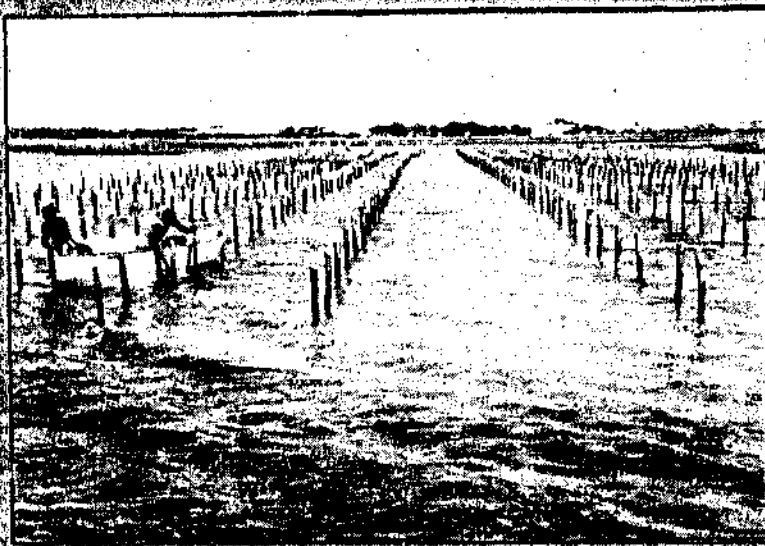


# Oyster Culture



CENTRAL MARINE FISHERIES  
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## LAB TO LAND

### FARMING THE OYSTER

#### WHAT IS AN OYSTER?

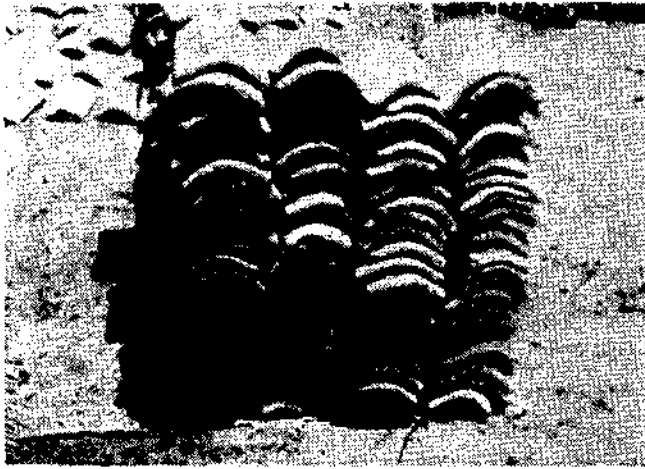
The Edible Oyster popularly known as *Aali*, *Kalungu* or *Paatti* in Tamil and *Muru* or *Muringa* in Malayalam, is a sedentary animal. The soft part of the animal (flesh) is encased by two shell valves protecting it. While the lower shell valve gets cemented to the substratum in natural beds, the upper valve acts as a lid, to open and close, by a hinge mechanism connecting both valves. The margin of the shell valves usually remains agape permitting water to enter the interior which enables the animal to respire and also to feed by filtering the microscopic organisms in the water.

#### WHERE DO THEY OCCUR?

The intertidal rocky areas, muddy bays, backwaters, lagoons, creeks and estuarine areas of the east and west coast of peninsular India, afford excellent habitat for the settlement and growth of the oysters. Naturally there is a very large population of different varieties of oysters growing in these areas.



*Opened Oyster showing the fleshy edible portion inside.*



*Lime-coated tiles used for spat collection.*

#### HOW ARE THEY USEFUL?

The flesh of the oyster has been found to be highly nutritious and palatable, containing 8-10% protein, in addition to minerals like calcium, phosphorus, manganese and iodine. The carbohydrate and fat content is very low. The oyster meat is among the popular items of table food in many countries of the world, and to meet the market demand countries like Japan, France, U.S.A., Netherlands and U. K. have developed methods of farming the oysters successfully, since dependence on oysters from natural beds is beset with several problems.

#### OYSTER - A SUSTENANCE FISHERY:

In our country the usefulness and value of the oyster flesh has not been so far fully exploited leaving considerable scope for efforts in this direction. Lack of organised fishing resulting in sporadic supply to the market is one of the reasons why people in India have not taken to it in a large way.

#### WHAT ARE OUR EFFORTS?

THE CENTRAL MARINE FISHERIES RESEARCH INSTITUTE has given a lead in our country by experimenting on oyster culture, adopting suitable techniques. The results have been encouraging and the scientists of the Institute have achieved a breakthrough in the technology of oyster farming in India.

#### CULTIVABLE SPECIES COMMONLY FOUND:

There are essentially four important varieties of oysters which can be subjected to culture practices.

- (1) East coast oyster (*Crassostrea madrasensis* =  
*C. virginica*)
- (2) West coast oyster (*Crassostrea discoidea*)
- (3) Kutch oyster (*Crassostrea gryphoides*)
- (4) Rock oyster (*Saccostrea cucullata*)

Of these the east coast oyster is present all along the east coast of India, and also along the west coast upto Karwar, and can be easily farmed. The other varieties also can be cultured in areas where they are found in abundance, suggesting thereby that the environmental conditions in those areas would favour easy farming of those varieties.

#### WHY RESORT TO OYSTER FARMING?

Oyster farming wherever undertaken and whatever the species involved is advocated because:

- (a) Farmed oysters have better size and weight,
- (b) Growth is faster because of the three dimensional environment provided,
- (c) Oysters are healthy, and
- (d) The yield per hectare of water mass is high.

