CHAPTER -10
SUMMARY, CONCLUSION, PROBLEMS AND SUGGESTIONS
Summary, Conclusion, Problems and Suggestions

This chapter provides a summary of the major findings of the study. It also gives the problems faced by the FFDA and suggestions to overcome them.

India is blessed with vast inland natural water resources. But Indian economy is faced with the problem of proper utilization of these huge water resources. In a predominantly agricultural country like India, having limited scope for alternative non-land based employment for the non-skilled labour force and where mal-nutrition is a common phenomena, generation of employment by means of pisciculture is of great importance.

The present study has been undertaken to examine the socio-economic impact of FFDA programme on the rural life and also on the economic status of fish farmers in the districts of Burdwan and Birbhum of West Bengal. For this purpose at first 5 blocks from each district have been purposefully selected. Then 10 recorded fish farmers from each block have been selected purposefully. Thus 50 fish farmers from each district have been selected. A questionnaire was prepared for the collection of desired information from the selected fish farmers of the two districts. The data were collected during the period from August 1999 to August 2002. The data were then subjected to statistical analysis by employing simple tabular method. The corresponding statistical tests (if required) and percentages were also calculated to facilitate interpretation and to draw conclusions.

The main findings of the study are summarized below:

1. General Findings

   By means of general classification of sample fish farmers on various aspects like religion caste, level of education, family size, location of tanks, sources of water body, ownerships of ponds, type of assistance, name of the project, sources of finance etc. We observed the following results. (The number of sample fish farmers was 50 in each district).

   (i) In Burdwan district 30% of fish farmers belonged to S.C., 10% belonged to S.T. and 60% belonged to general caste. In Birbhum district 62%
belonged to S.C. and 38% belonged to general caste and neither fish farmers belonged to S.T. category.

(ii) In Burdwan district 10% fish farmers belonged to illiterate group, 12% belonged to primary (i.e. up to class IV) educated, 70% belonged to secondary level (i.e. up to Class XII) educated and 8% belonged to highly educated group (i.e. graduation and above). The corresponding figures for Birbhum district were 10%, 16%, 68% and 6% respectively.

(iii) It was found that in Burdwan district 52% fish farmers had pisciculture as sole occupation and 48% had pisciculture as subsidiary occupation. But in Birbhum district 64% fish farmers had pisciculture as sole occupation and 36% had pisciculture as subsidiary occupations.

(iv) Out of 100 fish farmers of the two districts the minimum family members was 3 and maximum was 10. But the average family-size of the two districts were more or less the same (i.e. 6 approx persons).

(v) Burdwan district had 16% farmers having single ownership type of ponds, 14% having share type, 54% having lease/contract and 16% having other types of ponds. The corresponding figures for Birbhum district were 2%, 12%, 70% and 16% respectively.

(vi) It was observed that in Burdwan district 88% fish farmers had perennial ponds and 12% fish farmers had seasonal ponds while the corresponding figures in Birbhum were 80% and 20% respectively. This result implied that Burdwan district had more perennial ponds which were more efficient for fish farming.

(vii) In Burdwan district 52% fish farmers had used their water resources for pisciculture only and 48% had used their water resources both for pisciculture and irrigation. The corresponding figures for Birbhum district were 40% and 60% respectively, This result implied that Birbhum district had more fish farmers having common usage of water body.

(viii) It was observed that in Burdwan district 64% fish farmers had ponds only within the villages, 20% fish farmers had ponds outside the villages and 14% fish farmers had ponds amidst agricultural fields. The corresponding figures for Birbhum district were 50%, 32% and 20% respectively.
In Burdwan district 32% fish farmers had purchased fish seed from private fish farm, 44% from private traders and 24% from Government fish farms. The corresponding figures for Birbhum district were 42%, 52% and 6% respectively. This result implied that more fish farmers in Burdwan district had purchased spawn from Govt. fish farm than in Birbhum district. (Generally the Govt. fish farms supply more improved qualitative seeds to the fish farmers)

In Burdwan district 14% fish farmers sold their product to fishermen (professional) 28% to local traders, 40% to arats and 18% to villages. The corresponding figures for Birbhum district were 16%, 12% 42% and 30% respectively.

