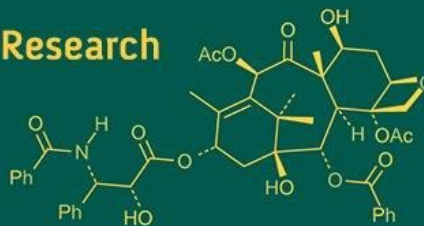


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Assessment of the socio-economic status of farmers in Hisar District of Haryana

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Abstract

The present study assessed the socio-economic status of fish farmers in Hisar district, Haryana, India. Primary data were collected from 61 farmers through a pre-tested questionnaire, supported by secondary data from fisheries departments. The results revealed that the majority of farmers belonged to the middle age group (35-50 years) and were predominantly male. Most farmers had medium landholdings and practiced fisheries as a secondary occupation. Households were generally small to medium in size, with joint family systems and one or two earning members. Educational status was moderate, and most farmers lived in pucca houses with medium to high asset ownership. A significant proportion had undergone training and maintained moderate extension and media exposure, though access to institutional credit remained low. Farmers possessed considerable experience and relied on traditional practices such as drag nets and leased ponds. Despite moderate production and income levels, key constraints included inadequate technical knowledge, poor marketing, and limited resources. Strengthening institutional support is essential for sustainable development.

Keywords: Socio-economic status, Fish farmers, Aquaculture, Hisar district, Livelihood, Extension services, Fish production, Rural development

Introduction

Fisheries and aquaculture are important components of India's economic development, and they are also part of our cultural heritage in many areas. Fish and fishery resources are important for improving the socioeconomic position of fish farmers, diversifying rural institutions, and maintaining food security (Tripathi *et al.*, 2017; Kumar *et al.*, 2018) [18, 10]. The majority of people engage in fish farming in order to enhance their socioeconomic status through pond farming (Ayeloja *et al.*, 2021) [2]. Different techniques have been employed for sustainable rural development and poverty eradication, with the "Sustainable Livelihood Approach" increasingly expanding with its own core and principles for poverty-focused development operations. In the context of the external environment, capital includes physical capital, financial capital, social capital, and natural capital (Kabir *et al.*, 2012) [9]. A person's socioeconomic profile is crucial in defining his or her social life and conduct (Kumar, *et al.*, 2015) [11]. The capabilities, assets (natural, physical, human, financial, and social), activities, and access to these that collectively determine the living gained by the individual household are referred to as livelihood (Chambers and Conway, 1992) [3].

People's reactions to technological advancements and participation in development programmes are significantly influenced by socioeconomic factors such as demography, production and investment methods, as well as income and expenditure trends in a given location (Sharma *et al.*, 2018) [17]. However, one of the most significant impediments to the successful implementation of developmental programmes is a lack of accurate information regarding the socioeconomic situation of the target group (Pandey and Upadhyay, 2012; Gupta and Day, 2014) [13, 6]. Keeping these facts into consideration it was felt that there is a need to generate data on fish biodiversity and Socio-economic conditions of fish farmers of Hisar.

2. Materials and Methods

2.1 Study area

In the present research, sampling sites were selected for the collection of Socio-economic conditions of fish farmers from four sub division of Hisar. The Indo-Gangetic alluvial plain's

Hisar district is located between 28°53'45" and 29°49'15" north latitudes and 75°13'15" and 76°18'15" east longitudes (India).

2.2 Socio-economic status of fish farmers

Farmers were selected randomly and they were interviewed at their pond sites to collect the first-hand information with a pre-tested structural questionnaire. Following factors viz., related to their socio-economic status namely, family size, literacy status, age, occupation, experience of fish culture, operational economics have been studied.

2.2.1 Primary data: Data were collected through personal Interview. Primary data on the socioeconomic status of the fish farmers were collected using a questionnaire for survey. Primary data from 61 fish farmers were interviewed using a well-defined and pre-tested questionnaire.

2.2.2 Secondary data: Secondary data of information on important data for socioeconomic status were collected from District Fisheries Office, Hisar and Aquaculture Research and Training Institute, Hisar.

2.3 Sampling selection (selection of respondents) and characteristic

2.2.1. Age: Age was enlisted as the number of years completed by the respondents at the time of interview. The respondents were categorized as:

Young (up to 35 Years)	1
Middle (36 to 50 Years)	2
Old (above 50 Years)	3

2.2.2. Gender

Male	1
Female	2

2.2.3. Land Holding/Farm Size

Small (>2.5-5 acres)	1
Medium (>5-10 acres)	2
Large (above 10 acres)	3

2.2.4. Is the fisheries primary occupation?

Yes	1
No	0

Type of house	Kucha (0)/Semi pucca (1) /Pucca(2)
Ownership status of house	Rented (1) /Owned (2)
Sanitation facility in the house?	Yes (1)/No (0)

2.2.11. Training programme attended in last five years

Yes	1
No	0

2.2.12. Assets owned by household

Assets	Yes (1)/NO (0)
Radio/TV	
Bicycle/ Motorcycle	
Car	
Computer	
Refrigerator Fan	
Household Jewelry	
mobile	

2.2.5. Total no. of the earning/working members in the family

1-2	1
3-4	2
>4	3

2.2.6. Family size

The total number of members living together in the family of the respondents at the time of investigation was considered to assess the family size. Families with members up to 5 were considered as small, families with more than 5 members were categorised as large. Score assigned to different family size group were as follows:

Small (up to 5 members)	1
Large (More than 5 member)	2

2.2.7. Family type

It was conceptualized as a unit of people living in a single household. It was categorized in nuclear and joint families and scores were assigned as follow:

Nuclear	1
Joint	2

2.2.8. Caste

Caste is referred to distinct hereditary order and strata in society. The relative codes assigned to different castes are mentioned below:

