have electricity connection and used neighbors' tube-well for drinking water. About 71% of the fingerling traders received health service from village doctor or kobiraj, 17% have access to upazilla health complex, 9% went to district hospital and only 3% consulted with MBBS doctor. Inadequate technical knowledge, multiple ownership, theft, poisoning, lack of money, poor quality of fingerling, transportation, price fluctuation, customer diversity, demand driven product, communication facilities, promotional activity, etc. were the major constraints for fingerling trading and the single largest problem reported by 56% of respondents as lack of technical knowledge.

**Key words:** Constraints, fish fingerling traders and livelihoods

### Introduction

Livelihood comprises the capabilities, the assets (natural, physical, human, financial and social capital), the activities and the accesses to these (mediated by institutions and social relations) that together determine the living gained by the individual household (Chambers and Conway, 1992). About 12 million people derive their livelihood directly or indirectly from this sector. There are over 1.2 million fishermen in the country but almost two-thirds of the rural households get involved in fishing during the monsoon (DoF, 2005). Fish and fisheries are indispensable part in the life and livelihoods of the people of Bangladesh since time immemorial. It is the part of our cultural heritage. Fisheries sector is the most important sub-sectors of the national economy in Bangladesh and plays very important role in the socio-cultural and economic life of Bangladesh and it contributes 4.92% to the gross domestic product (GDP) and 5.71% to the export earnings of the country (DoF, 2005). About 12 million people (10% of total population) directly or indirectly depend on fisheries sector for their livelihood (DoF, 2005). Fingerling traders are playing vital role to decentralize fingerling to the table fish producers and providing technical assistance as well. Considering the financial hardship and other complexities of the rural fingerling traders, it is important to analyze their livelihood status. In view of the above consideration; the present study was undertaken to determine the living standard of the fingerling traders and their sustainable livelihood and to identify the socio-economic problem /constraints associated with fingerling business.

### Materials and Methods

Three districts (i. e. Nilphamari, Thakurgaon and Kurigram) of northern Bangladesh were selected for the study, because; fingerling traders (sometimes known as *patilwala*) are heavily concentrated in this area, various NGOs and DoF have been working with traders to increase fish production, well communication facilities, relatively homogenous physiographic condition and finally suitable for research work in this areas. Data were collected during October 2010 to June 2011. Seventy five

(75) fingerling traders were randomly selected from the study areas where each of the districts covers 25 traders. Fingerling trading by the traders, management practices and farmers age, number of family member; religious status, income level, health facilities, sanitary facilities, get a technical assistance, electricity facilities etc were included in the sample. Fingerling traders' data were collected using questionnaire interviews, Participatory Rural Appraisal (PRA) tool such as Focus Group Discussion (FGD) and Cross-check interview with key informants. Data were processed and finally analyzed using tabular method.

### Results

The key market actors in fish sub-sector are fingerling traders and played a vital role in fingerling business since they are typical service providers and continuing their services to the fingerling producers, satellite brood rearers (SBRs) and other table fish producers. The fingerling traders are sometimes known as *patilwala* and they moved one place to another place to decentralize the produced fingerling throughout the community and fingerling selling points or markets. Generally van, bicycle and aluminum pots were being used by the traders to transport the produces from one place to others.

**Fish fingerling for trading:** The most common fingerling species in the studied areas were Tilapia, Common carp, Rui, Saurpunti, Bighead carp, Silver carp, Mrigel, Catla, Bata, Grass carp, etc (Table 1). The table showing that the fingerling traders get highest and lowest profit from Mrigel (51 Tk/kg) and Grass carp (17 Tk/kg), respectively.

#### Livelihood Assets, Human Capital

**Age distribution:** Out of 75 farmers, 48% belonged to the age group of 31 to 40 years whereas only 8% are found in the group of above 51 years (Table 2).

**Family size:** About 32% of the respondents had 4-5 family members, 45% had small family with 2-3 members, while 23% had more than 6 family members (Table 3).

