FISHERIES SCHEMES

6.1 INTRODUCTION

Fisheries sector occupies a very important place in the socio-economic development of the country. It has been recognized as a powerful income and employment generator as it stimulates growth of a number of subsidiary industries, and is a source of cheap and nutritious food, besides being a foreign exchange earner. Most importantly, it is the source of livelihood for a large section of economically backward population of the country. Yet the above said benefits are at risk as the exploitation of natural fish stocks is reaching limits and aquaculture production has not yet fulfilled its potential. In aquaculture production freshwater and brackish water resources are utilized to certain extent. The freshwater aquaculture production is targeting the domestic consumption and brackish water aquaculture contribution is towards major exports to gain foreign exchange.

Tamil Nadu with its 1076 km of coastline (13 per cent of country’s coastline), 1.9 lakh sq. km of Exclusive Economic Zone (EEZ) (9.4 per cent of India’s EEZ) and a continental shelf of about 41,412 sq km is one of the leading producers of both marine and inland fish. At present, about 13,164 mechanised fishing crafts and 62,594 traditional crafts (26,601 vallams and 35,993 catamarans) are engaged in marine fishing. The marine fish catch potential in Tamil Nadu is estimated at 3,89,714 lakh tonnes from the EEZ (3,69,676 lakh tonnes from less than 50 metres depth and 20038 lakh tonnes from the Deep Sea fishing). The inland fisheries sector has about 3.71 lakh ha of waterspread area comprising of reservoirs, major irrigation and long seasonal tanks, short seasonal tanks and ponds, estuaries, backwaters, etc., which are suitable for both capture and culture fisheries. About 5,000 ha of water spread area is being utilised for fresh water aquaculture under the programmes of the Fish Farmers Development Agencies. In Tamil Nadu, the total brackish water area available for aquaculture production is 56,000 ha. of which about 6250 ha. are actually under aquaculture production. At present there are 8 fish seed production centres and 29 fish seed rearing centres located in various places with a capacity to produce 2750 lakhs of early fry. It contributes around 1.1 per cent to total GDP, around 4.7 per cent to GDP from the agriculture sector and over Rs.6000 crore to export earnings. Hence, there is a need to build a common and strategic understanding of the importance of aquaculture for development and of the challenges faced by the sector.
The present study was done with the following objectives

6.2 OBJECTIVES

- Review the past performance of major Fisheries Development Schemes by analysis of secondary data
- To identify the approach, mandate, target and present status of the schemes of fisheries Development especially on Seed production and sperm bank
- To identify the gaps, constraints – SWOC analysis of the schemes
- To get feedback from the stakeholders through interactions and Focus Group Discussions
- To suggest measures for further development which will serve as inputs for twelfth plan document

In the Eleventh Five Year Plan period, the fisheries sector was driven with following objectives:

- To increase fish production by encouraging fisherman to exploit underutilized marine fishery resources in order to reduce fishing pressure in inshore areas.
- To augment aquatic resource production in inshore areas through conservation measures, stock enhancement, establishment of artificial reefs, etc., along the coast.
- To continuously improve the knowledge and understanding of fisheries resources, their conservation, management and development and especially promote sustainable eco-friendly coastal aquaculture.
- To improve and strengthen infrastructure facilities for fish landing and marketing.
- To augment inland fish production in reservoirs, panchayat tanks and ponds.
- To uplift the socio-economic conditions of fisherfolk through welfare measures and by generating employment opportunities and by ensuring their safety of the fisherfolk.
- To provide hygienic and safe fish and fish products to consumers.

The outcome of above said objectives could be inferred from the total production trend and likewise in respective sub sectors. The performance of the fisheries sector is discussed below. The schemes implemented to achieve this production are detailed in Annexure I. The structure of fish production in TamilNadu is given in the table below. The inland fish production has a increasing trend in the period from 2005-06 to 2009-10 like wise in marine fish production.
The change in inland fish production is shown in the diagrams below.
### Structure of fish production in Tamil Nadu ('000 tonnes)

