Constraints in Adoption of Scientific Fish Farming in Nagaon District, Assam

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ABSTRACT

The study is conducted at two randomly selected development blocks of Nagaon district, Assam *viz.* Rupahi and Kaliabor Block during 2019-2021 to find out the constraints faced by the farmers in adoption of scientific fish farming. A total of 50 farmers from each of the selected blocks were finally selected through simple random sampling. A structured questionnaire consisting of 20 questions was used to collect responses about scientific fish farming problems and related information specifically based on preliminary survey as well as focus group discussions and Constraint Index (CI) was calculated. Lack of quality fish seed of required size and number at the time of stock (CI 1.66) in both Kaliabor and Rupahi blocks were the most common constraint and poaching of fish (CI 0.05) was the least common constraint. It was also observed that most of the adopters in the studied area were within the age group of 18 to 30 years which calls for better entrepreneurship and employment generation.

INTRODUCTION

Fish production plays a crucial role in socioeconomic status of rural population in India. It is not only a rich source of protein and quality food which provide nutritional securities, but also a well-known fact that it is an important source of income for millions of rural farmers, especially women (Jacinto, 2004). The sector is also a major source of livelihood for a large section of economically weaker section in the country. Share of agriculture and allied activities in the GDP is constantly declining (Islam et al., 2006) and it has been observed that agriculture sector is gradually diversifying towards high value enterprises including fisheries (Anonymous, 2011). The Fishery sector has also been a part of a significant role in various socio-economic development programmes, self-employment, income generation and also in providing nutritional security to every sections of the people of Assam and Nagaon is such a district in the state which has a vast aquatic resource with immense potential as well as the involvement in the sector is much great. Also, this study will help to bring out constraints and bottlenecks in adoption of scientific technology and also provide recommendation of a suitable aquaculture technology to the farmers for the socio-economic development of the community.

METHODOLOGY

Two development blocks *viz.* Rupahi block (26° 25' 0" North Latitude, 92° 44' 0" East Longitude) and Kaliabor block (26°54' North Latitude, E 93°10' East Longitude) were randomly selected from Nagaon district of Assam. The study was carried out from 2019 to 2021 and during the study a list of fish farmers was prepared from each of the selected blocks in consultation with fishery officials of respective blocks. Out of the prepared list, 50 farmers from each of the selected blocks were finally selected through simple random sampling. Altogether 100 fish farmers were selected as sample. A pilot survey was also conducted among 30 farmers following authoritative sampling (Kothari, 2004) with an open ended questionnaire to identify the problems of scientific fish farming to understand their degree of seriousness.

A structured questionnaire consisting of 20 items were used to collect responses from respondents about scientific fish farming

problems and related information specifically based on preliminary survey as well as focus group discussions. The questionnaire was distributed among 100 fish farmers. The perceived levels of responsiveness to various problems in the adoption of scientific fish farming practices were collected from the farmers through the questionnaire.

Constraint index (CI) was developed as suggested by Angral (2017). This index measured and compared the constraints expressed by different respondents.

$$CI = SC \times 2 + C \times 1/N$$

Where, SC = Severe constraints, C = Constraint, N = Total number of respondents

The constraints themselves were classified into 3 sets *viz*; severe, most severe and no constraints. The Constraint index was recorded on a 1 to 6 point scale, with 6 being the most severe and 1 being the least severe. The relevant data collected were tabulated and analyzed using different statistical tools of SPSS package.

RESULTS AND DISCUSSION

It was observed that lack of quality fish seed of required size and number at the time of stock (CI 1.66) in both Kaliabor and Rupahi blocks the most common constraint. Furthermore, lack of facilities for water and soil testing (CI 1.42), frequent occurrence of flood in the particular area (CI 1.41), high cost of feed (CI 1.39) and disease outbreaks (1.31) were some of the major concerns for the fish farmers faced while adopting scientific fish farming. The study shows that the factor of flood occurrence is more prominent in the selected development blocks of Nagaon District of Assam. Bhuyan et al., (2017); Dutta et al., (2019) also observed that occurrence of flood contributes to the loss of fish stock in Assam. It was also observed that, the perceived cost of medicine was very high in the observed district leading to a major problem at the time of occurrence of disease. Other major problems which were