**Family status:** Data in Table 4 indicated that 44% fingerling traders lived with joint families and 56% lived with nuclear families. The highest number of fingerling

traders with nuclear family structures was found in Nilphamari (72%) than Thakurgaon and Kurigram districts. **Education:** Only 8% of the fingerling traders had education up to S.S.C level, while 2% had H.S.C level of

education. About 8% of the fingerling traders were illiterate and no of the respondents possessed bachelors' degree (Table 5).

**Table 1.** Fingerlings and their current business status though fingerling traders

Species	Purchase price (Tk/kg)	Other cost (Tk/kg)	Sales price (Tk/kg)	Profit (Tk/kg)
Rui	88	8	128	32
Saourpunti	106	6	154	42
Bata	110	15	153	28
Mrigel	87	8	146	51
Catla	135	12	181	34
Silver carp	65	8	93	20
Bighead carp	60	8	95.5	27.5
Tilapia	91	7	138	40
Common carp	100	5	131.5	26.5
Grass carp	120	6	143	17

with 2-3 members, while 23% had more than 6 family members (Table 3).

**Table 2.** Age distribution of the fingerling traders in the study area

Age group (years)	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
20 to 30	7 (28%)	05 (20%)	09 (36%)	21 (28%)
31 to 40	12 (48%)	11 (44%)	13 (52%)	36 (48%)
41 to 50	03 (12%)	07 (28%)	02 (8%)	12 (16%)
51 to above	03 (12%)	02 (8%)	01 (4%)	06 (8%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 3.** Family size of the fingerling traders in the study area

Family size	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
2-3	13 (52%)	11 (44%)	10 (40%)	34 (45%)
4-5	08 (32%)	09 (36%)	07 (28%)	24 (32%)
> 6	04 (16%)	05 (20%)	08 (32%)	17 (23%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 4.** Family status of the fingerling traders in the study area

Family type	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Joint family	7 (28%)	11 (44%)	15 (60%)	33 (44%)
Nuclear family	18 (72%)	14 (56%)	10 (40%)	42 (56%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 5.** Educational status of the fingerling traders in the study area

Educational level	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
No education (Illiterate)	01 (4%)	03 (12%)	02 (8%)	6 (8%)
Only signature	05 (20%)	07 (28%)	08 (32%)	20 (27%)
Up to Primary	17 (68%)	13 (52%)	11 (44%)	41 (55%)
S.S.C	02 (8%)	01 (4%)	03 (12%)	06 (8%)
H.S.C		01 (4%)	01 (4%)	02 (2%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 6.** Religious status of the fingerling traders in the study area

Religion	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Muslims	21 (84%)	18 (72%)	15 (60%)	54 (72%)
Hindus	04 (16%)	07 (28%)	10 (40%)	21 (28%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 7.** Size of ponds (ha) in the surveyed area

Parameter	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Range (ha)	0.06 – 0.28	0.05 - 0.30	0.04-0.75	
Average pond size (ha)	0.18	0.20	0.39	0.25

**Table 8.** Distribution of the type of pond in the study area

Pond type	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Seasonal	22 (88%)	21 (84%)	24 (96%)	67 (89%)
Perennial	03 (12%)	04 (16%)	01 (4%)	08 (11%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 9.** Housing condition of the fingerling traders in the study area

Housing condition	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Kacha	09 (36%)	07 (28%)	08 (32%)	24 (32%)
Tinshed	14 (56%)	16 (64%)	15 (60%)	45 (60%)
Half building	02 (8%)	02 (8%)	02 (8%)	06 (8%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 10.** Health service received by the fingerling traders in the surveyed area

Health service	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Village doctor / kobiraj	18 (72%)	15 (60%)	20 (80%)	53 (71%)
Upazila health complex	04 (16%)	07 (28%)	02 (8%)	13 (17%)
District hospital	03 (12%)	02 (8%)	02 (8%)	07 (9%)
MBBS doctor (private)		01 (4%)	01 (4%)	02 (3%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 11.** Drinking water facilities of the fingerling traders in the study area

Source of drinking water	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Own tube-well	23 (92%)	21 (84%)	18 (72%)	62 (83%)
Neighbor's tube-well	02 (8%)	04 (16%)	07 (28%)	13 (17%)

\*\*Figure in the parenthesis indicate percentage of total

**Religious status:** It was found that maximum fingerling traders were Muslim (72%) while small proportions (28%) were Hindus (Table 6). Highest percentage of Muslims fingerling traders were found in Nilphamari (84%) whereas the increased number of Hindus (40%) fingerling traders were found in Kurigram district.

