MBM-CARI-XIII

Small scale seed production and nursery rearing of Indian major carps

Rationale

Fishery is the fastest growing food producing sector in the world. In India this sector has grown at the rate of about 4.1% in last fifty years. The fresh water sector has increased by 16.2 times during this period and this is mainly due to the standardization and easy to adopt seed production technology. Fish hatcheries have been established in all parts of India and producing seeds to satisfy local demand as well as supplying to neighbouring states. Because of easy to operate and lucrative returns, it is becoming an important business opportunities for the people. Establishment of a fish hatchery can not only generate self employment avenues but also will trigger development of many subsidiary industries.

Freshwater fishery resources and scope for development of inland fisheries in these Inlands is limited in this island states. This is mainly due to absence of major rivers or large natural water bodies. However, fresh water fish culture is popular in Andaman. There is heavy demand for IMC fishes and the average price of IMC is always above Rs.140 per kg. Because of high rate of annual rainfall many farmers have constructed ponds for conservation of rain water and use either for either agricultural purpose or for water source for human or animal use. Recently Department of Agriculture constructed many ponds for the farmers where fish culture can be carried out. Total demand of fish seed for Andaman is around 10 lakh fingerling. However, at present there is no well established private fish seed producing farm in South Andaman that can produce and supply fish seeds are not only costly but also creating vulnerable situation of disease outbreak to the indigenous species of this island. The main objective of this project is to establish a small scale fish breeding unit through hapa breeding techniques to produce quality fish seed. This will not only help to increase freshwater fish production in these islands but will also be as an avenue of self employment.

Technology to be adopted for the:

(i) Development of small hatchery (hapa breeding)

- Proper design for spawning and incubation facilities will be adopted.
- Egg and spawn collection and transportation facilities will be made.

(ii) Nursery Management

- Construction of brood stock and nursery pond.

Technical Details

Fishes generally mature when they become 2 + years of old. In the brood stock pond healthy yearling can be procured and regular feeding and management techniques should be taken up till they mature. The breeding season starts in Andaman from the month of May to August. Special care has to be taken from January onwards as from this season development of eggs is in progress. If the farmers can procure brooders itself in the months of March-April breeding can starts in the same year itself after through acclimatization. Mature male and female can be identified through secondary sexual characteristic or by gently pressing the belly of the fishes. Fully ripe male freely ooze milt and female with swollen abdomen and pinkish genital opening. The carp should be selected with body weight of 2-5 kg for breeding. In small scale hapa breeding operation breeding and incubation will be carried out in the brood stock pond itself. The breeding operation last for about 3½ months. During the whole season, two-three times nursery management can be repeated. Note that from second year on wards more that two times nursery management can be practiced and production of the last one can be raised in the nursery pond itself to because fingerling or yearling. These fingerling and yearling will give an additional income to the farmer.

Flow chart, time schedule

Pond preparation	20 days
↓	
Collection of yearling & stocking in the brood stock pond	2-3 days
↓	
Feeding & monitoring growth till fish matures	2 years
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Spawning and incubation	May – August
↓	
Nursery Rearing	June-July, July-Aug
↓	
Selling of fry	2 sets of fry production

*Total investment in 16 months : Rs. 140000

AREA

Area	0.2 ha	Number/Volume (in m^3)	Area (in m^2)
Brooders tank	50 m x 20 m of 2.5 m depth	1 (2500m^3)	1000
Nursery pond	10 m x 20 m x 1 m depth	4 (800 m^3)	800
Free space for breeding operation	10 m x 5 m	1	50
Packing shed	10 m x 5 m	1	50
Feed storage unit, office room etc		1	100
Total	-	-	2000

Input Required

S.No.	Item	Source of Availability
1.	Breeding hapa (2mx1mx1m)	Can be made by purchasing cloth from market and tailoring
2.	Incubation hapa set (2mx1mx1m)	- do -
3.	Conditioning hapa (2mx2mx1m)	- do -
4.	Spring balance	Market
5.	Hand net	Can be made by purchasing cloth from market and tailoring
6.	Ovaprim hormone	Procured through order
7.	Drag net	Market
8.	Potassium permanganate	Chemical shop
9.	Brooders (yearling)	Farmer's pond
10.	Feed	Market
11.	Lime	Market
12.	Cowdung	Farmer
13.	Urea and SSP	Fertilizer shop

Investments:

A. Fixed Cost:

Sl. No.	Item	No. Required	Rate (Rs.)	Total (Rs.)
1.	*Brood stock and Nursery pond construction (using Hitachi)	3300 m^3	Rs. 1000/ hour (20 m^3/hr)	165,000
2.	Breeding hapa	5	400	2,000
3.	Incubation hapa set	20	800	16,000
4.	Conditioning hapa	5	600	3,000
5.	Spring balance	1	2000	2,000
6.	Hand net	2	200	400
7.	Drag net	1	8,000	8,000
8.	Measuring cylinder, eyes glass syringe	-	-	600
	Total	-	-	197,000

* Cost of pond construction is a one time investment.

B. Variable cost :

Sl. No.	Item	No. Required	Rate (Rs.)	Total (Rs.)
1.	Brooders pond preparation		10,000	10,000
2.	Brooders (yearling)	80	5	400
3.	Feed for (2 years)	1000	12 / kg	12,000
4.	Potassium permanganate	500 g	500/ 500 g	500
5.	Ovaprim	3	500	1,500
6.	Nursery pond preparation	3 x two times	6000	16,000
7.	Labour (3 months)	2	100	18,000
8.	Miscellaneous	-	-	1,600
	Total	-	-	60,000

Total cost :

Sl. No.	Particulars	Amount (Rs.)
A.	Fixed cost	197,000.00
B.	Variable cost	60,000.00
	Total (A + B)	257,000.00

Gross Returns

Particulars	Fry produced	Rate of fry (Rs.)	Total expected revenue (Rs.)
Nursery pond	240000	1 per piece	2,40,000

Net Returns from small scale hatchery unit (Rs.)

Particulars	Gross returns (Rs.)	Cost (Rs.)	Returns (Rs.)	Net Returns (Rs.)
Net income of I year	2,40,000.00	257,000.00	- 17,000.00	
Net income II year onwards	2,40,000.00	60,000.00	+ 1,80,000.00	163000.00
Net income III year onwards	2,40,000.00	60,000.00	1,80,000.00	1,80,000.00