



MARINE FISHERIES INFORMATION SERVICE

**TECHNICAL AND
EXTENSION SERIES**

No.49
April, May 1983

**CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
COCHIN, INDIA**

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

PROVEN TECHNOLOGY

6. TECHNOLOGY OF OPEN-SEA MUSSEL CULTURE

Highlights: A technique for the culture of the green mussel *Perna viridis* in the open sea has been developed. Mussel seed collected from the intertidal rocky beds and/or produced in the mussel farm through spat collection on ropes are securely wrapped around ropes. The seeded ropes are suspended from rafts moored in the sea at a depth of 8-10 m. The seed mussels get attached over the ropes within one or two days. The growth of mussels in the farm is faster compared to the mussels in the over-crowded natural beds. In the farm they reach the harvestable size in five months from seeding. The production per metre length to rope is 10-12.3 kg of mussels and the cultured mussels give a meat yield of upto 40 per cent. Such high production is possible due to the three dimensional culture where in the entire water column below the raft is used for production and the mussel feeds directly on primary producers namely phytoplankton. The technique for the culture of brown mussel *Perna indica* is the same as for the green mussel.

Operational details: Mussel culture in the open sea is done from floating rafts varying in size from 5 x 5 m to 8 x 8 m. The rafts are constructed using teak and bamboo poles lashed together with ropes and are mounted on 5-6 cylindrical metallic floats of 200 l capacity to get the correct buoyancy. The raft is moored in the open sea at 8-10 m depth by 2 anchors each of 100 kg and anchor chains of length 3-4 times the depth.

Collection of mussel seed for the farm is done from the intertidal mussel beds after the peak spawning season. One can easily collect about 10-20 kg of mussel seed in an hour. The average seed size for farming is 15-25 mm and 600 g seed are required for seeding one metre length of rope. Synthetic and coir ropes of 15 to 20 mm diameter are suitable for growing mussels from the rafts. An optimum number of 60 ropes each having 6 m seeded length can be suspended from a standard raft of 6 x 6 m. After suspension of ropes, the mussel culture farm needs only minimum attention to see that the rafts are in position and in good shape and the ropes with growing mussels remain hung properly. Growth of the mussels in the farm at Calicut ranges 11.6-12.9 mm in length and 5.9-7.3 g. in weight per month. A production rate of 10-12.3 kg per metre length of rope would be possible, which is about 20 times the average seed weight. Harvesting is done at the end of 5 months by bringing the ropes ashore with

the help of the canoes and removing the mussels. The mussels are cleaned of all the fouling organisms such as barnacles and are depurated in clean sea water before they are marketed.

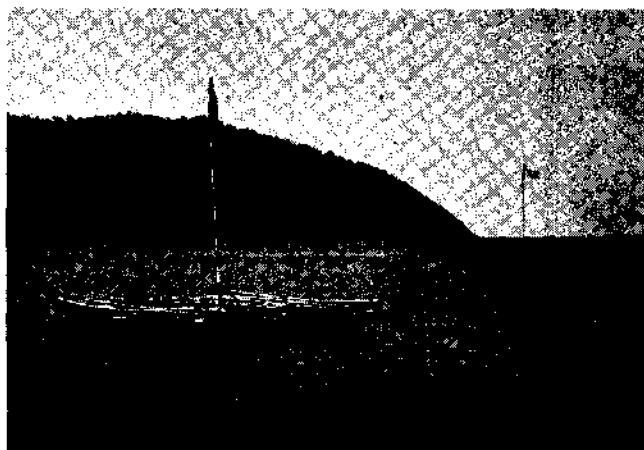


Fig.1 Mussel culture rafts moored in the sea

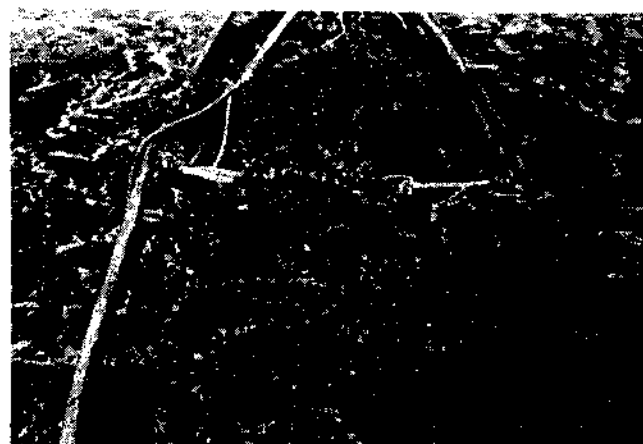


Fig.2. Canoe loaded with ropes bearing cultured mussels harvested from the farm

Production: One standard raft of 6 x 6 m holding 60 ropes will produce 3600 kg whole mussels or 1260-1440 kg meat.

Investment and cost: The materials required for a standard raft are 10 teak poles, 12 bamboo poles, 2 anchors, 2 anchor chains and 70 kg nylon ropes. These capital items will be good for 3 years except anchors which will have a longer life and the expenditure on these will be Rs.5500. Contingent expenditure on floats, knitted cotton cloth, seed collection, seeding,

maintenance and labour for operation of one raft will be Rs.4500 for 3 years. The total cost for 3 years would be Rs.10,000

Turn over of mussel farm: In a three-year mussel culture project, total production from each standard raft would be 10 tonnes of whole mussels. At an average cost of Rs.2000 per tonne the turn over will be Rs. 20,000.

Constraints and prospects: Considering the rough sea conditions prevailing during monsoon, open-sea mussel farming can be carried out only during part of the

year for a single crop. Technology for year-round mussel culture is under development. Availability of seed for large-scale farming is a serious constraint. The natural mussel beds can provide seed on a limited scale. Technology for hatchery production of seed is being developed to overcome the seed problem. Marketing aspect has to be looked into as mussel is a popular food only in some coastal sectors. A small export potential for processed mussel meat exists. In view of the very high production rate, mussel culture holds great promise for increasing protein-rich seafood production.