#### Natural Capital

**Pond size:** The average pond size in the study area was found to be 0.25 ha. The average pond size in Nilphamari was 0.18 ha which was lower than in Thakurgaon and Kurigram districts (Table 7).

**Type of pond:** In the study area, 89% of the pond were seasonal and only 11% pond were perennial (Table 8). The water level in the perennial ponds declined significantly during dry season and become unsuitable for fish culture. Some of the fingerling traders filled their ponds up to 3-4ft level by pumping water from the nearly deep tube-well. Seasonal ponds become totally unsuitable for fish culture during dry season.

#### Physical Capital

**Housing conditions:** The majority (60%) of the respondents had tinshed, only 8% had half building, no one had building and 32% had kacha house (Table 9).

**Health facilities:** When the farmers face health problem then initially most of them go to the village doctor / kobiraj (71%). If the problem is severe then they go to upazilla health complex (17%), district hospital (9%), and MBBS doctor (3%) (Table 10).

**Drinking water facilities:** In the study area, 83% of the fingerling traders used own tube-well and 17% of the fingerling traders used neighbors' tube-well for collecting drinking water (Table 11).

**Electricity facilities:** It was found that 83% of the surveyed fingerling traders had electricity facilities, whereas only 17% had no electricity facilities at their residence (Table 12). The fingerling traders in Nilphamari district had more access to electricity (92%) as compared to those in Thakurgaon and Kurigram districts

**Sanitary facilities:** It was observed that the fingerling traders' sanitary conditions were very poor in the surveyed area and only 32% stated that they had these (Table 13). The fingerling traders had higher access to good sanitation in Thakurgaon (48%) than others. A few fingerling traders noted that the households of fingerling traders often suffered from diarrhea and cholera due to lack of good sanitary facilities.

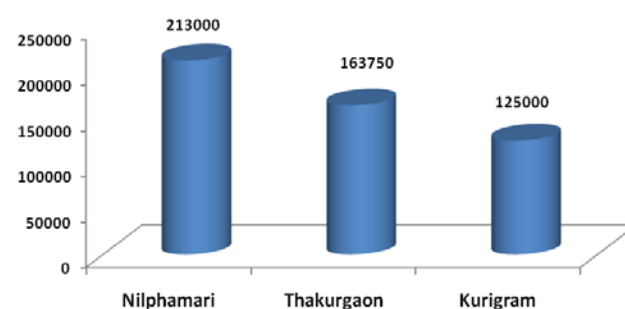


Fig 1: Annual household income (Tk) of the Fingerling Traders

**Cooking fuels:** At about 73% of respondents stated that they mainly used paddy straw, while 19% and 8% used wood and cow-dung, respectively for cooking purposes (Table 14).

### Social Capital

It was found that 64% of the fingerling traders got technical assistance or advice on fingerling trading from NGOs. About 28% of the fingerling traders acquired technical assistance from DoF (department of Fisheries) while only 8% of the fingerling traders got technical assistance from friends and neighbors (Table 15).

**Financial Capital: Annual house hold income:** The average annual household income (Tk) of the fingerling traders was 167250 Tk. The highest and lowest annual

income was Tk 213000 (Nilphamari) and 125000 (Kurigram), respectively (Fig 1).

**Occupation: Primary occupation:** Almost all respondents (85%) reported fingerling trading was their primary occupation. However, as a primary occupation, 15% of respondents stated that agriculture and others was their primary occupation (Table 16).

**Secondary occupation:** Eighty three percent of respondents stated that their secondary occupation was agriculture while 16% and 1% are occupied in fish farming and business respectively (Table 17).