General caste	1
Backward caste (OBC)	2
Scheduled caste	3

2.2.9. Education

Education refers to the years of formal schooling attended by the respondents. It was categorised into the following different groups:

Uneducated	0
Up to middle	1
Secondary & Sr. Secondary	2
Graduation & above	3

2.2.10. House and Habitation

2.2.13. Year of experience in fishing (or) fisheries related activities

Less than one year	1
One - two year	2
Three - Four year	3
>Four year	4

2.2.14. Access to different schemes and programs of DOF (in last five years)

YES (1)	NO (0)
---------	--------

2.2.15. Do you think fisheries had helped in improving your socio-economic condition? Yes (1) / No (0)**2.2.16. Influencing factors**

Economic factors (1)/Training (2)/ Both (3)

2.2.17. Information about owned gears

Cast net (1)/Drag net (2)/ Both (3)

Source of fund: Owned-1, Rented-2

2.2.18. Do you think that catch is decreasing over the years?

Yes (1)/No (0)

2.2.19. What is the system of fishing you followed?

Owned (2) / Lease (1)

2.2.20. Methods of fish storage

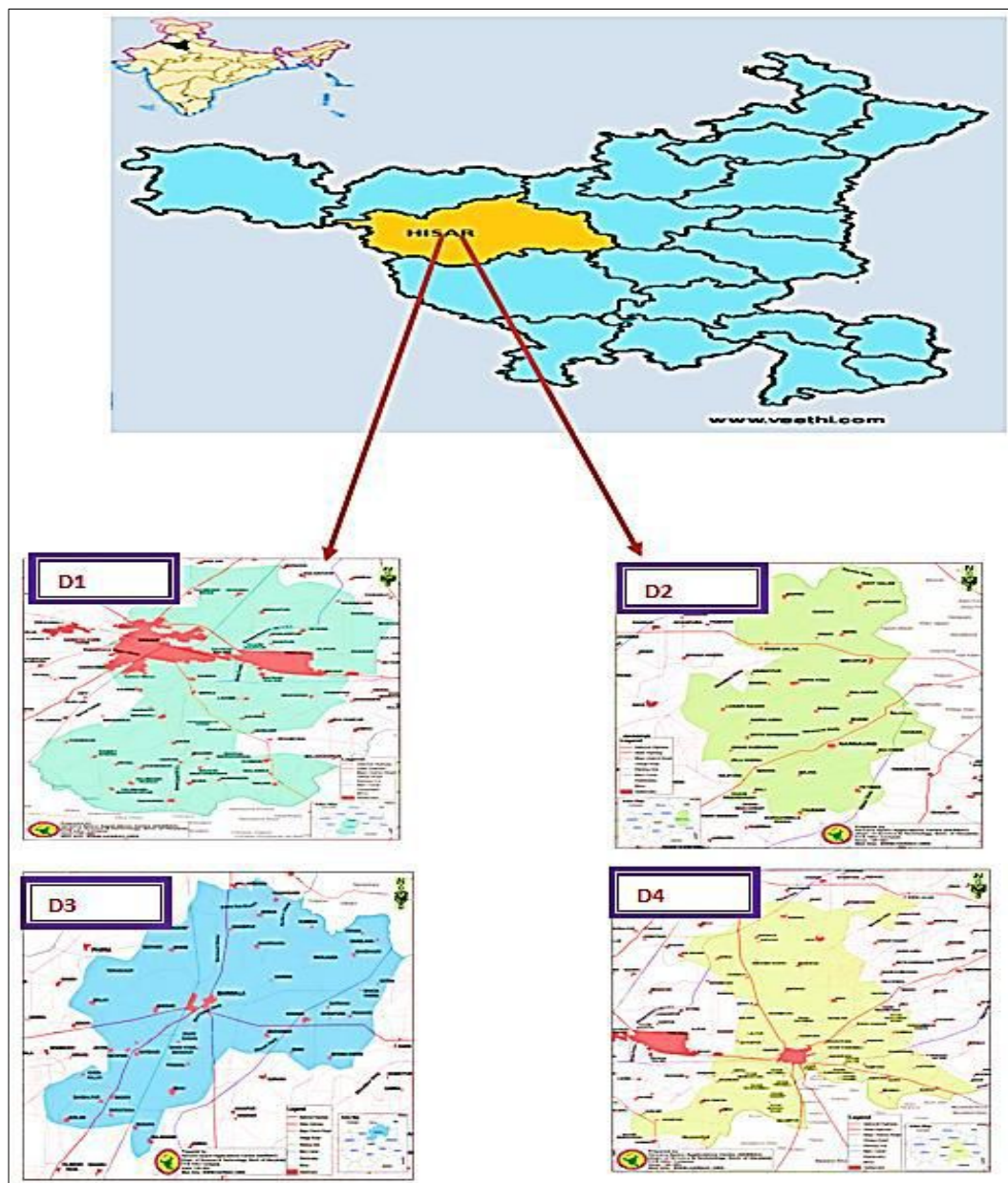
Fresh fish (1)/Processed fish (0)

2.2.21. Annual income through fisheries

1. Up to 3 lakhs (Small)
2. 3 to 4.5 lakh (Medium)
3. >4 lakh (High)

2.2.22. Annual fish production

1. 2.5 to 3 ton/hq (Small)
2. 3 to 5 ton/hq (Medium)
3. >5 ton/hq (High)

**Fig 1: Map of the study area**

3. Results and Discussion

The socio economic status of fish farmers of district Hisar was studied in terms of age, gender, selection of farmers, caste, education, house and habitation, occupation, earning and working members in family, family size and type, training, extension contact, mass media exposure, availed credit, savings, assets owned by households, experience in fishing, access to different schemes and programs of Department of Fisheries (DOF), improving in socio-

economic condition, influencing factors, owned gears and their source of funds, decreasing in catch, system of fishing followed and method of fish storage.