<table>
<thead>
<tr>
<th>Year</th>
<th>Marine</th>
<th>Inland</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>372.42</td>
<td>110.13</td>
<td>482.53</td>
</tr>
<tr>
<td>2001-02</td>
<td>373.86</td>
<td>113.69</td>
<td>487.55</td>
</tr>
<tr>
<td>2002-03</td>
<td>379.21</td>
<td>102.21</td>
<td>481.43</td>
</tr>
<tr>
<td>2003-04</td>
<td>381.14</td>
<td>77.3</td>
<td>458.45</td>
</tr>
<tr>
<td>2004-05</td>
<td>307.69</td>
<td>86.85</td>
<td>394.54</td>
</tr>
<tr>
<td>2005-06</td>
<td>389.71</td>
<td>155.94</td>
<td>545.65</td>
</tr>
<tr>
<td>2006-07</td>
<td>387.25</td>
<td>160.17</td>
<td>547.42</td>
</tr>
<tr>
<td>2007-08</td>
<td>393.27</td>
<td>164.50</td>
<td>557.77</td>
</tr>
<tr>
<td>2008-09</td>
<td>365.28</td>
<td>166.45</td>
<td>534.16</td>
</tr>
<tr>
<td>2009-10</td>
<td>401.56</td>
<td>169.79</td>
<td>571.34</td>
</tr>
</tbody>
</table>

Source: Director of Fisheries, Government of Tamil Nadu

The trend in total fish production is shown in the following figure.
The trend in marine fish production in Tamil Nadu is depicted in the diagram given below.

![Trend in Marine Fish Production In Tamil Nadu](image1)

The trend in inland fish production in Tamil Nadu shown in the following diagram reveals that there is a major shift in inland fish production and a positive trend in the eleventh five year plan period.

![Trend in Inland Production in Tamil Nadu](image2)

The growth rate of fish production in Tamil Nadu during different periods are given in the table below. The inland fish production during the period 2005-06 to 2009-10 has registered a positive growth and a major shift compared to other sectors.
<table>
<thead>
<tr>
<th>Period</th>
<th>Marine</th>
<th>Inland</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06 to 2009-10</td>
<td>0.01502</td>
<td>2.108331</td>
<td>0.677208</td>
</tr>
<tr>
<td>2000-01 to 2009-10</td>
<td>0.596648</td>
<td>7.358099</td>
<td>2.299911</td>
</tr>
</tbody>
</table>

6.3 SCHEMES FOR FISHERIES DEVELOPMENT ESPECIALLY ON SEED PRODUCTION AND SPERM BANK

The inland fisheries schemes have contributed for the increasing growth rate of inland fish production in Tamil Nadu. The details of the schemes are presented below.

Inland Fisheries Development Programmes in Tamil Nadu

In connection with the inland fisheries development in Tamil Nadu, the following schemes were implemented during eleventh five year plan period (Source: Director of Fisheries, Government of Tamil Nadu, Chennai).

- Assistance to inland fish farmers through Fish Farmers Development Agencies (Central and State Scheme)
- National Agriculture Development Programme (NADP) Scheme
- National Fisheries Development Board Scheme (NFDB)
- Tamil Nadu Irrigated Agriculture Modernisation and Water bodies Restoration and Management scheme (IAMWARM)

The details about schemes are given in Annexure I. Though the above mentioned schemes have collectively contributed for the inland fisheries development in Tamil Nadu, especially fish seed production and sperm bank schemes (vide G.O.M.S.No.129 dtd 19.3.2008 Agriculture Department, State Government of Tamil Nadu) are recorded below.

6.4 IMPLEMENTING AGENCIES OF VARIOUS INLAND FISHERIES DEVELOPMENT PROGRAMMES

- Department of Fisheries, Tamil Nadu
- Tamil Nadu Veterinary and Animal Sciences University (TANUVAS)
6.5 FUNDING AGENCIES OF VARIOUS FISHERIES DEVELOPMENT PROGRAMMES

- Government of India
- Government of Tamil Nadu

6.6 FISH SEED PRODUCTION AND REARING

The scheme is implemented by State Fisheries Department under NADP.

