

# **Integrated Fish Farming in Jorhat District of Assam: Problems and Policy Options**

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## **Abstract**

Assam has enormous potential for development of integrated fish farming to make the state self sufficient on table fish requirement and also for employment generation. The present study is an attempt to analyses the impediments faced by the farmers practicing integrated fish farming in Jorhat district of Assam. The study revealed that integrated fish farming as a system generated sizeable income and employment in the area. On the whole, four major integrated fish farming systems were adopted by the sample farmers, e.g. integrated pig fish farming, integrated poultry- fish farming, integrated horti-fish farming and integrated horti-pig-fish farming. High cost of input, lack of finance, non-availability of fish seed, inadequate training facility, poaching, lack of transportation facility were found to be the major problems faced by the sample farmers hindering the adoption of integrated fish farming in the study area.

**Keywords:** Assam, Integrated fish farming, problems and policy

## **Introduction**

Fish is the primary source of protein for more than 1 billion people and fishing is the main occupation of over 100 millions of the world Fisheries play a vital role in agrarian economy of India and is recognized as a powerful income and employment generator as it stimulates the growth of a number of subsidiary industries and is a cheap but nutritious food besides being a foreign exchange earner. Integrated fish farming refers to the simultaneous culture of fish or shell fish along with other farming system. It may also be defined as the sequential linkage between two or more farming practices. Generally, integrated farming means production or culture of two or more farming practices and when fish becomes its major component, it is called integrated fish farming. Fish culture can be integrated with several systems for efficient resource utilization. Ordinarily, fisheries in India is organic based and derives inputs from agriculture and animal husbandry. Over the years, integrated fish farming is accepted as a sustainable form of aquaculture. integrated agriculture and agriculture systems such as fish- paddy, fish -pig, fish- poultry, fish- sericulture, fish- cattle with emphasis on their potential for increasing food production (Devraj, K.V. (1987). Integrated fish farming system largely practiced in Assam, are integrated livestock fish farming, integrated rice- fish farming, integrated horticulture- fish farming etc.

Fish is one of the most preferred foods in Assam and integrated fish farming has a great potential to help improve the economy of the state. Very few studies on problems of integrated fish farming have been reported at the micro level in Assam. The study is designed to look into the various problems faced by the farmers and to suggest possible remedies thereof. This paper attempts to assess the impediments of integrated fish farming in Jorhat district of Assam.

**Materials and Methods**

The study was conducted in Jorhat district of Assam. The sampling design followed for the study is three stage random sampling design. Blocks from the first stage unit, villages are the second and the farm households with ponds are the third and ultimate stage unit of sampling. (Figure 1) A list of development blocks in the Jorhat district was prepared and three blocks having highest area under integrated fish farming were selected for the study. viz. Dhekargorah, Titabor and Majuli Blocks.

A structured and pretested interview schedule and questionnaire was used to collect the data from 120 sample farmers from the district. Garrett’s ranking technique was used to analyse the problems encountered by the integrated fish farmers

