Eco-hatchery for Carp Seed Production and Extension Services

Objectives:

- To breed commonly cultivated six species of fish viz., Catla (Catla catla) Rohu (Labeo rohita), Mrigal (Cirrhinus mrigala) Silver carp (Hypothalmichthys molitrix), Grass carp (Ctenopharyngodon idella) and Common carp (Cyprinus carpio).
- To facilitate quality production of fish seed of culturable varieties.
- To produce fish seed in those areas where natural collection of fish seed is not possible and arrange for distribution/marketing.

2. Location and Area of Operation:

The project may be located in high land areas which are near to areas having concentration of fish farmers.

3. Project Components:

Breeding pool, hatching pool, overhead tank, STW, pumpset, generator, guardshed.

4. Project Cost:

Installed Capacity:
Swimming pool - 1 no. 8m diameter 150-200 kg of brood fish.
Hatching pool - 3 nos. 3m diameter 450 trs of fertilised eggs.

A. Capital Cost:

<table>
<thead>
<tr>
<th>Item Cost (Rs.)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Item Cost (Rs.)</td>
<td></td>
</tr>
<tr>
<td>Renovation of tank of 2 ha water spread area / circular breeding pool 105,000 and hatching pools</td>
<td></td>
</tr>
<tr>
<td>Overhead tank of 5000 gallons capacity 50,000</td>
<td></td>
</tr>
<tr>
<td>Shallow tube well/pumpset/guard shed 120,000</td>
<td></td>
</tr>
<tr>
<td>Brood stock-5 tonnes 150,000</td>
<td></td>
</tr>
<tr>
<td>Contingent expenses for nets, equipments hapas etc. 30,000</td>
<td></td>
</tr>
<tr>
<td>Total 455,000</td>
<td></td>
</tr>
</tbody>
</table>

B. Recurring Cost

I. Cultural cost for 3 preparatory months
   i. Feeding of brood stock 40,500
   ii. Salary of 2 guards-cum-labour @ Rs. 450/pm/Netting 3,300
Total 43,800

II. Cultural cost for five operating months
   i. Feeding of brood fish 33,750
   ii. Wages of 2 guards/labour and operation of electricity charges 44,250
   iii. Misc. cost for pituitary glands, equipments, electricity etc. 19,250

Total 97,250

III. Cultural cost for 4 post-operatory months
   i. Manuring, limiting and fertilising, wages for guards and netting, etc., 7,900

Total A + B = 603,850

5. Margin (10%) : Rs. 0.60 lakh

6. Bank Loan : Rs. 5.43 lakhs

7. Rate of Interest : 15% p.a.

8. Repayment period : 5 years which includes a grace period of one year.

9. Income Parameters :

   Sale of major & exotic carp spawn for five operative months @ 5 runs per Rs. 4,16,000 month (1 run=sale of 51.2 lakhs of major carp @ Rs. 200/lakh + sale of 12.8 lakhs of exotic carp spawn @ Rs. 500/lakh) i.e., (10,240 + 6400)*5*5

10. Economics of the Project:

   - Net Present Worth - Rs. 2.32 lakhs
   - Benefit Cost Ratio - 1.24 : 1
   - Internal Rate of Return - 40%

11. Other Information:

   Process :
   By resorting to induced breeding by administering pituitary gland extract injection.
Steps:

i. Collection and storage of pituitary glands:
Pituitary glands are collected from ripe fish and preserved in absolute alcohol/acetone or by quick freezing.

ii. Selection of breeders:
Breeders are identified and selected based on their external characteristics such as weight, quality, etc...

iii. Maintenance of breeders:
Breeders are maintained and stocked sex wise in separate ponds one to two months prior to breeding.

iv. Dosage and administration of injection:
Breeders are injected with different doses of pituitary gland extract depending on body weight.

v. Spawning:
In cement ponds diagonally fitted with water inlet pipes females and males are released for spawning and fertilising the eggs.

vi. Incubation:
The fertilised eggs are led to incubation pools for hatching and the hatchlings remain in the incubation pond for three days.

vii. Rearing of Seeds:
Seeds are reared in earthen ponds and feed of finely powdered groundnut/mustard cake is administered.

viii. Harvesting:
Fries grow reasonably big (25-30 mm) in two weeks and are harvested with drag net.

ix. Feed Requirement:
Mixture of finely powdered groundnut/mustard oil cake/rice bran in equal proportion by weight as under:
• 1 - 5 days - feeding four times the total weight of the spawns
• 6 - 12 days - feeding eight times the total weight of the spawns
• 13 - 14 days - no feeding

x. Few tips:
• The location of a Hatchery should ideally be on a sloping high land for economical construction. If sloping land is available the floor level of the spawn collection tank should be adjusted to the ground level for draining out water by gravity.
• The level of eggs transfer outlet located at the centre of spawning tank should be about 10 cm. above the level of central overflow pipe at the top of the hatching tank. This will enable complete transfer of eggs from the spawning tank to use outside the tanks.
• Overflowing water from the hatching tank should not be passed on to the spawn collection tanks but should be put to use outside the tanks.
• Separate fresh-water supply lines should be installed from the overheads water to k to each tank i.e. spawning tank, hatching tanks and spawn collection tanks in order to ensure independent working of each.
• Water spraying arrangements should be provided for aeration and oxygenation in the three tanks.
- Eggs transfer pipe should discharge the water along with eggs into the hatching tank in between the two walls of the hatching tank to avoid damage of eggs.
- The walls of the spawning tanks should be provided with water inlet pipes installed in a diagonal position to create a circular water flow during the spawning period.
- Where water flow is insufficient for circulation, multiple-chambered hatching pools with paddle wheels for circulation may be constructed.

**Note:**

- Margin of 10% is assumed, but the actual margin will be as per the discretion of the banks.
- Interest rate of 15% is assumed for both investment and working capital. However, the actual rate will be as per banks' discretion.
- Similarly, the other economic / financial parameters such as the repayment period, DSCR, IRR, etc., may also vary depending upon the margin, interest rate etc., taken into account by the bank.