To enhance the inland fish production enough seed supply is necessary. In order to increase the fish seed production through private sector and attain self sufficiency in fish production the subsidy was provided under NADP. The details of the scheme are provided in the Annexure I. The details of amount disbursed and units established under the seed production scheme are furnished in the tables below:

Details of amount disbursed and units established under the seed production scheme

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of the District</th>
<th>No. of Seed Production units</th>
<th>Subsidy released (Rs. in lakhs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thanjavur</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Thiruvarur</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>Madurai</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Tirunelveli</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Director of Fisheries, Government of Tamil Nadu, Chennai

Details of amount disbursed and units established under the seed rearing scheme

<table>
<thead>
<tr>
<th>Name of the District</th>
<th>No. of Seed rearing units 2008-09</th>
<th>Subsidy released (Rs. in lakhs.)</th>
<th>No. of Seed rearing units 2009-10</th>
<th>Subsidy released (Rs. in lakhs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kancheepuram</td>
<td>1</td>
<td>1.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Thiruvallur</td>
<td>1</td>
<td>1.5</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Villupuram</td>
<td>2</td>
<td>3</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Thanjavur</td>
<td>8</td>
<td>12</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Thiruvarur</td>
<td>7</td>
<td>10.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trichy</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Town</td>
<td>Value 1</td>
<td>Value 2</td>
<td>Value 3</td>
<td>Value 4</td>
</tr>
<tr>
<td>------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Tirunelveli</td>
<td>3</td>
<td>4.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Madurai</td>
<td>3</td>
<td>4.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cuddalore</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Thiruvannamalai</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Erode</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Pudukottai</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Perambalur</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Ariyalur</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Virudhunagar</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Theni</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Dindigul</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Sivagangai</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1.5</td>
</tr>
</tbody>
</table>

*Source: Director of Fisheries, Government of Tamil Nadu, Chennai*

### 6.6.1 SWOC Analysis

#### Strengths

- Suitable for flood prone low-lying areas
- Less labour requirement compared to agriculture
- Year round production
- Existing farms under exploited – low input use; low productivity
- Scope for expansion of area under aquaculture
- Scope for increasing production

#### Weaknesses

- Many water bodies received water only during north-east monsoon.
- Non-availability of adequate infrastructure facilities for seed production and rearing.
- Non-availability of adequate quality brood stock
Lack of certification for quality fish seed as similar in crops.

Fish culture in natural and small water systems is being practiced by stock and harvest method and not by scientific culture method.

Lack of post-harvest facilities like cold storage

Low fish productivity of tanks.

Non-availability of stock size quality fish seeds throughout the year.

Insufficient area for fish seed production

Under-utilization of short seasonal tanks and absence of dead storage level in the reservoirs affects the natural fish stock.

Lack of regional soil, water, feed and disease diagnosis laboratories.

**Opportunities**

- effective utilization of short seasonal tanks and ponds in the inland water ways for fish production
- Establishment of large scale brood banks, seed production and supply centres.

**Challenges**

- frequent monsoon failures, cyclones and occurrence of tsunami are the natural hazards that pose major threats to the growth of the fishery industry as a whole. Relief measures may be provided or insurance schemes may be introduced.
- Highest interest rate compared to agriculture for bank loan.
- Inadequate infrastructure for seed production discourages the farmers in taking up inland fish culture.
- Inadequacy of data on fish and seed production in Tamil Nadu. The major contribution by private sector has not been recorded.

**6.7 DEVELOPMENT OF SPERM BANK FOR PRODUCTION OF QUALITY SEEDS**

The scheme is implemented by Fisheries College and Research Institute, Thoothukkudi.

**6.7.7 Objectives of the Scheme**

- To establish a Sperm Bank catering to the needs of the hatchery owners.
- To train the hatchery operators for developing good brood stock for the carps.
To supply cryopreserved spermatozoa to the fish hatcheries in the state to produce good quality seeds for enhancing production from the culture ponds.

6.7.2 Status of the scheme:

Breeder farms located in Manimuthar, Bhavanisagar, Mettur, Thanjavur, Ambas Laudram, Vellanadu, Swamimalai, Thittai, Vaduvur, Sathyamangalam and Dindugul were visited and milt was collected from the male brood fishes of Indian Major Carps, Exotic carps and other species such as Sea Bass, Gold fish, Catfish and Cobia.