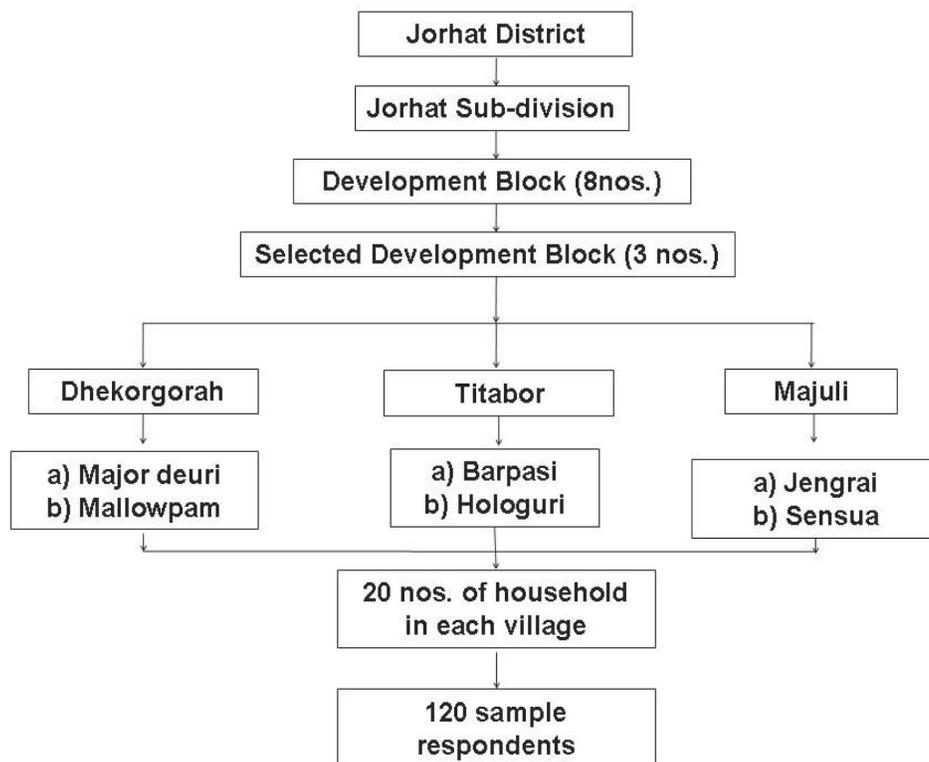


Fig. 1: Sampling design

The technique was applied by using the following formula:

$$\text{Per cent position} = \frac{100(R_{ij} - 0.5)}{N_{ij}}$$

Where,

$R_{ij}$  = Rank given for  $i^{\text{th}}$  factor by  $j^{\text{th}}$  individuals

$N_{ij}$  = Number of factors ranked by  $j^{\text{th}}$  individual

The per cent position of each rank thus obtained was converted into scores by referring to the table given by Garrette and Woodworth. Then for each factor, the scores of individual respondents were added together and divided by the total number of respondents for whom the scores were added. The mean score thus obtained for all the factors were then arranged in descending order, ranks given and the most limiting factor identified.

### Results and Discussion

The problems faced by the farmers practicing integrated fish farming were studied through personal interview of the sample farmers and the results are presented in Table I in order of their mean score. There were altogether nine major problems faced by the farmers.

The most important among them, was the high cost of inputs (71.60 percentage). The high cost of inputs like feeds and seeds was identified to be a strong barrier in the process of adoption. Next problem was management problem which might be due to lack of adequate training exposure. Management practices in aquaculture depends mainly on technical knowledge of the farmers. The present study indicated that the farmers were not aware of many primary aspects of integrated fish farming system, such as, application of manures, fertilizers, supplementary feedings, regulation of stocking density etc. The problem was directly related with the lack of training facilities as reported by 60.20 percentage of the sample farmers. Next important problem encountered by the farmers was inadequate credit facility (58.00 percentage). The problem of inadequate supply of the stocking material (non-availability of fish seed) was reported by 53.30 percentage of the sample farmers. The next problem in terms of magnitude was poor marketing facility (50.00 percentage). Transportation of table fish in hired vehicles to the Jorhat fish market was uneconomical for the small pond holders. The sale price of fish was low in local market, and the small pond holders had no option but to accept the price which they considered to be unremunerative. The large pond holders marketed the fish in the Jorhat fish market by transporting the commodity in hired vehicles. Often large quantity of fish arrived at the market from different parts of the district resulting in tied sale or spoilage. Poaching was another problem reported by 40.00 percentage of the sample farmers. The problem of weeds and disease was faced by 38.20 percentage of the sample farmers. The problem of diseases continues to affect the state showing major outbreak during the winter months (Anon., 1990-92). A package of technology for control of epizootic ulcerative syndrome and other diseases in fish have already been released by the ICAR and AAU (Anon., 1990-92). Also Production problems, management problems and marketing problems carried out (Hazarika A.C. (1993). The constraint of the outbreak of fish disease in the study area was found to be on account of lack of knowledge of prophylactic measures. Severe erosion of embankments resulting in high siltation on the cultured ponds was reported by 30.50 percentage of the sample farmers. This was again, related to a great extent to lack of knowledge of the farmers on construction of the ponds befitting to the soil condition and maintenance thereof. The multi-ownership of tanks and the shortage of development fund to be the great problems with the villagers (Chakravarty S.K. (1968). The existence of a number of middlemen was yet another problem as reported by 27.00 percentage of the sample

farmers. Low volume of production, high transportation cost and distance to main market might be the causes of emergence of middlemen in the study area.

