21. Fish seeds Production Programme (1995-96)

1. Background:

Majority of the people in the State are non-vegetarians, non-vegetarian food contains high percentage of proteins. Besides, pulses production is not sufficient to meet requirement of the State, therefore, as alternative to pulses fish production is important.

State has 720 Km long coast line from it about 3.45 lakh tonnes of fish production is available every year. There are some limitations to provide fresh fish to the people who stay away from the sea shore. Therefore, people staying in internal part of the State have to use inland fish as alternative, in this sense inland water fish production is important.

2. Implementing Programme:

In the State inland fish seeds were obtained from induced Breeding method. Fish seeds were imported from Calcutta and distributed among the fisherman’s societies. In order to become self-sufficient in production of fish seeds, the State Govt. decided to build Hatcheries in the State to increase fish seed production and completely stopped import from the Calcutta in 1991-92.

3. Objectives of the evaluation study:

With the intention to know the progress of the Inland fish seed project from inception to the year 1993-94. The evaluation study was undertaken by D.E.S, Govt of Maharashtra in 1995. Following are the objects of the evaluation study.

a) To study the working of the scheme and to find out discrepancies, if any and make recommendations to study financial and physical target and achievements.

b) To study as to whether fish seeds produced in the State are sufficient to make the State self sufficient and up to what extent objects are achieved.

c) To achieve targets of the scheme, whether scheme is implemented technically and correctly.

d) Whether sufficient water is available for the centres to function properly. If water is available whether arrangements to supply the same to the centres has been made and to study independently the functioning of the centre regarding the fish seed production, fish rearing and even though water is available find out the reasons for arrangements not made to supply it to the centres and feasibility of arrangement.
e) Whether water spread areas of the centres are useful for fish farming, if not what are the difficulties.

f) Whether centre's income is sufficient to meet its incurring expenditure (including wages & salaries) and after construction of circular hatcheries, whether there is a favorable change in the situation.

4. Sample selection:

Fish seed centres and districts have been selected for evaluation study as follows.

A) Selection of the districts:

12 districts were selected on basis of seed production during the year 1993-94 by probability proportional to size (production) using linear systematic sampling method considering seed production of the 1993-94. Selected districts were 1) Thane 2) Ahmednagar 3) Satara 4) Parbhani 5) Nanded 6) Beed 7) Amravati 8) Akola 9) Buldhana 10) Yavatmal 11) Bhandara 12) Chandrapur.

B) Selection of fish seed production centres:

One fish seed production centre producing maximum fish seeds in the year 1993-94 was selected from each selected district. Selected centres were 1) Dapchari 2) Mulanager 3) Dhom 4) Sidhshaver 5) Karadkhed 6) Manjra 7) Balasapur 8) Katepurna 9) Koradi 10) Saikheda 11) Idiadoh 12) Amalnala.

C) Selection of beneficiaries societies:

From each selected fish seed centre 5 fishing societies, 3 other societies and 2 private institutes were selected by random method from those who have purchased fish seeds from the centres in 1993-94. If selection of required number of co-operative societies and private institutes was not possible additional fishing societies were selected to fulfill required quota.

D) Selection of Zilla Parishad and Municipalities:

Two Z.P. and Municipalities who have purchased seed from centres in the year 1993-94 were selected by random method from each selected centres. If selection required number of Z.P. and municipalities from the centres was not possible the gap was filled in by selecting additional Z.P./Municipalities. As mentioned above, 14 beneficiary institutes were selected according to type of institutes for evaluation study.

5. Period of field work:

Fieldwork of this evaluation study was completed during the period from March 1995 to April 1995.
6. Findings:

1. It is observed that out of total area available for Inland fish farming in the State for the year 1993-94, actually 85 per cent of area was used for fish production.

2. Out of 31 districts in the State, the project is being implemented in 28 districts.

3. Out of total 12,902 ponds used for inland fish, there were 428 (3.3 per cent) ponds having waterspread area more than 60 hectares and 12,474 (96.7 per cent) ponds having waterspread area less than 60 hectares. Ponds having waterspread area more than 60 hectares had total waterspread area 2,29,112 H. (70.6 per cent) and ponds had waterspread area less than 60 hectares, has 95,297 H (29.4 per cent) total waterspread area. This indicate that ponds having less waterspread area were more in numbers than the number of ponds having more waterspread area. While big ponds are less in number but their total waterspread area more.