In Burdwan district 56% fish farmers used van/Rickshaw/tractor, 32% used buses and 12% used trains as their means of transport. The corresponding figures for Birbhum district were 52%, 38% and 10% respectively.

2. Impact of FFDA on Productivity of Water Area

From the field survey it was found that the average productivity of fish production of water area of fish farmers of Burdwan district was higher than that in Birbhum district. Moreover, these averages are slightly higher than the average productivity in national and state level. It was also found that the average productivity of water area was higher in those ponds which were cultivated by full time fish farmers. (i.e. pisciculture as main occupation). It was true for both the districts.

3. Comparison of Income of the sample fish farmers Before and After the Assistance of FFDA

From sample survey we have collected two sets of income data (one showing income before and other showing income after the assistance of FFDA) for each fish farmer. In this regard the income comparison has done in two areas (namely within the district, between the district and the overall change of income) and 't' test was used. The finding of these results was that the assistance of FFDA programme has raised the fish farmer’s income undoubtedly in both the districts. Not only that the
change of income was statistically significant. The result revealed that there was a positive impact of FFDA assistance on fish production (i.e. fish production has significantly increased). Moreover, it was also found that the gain of income of fish farmers of Birbhum district was higher than that of Burdwan district.

4. Impact of Educational status on fish farming

According to their level of education the sample fish farmers have been classified into four groups viz. Illiterate, Primary, Secondary and Higher educated. Moreover, on the basis of their rate of production the fish farmers were categorized into three groups, say, H.P., A.P. and L.P. groups (and for this categorization $M \pm \sigma$ ranges were also used). To estimate the impact of educational status on fish farming the $\chi^2$-test was used. The findings of the results show that higher educated fish farmers are less attentive in fish farming. They do feel some sort of frustration or hesitation about the work like fish farming or they consider fish farming as a low graded profession in conformity with their education status.

5. Impact of caste factor on fish production

According to castes the sample fish farmers have been classified into two groups, namely, scheduled castes including scheduled tribe and general castes. Further on the basis of their rate of production the farmers were categorized into three groups Viz. H.P., A.P. and L.P. groups. The relation between rate of production and caste categories can be verified into two areas namely within the district and between the district. For statistical verification here ‘t’ test has been used. From the findings of the results we may conclude that S.C. fish farmers of the two districts were more efficient in fish farming than G.C. people. The simple reason is that S.C. people are more economically backward section of the society and they have a special interest on low ranking profession like pisciculture and are have more aptitude in fish farming than G.C. people. The result indicates that caste factor plays an important role on fish farming.

6. Impact of Training on Fish Farming

Formal training is a necessary ingredient for fish farmers to adopt modern methods of intensive pisciculture. Formal training raises the farmers’ skill and ability to adopt new inputs in a cost efficient manner to raise fish production. The duration of
the training programmes was generally 4 days, 10 days, 15 days and 30 days and are held at G.P., Blocks and Meenbhavana offices. To show the impact of training on fish farming 't' test has been used. The findings of the result revealed that there was a clear impact of training on fish production (i.e. the impact was statistically significant) and there was a positive association between training and fish farming. Hence to motivate the poor fish farmers on training some amount of remunerations are also paid to the fish farmers during training.

7. Impact of FFDA in the Upliftment of Rural Economy of the two Districts

In this respect, our study reveals that, on the whole, the programme of FFDA is, more or less, successful in uplifting the level of the rural economy of the two districts undoubtedly. In an agricultural based developing country like India where unemployment is the burning problem and poverty and mal-nutrition are common phenomena, pisciculture can play an important role as an alternative source of livelihood for socio-economic development of the country. But the degree of upliftment has not reached to the desirable level owing to lack improper planning and intensive implementation of this government sponsored programme.

8. The Relative Loading or Weightage of factors on Fish Production

To estimate the loading or weightage of factors of fish production factor-analysis was done through pivotal condensation method. The results indicate that mahua cake and organic manure has maximum impact than in-organic manure and after that stocking. There is insignificant loading of the development of pond and lime as inputs of fish production.

9. Other Findings

Our study reveals certain other factors responsible for the smooth functioning of the programme of FFDA.

