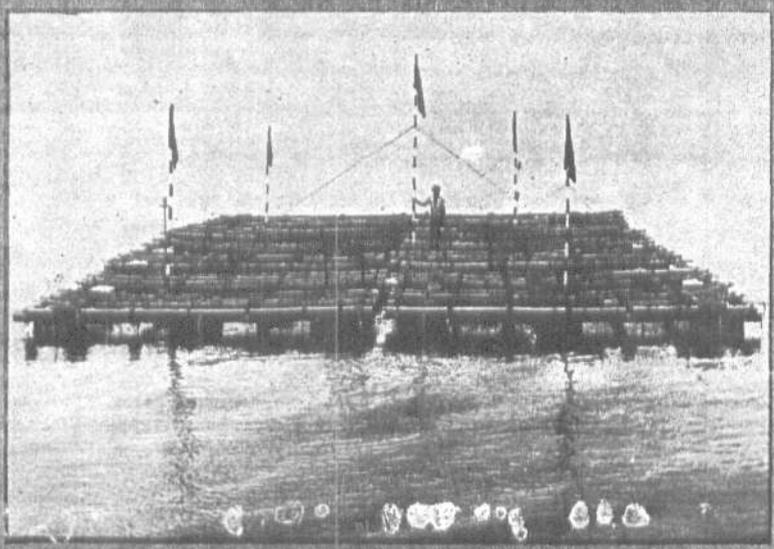


MUSSEL FARMING



Transfer of Technology

LAB TO LAND



CENTRAL MARINE FISHERIES
RESEARCH INSTITUTE
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MUSSEL FARMING

THE SEA MUSSEL

The sea mussel, popularly known as "Kallummel-kai" or "Kad. kka" in Malayalam and "Pachai azhi" or "Kadalka" in Tamil, is a bivalve mollusc of the family Mytilidae. The animal is found firmly attached over the rocks or any other hard objects in the sea by means of secreted threads called byssus. The body (flesh) of the animal is encased in two shell valves protecting it. The general shape of the shell is that of an elongated triangle but due to its ovate in outline. The two valves are connected along the anterior dorsal margin by a hinge. The ventral and posterior borders of the shells which are free, permit water to enter the interior, enabling the animal to respire and



Opened mussel to show the flesh inside



Seeds in the natural bed

also to feed by filtering the microscopic organisms in the water.

WHERE DO THEY OCCUR?

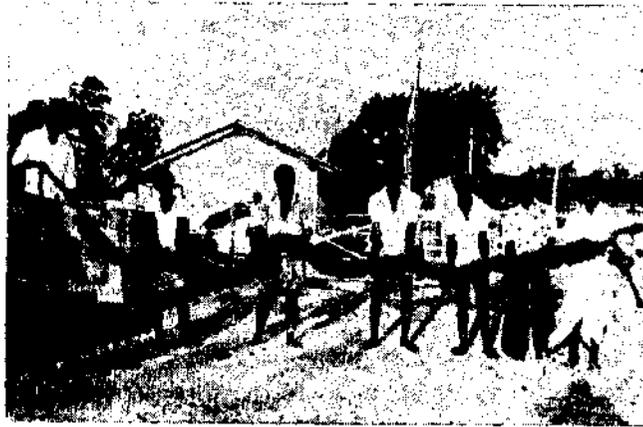
The intertidal and submerged rocky areas of the east and west coast of peninsular India afford excellent habitat for the settlement and growth of mussels. Thick carpet-like growth of mussels can be found over the submerged rocks along the Kerala Coast from Kasaragod to Beypore and from Quilon to the southernmost end of Kerala, and from Colachel to Kanyakumari in Tamil Nadu and Kakinada in Andhra Pradesh.

UTILITY

The mussels are extremely nutritious containing 8-10% protein, 1-3% fat and 3-5% glycogen, in addition to minerals like calcium, phosphorus, iron, manganese and iodine. The mussel meat is highly palatable and it forms a delicious food item of the people along the coastal areas. The mussel is a very popular food in many countries of the world. In order to meet the growing demand, countries such as Spain, France and Netherlands have successfully developed different farming methods.

FISHERY

Two species of mussels, namely the Brown mussel (*Perna indica*) and the green mussel



Rope with fully grown mussels

rocks. One can easily collect about 10 to 20 kg of mussel seed in an hour. Seed mussel can easily be transported in gunny bags in moist condition. Juvenile mussels can live out of water for about 24 hours provided they are not exposed to sun.

Seeding

The seeds are washed properly in seawater to remove mud particles and fouling organisms. Seeds are securely wrapped around coir or nylon ropes using knitted cotton cloth. The seeded ropes are taken to sea for farming. The seed mussels get attached over the ropes secreting new byssus threads within one or two days. The cloth cover disintegrates in sea water within ten days.

Raft culture

Mussel culture is done from rafts. The rafts are constructed using teak and bamboo poles lashed together with coir and nylon ropes. The rafts are mounted over five sealed metal drums of 200 litres capacity, four at the corners and one at the centre. The rafts are moored at a depth of about 8 metres in the open sea with three iron anchors each of 100 kg weight using iron chains. The rafts can withstand the open sea conditions well. The seeded ropes are suspended from the raft.

Growth

The young mussels in the farm grow very rapidly at the rate of about 14 mm per month. The seeds having

an average length of about 20 mm reach a size of about 90 mm within about 150 days. On the other hand, in the natural condition they would have grown only at a rate of about 7 mm per month. The cultured mussels give a better meat yield. When the mussels from the natural beds give a meat yield of about 38% only, the farm mussels give a meat yield of upto 52%.

Production

A mussel culture raft of about 250 square metres surface area can hold 400 ropes. One hectare area in the open sea can safely accommodate 30 such rafts with 12,000 ropes. The average production per rope of about 7 metres length is about 80 kg of mussels. Such high production is possible due to three-dimensional culture wherein the entire water column below the raft is used for production and because the mussels are



Harvested ropes

only a step away from the direct use of solar energy - they feed on the primary producers namely the phytoplankton.

MARKETING

The mussels are generally sold live with shell on in the market. Sometimes the meat is removed from the shell, packed in polythene bags and sold to restaurants. Purification of mussels is essential to remove the intestinal contents such as sand and detritus. This is done by keeping the harvested mussels in clean tanks holding filtered seawater for about 24 hours. Chlorinated water at 5 ppm concentration helps in the removal of pathogenic organisms to a large extent. There is a growing internal and external demand for mussel meat. Recently some factories in Kerala and Tamil Nadu have started canning mussel meat for export.

PROSPECTS

India has a coastline of about 6100 km. The success of open-sea mussel culture achieved at the Central Marine Fisheries Research Institute has shown that it can be extended to several new areas. The only limitation would appear to be the availability of seed. Mussels are prolific breeders and each adult spawns over a million eggs. Besides production of seed in the wild, dense spat fall occurs in the farms. Research work is on for the production of mussel seed in hatcheries. All these would meet the requirements of seed for large-scale commercial projects. There is a good potential for export of processed mussel meat, besides scope for widening the internal consumer sector. The Central Marine Fisheries Research Institute would provide the necessary R & D support for the growth of mussel culture industry in India.

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