3.1. Age wise distribution of fish farmers of district Hisar: The study revealed that more than half of the respondents (63.93%) hailed from the age group of 35-50 years followed by the young age group (26.23%) and old age group (9.84%).

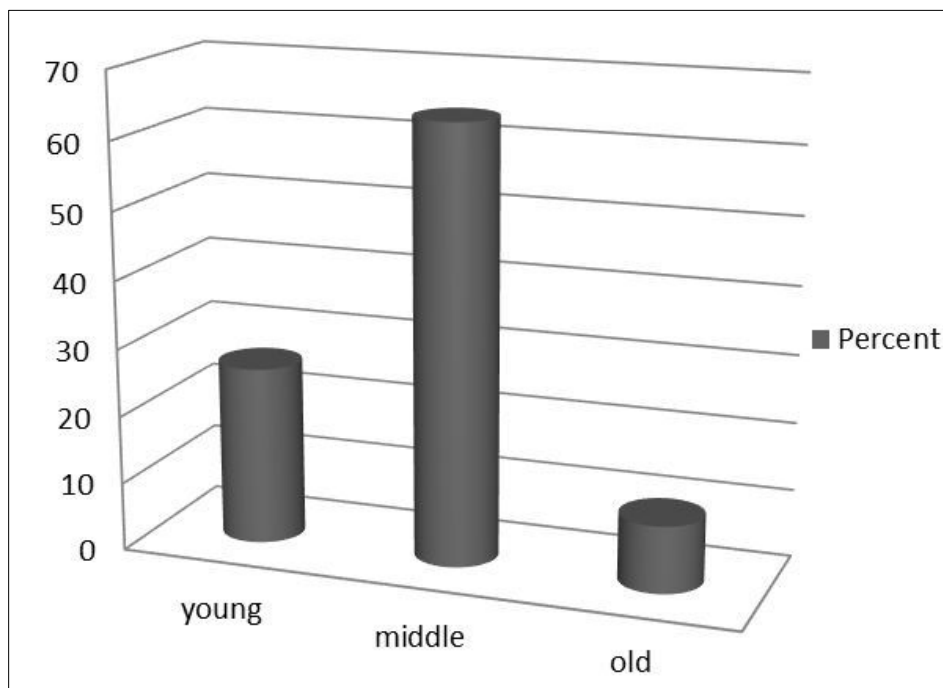


Fig 2: Age-wise distribution of fish farmers of district Hisar

3.2. Gender wise distribution of fish farmers of district Hisar

The result regarding gender indicates that male (98.36%)

and female (1.64%). From the figure 6, it is revealed that 98.36% males are involved in fish farming where only 1.64% females were observed in fish farming.

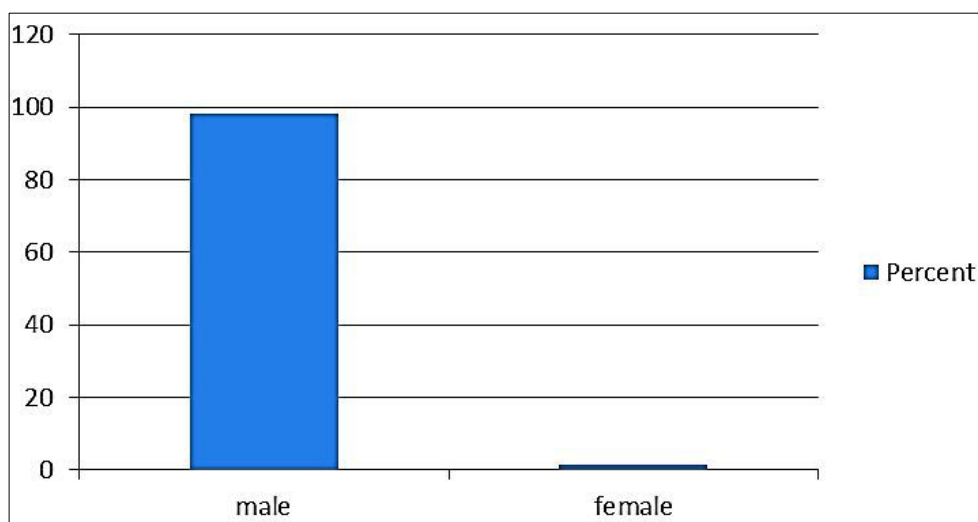


Fig 3: Distribution of respondents as per their gender

3.3. Distribution of fish farmers based on land holdings

Based on the land holding by the fish farmers, there are three categories of fish farmers i.e. small, medium and large. According to data, more than half of the respondents (52.46%) belong to the medium category of farmers, 31.15 % to small and 16.39 % to large category farmers.

3.4. Fisheries as an occupation of farmers of district Hisar

The study of occupation of farmers of district Hisar was present in figure 8. It is observed that 37.7% of fish farmers have fisheries as primary occupation while 62.3% fish farmers have secondary occupation as fisheries. From the

above figure 8 it can be revealed that fisheries is become popular among 1/3 of farmers.