**Table 1:** problems of integrated fish farming

Sl. No.	Problems	Mean score	Rank
1.	High cost of inputs	71.60	I
2	Inadequate training facility	60.20	II
3.	Inadequate credit facility	58.00	III
4.	Non-availability of fish seed	53.30	IV
5.	Poor marketing facility	50.00	V
6.	Poaching	40.00	VI
7.	Infestation of weeds and disease	38.20	VII
8.	Siltation of ponds	30.50	VIII
9	Existence of middlemen	27.00	IX

### Policy Implications

Looking in to the constraints, the following ameliorative measures may be suggested to increase the integrated fish production in the study area through integrated fish farming.

For application of the right type of inputs at right time, measures should be taken to ensure the availability of the inputs within the convenient reach of the farmers. Facilities may be created to augment the fish seed production in Jorhat area, so that the seeds are made available on time and at reasonable price. High cost of seed was reported to be a constraint due to escalation of the actual cost in transportation. This constraint can be minimized by advanced planning on the part of the extension agencies by encouraging local nurseries and resorting to an effective delivery system.

Monitoring of the market price of the inputs is essential for stabilizing the prices of the inputs. Regulatory bodies including the Govt should take appropriate measures to do away with any kind of exploitation of poor fish farmers.

The problem of inadequate credit facilities can be easily overcome by strengthening the existing financial institutions and the extension machinery specially Fish Farmers Development Agency (FFDA). Measures should be adopted for (a) flow of credit on adequate and reasonable terms, (b) closer supervision and follow up on proper use of credit, (c) providing with infrastructural facilities so that the potential income can be translated into actual income and (d) changing the attitude of the concerned officials of the financing institutions towards helping the farmers. Effort should be made to intensity short term and long term farmers’ training programme. The progressive fish farmers may be sent outside the state for exposure visit to learn the modern techniques of fish farming.

Poaching is generally a problem of jealousy or enmity coupled with lack of proper administration. Group action among villagers initiated through extension department may be the best solution in this regard. The constraint of weed infestation and disease may be best controlled by educating the farmers on the appropriate and effective technology. Organizing result demonstration can motivate the farmers with great success.

Similarly, the problem of siltation can be controlled by educating the farmers on the maintenance of pond embankments, annual desilting and prevention of excess flow of run off water into the ponds.

The marketing constraints call for a better organizational restructuring by the state for regulating market practices and for ensuring remunerative price for the farmers. The perishable nature of the table fish calls for establishment of cold storage near to the big fish markets. The consumer's preference for fresh fish controls the price to a great extent. The transportation of the fish at low cost should therefore, be arranged to cater to the demand of the fish markets. The delay in advancing credit by the financial institutions forces the farmers to make ad-hoc arrangements with the middlemen resulting in tied sale. Simplification of procedural formalities for advancing loans may be a boost to overcome this problem.

### Conclusion

Assam has the vast potential for development of integrated fish farming to make the state self sufficient on table fish requirement and for additional employment generation. In spite of the thrusts put in by the development department, the potentiality of Integrated Fish Farming is yet to be realized. It is a reflection of the present status of fishery industry in Assam and indicates that lots more are to be done for making the integrated fish farming more scientific, more remunerative and more acceptable through latest technological intervention and massive training programmes. It has also reaffirmed the suitability of the integrated fish farming system for the rural agrarian condition of Assam. Acceptance and adoption of proven technologies by the farmers would definitely help them to generate more income from the existing resources in an ecofriendly manner.

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