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## Socio-economic status and farming conditions of fish farmers in Saidpur Upazila of Nilphamari district

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### Abstract

The present work was undertaken to evaluate the status of fish farmer and farming conditions in Saidpur Upazila of Nilphamari district. Data were collected from 50 pond owners based on a questionnaire survey for a period of five months from January to May, 2014. It was found that most of the farmers (88%) were involved in carp polyculture. A large number of farmers (46%) started fish farming before one to five years. The average pond size was 0.22 hac. The average dose of organic fertilizer was 2964 kg /hac /yr and inorganic fertilizer such as urea and TSP was 308 kg/hac/yr and 197 kg/hac/yr, respectively. The average annual yield was 2593.5 kg/hac/yr and average annual income of fish farmers was 58306 Tk/hac/yr. Lack of proper management and technical knowledge, theft, disease of fishes, lack of money and inadequate extension services were the most important constraints for fish production. It is therefore, necessary to provide necessary training to the farmers, institutional and policy supports and proper credit facilities for sustainable fish production as well as sustainable livelihood of the poor farmers.

**Keywords:** Socioeconomic status, fish farming, problems, sustainable production

### 1. Introduction

Fish is the second most important agricultural crop in Bangladesh and its production contributes to the livelihoods and employment of millions of people (Ghose, 2014)<sup>[6]</sup>. Most of the people in the country depend on fish as main source of protein. Fish, which is rich in high quality proteins, lipids and minerals, is normally better to meat (Saha, 2004)<sup>[15]</sup>. Fish play a crucial role in the Bangladeshi diet, providing more than 60% of animal source food, representing a crucial source of micro-nutrients, and possessing an extremely strong cultural attachment.

Inland waters of Bangladesh is blessed with vast water area in the form of ponds, canals, ditches, flood plains, haors (natural depression), baors (oxbow lake), rivers, estuaries etc. covering an area of 47.66 lac hactre in which only ponds and ditches occupy an area of 3.71 lac hactre. Bangladesh is one of the world's leading fish producing countries with a total production of 41.34 lakh MT in 2016-17, whereas inland open water (capture) contributes 28.14 percent (11.63 lakh MT) and inland closed water (culture) contributes 56.44 percent (23.33 lakh MT) to total production. So, 84.58 percent of total production comes from inland fisheries. The fish production diversity of fisheries in 2016-17 are 2.71 lakh MT, 0.98 lakh MT, 7.66 lakh resources of inland open water fisheries of river, beel, floodplain and Kaptai lake MT and 0.09 lakh MT respectively and corresponding growth rates are 52.21, 2.79, 2.39 and 4.10 percent respectively (DoF, 2017)<sup>[5]</sup>.

Fish and fisheries play a vital role in the socio-economic development, poverty alleviation of large number of population and earning foreign currency. It is generally estimated about 12 m people of the country are supported by fisheries and its related activities, in which more than 1.3 m people are directly engaged with fisheries sector (Ahmed, 2003)<sup>[2]</sup>.

Saidpur is an important Upazila in the Nilphamari district, the northwest of Bangladesh. Its total area is 121.68 km<sup>2</sup>. There are 2,574 ponds in which 16 ponds are public and 2,558 ponds are private (Personal communication, Upazila Fisheries Officer, Saidpur, Nilphamari). Various aquaculture practices are being conducted in the villages of the Saidpur Upazila. All union has been selected for the present study. Several fish farms were developed in the country which ultimately increased fish production. But the production of farm, different types of species, problems faced by farmers during culture, socio-economic conditions and constraints of fish farming are not well addressed in this area. Based on the above context, this study was