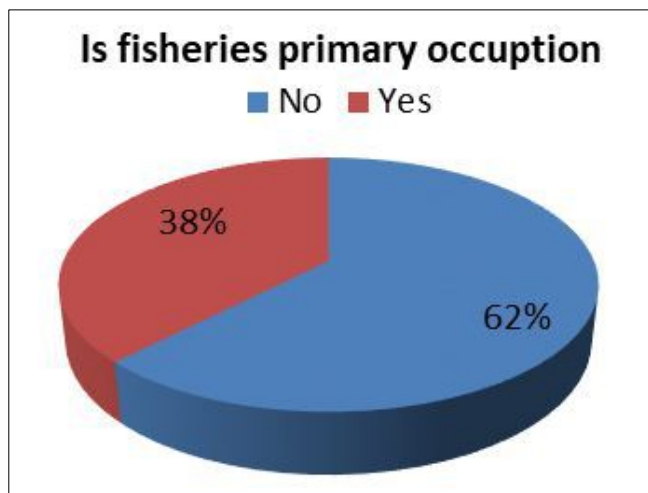


Fig 4: Distribution of respondents based on fisheries occupation

3.5. Status of working members in the family of fish farmers of district Hisar

The data of survey revealed that 72.13% of the households have one or two members earning following by the 16.39% of the household have three or four and 11.48% of household have more than four members are earning.

3.6. Farming size of fish farmers of district Hisar

Along with the type of family, the size of the family has a significant impact on an individual's social and economic growth. Analysis revealed that 52.46% fish farmers have five or less than five members followed by 47.54% respondent have more than five members.

3.7 Family type of fish farmers of district Hisar

The table clearly indicates that regarding the family type, more than half of the respondents 55.74% hailed from joint family and 44.26% were from nuclear family.

3.8 Caste wise percentage of fish farmers in district Hisar:

According to the data, more than half of the respondents (57.38%) belonged to general castes, 21.31% of the respondents belonged to backward castes, and 21.31% percent of the respondents belonged to scheduled caste.

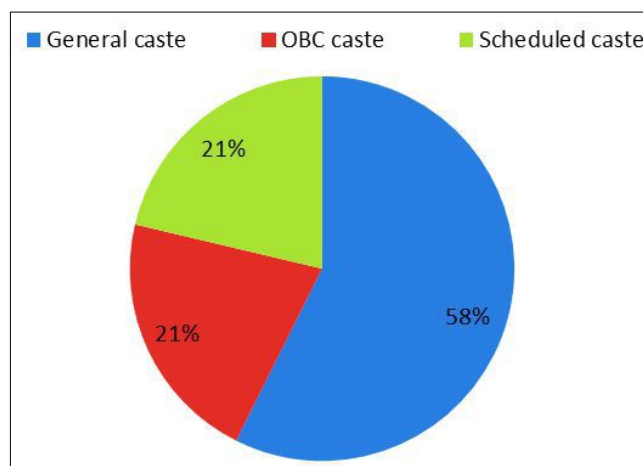


Fig 5: Caste wise percentage of fish farmers of district Hisar

3.9 Education status of fish farmers of district Hisar

The result regarding education indicate that 42.62% of the respondent were educated up to middle school and 37.7% respondents were educated up to secondary, 13.11% were educated up to graduation and above and 6.56% were uneducated respectively.

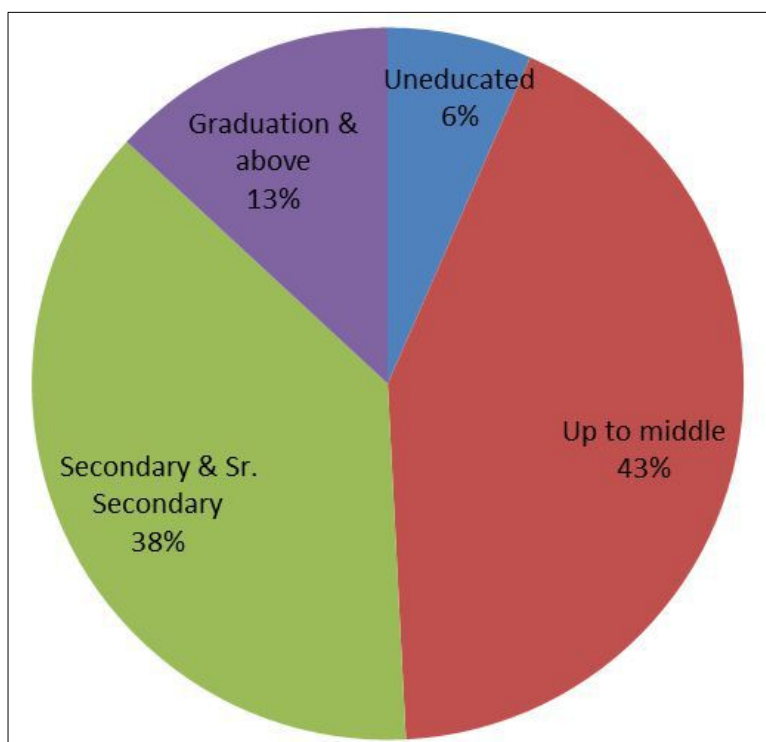


Fig 6: Showing education status of fish farmers of district Hisar

3.10 House and habitation of fish farmers of district Hisar:

According to data more than half of the respondents

(73.77%) have their pucca house where as 26.23% households have semi pucca house.

3.11 Status of house owned or rented by fish farmers

Data revealed that 90.16% households have their own house and 9.84% respondents have rented house.

3.12 Status of taking loans for fish farming by fish farmers of district Hisar

It was observed that 65.57% fish farmers have not availed credit or any kind of loan from banks and 34.43% fish farmers availed credit for their fisheries activities.

3.13 Status of assets at house of fish farmers of district

Hisar: It was found that more than half of the respondents (52.46%) had medium category assets owned, 44.26% had high and 3.28% had low category assets owned by households.

3.14 Experience in fishing activity of fish farmers in district Hisar

Analysis revealed that 60.66% respondents have more than four-year experience in fishing or fisheries related activities, 26.23% have three to four year, 11.48% have one to two and 1.64% have less than one-year experience, respectively.