**Abstract of milt collection done from 2009 to 2012**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Parameter</th>
<th>Numbers</th>
<th>Straws</th>
<th>Vials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>No. of breeder farms visited</td>
<td>22 (Government - 7 and Private - 15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Breeders used for collection</td>
<td>Numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Catla</td>
<td>45</td>
<td>380</td>
<td>110</td>
</tr>
<tr>
<td>4.</td>
<td>Rohu</td>
<td>68</td>
<td>270</td>
<td>13</td>
</tr>
<tr>
<td>5.</td>
<td>Mrigal</td>
<td>42</td>
<td>270</td>
<td>6</td>
</tr>
<tr>
<td>6.</td>
<td>Common Carp</td>
<td>89</td>
<td>240</td>
<td>8</td>
</tr>
<tr>
<td>7.</td>
<td>Grass Carp</td>
<td>5</td>
<td>150</td>
<td>1</td>
</tr>
<tr>
<td>8.</td>
<td>Silver Carp</td>
<td>3</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>9.</td>
<td>Big head Carp</td>
<td>2</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>10.</td>
<td><em>Labeo fimbriatus</em> (Sall Kendai)</td>
<td>4</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>11.</td>
<td><em>Labeo calbasu</em></td>
<td>4</td>
<td>---</td>
<td>3</td>
</tr>
<tr>
<td>12.</td>
<td>Lates calcarifer</td>
<td>1</td>
<td>----</td>
<td>2</td>
</tr>
<tr>
<td>13.</td>
<td>Catfish (<em>Clarias gariepinus</em>)</td>
<td>3</td>
<td>----</td>
<td>3</td>
</tr>
<tr>
<td>14.</td>
<td><em>Carassius auratus</em> (Gold fish)</td>
<td>3</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td>15.</td>
<td>Total</td>
<td>269</td>
<td>1340</td>
<td>143</td>
</tr>
</tbody>
</table>

Source: Monthly Progress Reports of the Principal Investigator of the scheme

Protocols for the cryopreservation of sperm from different species of carps and other fishes were standardized after studying the quality parameters of the spermatozoa of different regions during different seasons. These studies were under documentation.

Artificial Fertilization (AF) was done in Bhavanisagar, Mettur, Manimuthar, Thanjavur and Thoothukudi and seeds produced with 58 per cent success rate in the attempts. Artificial Fertilization was successfully done with the cryopreserved spermatozoa of Catla, Rohu, Mrigal, Common Carp and Gold fish. Artificial Fertilization of other species was also tried.
Quality seeds of Rohu (900 Nos) and Mrigal (1600 Nos) were produced at Bhanvanisagar Dam using cryopreserved milt of Rohu (Mettur) and Mrigal (Thoothukudi). Quality seeds of Rohu (12600 Nos) and Catla (1400 Nos) were produced at Manimuthar Dam using cryopreserved milt of Rohu and Catla. Another 1000 fry of Rohu were produced at Thanjavur. Artificial Fertilization was done for *L. fimbriatus* also at Manimuthar with limited success. Artificial Fertilization was done for Common Carp at Fisheries College and Research Institute (FCRI) and 7000 seeds were produced and stocked in the ponds. In the successive attempts of Artificial Fertilization with Common Carp in FCRI, 1.75 lakhs hatchlings were produced and sold to the farmers.

Three Technical Training were conducted in the Sperm Bank during 16th to 18th Sept. 2009, 13th and 14th Sept. 2011 and 1st and 2nd March 2012 for Govt and Private hatchery operators. Totally, 21 State Fisheries Personnel and 12 private hatchery operators were given hands-on training at FCRI, Thoothukudi in the collection, processing and cryopreservation of milt from different species of carps and artificial fertilization with the cryopreserved spermatozoa. In addition to the above training two demonstrations were conducted in the field at Thanjavur for on-the spot freezing and AF with cryopreserved spermatozoa. Four private hatchery operators in Thanjavur area attended the demonstration training in the SSM Farm, Swamimalai on 25.08.2010.

Under the NADP Scheme, the Cryolab available in the Department of Aquaculture was further strengthened with Programmable Controlled Rate Freezer (KRYO 560 – 16), a High Resolution Microscope with image capturing, Cryocans and Cryovessel. An in-vitro fertilization facility was also created in FCRI, Thoothukudi for carrying out AF trials with cryopreserved spermatozoa and to assess the quality of the cryopreserved spermatozoa.

Cryocans and other materials required for field level collection were procured and supplied to the 5 breeding centres of the State Fisheries Department (Mettur, Bavahanisagar, Manimuthar, Karanthai and Sathanoor) identified for the production of quality seeds by the State Fisheries Department.

The entire process of collection, cryopreservation and Artificial Fertilization in fishes with cryopreserved spermatozoa was documented as a video film.