**Table 12.** Status of electricity facilities of the fingerling traders in the study area

Electricity facilities	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Yes	23 (92%)	21 (84%)	18 (72%)	62 (83%)
No	02 (8%)	04 (16%)	07 (28%)	13 (17%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 13.** Use of sanitary facilities by the fingerling traders in the study area

Sanitary facilities	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Katcha	17 (68%)	13 (52%)	20 (80%)	50 (67%)
Semi-pucca	06 (24%)	11 (44%)	04 (16%)	21 (28%)
Pucca	02 (8%)	01 (4%)	01 (4%)	04 (5%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 14.** Use of cooking fuels by the fingerling traders in the study area

Cooking fuel	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Cow-dung	15 (60%)	19 (76%)	21 (84%)	55 (73%)
Paddy straw	02 (8%)	02 (8%)	02 (8%)	06 (8%)
Wood	08 (32%)	04 (16%)	02 (8%)	14 (19%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 15.** Source of technical assistance on fingerling trading in the study area

Source of technical assistance	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
DoF	07 (28%)	05 (20%)	09 (36%)	21 (28%)
NGO	17 (68%)	18 (72%)	13 (52%)	48 (64%)
Friends and neighbors	01 (4%)	02 (8%)	03 (12%)	06 (8%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 16.** Primary occupation by fingerling traders in the surveyed area

Occupation	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Fingerling trading	23 (92%)	21 (84%)	20 (80%)	64 (85%)
Agriculture and others	02 (8%)	04 (16%)	05 (20%)	11 (15%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 17.** Secondary occupation by fingerling traders in the surveyed area

Occupation	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Agriculture	21 (84%)	23 (92%)	18 (72%)	62 (83%)
Fish farming	04 (16%)	02 (8%)	06 (24%)	12 (16%)
Business			01 (4%)	01 (1%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 18.** Savings by fingerling traders in the study area

Savings	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Yes	23 (92%)	24 (96%)	20 (80%)	67 (89%)
No	02 (8%)	01 (4%)	05 (20%)	08 (11%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 19.** Ownership of the ponds in the study area

Ownership	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Single	14 (56%)	12 (48%)	13 (52%)	39 (52%)
Multiple	11 (44%)	13 (52%)	12 (48%)	36 (48%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 20.** Lone received by fingerling traders for trading in the study area

Received loan	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Yes	05 (20%)	09 (36%)	07 (28%)	21 (28%)
No	20 (80%)	16 (64%)	18 (72%)	54 (72%)

\*\*Figure in the parenthesis indicate percentage of total

**Table 21.** Improved livelihood conditions through fingerling trading

Improved livelihood conditions	Nilphamari (n -25)	Thakurgaon (n-25)	Kurigram (n-25)	Total (N-75)
Yes	22 (88%)	20 (80%)	18 (72%)	60 (80%)
No	03 (12%)	05 (20%)	07 (28%)	15 (20%)

\*\*Figure in the parenthesis indicate percentage of total

**Savings:** It was found that 89% of respondents had savings (Table 18). The fingerling traders could save some from fingerling trading, agriculture, fish culture, business, service and other activities. Savings were used for many purposes like, basic needs such as, children's education, health, loan payment, housing, food consumption, clothes etc. However, the rest of 11% fingerling traders could not save money due to poor resources and household expenses.

**Pond ownership:** In the study area 52% of the ponds were under single ownerships and 48% under multiple ownerships (Table 19).

**Credit facilities:** It was found that 72% of fingerling traders used their own money for fingerling trading, while the rest (28%) of the fingerling traders received loans. In recent years several institutions such as, banks, NGOs, money lenders (mohazon) etc. were providing credit to the fingerling traders (Table 20). The amount of loan for fingerling trading varies; depending on business volume, customer base, operational cost and others management practices.

**Constraints of fingerling business:** A number of constraints and risks were reported by the fingerling trading i.e. inadequate technical knowledge, multiple ownership, theft, poisoning, lack of money, poor quality of fingerling, transportation, price fluctuation, customer diversity, demand driven product, communication facilities, promotional activity, etc. The single largest problem reported by 56% of respondents as lack of technical knowledge.