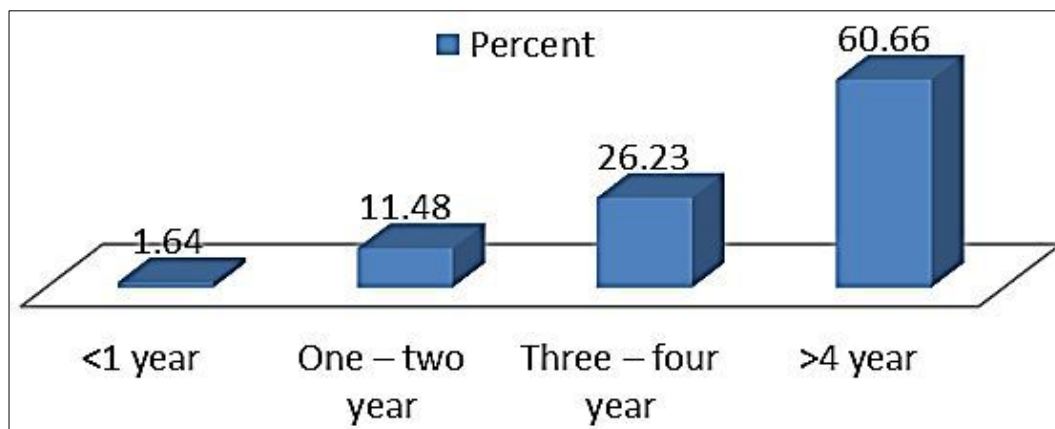


Fig 7: Showing experience of fish farming

3.15 Role of economic and training factors in fish farming:

Data revealed that economic factor and training

factors (70.49%), both are the main influencing factor towards fisheries.

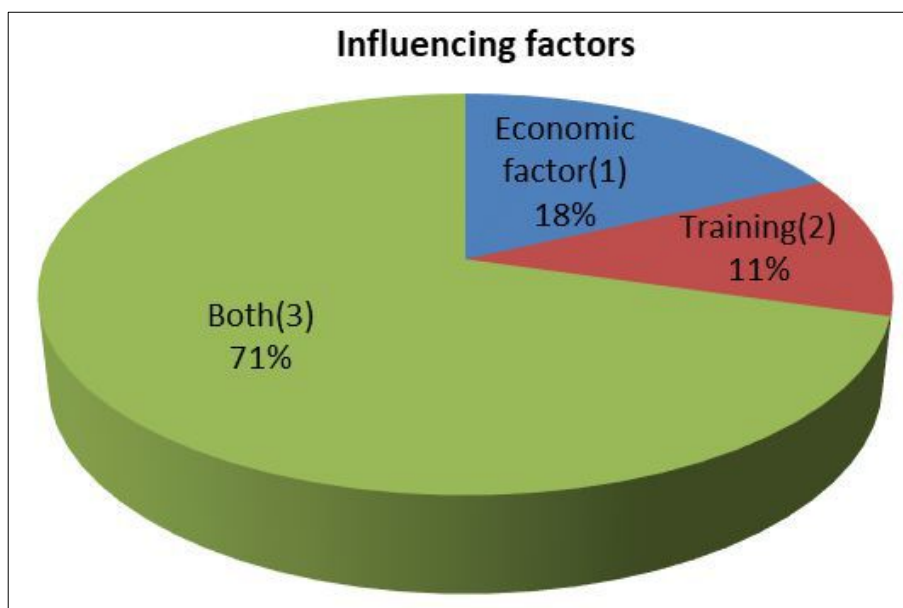


Fig 8: Showing role of economic and training factors in fish farming

3.16 Use of fishing gears by fish farmers of district Hisar

It was found that drag net (44.26%) was the most used net by respondents followed by cast net (14.75%). 40.98% farmers used both, cast and drag net for fishing activities (figure23). More than half of the respondents (52.46%) have

their own source of fund for gears and 47.54% respondents have rented gears (figure 24).

According to the findings, more than half of the farmers (55.74%) use leased land and 44.26% farmers use their own land for fishing activities (Figure 25).