4. According to ownership type Zilla Parishad has more ponds (tanks) (76.2 per cent) with 16.98 per cent waterspread area. Small Irrigation Department has 12.5 per cent ponds (lake) with 68.8 per cent waterspread area. Ponds/ lakes whose waterspread area was less than 60 hectares. Z.P. owned 9,802 (78.6 per cent) ponds with 53.8 per cent waterspread area. Ponds whose waterspread area was more than 60 hectare, S.I. Deptt. owned 87.2 per cent ponds with 81.2 per cent waterspread area. It means that Z.P. and Small Irrigation Department has more participation in fish production activities and in that Z.P.’s share was higher.

5. Even though optimum fish seed stocking capacity of ponds used for fish production was 6012.23 lakh seeds annually actually 53.6 per cent fish seeds were stocked. According to division wise analysis except Nagpur division fish seeds were not stocked upto storing capacity in any other divisions.

The three divisions namely Aurangabad, Pune and Nashik 24.9, 31.9 and 25.8 per cent seeds actually stored respectively.

6. In the State 5870.55, 6569.65 and 8680.00 lakh spawns were produced in the year 1991-92, 1992-93 and 1993-94 respectively. Considering spawn production of the year 1991-92 as base in the year 1992-93 and 1993-94 spawn production has increased by 11.9 and 47.9 per cent respectively. In 1991-92 production of cyprincus was 20.4 per cent in 1992-93, it was 5.1 per cent and in 1993-94 it was 5.1 per cent it means that cyprincus spawn production was decreasing while that of major crop spawn production was increasing.

Capacity of Hatcheries and spawn production:

7. It is expected that in a year one hatchery should produce 500 lakh spawns. Considering this norm in 1993-94, 12,500 lakh spawn could have been produced by 25
working hatcheries but actually 8,680 lakh (69 per cent) spawns was produced. It is observed that hatcheries in Pune Division has produced spawn as per expected capacity but in the remaining divisions, hatcheries were not able to produce spawns as expected.

Rearing of spawn and seed yield:

8. Out of total spawns produced by centres, 35 per cent spawns were sold and remaining 65 per cent spawn were used for nursery in the centres to obtain fish seeds.

   It is seen that 1622.58 lakh fish seeds were produced from nursery of 7092.45 lakh spawns. Only 23 per cent of fish seed was obtained from nursery of spawns. It means that in the period from spawns nursery to fish seed production 77 per cent spawns died.

   This ratio was highest in the Pune and Nashik Division. In total seed production share of cyprinus seeds was very low while that of major carp was higher. It can be concluded that centres prefer to produce seeds of major carp than cyprinus seeds.

9. Fish seed production in 1991-92 was 1314.99 lakhs. In 1992-93 it was 1414.83 lakhs and in 1993-94 it was 1632.58 lakhs. In comparison with seed production in 1991-92, production in 1992-93 and in 1993-94 increased by 7.6 per cent and 24.1 per cent respectively. In 1993-94 target of 55,000 lakh seed production was given but only 29.7 per cent seeds were produced.

Provision and Expenditure:

10. From observation of Provision and Expenditure for three years (1991-92 to 1993-94) it was seen that expenditure was more than provision but in 1992-93 expenditure was less than provision. In 1991-92 expenditure was 116.6 per cent of provision and in 1992-93 it was 92.4 per cent and in 1993-94 it was 105.2 per cent.

Income of Centres:

11. Considering income of the centres from sale of spawns semi fingerlings, fingerling, in the years 1991-92, 1992-93 and 1993-94 the State received income of Rs.94.97 lakh, Rs.96.51 lakh and Rs.126.96 lakh respectively. The income received by the State from the sale of centre’s product was increasing, considering income and expenditure of the centres. The State received net income of Rs.6.06 lakh in 1991-92, in 1992-93 Rs.10.81 lakh and in 1993-94 Rs.28.59 lakh. It can be said positively that the State Government’s seed producing centres are becoming more efficient day-by-day.