One Technical Manual on Cryopreservation and Artificial Fertilization in fishes was produced and Five technical brochures on how to use cryopreserved milt were prepared and distributed to all the hatchery operators and also fish farmers.
Two M.F.Sc. dissertations and Three M.Sc. Project work were done in the Cryolaboratory. One more M.F.Sc. dissertation is underway. Five training classes were conducted in the Cryolaboratory for the trainees under various training schemes. Six Television programmes were given on the Cryolaboratory, sperm collection and Cryopreservation.

6.7.3 SWOC Analysis

Strengths

- The ill effects of inbreeding among the carps can be totally eradicated by the use of cryopreserved spermatozoa.
- Cryopreserved spermatozoa of the genetically superior males will help in the production of quality seeds that can enhance the production from the ponds.
- These quality seeds will also lead to the production of quality brooders from which high seed yield can be achieved leading to self sufficiency in the seed production in the state.
- The sperm bank can preserve and store spermatozoa of important ornamental fishes that can help in the production of fancy varieties.
- As on date about 400 straws and 35 vials of quality gametes are under storage that can be supplied to fish hatchery operators. Hatchery operators can get the cryopreserved spermatozoa and use them for the seed production in their hatcheries.
- The created facilities can be effectively used for the standardization of protocols for further cryopreservation and also production of hybrids that can lead to the increase in the production.

Weaknesses

- Non-availability of adequate infrastructure facilities for the collection and cryopreservation in many brooder farms.
- Seasonal availability of sperm from the brooders
- Lack of awareness among the seed producers about cryopreservation technique and use of cryopreserved spermatozoa.
- Non-availability of adequate quality brood stock in the farms and difficulty in the collection from wild brooders.
- Lack of certification for quality fish seed as similar in crops.

Opportunities

- The sperm bank can lead to the further studies on the gene mapping and production of quality breeds of fishes for increasing production and profit.
Protection of endangered species for the population enhancement through AF.

Production of more hybrids for production enhancement,

Storage of endangered species in freshwater and marine waters will help in the protection of the species from extinction and artificial propagation

Challenges

- Creation of cryopreservation facility and milt collection centers in potential places of the state and making it used by the seed producers.
- Training to the hatchery operators for the application of cryopreserved spermatozoa

6.8 RESPONSE GROUP DISCUSSION

The officials from Tamil Nadu Veterinary and Animal Sciences University and Assistant Director (Inland), Thiruvarur from State Fisheries Department were present for the Response Group Discussion held in Maanal Fish Farm, Orathanadu, Thanjavur District on 17.03.2012. Forty farmers who were the beneficiaries under seed production and rearing scheme and the seed producers who tried trials with cryopreserved sperm participated in the discussion. Major outcome of the discussion were:

- Fisheries, an allied activity of agriculture should be treated on par with agriculture for providing government schemes and subsidy programmes for the benefit of small and marginal fish farmers.
- Development of quality brood stock by establishing brood banks in potential places as a common facility.
- Certification authority may be declared for testing the quality of fish seeds as similar in agriculture. Certified seeds alone should be allowed for stocking by the farmers.
- Authorities should regulate the fish seed price produced by hatcheries.
- The private seed producers may be considered for supplying fish seed for reservoirs stocking by State Fisheries Department to avoid supply of fish seeds from other states by middlemen.
- While handing over public water bodies for fish culture existing farmers registered under Fresh water Fish Farmers Development Agency should be given preference.
- While providing input subsidy the seed producers may be provided with energy subsidy for purchasing generator (10KV -100KV) and diesel (500 lts/month) for operation.
Insurance policies may be developed to suit the needs of the fish farming activity to compensate the loss of small and marginal farmers by natural hazards and disasters.

Minimum support price for the produced fish may be fixed by the authorities.

Extension services provided may be linked with Information and Communication Technology for widespread reach among the farming community.

Similar to Artificial Insemination in Animal Husbandry, bare foot extension agents may be trained in cryopreservation of fish milt and fish breeding using the preserved milt.

Quality spermatozoa can be preserved and supplied to the farmers for large scale application of the technology. Further fast growing species can be developed for the culture in the field.

Post harvest transport facilities and storages may be created for reducing the post harvest loss.

Hygienic fish markets may be created with state-of-art facility.