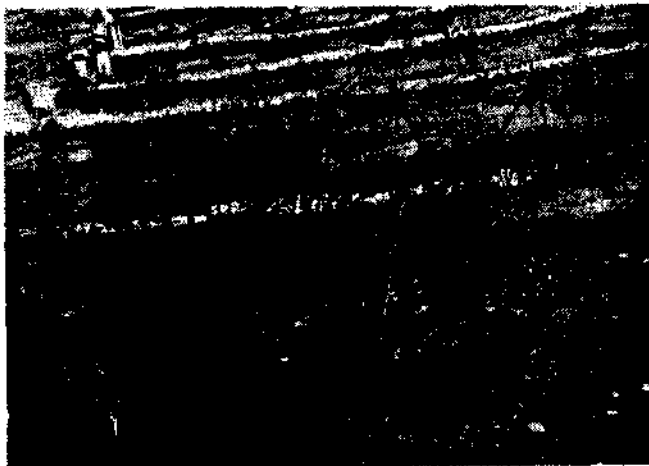
#### ESSENTIAL CONDITIONS:

An important pre-requisite for achieving the above, is selection of a suitable site for locating the farm. The topography of the coastline, the climate, availability of natural food, physical and chemical qualities of the water mass, are some of the other essential features to be borne in mind in this context.

Next in importance is the location and selection of a suitable place for the collection of young ones or 'spat' of oysters and finding out the season of availability. This leads naturally to the third step, finding out a suitable method for the collection of oyster spat. The



*Concave surface of tiles showing settled spat.*



*Cages used for initial spat growing*

final aspect of the work relates to developing a method for growing the oyster to marketable size and also to determine at what stage the oysters are to be marketed.

#### SPAT COLLECTING MATERIALS:

Semi-cylindrical tiles are found to be very good for the collection of oyster spat. Before setting them in water they are dipped in a mixture of sand and slacked lime. Double coating is efficient. The tiles are laid in stacks of 4 or 8 over trays on racks, just  $\frac{1}{2}$  metre below the water surface. This is done just before the known spawning period of oyster. When the young ones (spat) settle down, they do so in large numbers. They are allowed to grow upto 25 mm in size, and then carefully scraped from the tiles and transferred to growing areas. By careful handling, the tiles can be cleaned, recoated and used for several seasons.

Bamboo poles bearing branches are also used as spat collectors. Shells of various marine molluscs easily available in large quantities can also be used as spat collectors. These shells are spread over the bottom of shallow bays or creeks for spat setting. In places where the depth is more, shell strings are prepared and hung from bamboo or wooden rafts. In addition to the above, plastic nets, wood veneers, etc. are also used for collection of spat. The method and the season of collection, and the nature of spat collector to be used varies from area to area depending on local conditions.

#### FARMING METHODS:

##### 1. *Rack culture:*

In shallow bays and creeks where tidal influence is somewhat strong, 'rack' and 'tray' method of culture is most suitable. Creosoted posts are driven into the

ground and a platform like structure is erected. Seeds should be kept on suitable trays over the platform, in such a way that the oysters are always submerged in the water. This type of tray culture is adopted at the Tuticorin experimental farm.

2. *Stake method:*

It consists of a wooden stake usually about 18 inches in length, with a 2 inch nail driven at one end, to which is fixed a single cultch shell with young oysters. The other end of the stake is pushed down into the bottom nearly one foot. This method is ideal in shallow regions.

3. *Raft method:*

In places where the depth is more than 5 metres, suitable bamboo or wooden rafts are constructed and they are allowed to float on the surface of the water by means of empty oil drums or wooden barrels. Once the rafts are put in position they are suitably anchored. The oyster spat collected on the spat collectors such as shells, are strung from suitable galvanised wire ropes allowing sufficient space in between the clusters of oysters to avoid over-crowding. The length of the oyster strings are adjusted in such a way that they do not touch the bottom.

4. *Long-line method:*

The long-line culture method is a modified method of raft culture wherein the raft is eliminated. The long-line unit consists of a series of wooden barrels placed at regular intervals over which two parallel long-line of ropes are tied. The ends of the long-line are suitably



*View of the oyster farm in a creek at Tuticorin.*

anchored and the oyster strings are suspended from the long-line.

5. *Bottom or sowing method:*

The oyster seeds attached to some form of cultch is spread on suitable bottom, and allowed to grow to marketable size. This method is practised in some places including the United States.

**GROWTH OF OYSTER:**

It has been observed that once the oysters are removed from their natural beds and grown by an off-bottom method, either in rafts or trays or long-line, growth rate of the oysters is considerably good and a growth of 8 to 12 mm per month could be expected during the early stages. In the natural beds the growth is roughly half of this. *C. madrasensis* attains a size of about 110 mm within a period of one year. It is better to harvest oysters when they attain this size.

**WHEN TO HARVEST OYSTERS?**

Harvesting should be done when the oysters are in plum condition. The meat of the oysters will be very thin soon after the spawning period and this should be avoided for harvesting. Once the oysters are harvested they should be cleaned well and all the external fouling organisms should be properly removed. This can be done to a very great extent by allowing a jet of sea water to be directed over the oysters, kept on a suitable wooden grid. The cleaned oysters are to be kept in suitably constructed cement tanks filled with sea water. The water used for flushing and cleaning the oyster, should be first filtered through sand filters to reduce the bacterial count of the water. The oysters are washed and kept in this filtered water in cement tanks for 48 hours. They are then allowed to remain for one hour in sea water freshly chlorinated with 3 ppm of chlorine or water treated with ultraviolet light.

**MARKETING OF OYSTERS:**

Oysters are marketed in different ways. Without removing the shells it can be sent to nearby places, provided they are packed in such a way that they are kept moist, and sufficient space is allowed for the free flow of air and kept in a cool place. The oysters are also shucked and canned, or frozen and sent to distant places.

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