Import of seed before 1991-92:

12. Before 1991-92 domestic fish seed production was not enough to meet the needs of the State. Therefore, fish seeds were imported from Calcutta.

   Total 6351 lakh seeds were imported from 1986-87 to 1990-91 in a period of 5 years. In this period every year import of seed increased by 10 per cent but in 1991-92
due to State Government's decision to stop import of seeds and to build hatcheries in the State, domestic production of seeds increased substantially and the State Government was also receiving net revenue from it.

**Results of the survey of fish producing centres:**

13. For inspection of working capability of Government fish seed producing centres, 12 seed producing centres were selected from total working fish seed centres in the State.

Out of 12 selected seed centres, 10 centres has hatcheries and remaining two have only fish rearing and nursery facilities. The eight hatcheries were working properly and one hatchery was having technical fault in construction and other was in incomplete stage of construction.

**Incubation tanks/ponds:**

14. The four tanks are necessary to produce spawns by incubating hatchlings. It was observed that out of 10 selected hatcheries, five hatcheries were not having prescribed number of incubation tanks.

**Spawns obtained:**

15. It was expected that one hatchery should produce 500 lakh spawns in a year. Out of 10 hatcheries selected it was observed that only 4 (40 per cent) were producing expected number of spawns.

**Stocking tanks:**

16. Out of 42 stocking ponds/tanks of 10 selected hatcheries in 1993-94 only 88 per cent tanks were in use and out of the total 13.13 hectare waterspread area, 92 per cent waterspread area was used.

17. Of the stocking capacity of the stocking ponds/tanks in use, up to 134 per cent of capacity reproducing fish were stocked.

**Ratio of dead spawns:**

18. It was expected that 12,208 lakh eggs could have been obtained from 12,208 female fish kept in the stocking ponds/tanks. From these eggs, 4780.50 lakh spawns were produced in 1993-94. It means that rate of spawns obtained from eggs was 38.64 per cent only.

**Nursing Ponds (tanks):**

19. The selected 12 seed centres has 490 nursery tanks with 11.32 hectares of waterspread area and of these tanks, 82 per cent ponds/tanks with their 81 per cent waterspread area were actually in use.
20. Even then nursing capacity of 404 nursery ponds/tanks was 684.15 lakh spawns in 1993-94 actually about five times of nursing capacity spawns were nursered.

**Rearing Ponds/tanks:**

21. Out of 12 selected seed producing centres, 10 centres had 159 tanks with 11.59 hectare waterspread area. Remaining two centres had no rearing ponds/tanks because of lack of waterspread area. Of 159 rearing tanks 9 per cent rearing tanks, 9.66 per cent waterspread area was not used for rearing fish.

**Water supply:**

22. Water supply for all the 12 months of the year was available to the 10 centres but for two centres supply for all the 12 months was not available as during summer water level of the source goes down.

   Out of 12 selected centres 58 per cent centres had regular water supply for all the 12 months. 42 per cent centres did not have regular water supply.

   Out of the 12 selected centres, well water supply facility was available to 25 per cent centres.

**Filter Tank:**

23. Out of 12 selected centres 11 centres’ filter tank were functioning and filter tank of one centre was out of order.

**Lab:**

24. Out of 12 selected centres 58 per cent of the centres had laboratory and of these only 25 per cent centres had appointed staff to run the laboratory.

**Fieldmen:**

25. Out of total 58 posts of Fieldman sanctioned for selected for the 12 seed producing centres, 6 posts were vacant.

**Spawns/seeds production:**

26. Comparisons of spawn/seed production before hatcheries were constructed and after construction of hatcheries shows that in 1993-94 production of spawns increased by 426 per cent and that of seed production increased by 609 per cent. Before construction of hatcheries cyprinicus spawns and seed productions ratio was 25.3, 16.8 per cent respectively. In 1993-94 this ratio came down to 3.8, 4.2 per cent. It means that after construction of hatcheries selected centres prefer to produce major carp spawns instead of cyprinicus spawns production.
In comparison with spawns production of 1991-92, in 1992-93 spawns production has increased by 37.8 per cent and in 1993-94 88.7 per cent. Fish seed production also increased by 16.7 and 64.6 per cent respectively for the same years.