6.9 RECOMMENDATIONS

The data available in inland fisheries sector has to be strengthened by utilizing the remote sensing maps and GPS facilities for effective planning and monitoring of the sector.

Initially Brood bank may be established in nearby farming centres of Tamil Nadu.

Seed rearing centers may be promoted with subsidy to increase the supply of stunted seed, which will result in increased fish production and productivity.

Feed mills may be established to prepare feed with optimum quality with locally available raw materials.

Live fish transport facilities may be created at farming centres.

The bank loan interest rate may be fixed as similar to agriculture as fisheries is an allied activity of agriculture.
RESPONSE GROUP DISCUSSION - FISHERIES

Address by Principal Investigator
Dr. K.N. Selvakumar

Feed Back by NADP beneficiary Mr. Sivakumar

Feed Back by Mr. Murugesan

Feed Back by Mr. Fredrick Nicson

Feed Back by Mr. M. Balayan

Feed Back by Mr. R. Kathiresan
RESPONSE GROUP DISCUSSION - FISHERIES

Feedback by Mr. Sirmasth

Feedback by Mr. Pugalenthi

Address by Sperm Bank Project Principal Investigator Dr. J. Stephen Sampath Kumar

Address by Dr. M. Venkatasami, Director of Fisheries Research & Extension, TANUVAS

Vote of Thanks by Co-Principal Investigator Mr. V. Senthilkumar

Compilation by Co-Principal Investigator Dr. A. Serma Saravana Pandian
Annexure I

A. Assistance to inland fish farmers through Fish Farmers Development Agencies (Central & State Scheme)

**Construction of New Ponds/Tanks**

To construct a new one hectare fish pond / tank the estimated cost is Rs.3.00 lakh / ha in which 20 per cent subsidy to a maximum of Rs.60,000/- shall be provided. For ST/SC fish farmers 25 per cent subsidy, a maximum of Rs. Rs.75,000/- shall be paid.

**a) Reclamation – Renovation of Tanks / Ponds:**

To reclamate and renovate the existing fish ponds / Tanks out of an estimate cost of Rs.75,000/- per ha 20 per cent subsidy to a maximum of Rs.15,000/ha,shall be provided. For SC/ST fish farmers the subsidy shall be 25 per cent, subject to a maximum of Rs.18,750/-per ha.

**b) Fin Fish Culture - cost of inputs**

For Finfish culture the estimated cost is Rs.50,000/ha. Subsidy shall be 20 per cent subject to a maximum of Rs.10,000/ha. For SC/ST fish farmers the subsidy shall be 25 per cent, subject to a maximum of Rs.12,500/ ha.

**c) Freshwater prawn/ Cold water fish culture:**

Estimated cost is Rs.1.80 lakh/ha subsidy shall be 20 per cent to a maximum of Rs.36,000/-. For SC/ST fish farmers, 25 per cent subsidy to a maximum of Rs.45,000/- per ha.

**d) Freshwater Fish Seed Hatchery**

For the construction of a hatchery with a capacity of 10 million fish fry production, the estimated cost is Rs.12.00 lakh. Subsidy shall be 10 per cent to a maximum of Rs.1.20 lakh. For hill states the subsidy is 10 per cent to a maximum of Rs.1.60 lakh to entrepreneurs at a unit cost of Rs. 16.00 lakhs.

**e) Fish Feed Units**

Under this scheme, for the installation of fish feed unit with a capacity of 1.20 quintal feed per day at the total cost of Rs.7.50 lakh 20 per cent subsidy to a maximum of Rs.1.50 lakh shall be provided to the entrepreneurs.

**f) Establishment of Trout and freshwater prawn seed hatchery**

The estimated cost is Rs.12.00 lakh for a small hatchery with the production capacity of 5-10 million prawn seed / Cold water fish seed per year. 20 per cent subsidy shall be provided to a maximum of Rs.2.40 lakh as one time grant to entrepreneurs.
g. Setting up of Integrated units, including hatcheries for ornamental fishes

Unit cost is Rs. 15.00 lakh which includes hatchery of 5 to 10 million (fry) production capacity, 10 per cent subsidy to a maximum of Rs. 1.50 lakhs shall be provided to all fish farmers.