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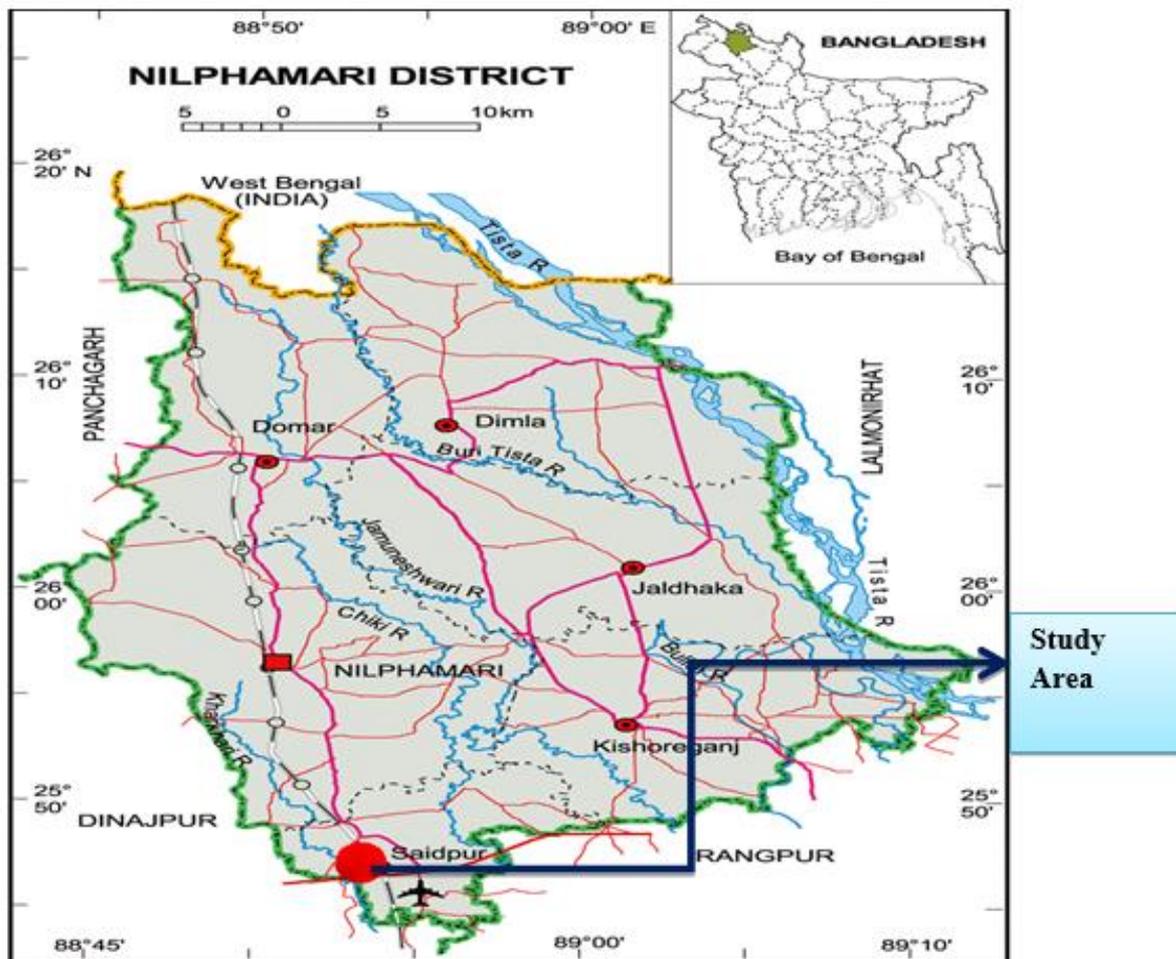
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designed to investigate the current status of fish farmers, understand the existing fish farming in pond system as well as to identify the constraints of fish production in Saidpur upazilla of Nilphamari district.

**2. Materials and Methods**

The survey was conducted for period of five months from January 2014-May 2014. One Upazila of Nilphamari district namely Saidpur was selected for the study. A total of 50 pond farmers were randomly selected from study area. A

questionnaire was prepared after pre-test and then data were collected from 50 pond farmers through face to face interview. After collecting through questionnaire interviews and FGD, crosscheck interviews were conducted with key informants such as Upazila Fisheries Officer; Assistant Fisheries Officer; Senior Scientific Officer (SSO), BFRI, Fisheries Sub- Station, Saidpur, Nilphamari and other relevant NGOs workers. The collected data were entered into Microsoft Excel spreadsheet and analyses were carried out using SPSS, Version-16.