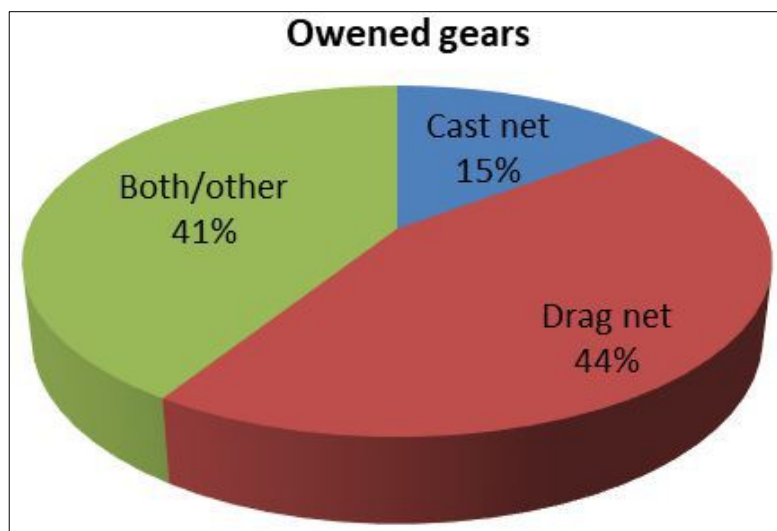


Fig 9: Showing the gears used by fish farmers

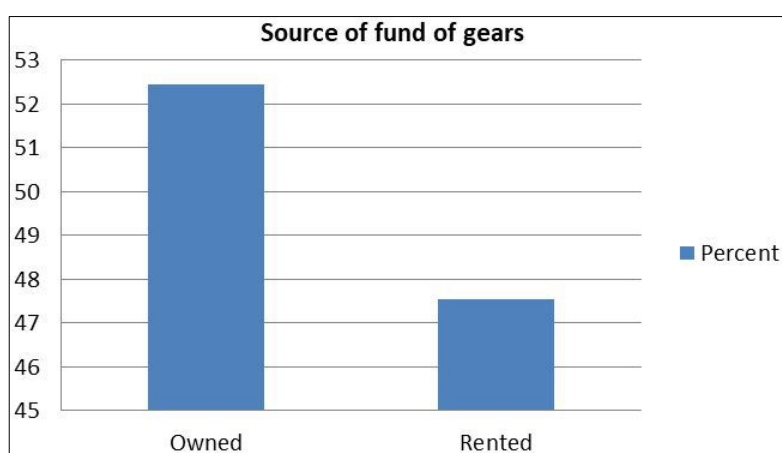


Fig 10: Showing the source of fund of gears

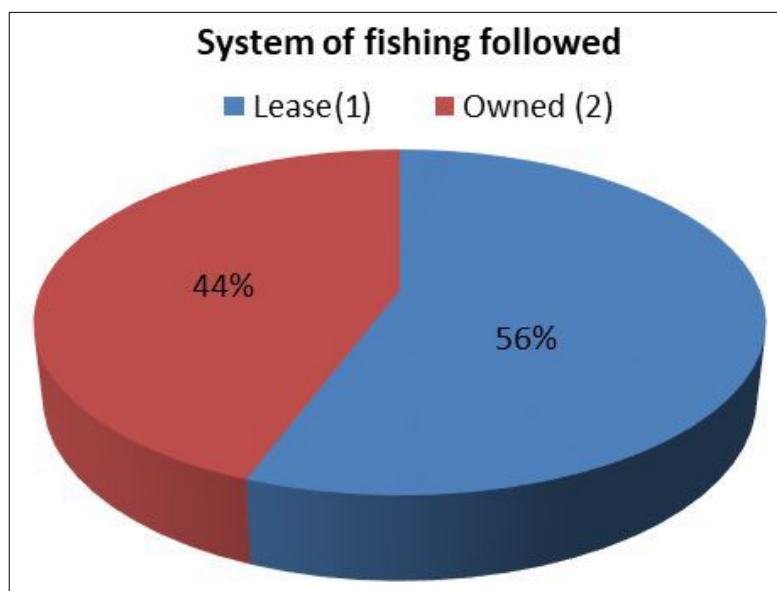


Fig 11: Showing the system of fishing followed by fish farmers

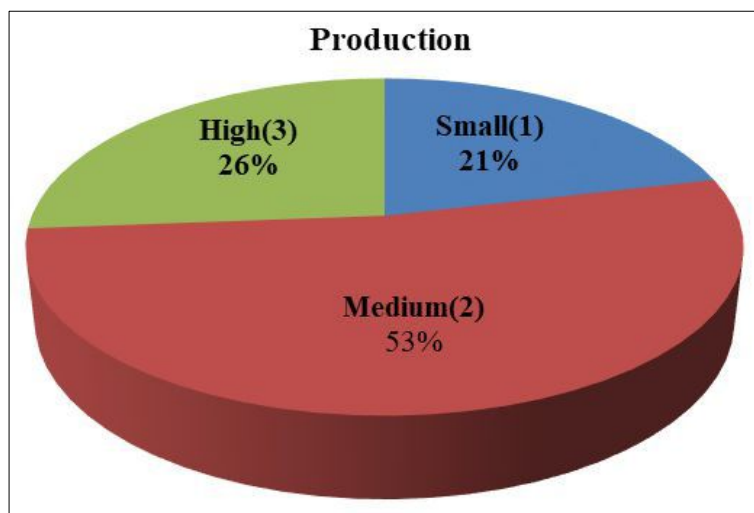
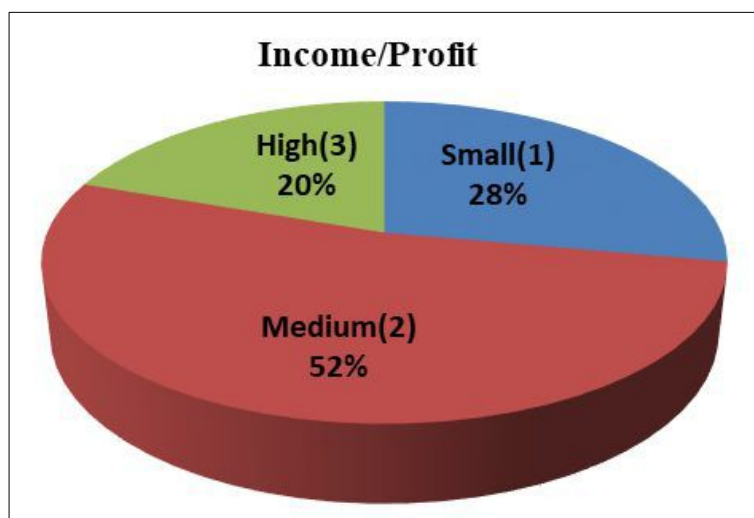
3.17 Annual income and production of fish farmers

During the study it was observed that more than half of the farmers (52.46%) have medium level of fish production (figure 26) and it was also observed that income of the

farmers were maximum under medium level (52.46%) followed by small level (27.87%) and high level (19.67%) of income (figure 27).