B. National Agriculture Development Programme (NADP)

1) Establishment of Fish seed Production Centre (Hatcheries)
   - Area required - 2 Ha
   - Production Capacity - 8-10 Million early fry / annum
   - Estimate cost - Rs. 10.00 Lakh
   - Subsidy (50 per cent) - Rs. 5.00 Lakh

2) Establishment of Fish seed Rearing Centres
   - Area required - 1 Ha
   - Production Capacity - 5 Million advanced fingerlings / annum
   - Estimate cost - Rs. 3.00 Lakh
   - Subsidy (50 per cent) - Rs. 1.50 Lakh

3) Training to village forest council members in fish culture and provide nets and coracle per unit and stocking of fish seeds in check dam/ percolation ponds (1 unit = 30 members)

4) Capacity building of 100 fish farmers and 100 technical staff of the department per year

C. National Fisheries Development Board Scheme. (NFDB)

1. To reclamate /renovate the existing fish farms for intensive fish culture out of an estimated cost of Rs.75,000/- per ha. 20 per cent subsidy to a maximum of Rs.15,000/- For SC/ST, 25 per cent subsidy, subject to a maximum of Rs.18,750/- per ha.

2. To construct new fish farms for intensive fish culture at an estimated cost of Rs.3.00 Lakhs per ha. 20 per cent subsidy to a maximum of Rs.60,000/- . For SC/ST, 25 per cent subsidy to a maximum of Rs.75,000 /- per ha..

3. For establishment of fish seed production hatchery with a production capacity of 7 to 8 million fry per year at an estimated cost of Rs.12.00 lakh, 20 per cent subsidy subject to maximum of Rs.2.40 lakhs.
4. For construction of new fish seed rearing centre in an area of 2.5 acres with a production capacity of 2.5 lakhs fingerlings at an estimated cost of Rs.3,00,000 /- 20 per cent subsidy, to a maximum of Rs.60,000/- For SC/ST, subsidy of 25 per cent to a maximum of Rs.75,000 /-.

D. Tamil Nadu Irrigated Agriculture Modernisation and Water bodies restoration and Management scheme (IAMWARM)

1. Aquaculture in Farm ponds:
   (i) Farm ponds of 0.1 hectare are developed by Agriculture Engineering Department at an estimated cost of Rs.40,000/- (Beneficiary contribution - Rs.5000/- and AED – Rs.35,000/-) in the farmers field to promote fish culture.
   (ii) One time input cost for undertaking fish culture @ Rs.15000/- (Seed & Feed)

2. Construction of Fish seed bank:
   a. Masonary Fish Seed Bank
      (i) Fish seed banks of 600 sq.m area are developed at an estimated cost of Rs.14.50 lakhs to promote fish seed production.
      (ii) Input cost for undertaking fish seed production @ Rs.58,000/- per year (seed, feed, electricity charges, labour wages) is provided for two years.
   b. Earthen Fish Seed Bank
      (i) A total cost of Rs.4.00 lakhs is allotted for this activity in which Rs.2.20 lakhs is capital cost and Rs.0.90 lakh is input cost per annum for two years as 100 per cent subsidy.

3. Fish Seed rearing in cages
   (i) Fish seed rearing in cages and inputs such as fish seed and feed are procured and supplied to the farmers as 100 per cent subsidy.
   (ii) The cost of one unit is Rs.30,000 which is provided as 100 per cent subsidy for one time.

4. Supply of Fishing Implements
   (i) For effective harvesting of fishes in the sub-basin tanks, fishing implements such as coracles, gillnets, dragnets shall be provided to inland Fishermen Co-operative societies with 90 per cent subsidy. 
      FRP Coracle - Rs.9000 with Gill Net - Rs.6000 (or) Drag Net - Rs.20000
5. Construction of Ornamental Fish Culture Unit

For the benefit of farmers in the sub-basin areas, ornamental fish culture units are constructed and given at 100 per cent subsidy (Rs.2.00 lakhs), in an area of 2500 sq.ft.

6. Fish Kiosk (Size - 3.60m L X 3.00m B x 3.00m H)

Kiosk with fish preserving facilities will be provided at a unit cost Rs.4.00 lakh (100 per cent subsidy) to fishermen Cooperative Society members or Self Help Group. The Kiosk will have Freezer box, Electronic weighing balance, PVC Crates, Live fish containers, Electric portable motor with accessories, Stainless steel sink & Hygienic hand gloves.