

CAGE CULTURE TO ENHANCE ESTUARINE FISH PRODUCTION

Success Story/2022-16

START-UP IN ESTUARINE CAGE CULTURE IMPROVES FARMER INCOME: A SUCCESS STORY FROM KOCHI, KERALA

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PROBLEMS/CONSTRAINTS

Vembanad wetland system, a Ramsar site on the west coast of India, covers an area of over 2033.02 square km. It is the lifeline for 1.6 million people and a variety of flora and fauna. Decrease in the lake area, unseasonal rains, climate change, aggressive growth of aquatic weeds, the aging of Thanneermukkam barrage and its faulty operation, modification of lake water through anthropogenic activities like pollution, over-exploitation of fish, dredging operations, and, other developmental interventions have resulted in the depletion of flora and fauna. The ecological decline has affected most of those who are dependent on the Vembanad lake, probably the most affected are the fisher folks, whose livelihood is very much dependent on the health of the ecosystem. This led the traditional fishermen to find an alternative way to tackle the issue. Pearls spot (*Etroplus suratensis*) and Asian seabass (*Lates calcarifer*) are the commercially important fish species along the Kerala coast and the cage farming of these fishes is gaining popularity in the recent times.

INTERVENTIONS

1. The fishermen have been given awareness of the estuarine cage culture of finfish species such as Pearls spot, Asian seabass as options for their sustainable livelihood.
2. The cage culture (4*2*2.5 m) of pearls spot (*Etroplus suratensis*) was initiated on late December 2019 with twelve cages.
3. Solar panels were established in order to provide aeration, lighting, and electrical aids in the cage and feed room.
4. The ICAR-CCARI and Faculty of Fisheries, Kerala University of Fisheries and Ocean Studies, Kochi conducted a capacity-building programme in 2019 on coastal aquaculture and the fishermen were trained under this programme. The farmer also received financial aid from the 'Subhiksha Keralam Project' by Govt. of Kerala.
5. Before the intervention, the fishermen opined an investment of Rs. 1.18 lakh per cage by excluding the operational costs and however, the returns are only 2.2 lakhs per year (from two partial harvests). The cost of feeding was about 35% of the operational expenses. The survival rate as only of 60% and the Benefit Cost (B:C) ratio of just 1.19.
6. The stocking density and size at stocking modified for pearls spot (size at stocking: 5-8 cm) was 900 nos. per cage.
7. The following modified feeding protocol were followed per cage:
 - a. Starter feed 1 (0.6 mm size): Three times a day and for 10 days.
 - b. Starter feed 2 (1 mm size): Three times a day and for 20 days.
 - c. Grower feed (2 mm size): Three times a day for one month.
 - d. Finisher feed 1 (3 mm size): Three times a day for one month.
 - e. Finisher feed 2 (4 mm size): Two times a day for three months (till 250 g).



IMPACT

- The survival rate of the fish showed an increase from 60% to 75%.
- The mean harvest size of the fish increased to 225 gm (size range: 200 to 250 gm), which was 175 g before the intervention.
- The total cost including the annual fixed cost and operating expenses was estimated as Rs. 2.1 lakh per cage.
- The total harvest (kg) and total returns were 700 kg and Rs. 3.85 lakhs per cage, respectively.
- The net profit per year was Rs. 1.8 lakh with an increase in the B:C ratio from 1.19 to 1.83. The net profit increased by 64% when compared to the existing farmers' practices.
- Harnessing solar energy to power farm operations has considerably augmented the farmers' income by 15%.
- Using green energy to power the farm activities is advantageous as it improves the overall sustainability of the farm.



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