**Harvest of Fish seeds:**

27. In 1993-94 two centres harvested fish seed only once and seven centres harvested twice and three centres harvested thrice. In 1993-94 only 26 per cent of seeds was obtained from rearing of 3469.40 lakhs spawns. It means that in the period of nursery spawns 74 per cent spawns died.

**Provision & Expenditure:**

28. Out of Provisions made for the centre for the years 1991-92, 1992-93 and 1993-94 expenditure of the centres was 104, 117 and 109 per cent respectively. In 1991-92 out of 12 centres 92 per cent centres were in loss. In 1992-93 number of centres in loss reduced to 50 per cent and in 1993-94 only 33 per cent centres had suffered loss. It means after 1991-92 number of centres in loss is reducing.

**Results of Survey of Fishing Societies:**

29. All the selected institutes had 503 ponds with their total waterspread area of 32740.56 hectares. Its optimum seed stocking capacity of fish stocking ponds was 1308.13 lakh seeds and only 53 per cent of this capacity seed was purchased by them.

30. According to yearwise classification of rented tanks, percentage of ponds rented for 5 years was 64.4, which was highest, the percentage of Small Irrigation Department and Z.P’s ponds was higher.

31. In the duration from 1991-92 to 1993-94, 1.2 per cent cyprincus seeds and 98.8 per cent of major carp seeds were purchased by fishermen’s Societies. Out of total seeds purchased, 70.9 per cent were in spawn form, 28.0 per cent were in seed form, 0.3 per cent and 0.7 per cent were in fingerling form and half-fingerling forms.

**Cost of Fish Production:**

32. Out of total expenditure for fish production the Fishermen’s Societies highest expenditure was on seed purchased 46.8 per cent and on rent of lakes/ponds 23.5 per cent. Expenditure on Packing, Transport, other expenses and on employees salary was 3.4 per cent, 7.4 per cent, 11.6 per cent and 7.5 per cent respectively.

**Fish Production:**

33. In 1993-94, 5,68,439 kg. fish production was obtained from all the ponds of the institutes. By the sale of fish production institutes had received 10,872 thousand Rupees.
Profits of the institutes:

34. Out of selected institutes 20 per cent institutes were in loss and 80 per cent institutes were in profit. From the point of view of loss and profit according to management of ponds, 66 per cent ponds of Nagar Parishad, 27 per cent ponds of Z.P., 17 per cent ponds of Small Irrigation Department and 10 per cent other ponds were in loss.

Summary:

Domestic fish seed production has increased appreciably after decision has been taken by the State in 1991-92 to build modern hatcheries in the State. Considering the capacity of waterspread area used for fish production, domestic seed production is not sufficient. The fish seed centres in the State have seed producing capacity to produce fish seeds requirement of the State but ratio of spawns obtained from hatchlings is very low. Production of fish seeds as per capacity is not possible. Following are the recommendations to improve the situation.
7. **Recommendation:**

1. Considering the production process of jire and fish seed should be treated as independent unit and Asstt. Fish Office should be appointed for each unit.

2. To provide water supply for all the 12 months to all the centres, there may be well water facility for each centre.

3. Centre’s ponds may be renovated every year.

4. Help of CIFRI type institutions should be taken to find out scientific reasons of mortality of jire and to increase fish seed production.

5. Each centre may have well equipped lab and trained staff may be appointed.

6. One small freezer, telephone and transport facility may be provided to each centre.

7. Prescribed number of fieldmen may be appointed in the centre.

8. Fishermen’s Society should not sell jire/fish seeds and they should sell fingerlings and semi-fingerlings, fishes.

9. Loan facilities may be available to the fishermen societies for purchase of fish seeds, implements and for the repairing of the ponds/lakes.