**Livelihood Outcomes:** The survey suggests that farmers have improved their livelihood conditions through fingerling trading, as confirmed by 80% of fingerling traders. As Table 21 shows that the percentage of positive response was higher in Nilphamari (88%) district than that of Thakurgaon (80%) and Kurigram districts (72%). Only 20% of fingerling traders could not improve their livelihood conditions due to poor knowledge on fingerling trading, lack of money and other causes.

## Discussion

Human capital represents the farmer's age, education, family size and status, religious status etc. Ahmed (2001) reported that human capital is skills, knowledge, education, ability of labor and good health that together enable people to pursue their livelihood strategies. As well as being of intrinsic value, human capital is required in order to make use of any of the four other types of assets. From the present study it was found that, only 3% got health service from MBBS doctors, while 71% of fingerling traders were dependent on village doctors. The poor health and inadequate nutrition of the children, women and old-aged members of trading communities also inhibits their development. The poor health facilities, sanitary facilities and inadequate access to safe drinking water make their human assets and consequently the livelihoods more vulnerable. The similar views were also expressed by Hossain (2007), Sarker (2007) and Ail *et al* (2008). Natural capital of farmers represents the natural resources such as land, water, timber and wider environmental goods that are critical for fingerling traders and associated groups, to support the production. Rapid population growth has to some extent led to accelerate natural capital depletion that has affected their income. The physical capital of fingerling trading is transport, drinking water supply, sanitary facilities, shelter, roads, market, electricity etc (DFID, 2000). The study showed that 83% of the fingerling traders' household used their own tube-well for drinking water, while 17% used neighbor's tube-well. About 83% of the respondents stated that they had electricity. Poor physical capitals in turn affect higher production costs and lower production. Similar findings also reported by Ali *et al* (2008) at Bagmara upazilla, Rajshahi. Almost all fingerling traders are disadvantaged in social capital such as the networks, groups, trust, access to institutions etc. Result of the present study showed poor existence of social organizations of the farmers. The lack of social capital has affected livelihoods of poor people in fingerling trading communities. The present findings agreed well with the findings of Zaman (2006) and Hossain (2007); while the opposite picture was noted by

Sarker (2007) in Trishal upazila under Mymensingh district. The apparent difference in the functioning of social capital seems to be related with the localities and proximity to district town. Financial capital of the fingerling traders represents income, occupation, savings, credit etc. The fingerling trading sector has the potential to generate considerable amounts of financial capital to the resources of associated groups. However, the study showed that small fingerling traders suffer more from lack of adequate financial resources. The similar situations were also noted by Sarker (2007) and Ali *et al* (2008). From the study, it was found that inadequate technical knowledge, multiple ownership, theft, poisoning, lack of money, poor quality of fingerling, transportation, price fluctuation, customer diversity, demand driven product, communication facilities, promotional activity, etc were the major constraints. Rahman (2003) stated that the major constraints of carp fingerling production were lack of money and higher production cost. Khan *et al.* (1998) found that the lack of extension work for fisheries improvements caused the highest difficulty in pond fish culture and fingerling business. The problems encountered by the fingerling traders in the surveyed area are almost similar to those recorded by Hossain (2007), Sarker (2007) and Ail *et al* (2008). Livelihood outcomes can be thought of as the inverse of poverty. Contributing to the eradication of poverty and food insecurity depends on equitable access to resources, access of disadvantaged groups to sufficient, safe and nutritionally adequate food (Scones, 1998). In spite of poor resources livelihood outcomes of fingerling trading are positive and most of them increased their income, food security and basic needs. The survey suggests that 80% of fingerling traders have improved their socio-economic condition through fingerling business. Now, they have better food, cloths, housing conditions and children education. However, 20% fingerling traders have not yet improved their status. Impact of fish fingerling trading were reflected in the process of increased saving, investment and purchasing capacity which have been increased and unemployment problem was decreased for both man and women. Further

studies are needed to precisely determine the prospect for enhancement of livelihood management strategies of the fish fingerling communities in the northern districts of Bangladesh.

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