(i) Since most of the fish farmers are poor the bank loan is a necessary ingredient for the development of pisciculture in rural areas. The main objective of bank loan and government subsidy was to use the money only in pisciculture. But in some cases it was misused for consumption or other
non-productive purposes and the fish farmers were not repay the bank loan regularly.

(ii) The average family-member of the fish farmers of the two districts were more or less the same (i.e. approx. 6).

(iii) In a poor country like India where malnutrition is a common phenomenon the consumption of fish may play an important role in this respect. The per capita availability of fish consumption of the fish farmers families of the two districts were higher than national average and even equal to the development countries.

(iv) Among the 6 species Rahu, Catla and Mrigel were the HYV species of fish production of both the districts.

(v) Average yield (per bigha) decreases as the number of shareholders in ponds increases. In multiple ownership ponds yield per bigha is lower due to uneconomic and poor economic conditions of fish farmers, unwillingness absence of unanimous decision regarding catching, stocking and adoption of scientific new methods etc

(vi) Yield per bigha to the fish farmers owning higher and higher amounts of water bodies was lower while the same was higher to the fish farmers owning smaller amounts of water bodies.

(vii) The average productivity of perennial type ponds was higher than the average productivity of seasonal type ponds. Hence the perennial type ponds are more effective for pisciculture than the seasonal type ponds.

(viii) The yield per bigha was highly correlated with the average depth of ponds of the two districts. But for efficient pisciculture the ponds should not be too deep nor too shallow. The average depth should between 7 feet to 10 feet.

(ix) The yield (per bigha ) was lower in lease/contract ponds which were leased in short-term basis.
The findings of the Revenue, cost and profit calculations can be summarized as follows:

(a) The average revenue of fish production in Burdwan district was higher than in Birbhum district.

(b) The average cost of fish production in Burdwan district was also higher than in Birbhum district.

and (c) The average rate of profit of fish production in Burdwan district was also higher than in Birbhum district.

The above results also indicate that in case of implementation of the programme of FFDA the district of Burdwan has more successful achievements than the district of Birbhum.

10. PROBLEMS

On the basis of formal and informal discussions with the ADFs Burdwan and Birbhum, different FEOs of different blocks of the two districts, bank officials having responsibility in issuing loans to the fish farmers, members and Pradhans of different Gram Panchayats and from the sample fish farmers the following main problems regarding the successful implementation of FFDA programme in these two districts are highlighted.

1. Lack of finance is one of the most important retarding factors for pisciculture to the rural poor fish farmers. But getting bank loan was not a smooth process. It was observed that time taken for sanctioning and disbursing of bank loan took huge time. This delay in disbursement of assistance to the beneficiaries can be analysed from two sides: block level delay and bank level delay. The financial assistance targets of the schemes were achieved in terms of covering the numbers of beneficiaries only and not in terms of money. As a result the quantity was achieved but the quality of the programme deteriorated. Sometimes the proposals for this programme were sent to banks just before the end of the financial year. As a result the bank branches could not perform their functions properly due to shortage of time as well as shortage of manpower. Moreover, since the fish farmers do not get bank loan in proper time sometimes they misused it for consumption or other non-productive purposes.
2. Subsidy cum loan can benefit those people who are not so poor than those who are the poorest of the poor.

3. Proper indentification of the actual beneficiary is very much important for the success of the implementation of the programme. But this factor remained less important to the authority. As a result the objective of development of grass root ‘man’ was jeopardized. In actual practice some undeserving fish farmers got FFDA assistance.

4. In some cases, the staffing pattern of the rural bank branches as well as the agencies affected the success of the programme. Some of them do not evince any interest about the necessity of rural development.

5. Sometimes, the pond is under a bank’s jurisdiction while the residence of the loanee is under another bank. In these cases problems arise to get bank loan.

6. In some cases, the repayments of bank loans were not regular due to lack of knowledge about the banking system (i.e. ignorance of the farmers), poverty, misery, family liability, unwillingness, negligence of the fish farmers etc. Hence banks find it difficult to advance new loans to the fish farmers.

7. Lack of liasion between the banks and the Government Authority also creates some problems (in some cases) to get bank loan.