**Fig 1:** Map showing the study area of Nilphamari district (Saidpur Upazila).

**3. Results & Discussion**

**3.1 Socio-demographic Characteristics of farmers**

**3.1.1 Age Distribution**

Knowledge of the age structure of farm owners is important in estimating potential productive human resources (Rahman *et al.*, 2018)<sup>[13]</sup>. It was observed that the highest numbers of the fish farmers age were 26 to 50 (68%) and lowest age (10%) were up to 25. It indicates that the middle age group to be involved (Table 1). (Islam *et al.*, 2017)<sup>[8]</sup> conducted in a study in Sadar Upazila, Meherpur and showed that majority (33.3%) of fish farmers were belongs to 31-40 age group and lowest were found in 10-20 (3%) age group which is more or less similar to the findings of the present study. (Sharif *et al.*, 2015)<sup>[16]</sup> reveal that highest (85%) fish farmer were found in above 40 age group and lowest (5%) were up to 25 which is also similar to the findings of the present study.

**Table 1:** Socio-demographic characteristics of fish farmers in the study areas

Parameters	Categories	No. of Respondents (%)
Age Distribution	Low (0-25)	10 (5)
	Medium (26-50)	68 (34)
	High (51-75)	22 (11)
Family Size	Small (1-4)	28 (14)
	Medium (5-8)	52 (26)
	Larger (>8)	20 (10)
Family status	Separated	42 (21)
	Joint	58 (29)
Religion status	Islam	96 (47)
	Hindus	6 (3)
Education of farmer	Primary (up to V)	22 (11)
	Secondary (up to X)	28 (14)
	S.S.C (X passed)	18 (9)
	H.S.C (XII passed)	16 (8)
	Bachelor	10 (5)

### 3.1.2 Family Size

In the study area, it was found that the average family size was 6.24 (members) which is shown in (Table 1). (Rahman *et al.*, 2018) <sup>[13]</sup> conducted a study in Nilphamari district showed that the family size of most (62%) of the fish farmer was 5 to 8 which is very similar to the findings of the present study.

### 3.1.3 Family Status

In Saidpur Upazila, it was found that 58% of fish farmers lived in joint families and only 42% lived with nuclear family (Table 1). (Islam *et al.*, 2017) <sup>[8]</sup> conducted a study in Sadar Upazila, Meherpur and showed that 67.67% of fish farmers were lived in joint family and 33.33% of fish farmer were lived in nuclear family which is very similar to the findings of present study. (Pravakar *et al.*, 2013) <sup>[11]</sup> found that about 54% of farmers lived in joint families and 46% in nuclear families in Shahrasti Upazila of Chandpur district. This result is more or less similar to the present study.

### 3.1.4 Religion Status

Religion can play a very important role in the socio-economic certain life of people of an area and can act as a notable constraint or modifies in social status. It was observed that 94% of fish farmers were muslims and 6% were hindus (Table 1). (Khatun *et al.*, 2013) <sup>[10]</sup> observed in his study in Charbata in Noakhali district that 82% of fish farmers were muslims and 18% were hindus. (Sharif *et al.*, 2015) <sup>[16]</sup> also found that (100%) of fish farmers were muslims in their study in Chaugachha Upazila in Jessore, Bangladesh. (Ali *et al.*, 2008) <sup>[4]</sup> found that maximum fish farmers were muslim (94%) while small proportions (6%) were hindus in some selected areas of Bagmara upazilla under Rajshahi district. This result is similar to the present study.

### 3.1.5 Education of Farmer

Education of pond fish farmers can play a vital role in efficient management and operation as well as in successful production of fish. In the study area, it was found that 6% had no education, 22% had up to primary, 28% respondent had secondary (up to X), 18% S.S.C passed, 16% H.S.C passed and only 10% respondent had bachelor level (Table 1). (Islam *et al.*, 2017) <sup>[8]</sup> conducted a study in Sadar Upazila, Meherpur and showed that out of 30 fish farmers, 8% had no education (illiterate), 16% had primary level, 36% had secondary level, 20% had S.S.C. level, 14% had H.S.C. level, and 6% had bachelor level of education, respectively which is very similar to the findings of present study.