Table 1: Showing the frequency and percent of fish farming according to there income and production

Production	Frequency	Percent
Small(1)	13	21.31
Medium(2)	32	52.46
High(3)	16	26.23
Income		
Small (1)	17	27.87
Medium (2)	32	52.46
High (3)	12	19.67

**Fig 12:** Showing the total fish production of fish farmers**Fig 13:** Showing the annual income/profit of fish farmers**Table 2:** Contextual matrixes of the fish farmers

Age	Frequency	Percent
Young	16	26.23
Middle	39	63.93
Old	6	9.84
Gender		
Male	60	98.36
Female	1	1.64
Selection of farmer		
Small	19	31.15
Medium	32	52.46
Large	10	16.39
Is the fisheries primary occupation		
No	38	62.30
Yes	23	37.70
Total no. of the earning/working members in the family		

One - Two	44	72.13
Two - Three	10	16.39
>Four	7	11.48
Family size		
Small (up to 5 members)	32	52.46
Large (More than 5 member)	29	47.54
Family Type		
Joint	34	55.74
Nuclear	27	44.26
Category		
General caste	35	57.38
OBC caste	13	21.31
Scheduled caste	13	21.31
Category		
General caste	35	57.38
OBC caste	13	21.31
Scheduled caste	13	21.31
Education		
Uneducated	4	6.56
Up to middle	26	42.62
Secondary & Sr. Secondary	23	37.70
Graduation & above	8	13.11
Type of house		
Semi pucca	16	26.23
Pucca	45	73.77
Ownership of House		
Rented	6	9.84
Owned	55	90.16
Training		
NO	11	18.03
YES	50	81.97
Extension Contact (4-18)		
Low (4-8)	14	22.95
Medium (9-13)	41	67.21
High (14-18)	6	9.84
Mass media exposure (7-14)		
Low (7-9)	7	11.48
Medium (10-12)	38	62.30
High (13-14)	16	26.23
Credit		
No	40	65.57
Yes	21	34.43
Assets owned by household (1-8)		
Low (up to 4)	2	3.28
Medium (4-6)	32	52.46
High(7-8)	27	44.26
Experience		
<1 year	1	1.64
One - two years	7	11.48
Three - four years	16	26.23
>4 year	37	60.66
Access to different schemes and programs of DOF		
0	4	6.56
1	57	93.44
Influencing factor		
(1) Economic factor	11	18.03
(2) Training	7	11.48
(3) Both	43	70.49
Owned gears		
Cast net	9	14.75
Drag net	27	44.26
Both/other	25	40.98
Source of fund of gears		
Owned	32	52.46
Rented	29	47.54
What is the system of fishing you followed?		
Lease (1)	34	55.74
Owned (2)	27	44.26

3.18 Constraints faced by fish farmers

Table 10 shows the constraints by the fish farmers of Hisar district in acceptance of the fishing activities. Overall ranking was given on the basis of weighted mean score. Investigation revealed that Inadequate technical knowledge

was ranked first, Marketing problem (2), Unfavorable price of fish (3), Lack of transport (4) and non-availability of fish seed (5) with a weighted mean score of 2.03, 2.01, 2.00, 1.98 and 1.96.

Table 3: Constraints faced by fish farmers

Constraints	Very serious (3)	Serious (2)	Not so serious (1)	WM	WM score	Rank
Economic factor	11	31	19	114	1.86	11
Training factor	13	29	19	116	1.90	9
Inadequate tech. knowledge	16	31	14	124	2.03	1
Plurality of ownership	19	19	23	118	1.93	7
Lack of fund	13	28	20	115	1.88	10
Marketing problem	18	26	17	123	2.01	2
Non-availability of fish seed	13	33	15	120	1.96	5
Lack of transport	17	26	18	121	1.98	4
No skilled worker	13	32	16	119	1.95	6
Increased cost of feed	12	32	17	117	1.91	8
Unfavorable price of fish	17	27	17	122	2.00	3

*Figures in the parenthesis denote percentage, WM = weighted mean

Socio economic status of fish farmers of Hisar district

The socio economic status of fish farmers of district Hisar was studied in terms of age, gender, selection of farmers, caste, education, house and habitation, occupation, earning and working members in family, family size and type, training, extension contact, mass media exposure, availed credit, savings, assets owned by households, experience in fishing, access to different schemes and programs of DOF, improving in socio-economic condition, influencing factors, owned gears and their source of funds, decreasing in catch, system of fishing followed and method of fish storage. The study revealed that more than half of the respondents (63.93%) hailed from the age group of 35-50 years followed by the young age group (26.23) and old age group (9.84%). Which are in line with the findings of Sheikh and Goswami who reported that majority of the farmers were medium age farmers. Shows that medium age group peoples are more involved in fisheries and aquaculture in Hisar. This may be due to the lack of interest among the youth about fisheries and aquaculture.

The result regarding gender indicates that male (98.36%) and female (1.64%). From findings, it is revealed that 98.36% males are involved in fish farming where only 1.64% females were observed in fish farming. Which is in line with Gupta and Day (2015) [5] who was also found that females are less likely to adopt fish farming than males due to their high workload. It shows the participation of women in fisheries and aquaculture of Hisar is very low than the men. This may be due to lack of awareness among women about the fisheries and related activities.

Based on the land holding by the fish farmers, there are three categories of fish farmers i.e., small, medium and large. According to data, more than half of the respondents (52.46%) belong to the medium category of farmers, 31.15 % to small and 16.39 % to large category farmers. Rahman *et al.* (2016) [15] also observed that most of the farmers have medium categories farmers (57.5%) during their study. This may be due to the financial insecurities and negative rumours among the large category farmers regarding fisheries and aquaculture.

The study of occupation of farmers of district Hisar was present in figure 8. It is observed that 37.7% of fish farmers have fisheries as primary occupation while 62.3% fish

farmers have secondary occupation as fisheries. From the above results it can be revealed that fisheries are become popular among 1/3 of farmers which are in line with Reza *et al.* (2015) [16] who find the maximum (40%) of fishermen was involved in fishing as secondary income source which is also observed by Pravakar *et al.* (2013) as they found that only 20% fish farmers were engaged in fisheries as their main occupation.