8. No collateral security is required for sanctioning this type of loan. So some beneficiaries do not feel any urge to repay the loans in due time. Actually the banks have no power for enforcing recovery of bank loans such as seizing the assets of the loanees.

9. Transportation is one of the most important problems faced by the fish farmers. Most of the fish farmers of the two districts have no personal vehicle to transport their product (i.e. fish) and hence they primarily depend upon private buses or train. Hence they cannot reach the market in proper time. (i.e. early in the morning). Thus transportation problem hampers the successful implementation of the programme.

10. Since fish is a perishable commodity, storage of fish is also a problem to the fish farmers. Due to lack of sufficient ice needed for preservation the fish farmers are forced to sell their products even at low prices.
11. The catching of immature fish by the fish farmers is also an important retarding factor for the success of the programme. It not only decreases total production but also gets lower price in the market (and hence get lower profit).

12. Most of the ponds of the two districts were seasonal in nature. These seasonal type ponds dry up during the summer and this hampers fish production.

13. Some ponds have common usage i.e. they are used both for agriculture and pisciculture. But there is an antagonistic relation between agriculture and pisciculture. These ponds are not suitable for pisciculture in the long-run since these ponds are dried up for providing irrigation water.

14. The success of the programme primarily depends upon the quality of fish seed used for pisciculture. Most of the fish farmers collect fish seed from private traders and not from the Government fish farms. This poor quality of fish seed implies low rate of growth of fishes. Sometimes they spread infectious diseases among fish.

15. Pollution of the pond water due to the use of pesticides for agriculture also hampers fish production. The problem is more acute in the case of ponds amidst agricultural fields.

16. Some of the social problems like, catching, theft, poisoning are also important retarding factors in the way of successful implementation of the programme.

17. Multiple ownership ponds create some problems in decision making for fish farming.

18. The part-time fish farmers are not so efficient to adopt new scientific methods of pisciculture. These farmers have low productivity than full time fish farmers.

19. Most of PFCS of the two districts are not properly functioning though the formation and functioning of PFCS help the poor fish farmers in many ways.

SUGGESTIONS

We have already discussed some major problems faced by the fish farmers for fish farming. To solve these problems and for proper implementation of FFDA programme the following suggestions can be offered:
1. Granting of bank loan should be in proper amount and in proper time. In this case the bank officials, FEOs, Panchayat Pradhans and the fish farmers have to work collectively and with active cooperation among them. The rural bank officials should be cordial and neutral in this case.

2. The selection of actual beneficiary is very much essential. Selection should be made on the basis of need and neutrally and not on the basis of political influence or others.

3. For repayment of the bank loans regularly some campaign is required to be taken up by the Government and bank officials such that the fish farmers are motivated to repay the bank loans. The matter may be discussed in training classes.

4. Decentralised effective planning, formation and proper functioning of PFCs and a strong communication and integration among all the sections in a cooperative manner may uplift the programme to a satisfactory level. Well trained and qualified persons should be appointed as managers of the PFCS for fulfillment of their basic objectives.

5. The urban wastes (i.e. garbage) may be recycled as fish feed to raise fish production (to those ponds and water areas lying near the towns) and to prevent the environmental pollution in those urban areas.

6. The use of pesticides in agricultural field may damage fish production in those ponds which are amidst agricultural fields. In these case the field water should be totally blocked by making embankments around the ponds.

7. In Burdwan district there are some open cast pits (O.C.P.) in Raniganj coal belt and in Birbhum district also such pits are available at khoirasole block. Claymines at Md. Bazar block also offer open east pits. Fish production may increase by utilizing these huge water resources for pisciculture purposes.

8. More formal training programmes should be arranged for the proper implementation of the programme. Crash programme of refresher and training courses for in-service personnel are required to provide expertise to the staff members such that they are able to provide solutions to all the problems faced by the fish farmers regarding diseases of fishes, fish seed production, technical and financial aspects, statistical estimation of fish production etc. The
refresher courses should be for fieldsmen and fishermen and training courses should be for fishery inspectors, asst. fishery extension officers and other similarly placed personnel.

(9) The seasonal ponds may be filled in by the help of canal water (or by ground water with the help of shallow or sub-mushible pumps) at a nominal rate. Further when the seasonal ponds are dried up the ponds bed be kept under the sun to raise the fertility of the bottom soil.