## 3.2 Fish Farming information

### 3.2.1 Farm Size

It was observed that 84% of the sample farms were of small farm, 4% were medium farm and only 10% large farm. It was found that the average pond size was 0.22 hac (55 dec) (Table 2).

(Rahman *et al.*, 2018) <sup>[13]</sup> showed that the average farm size was 0.27 ha in Nilphamari district which is very similar to the present study. (Pravakar *et al.*, 2013) <sup>[11]</sup> reported that the average pond size of the area was 0.24 hac (60 dec) in Shahrasti Upazila of Chandpur district. This study is more or less similar to the present study.

**Table 2:** Fish farming information in the selected fish farmers

Parameters	Categories	No. of Respondents (%)
Farm Size (ha)	0.04-0.40	84 (43)
	0.41-0.8	04 (2)
	>0.8	10 (5)
Training status	Yes	46 (23)
	No	54 (27)
Experience and Training received	Relatives	12 (6)
	Friends and neighbor's	46 (23)
	Education	12 (6)
	DoF	26 (13)
	NGO	4 (2)

### 3.2.2 Training and Experience

Training experience and technical assistance play important roles in influencing aquaculture (Rahman *et al.*, 2018) <sup>[13]</sup>. Among 50 interviewed fish farmers, 46% were received formal training by different organizations. In the present study, 46% farmers acquired experience by relatives, 12% gained experience from friends and neighbours, 12% obtained experience from education, 26% gained experience from DoF and 4% obtained experience from NGO, respectively (Table 2). (Khatun *et al.*, 2013) <sup>[10]</sup> reported that 14% of farmers received training from DoF, 7% of farmers gain fish farming experience from relatives which is different from my study. (Rahman *et al.*, 2018) <sup>[13]</sup> showed that 50% farmers received training from DoF, 26% from different NGOs and 24% farmers were trained by BFRI.

## 3.3 Pond management system

### 3.3.1 Involvement in Pond Preparation

Pond preparation is a pre-requisite for successful fish culture. A suitable pond is required to minimize the production cost and maximize the production of fish (Rahman *et al.*, 2018) <sup>[13]</sup>. According to the survey 22% of farmers involved for weeding, 58% of farmers involved for fertilization and 20% of farmers involved in excavation (Table 3).

**Table 3:** Pond management information investigated in the study areas

Parameters	Categories	No. of Respondents (%)
Involvement in pond preparation	Weeding	22 (11)
	Fertilization	58 (29)
	Excavation	20 (10)
Fertilizer used	Cow dung	58 (29)
	Poultry waste	4 (2)
	Cow dung + poultry waste	8 (4)
Culture system	Cow dung + urea + TSP	30 (15)
	Carp polyculture	60 (30)
	Carp + tilapia	28 (14)
Feeding practices	Monosex Tilapia	12 (6)
	Yes	84 (42)
	No	16 (8)
Feed type	Wheat bran + rice bran	6 (3)
	Rice bran	32 (16)
	Company feed	14 (7)
	Rice bran + oil cake	14 (7)
	Company feed + rice	6 (3)

### 3.3.2 Fertilizer Used

Most of the farmers used fertilizer in their fish pond. About 58% of farmer’s fertilized ponds with cow dung where, 4% used poultry waste, 8% used cow dung and poultry was and 30% of farmers used cow dung, urea and TSP (Table 3). (Rahman *et. al.*, 2018) [13] found that farmers used fertilizers such as urea, triple superphosphate (TSP), and cow dung, and the dosages were 200, 100, and 500 kg/ha, respectively which is more or less similar to the present study. (Saha, 2004) [15] observed that the average dose of organic fertilizer as urea was 3330 kg/hac/yr and inorganic fertilizer was urea 387kg/hac/yr and TSP 176kg/hac/yr.

### 3.3.3 Culture System

From the survey it was found that a large number of farmers (88%) carried out poly culture system and only 12% were involved in monosex tilapia culture system (Table 3). In the study area the culture season was from March to December. Farmers in this area stocked carp (Indian major carp and exotic carp) and tilapia. (Ahmed, 2003a) [1] observed that peak period of carp polyculture was from April to December. (Rahman, 2003) [12] reported that the season of carp farming was March to December, these results was more or less similar to the present study. (Saha, 2003) [14] stated that there were two culture season in Dinajpur sadar Upazila (Fazilpur and Suderban union). One was from June to December and another was from February to June.

