

# The different ways to grow oysters and mussels

By E Aldon

Oysters and mussels can be grown in different ways in estuaries, tidal flats, and protected coves.

## OYSTER CULTURE

### 1. Broadcast method

This is the most "primitive" technique where oyster spats settle on empty shells, or other media collectors like stones or gravel scattered on the oyster bed. Harvests are done by diving or hand-picking at low tides. This method can only be used in very shallow areas with firm bottom which are generally exposed at low tides.

### 2. Stake method

The stake method is usually practiced in soft, muddy and shallow beds. Bamboo stakes are simply stuck in the oyster bed and serve as spat settlement. The stakes are aligned and spaced at 0.3-0.6 meter and are usually as high as the prevailing tide level in the area.

Delmendo (1989) reported that this method is better than broadcast in that the growth of oysters is faster and mortality of spats on settlement to the stakes is reduced. However, they are more

prone to predation by crabs, starfishes and shell borers. Bamboo as stake material is costly and does not collect as much spats as the oysters shells.

In both the broadcast and stake methods, spats are left to grow where they have settled. At harvests, smaller oysters are left behind to grow until they reach marketable size.

### 3. Hanging method

Strings made of nylon or polyethylene twine with spacers or knots are commonly used. These are usually placed in intertidal zones, at depths of 1-2.5 meters at the lowest tide. These strings are hung or fastened to bamboo or wooden framework at 25-30 cm apart. Variations of this method depend on the type of collectors used. The most common are as follows:

*Empty oyster shells.* SRDC (1991) described this method as strings of empty shells strung together by a polyethylene rope (1-3 mm) or monofilament nylon line at 10-15 cm intervals and hung with at least 0.5 m clearance from the bottom to avoid siltation and bottom predation.

Sometimes when the spat settlement is dense, the strings of cultches are moved farther apart to avoid too much congestion.

*Old rubber tires.* These are cut into halves and tied to the horizontal bamboo by nylon ropes at 25-30 cm space. Or they may be divided into strips of 10-20 cm wide and 1.0-1.5 m long attached to the bamboo placed horizontally.

*Plastic packaging straps.* These 1.5 cm width straps are cut into 1.0 m length and tied in bundles of 4-5 pieces, between 20-30 cm intervals.

### 4. Longline method

Four parallel lines of about 20 m long and 20 cm apart are strung between two bamboo or wooden posts. Strings of threaded oysters shells held every 12-15 cm apart by small plastic or bamboo tubes are hung on the line. This is a modified hanging method with a framework of threaded strings of oyster cultches made of rope or polyethylene twine.

### 5. Lattice-tray method

Bamboo splits are woven into a lattice and tied with galvanized wire, nylon or polyethylene twine. The splits are spaced 15-30 cm apart (1 x 1 x 2 m). The lattice can be positioned like a tray horizontally or vertically. They can be installed in a triangular position supported by bamboo or wood. Wire mesh trays supported by wooden frames can also be used. These are held on wooden stands or racks which are installed in tidal flats.

All these methods are applied in intertidal zones along shallow coastal areas which become exposed at low tides.

## MUSSEL CULTURE

### 1. Stake method

Like oyster farming, mussel farming employs the stake method. Bamboo stakes or mangrove trunk and palm tree trunks are used. As much as 5,000 stakes could be stuck on a 0.25 ha mussel bed. About 2.5-15.0 kg per stake could be produced by this method.

A modified stake method called the wigwam is also used. About 7-10 stakes or poles are stuck to the mud bottom in a 2-m radius from a central pole. The upper ends of the poles are tied to the center to form a wigwam. This is used



Stakes are used to culture oysters and mussels in Ivisan, Capiz, west central Philippines



*Longlines (top) and rafts (bottom) may be used for oysters and mussels.*

in deeper water areas with stronger water movement. The poles serve as spat collectors but no thinning nor transplantation of spats is made.

## 2. Hanging method

The same principle of hanging method in oyster farming is also used for mussels. However, coconut husks are used as cultch collectors besides empty oyster shells. This method is applied in deeper water areas as the mussels do not need exposure like the oysters.

## 3. Rope-web method

A unit of rope-web consists of a parallel pair or 5 m ropes at 2 m apart, connected in a zigzag pattern at 40 cm intervals between knots along each parallel rope. Bamboo pegs of 20 cm long and 1 cm in width are inserted in each zigzag rope spaced at 40 cm between pegs. This prevents the mussel clusters from sliding down the rope as they grow

bigger and heavier. The distance between posts is 5 m, and the rope-web is stretched 3 m apart along the rows. Rope-webs are installed parallel with the water current and positioned 2 m deep at low tide. These are untied at harvest and reused for the next crop.

## 4. Raft method

A raft may be made of bamboo with cross beams buoyed up by empty metal or plastic drums, old car tires blown with styrofoam or ferroconcrete bouys. Rafts are installed parallel to the flow of tide.

A unit of raft may be 6 x 8 x 8 x 5 m. Ropes are hung on the raft, and weighed down to prevent them from floating. Collector ropes (for spat) are hung at about 0.5 m apart while growout ropes at 1 m apart.

Abaca ropes or polycoco ropes are used as grow-out ropes. They are provided with bamboo pegs 2 mm long x 1.5 cm wide which are inserted into the lay of the rope at 30 cm interval. These pegs prevent the growing mussels from slipping. A 1-meter rope can hold 5-15 kg of mussels. Grow-out ropes could be as long as 4 m depending on the depth of the mussel farm.

## 5. Bouchot method

Originated in France, bouchots are generally rows of about 125 x 50 m poles at 20 cm intervals placed perpendicular to the coastline in the intertidal zone (Figueras 1989). Some bouchots are double-rowed at 1 m apart.

Spat collection is on the seaward side of a bouchot. Growing and fattening mussels is on the landward side.

The wooden poles (oak trunk) of a bouchot are 4 to 6 m long with 3 m inserted into the seabed. Poles to catch mussel seeds are placed from January-April. Seeds are left on the poles until they reached at least 20 mm. Mussel seed is not left very long as too much weight can detach whole clusters of mussels.

Harvest of seed is done in August-December by scraping. The poles are

then cleaned to allow new settlement. The now big mussels are grown further on nylon net tubes 5 m long and 10 cm in diameter. Two net tubes are attached to poles, one above the other. Nets are wound spirally around the pole. Seed collected from the ropes is transferred to these poles. The ropes cut into 3 m are wound spirally around a pole.

Harvest of marketable mussel (minimum, 4 cm shell length) is done in May-February by hand, and using a small boat. Mussels are washed, graded, and sold. Smaller mussels may be taken back to the bouchot.

## 6. Bottom method

This is commonly used in the east coast of Scotland along with long-line and raft methods. One year old seed mussels (10-30 mm) are collected by dredging from natural beds. These seeds are transplanted to sheltered inshore waters with silty seabed, favorable water currents, and abundant food.

The mussels remain on culture plots (either intertidal or subtidal) for 2.5 to 3 years and are harvested by dredging. The bottom culture method produces 3-5 kg of mussels per m<sup>2</sup>.

## 7. Long-line method

The same principle in oyster culture is used.

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