(10) In case of lease ponds the lease agreements should be written ones and on long-term basis such that no frequent eviction can occur.

(11) Proper marketing facilities of fish produced by fish farmers are provided so that they can easily sell their products and get fair prices of their produce. The storage facilities should also be provided such that the fish farmers are not forced to sell their perishable product at lower prices.

(12) Prices of organic and inorganic manures and fish seeds should be kept as low as possible or the Government should give more subsidy in the case of chemical fertilizers so that poor fish farmers can buy them.

(13) Application of mahua cake is essential in fish farming. It has dual role in pisciculture. It firstly acts as a pesticide but later it acts as an organic manure and produces a desired quantity of fish food organism for the baby fishes. The pesticides should not generally be used though they are cheaper because of negative effects to the ecology

(14) Ponds development is also an important factor for the successful implementation of the programme. The success primarily depends upon the quality of the ponds. Hence before pisciculture is taken up the ponds require excavation, de-watering, de-weeding, de-planting etc. (if necessary).

(15) Stocking of various species should be in a certain proportion such that various types of fishes live in various layers and eat the entire food organism of the water body. Moreover it has to be ensured that the species of the same layer are not competitive in their food habits. Thus in polyculture (when various species are cultured in the same pond simultaneously) all the pond’s feed are used scientifically and economically. Hence to make fish farming profitable
and for the successful implementation of the programme we should use mixed-culture or polyculture or composite fish culture (C.F.C.)

(16) Since perennial ponds are more efficient for fish farming the officials should give more emphasis on those fish farmers having perennial type of ponds for pisciculture.

(17) To create awareness among all sections of the society (particularly fish farmers) for preventing the social problems like catching, poisoning etc. some campaign by Government officials must be taken up.

(18) Since both the districts are agriculture based we should interlink agriculture with pisciculture for the simultaneous development of the two sectors because development of one independent of the other is beset with manifold problems and hence it is practically impossible. To interlink these two sectors we can draw the following interlinkage figure.
Circular Flow of Pisciculture and Other Allied Culture.
Circular Flow of Pisciculture and other Allied Culture

Along with pisciculture in ponds other allied culture can be inter-linked in composite farming. The concept of composite farming e.g. in the pond-there are pisciculture and on one side of the pond mulberry trees can be cultivated for the development of sericulture industry-from there silk industry can be grown. Thus the final products (i.e. silk yarn and silk cloth) come to the market and their waste materials are drained off to the pond and used as fish feed. In the same pattern on another side of the pond animal husbandry can be practised (e.g. poultry, ducarry and piggery) Their can be used as a valuable manure for fish feed and the excess manure can be utilized for agricultural production. The excreta of the animal husbandry can also be used in the biogas plant for fuel and light. The products of animal husbandry e.g milk, meat and egg come to the market directly. On another side of the pond some fruit plants such as papine, guava, mango etc. can be cultivated by using the excess manure of animal husbandry and the products can be sold in the market.

(19) For the successful implementation of the programme and for the solution of the transportation problem light commercial vehicles may be provided to the fishermen through bank finance

(20) To prevent the existence of middlemen in fish marketing in the local markets, cooperative marketing societies should be developed to ensure that the fish farmers can get fair prices for their products.

(21) To raise the welfare of the fishermen some group or personal insurance schemes should be introduced to provide economic security to fishermen and their families in case of disablement and loss of life. For the identification of actual fisherman the Fishery Department should issue ‘identity cards’ to all fishermen actively engaged in fishery.

(22) The Government fish farms should supply improved quality of fish seeds in proper time of harvesting at subsidized rates.

(23) Fish clubs may be established at different blocks to solve the various social, economic and political problems in a peaceful manner. Moreover these fish clubs should work with PFCS in a cooperative way.
Conclusion

The study indicates that the introduction of the programme of FFDA had a clear positive impact on the rural economy through employment and income generation and also through raising the standard of living and socio-economic performance of the rural community of the two districts. So it is recommended that the present programme should be further spread in the rural areas by means of proper planning, adequate supervision, effective implementation and better monitoring.