### 3.3.4 Feeding Practices

From the survey it was found that 84% of farmers applied supplementary feed and 16% didn’t used any feed in their

pond and depend on the natural food in the pond (Table 3). (Islam *et. al.*, 2017) [8] found that almost 90% farmers gave feed to their cultured species and remaining 10% farmers depended on only natural food produced in the pond which is very similar to the findings of the present study.

### 3.3.5 Feed Type

From the survey it was found that 84% of farmers applied supplementary feed and 16% did not used any feed in their pond and depend on the natural food in the pond (Table 3). (Rahman *et. al.*, 2018) [13] found that 100% farmers provided feeds with the cultured fishes. Artificial feed (63%), farm-made feed (3%), and both artificial and home-made feed (34%) were supplied to the cultured species. (Pravakar *et. al.*, 2013) [11] found in his study Shahrasti Upazila of Chandpur district and found that 95% of the farmers applied supplementary feed such as rice bran, mustard oil cake and commercially manufactured feed and rest 5% of the farmers depended on the natural food in the pond.

(Alam, 2006) [3] found that 80% of the farmers applied supplementary feed such as rice bran and mustard oil cake. The use of rice bran and oil cake by the farmers varies from place to place because farmers often do not follow any standard of rate feeding and frequency.

### 3.4 Involvement in Aquaculture

It was found that 46% respondent started fish culture practice in 1 to 5 years, 36% fish farmers started fish culture practice 6 to 10 years, 18% fish farmers started fish culture practice in 11 to 15 years which is shown in (Figure 2).

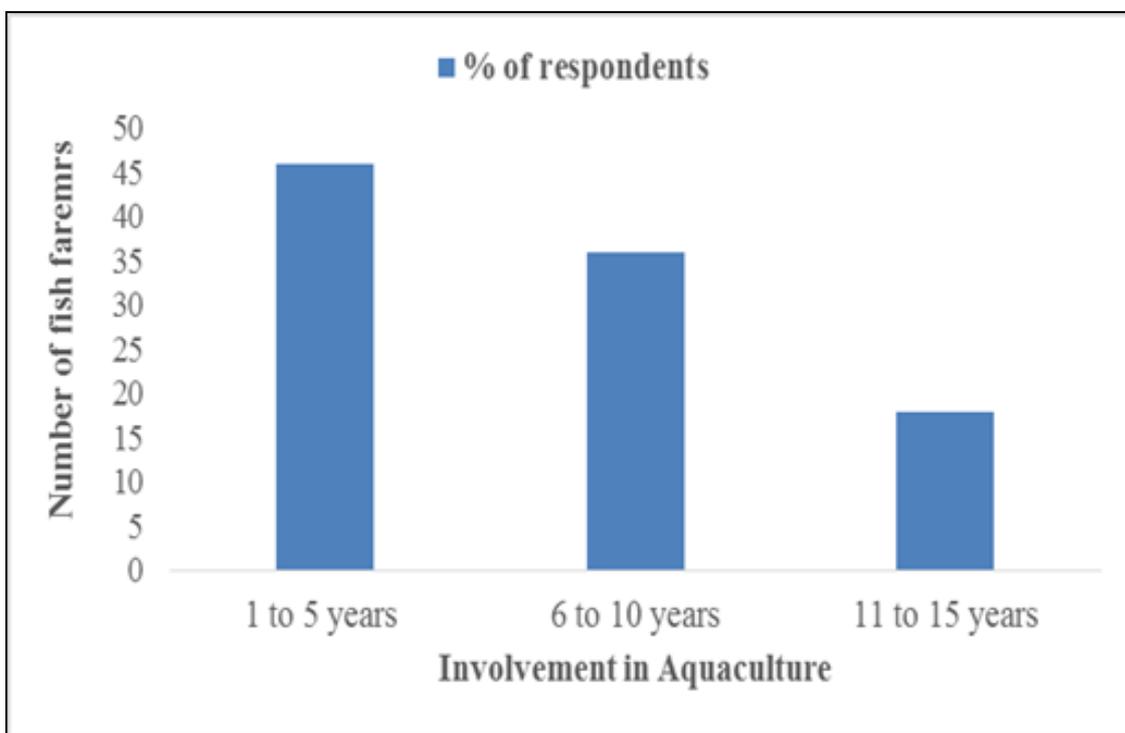


Fig 2: Engagements of fish farmers in aquaculture activity in Saidpur Upazila.