perceived by the fish farmers were lack of proper distribution channels (CI 1.25), high cost of carried-over seeds (CI 1.14), low selling price at farm front (CI 1.09) and exploitation by middleman (CI 1.02). It was appraised that adequate marketing channels were not available in the study areas. Although in both the study area, fish has a high consumer preference and has a potential market but unavailability of organized distribution channel made it difficult for the fish farmers to sell the commodity. In both the surveyed blocks of Nagaon district, the fish farmers were marketing the fish through middlemen who took away lions' share of their profits leaving a meager amount for the fish farmers. Das and Goswami (2002) also mentioned the lack of efficient marketing structure as a major constraint perceived by the fish farmers of Nagaon and Morigaon districts of Assam. Das et al., (2014) and Chander & Rathod (2020) also focused on market driven approach and FPOs for better markting. Another important observation was the absence of good quality brooders during breeding (CI 0.91) and difficulty in identifying good quality fish seed (CI 0.89) which are very important for scientific fish farming. Au & Enderwick (2000) explained that six beliefs, namely, compatibility, enhanced value, perceived benefits, adaptive experiences, perceived difficulties and suppliers' commitments, affect the cognitive process that determines the farmers' attitude towards technology adoption. The present study showed positive correlation with main occupation, scientific orientation, perceived difficulties, knowledge and problems and supplier's commitment. The study further revealed that were some other problems faced by fish farmers. Difficulty in institutional credit (CI 0.81), and irregular monsoon (CI 0.71) were also a matter of concern to the fish farmers. Similar constraints were reported on the perceived problems of few communities of Andhra Pradesh in adopting composite fish culture by Mandal et al., (2011); Dutta et al., (2019). The banks and financial institution were not granting the institutional credit for fisheries department for the reason best known to them which correlates with the findings of Angral et al.,

Table 1. Constraints faced by farmers in adoption of scientific fish farming

S.No.	Constraints	Constraint Index (CI)	Rank
1	Lack of quality fish seeds of required size and number at the time of stock	1.66	1
2	Difficult to identify good quality fish seed	0.89	12
3	Non availability of formulated feed	0.69	15
4	Difficulty in getting good brooders during breeding	0.91	11
5	Lack of fishery input supplier in the locality	0.37	18
6	Lack of facilities for soil and water testing	1.42	2
7	High cost of fingerlings/carried over seeds	1.14	8
8	Cost of fish medicine is high	1.28	6
9	High cost of feed	1.39	4
10	Low Selling price at farm front	1.09	9
11	Difficulty in getting institutional credit	0.81	13
12	Inadequate number of visits of extension personnel to farm site	0.52	16
13	Exploitation by middlemen	1.02	10
14	Inadequate training programme on fish culture	0.35	19
15	Low water retention capacity of soil	0.46	17
16	Irregular Monsoon	0.71	14
17	Occurrence of flood	1.41	3
18	Lack of proper distribution channel	1.25	7
19	Poaching of fish	0.05	20
20	Outbreak of disease	1.31	5

(2017). As far as the irregular monsoon was concerned, the fish farmers also need to adjust the work calendar of scientific fish farming or induced breeding programme with the changing monsoon which was also observed by Bhuyan et al., (2017). The factors which least bothered the fish farmers were inadequate visit of extension personnel to farm site (CI 0.52), lack of fishery input supplier (CI.0.37), inadequate training (CI 0.35) and poaching of fish (CI 0.05). It was also observed that most fish farmers were satisfied with the extension machineries although a few percentages of them had a problem. It was perceived that training was arranged in the district headquarters where, it was not possible for them to participate due to a number of reasons.

The current findings and focused discussions indicate that younger age fish farmers, had greater access towards extension machineries and financial freedom were more inclined towards adoption of scientific fish farming which correlates with the findings of Nirmalkar et al., (2022). These finding are also in line with Dutta et al., (2019). Further, greater adoption was observed from the farmers who had a propensity to increase their income and sustain in this area which also correlates with the works of Haque & Ray (1985); Biswas et al., (1991); Ghosh et al., (1993); Talukdar & Sontaki (2005).

CONCLUSION

It is observed that a maximum number of the adopters in both the studied area had a great exposure and a high degree of extension participation and financial motivation. Economic advantages of scientific fish farming need to be clearly highlighted to persuade fish farmers to undertake scientific fish farming. The observations of the prevailing study may assist all stakeholders related to fisheries sector in Nagaon district to take suitable steps to inspire and assist the fish farmers and triumph over the discovered issues confronted by them.

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