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TECHNOLOGY OF MUSSEL CULTURE

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Five different techniques are used in mussel culture (1) Sea bottom culture (2) Pole culture (3) Rack culture (4) Long line culture (5) Raft culture.

Sea bottom culture

This technique is widely practised in Netherlands and in a number of European countries including Denmark and West Germany. The principle of bottom culture is the transfer of seed or juvenile mussels from areas of great abundance where growth is very poor due to over-crowding to areas where mussels can grow faster. The basic requirement for this technique is a firm substratum free from drifting sand and mud particles. Seed mussels are dredged from public grounds and laid first on shallow grounds where they will grow. They are later transferred to deeper grounds for fattening. Mussel farmers sow a thick layer in the shallow grounds. When the mussels reach a length of about 25-30 mm they are thinned out by transferring the excess portion to deeper areas for fast growth and fattening. When mussels are 2 to 2½ years old they attain a size of about 60 to 70 mm and is ready for harvest. The mussels are dredged and dumped in a thick layer in an area of little tidal movement free from drifting sand. They are left for 48 hours to rid themselves of silt. The chief advantage of bottom cultivation is that the mussels always remain under water and therefore feed longer. The main drawbacks are exposure to bottom predators like star fishes and crabs, and need to cleanse the mussels of silt.

Pole culture or Bouchot method

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Pole culture is the oldest and principal method/mussel farming in France. In this method mussels are grown on rows of poles in the intertidal area. The extreme tidal range is advantageous to mussel grower. Mussel seeds or spat are collected on spat collector

poles closer to the land. The poles are 75 cm apart, and are set in rows at right angle to the shore. The seeds are attached to the rearing poles in bags of fine netting which rot and fall apart after the mussels attach themselves to the poles, by byssus threads. As the mussels grow they are thinned out and transferred to other rearing posts. Another seed collection technique recently practised in France involves suspending loosely woven ropes 13 mm in diameter and 3 metre long in the inter tidal region near natural beds. Within 3 weeks after spawning seed mussels of about 5 to 10 mm size attach themselves in the crevices between the strands of the ropes. The ropes are then wrapped around poles driven in the inter-tidal flats. The procedure is similar to the traditional method. The mussels are thinned out periodically as they grow and wrapped round other poles. By the end of second year the mussels are harvested, and marketed after reaching a size of about 50mm. The average production is about 25 kg of mussels each year for every pole used and per hectare yield is about 4.5 tonnes per year.

The main advantage of pole culture is that the mussels are less exposed to the bottom living predatory crabs and star fishes. Predation is further reduced by the adoption of plastic sheaths around the base of the pole. The main drawback however is that, the mussels are exposed at low tide especially on spring tide. The poles are vulnerable to storms.

Rack culture

Mussel farming on racks is practised in Italy. Though the mussel farmers do use mussel seeds which settle naturally on rocks and other hard substrates as primary materials by far the largest part of the seed requirement is met from artificial collectors. In the sheltered area where the mussel farming is practised, the bottom is predominantly soft and muddy. The mussel farmers construct parks comprising net works of poles connected with horizontal ropes. From these ropes they suspend strings of mussels which are permanently in sea water above the bottom. A special type of rope is stretched

around the park to collect the seed. Growth is very rapid and the mussels will be ready for harvest when they attain a size of 100 mm.

Long line culture

The long line method of mussel farming was introduced very recently in Europe. This method is very successful in open sea mussel farming. Long lines are 50 to 75 metre long and consist of a pair of ropes strung between two parallel pair of metal, wooden or styrofoam floats. Each end of the line portion is (some times the middle also) is anchored. Floats are spaced 3 to 7 metres apart. Mussel seeds are collected from natural beds and transplanted on the ropes and suspended from lines about 0.5 metre apart. The growth in this system is very rapid.

Raft culture or suspended culture

The raft culture technique has undergone great development in recent years offering the best prospects for farming of mussels in sheltered and open coastal waters. This method is generally used in waters more than 3 metres deep. The modern rafts commonly have four or more large wooden floats covered with cement or fibre glass to protect the wood from marine borers. On the top of the floats frame work of wooden beams are provided, about 50 to 60 cm apart, from which the ropes are hung. The raft is usually fitted with a working deck and shelter for the operators. The size of the raft varies but an average raft is 20 x 20 metres and will accommodate 500 ropes. Recently large-scale operators have constructed more rugged rafts about 700 sq.m for use in deeper and exposed waters. Such rafts can hold 1000 ropes and are stre^mngthened to withstand strong currents.

During the peak spawning period empty fibrous ropes are hung from the rafts for collecting spat. The ropes are soon crowded with young mussels. The mussels grow rapidly and generally reach a size of about 30 to 40 mm within five months. Thinning is done when the

mussels are 25 to 30 mm long. The mussels are removed from the ropes and bound on to new ropes using thin large meshed cotton or rayon netting. One "Settlement" or "Collector" rope yields enough mussels for twelve to fifteen new ropes.

Seed mussels gathered from the inter tidal rocks are wrapped round ropes and suspended from the rafts. At every 30 to 40cm length a wooden peg of about 12 mm square is inserted between the strands on each rope to prevent mussels from sliding. When the mussels reach a size of 70 to 90 mm they are harvested. A mussel culture raft of about 250 square metre surface area can hold 400 ropes. One hectare area in the sea can easily accommodate 30 such rafts with 12,000 ropes. The average production per rope of 8 metres length is about 30 kg of mussels.

(In India experimental mussel culture farms are mainly located in the coastal waters up to a depth of 10 metres. Only raft culture method is followed. A raft of the size 8 x 8 metres can safely hold up to 100 mussel ropes. Teak-wood or casuarine poles are used for the main frame work and bamboo poles for more strength and suspending the mussel ropes. Sealed and empty metal drums or high density plastic drums are used as floats. The raft is anchored with 3 iron anchors each of 100 kg weight. Knitted cotton cloth having a mesh size of 5 mm is used for seeding. Growth of mussels is very quick attaining marketable size of 75-80 mm in 5 months. In the case of brown mussels the harvest size of 60 mm is reached in 8 months.