### 3.5 Production of fish

In the study area, it was found that the level of production of the 38% respondents were very low (<2000 kg/hac/yr), only 20% were high (4001-5000 kg/hac/yr). It was also found that the average annual yield was 2593.5 kg/hac/yr (Figure 3). (Islam, 2005) [7] reported that the average annual yield of fish

was estimated at 2609 kg/hac/yr. This study has more similarity with the present study. (Islam *et. al.*, 2017) [8] conducted a study in sadar Upazila, Meherpur and showed that the average production of fish is 2271 kg/ha/year which is very similar to the findings of the present study.

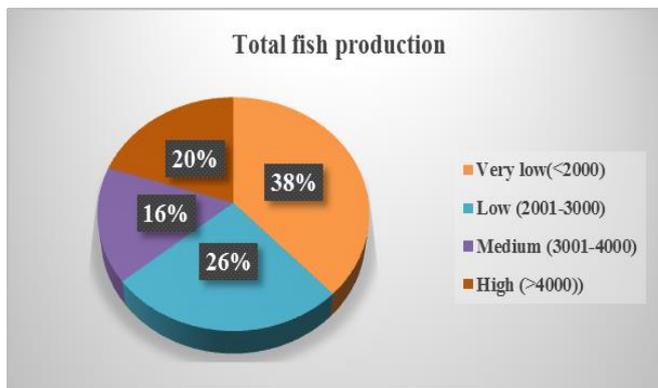


Fig 3: Average fish production of 50 pond owners in the study area.

72% fish farmers was estimated at (up to 50000) Tk/hac/yr. On the other hand, 14% fish farmers had annual income in the range of (50001-150000) Tk/hac/yr, 4%, fish farmers had (150001-250000) Tk/hac/yr, and 10% of (250001-350000) Tk/hac/yr, respectively (Table 4). It was found that the average annual income of fish farmers in the study area was 58306 Tk/hac/yr. (Pravakar *et. al.*, 2013) [11] stated that the highest percentage (34%) fish farmers earned BDT 75,000 to 1,00,000 per year in Shahrasti Upazila of Chandpur district. (Saha, 2004) [15] reported in his study that the annual income of fish farmers was estimated at 220 000 Tk/hac /yr which was very high than the present study. (Khan, 2012) [9] stated that the annual income of fish farmers was 1,24,908.9 Tk/hac/yr in Sreemongal Upazila of Moulvibazar district