This may be due to the awareness programmes, advertisements and training by the various government and NGOs.

The data of survey revealed that 72.13% of the households have one or two members earning following by the 16.39% of the household have three or four and 11.48% of household have more than four members are earning. Along with the type of family, the size of the family has a significant impact on an individual's social and economic growth. Analysis revealed that 52.46% fish farmers have five or less than five members (small family) followed by 47.54% respondent have more than five members (large family). Which is in line with Halim *et al.* (2017) [7] as they observed during their study that 55% of fisherman belongs to small family followed by medium family.

According to the data, more than half of the respondents (57.38%) belonged to general castes, 21.31% of the respondents belonged to scheduled caste, and 21.31% percent of the respondents belonged to backward castes. This may be due to lack of awareness among the backward and scheduled caste about the profits and subsidiary programmes for aquaculture and related activities by the government. It is also observed by Sen and Roy (2015) [19] as they found Majority of farmers (46.9%) belonged to General category, followed by Scheduled Castes (34.4%) and Other Backward Class (18.8%).

The education level of pond fish farmers plays an important role in good fish production and effective management as well as good fishing operation. The result regarding education indicates that 42.62% of the respondent were educated up to middle school and 37.7% respondents were educated up to secondary, 13.11% were educated up to graduation and above and 6.56% were uneducated respectively. The same result was also reported by Gupta and Day (2015) [5] who found that most of the farmers were

up to middle school level educated. This may be due lack of awareness among the poorly educated peoples.

According to data more than half of the respondents (73.77%) have their pucca house where as 26.23% households have semi pucca (Katcha) house which is in line with Das *et al.* (2014) [4] who also found that 12% farmers were live in katcha houses during the study on Socio-Economic Condition of the Fish and Prawn Gher Farmers at Dakatia Beel in Khulna, Bangladesh.

Data revealed that 90.16% households have their own house and 9.84% respondents have rented house. The survey revealed that 81.97% farmers took training and 18.03% farmers did not take training.

According to the findings, more than half of the fish farmers (67.21%) had a medium level of extension contacts, with 9.84% having a high level of extension contacts and 22.95% having a low level of contact with extension specialist and taken advice from these.

According to the findings, 62.29% of fish farmers had a medium degree of mass media exposure, while 26.23% and 11.48%, had a greater and lower level of mass media exposure, respectively.

It was observed that 65.57% fish farmers have not availed credit or any kind of loan from banks and 34.43% fish farmers availed credit for their fisheries activities.

It was found that more than half of the respondents (52.46%) had medium category assets owned, 44.26% had high and 3.28% had low category assets owned by households.

Analysis revealed that 60.66% respondents have more than four-year experience in fishing or fisheries related activities, 26.23% have three to four years, 11.48% have one to two and 1.64% have less than one-year experience, respectively which is also observed by Ogunmefun *et al.* (2017) [12] as they observed majority (50%) of the respondents had experience more than four years (6 - 10years).

Data revealed that economic factor and training factors (70.49%), both are the main influencing factor towards fisheries.

It was found that drag net (44.26%) was the most used net by respondents followed by cast net (14.75%). 40.98% farmers used both, cast and drag net for fishing activities. More than half of the respondents (52.46%) have their own source of fund for gears and 47.54% respondents have rented gears. The drag net is mainly used in rectangular ponds and this may be due to most of the farmers are doing traditional pond aquaculture practices.

According to the findings, more than half of the farmers (55.74%) use leased land and 44.26% farmers use their own land for fishing activities. This may be due to lack of land holding among the most of the farmers. It was also in line with Reza *et al.* (2015) [16] who find that 24% of fishermen had own pond and rest of the farmers have no owned pond.

During the study it was observed that more than half of the farmers (52.46%) have medium level of fish production which is in line with Rahman *et al.* (2016) [15] as they observed during their study that 80% of farmers were identified as medium level producers and it was also observed that income of the farmers was maximum under medium level (52.46%) followed by small level (27.87%) and high level (19.67%) of income. Afrad *et al.* (2019) [1] also observed that income of farmers was maximum under medium income farmers (60%) followed by lowest income (25%) and higher income (15%). Which is also in line with

Islam *et al.* (2016) [8] who observed that 40% of fishers had medium income followed by low income (33%) and high income (27%).

Conclusion

The present study clearly indicates that fish farming in Hisar district is predominantly practiced by middle-aged male farmers, with limited participation of youth and women. The majority of farmers belong to the medium landholding category, and fisheries is mainly adopted as a secondary occupation, highlighting its role as a supplementary source of income rather than a primary livelihood. Most households are characterized by small to medium family size, with one or two earning members, and a higher proportion of joint families. The socio-economic profile shows that farmers generally have basic to moderate education, live in pucca houses, and possess medium to high levels of household assets, indicating a moderately stable economic condition. A significant proportion of farmers have received training and maintain moderate extension contact and mass media exposure, which positively influences adoption of fish farming practices. However, a large number of farmers have not availed institutional credit, suggesting dependence on personal resources and limited access to formal financial support. Fish farmers in the study area possess considerable experience (>4 years) and are mainly influenced by economic incentives and training opportunities. The use of traditional fishing practices, such as drag nets and leased pond systems, reflects a semi-intensive and conventional aquaculture system. Despite moderate levels of production and income, several constraints persist. The most critical challenges identified include inadequate technical knowledge, marketing problems, unfavorable fish prices, lack of transport, and non-availability of quality fish seed. These issues hinder the overall growth and profitability of the sector. Overall, the study concludes that although fish farming in Hisar district has good potential for livelihood enhancement, its development is constrained by technical, financial, and infrastructural limitations. Strengthening training programs, extension services, access to credit, and market infrastructure will be essential to improve productivity, income, and socio-economic conditions of fish farmers in the region.

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