### 3.6 Annual income of fish farmer

In the study area, it was observed that the annual income of

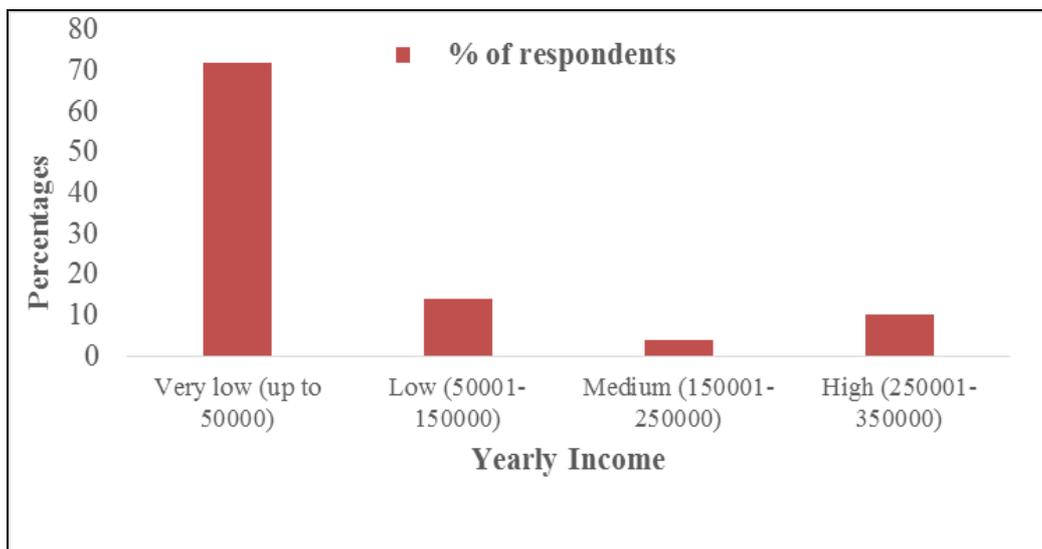


Fig 4: Annual income (Tk.) of fish farmers in the study area.

### 3.7 Problems of the farmer

From the survey, it was found that high production cost (32%), lack of help from family member (6%), multiple ownership (16%), lack of scientific knowledge (12%), theft (34%), lack of money (22%), lack of feed (4%), lack of proper management (20%), disease (48%) and lack of co-operation from UFO (42%) were the major problems of fish

production (Figure 5). (Khan, 2012) [9] reported the constraints for sustainable pond fish farming in Sreemongal Upazila under Moulvibazar district were lack of technical knowledge, disease of fishes, insufficient water in dry season, higher production cost (mainly feeds and seeds), insufficient supply of fry and fingerlings, lack of money and credit facilities and inadequate extension services.

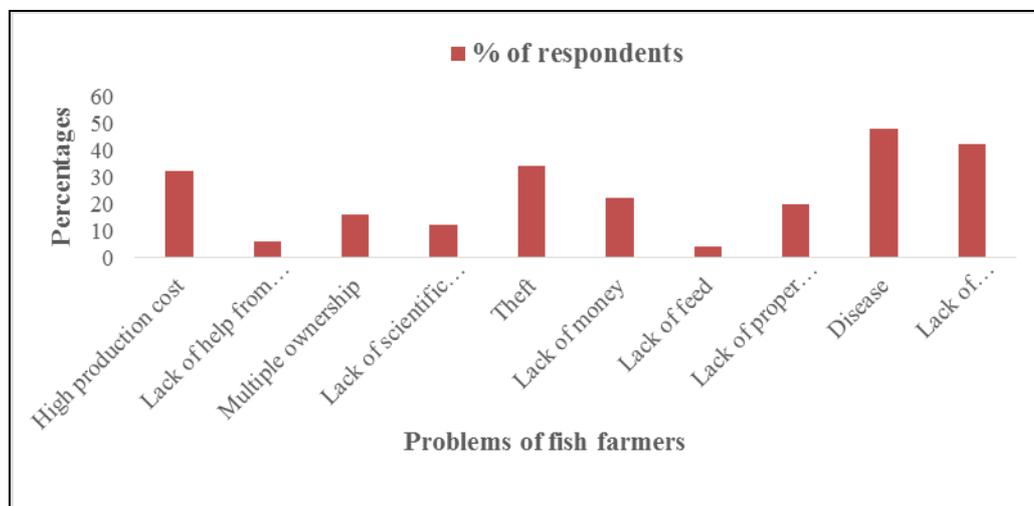


Fig 5: Problems faced by fish farmers in the study area

#### 4. Conclusion

Fish farming plays a great role to improve the livelihood and socioeconomic condition of fish farmer in Saidpur Upazila of Nilphamari district. It has a great opportunity to create employment, increase food production and meet up protein demand of poor people as well as to reduce poverty alleviation from the country. The present study explored some problems reported by the farmers which were inadequate technical knowledge, theft, poisoning, lack of money, poor quality of fish seed, disease, lack of feed, high production cost, lack of proper management etc. If the farmers are given appropriate training, financial credit on easy terms and conditions, more profit would be reflected. Thus it can be concluded that fish culture is a profitable business that can help the farmers to improve their livelihood condition as well as economic situation.

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