

M. Sc. IV Sem.
Paper Elective Paper III
Fishery Science, Culture Fishery

Prawn culture

Prawns are of considerable protein rich food value organisms and form an important source of foreign exchange. They are exported to various countries chiefly United State of America (USA), Japan and Australia. India ranks first and sometimes second among the prawn producing countries of the world. The products exported are frozen prawns, dried prawns, Prawn pickles, prawn powder, prawn curry and prawn meal. These form about 80% of the total marine export items. Since the demand for well processed hygienically prepared prawn products is increasing rapidly in advanced countries. There is very good scope for further expansion of the export trade.

Culture of fresh water prawns

The fresh water prawns of the genus *Macrobrachium* are very suitable for intensive culture. They occur in fresh water as well as estuarine water and the following culturable species are found in India. *Macrobrachium rosenbergii*, *M. malcomsonii* and *M. birmanicum*. These are large sized prawns occurring in the rivers. These prawns are cultured in fresh water ponds similar to those used for carp culture. Juveniles of 20 to 40 mm size are used for stocking and nursery ponds are not required. Most favourable period for culture is February to May during which growth is very fast. A second crop can be raised during the monsoon seasons.

Juveniles are stocked at the rate of 25,000 to 30,000/ha for 6 months. The production of *Macrobrachium rosenbergii* is about 600 kg/ha/6 months. For intensive culture, pond size is 0.2 to 0.3 ha. The artificial feeding or supplementary feeding is most important for good production. Rice bran, broken rice, groundnut oil cake, mustard oil cake, soyabean cake, fish meal, worms and meat are used as artificial food. Feeding is done at per day in morning hour at a rate ranging from 5-10% of the prawn biomass.

The under scientific culture and fully managed conditions, the prawn can develop upto 20 cm in length with about 80 to 100 gm in weight within 6 months. Two crops of prawns can easily be cultured per year.

Culture of marine prawn/shrimp

Several species of marine prawns have been cultured and spawned under controlled conditions in various countries like India, Japan, Malaysia Indonesia, USA, Philippines and China. In India *Penaeus indicus* and *Penaeus monodon* are commonly and commercially cultured in ponds and laboratories.

Intensive farms use even smaller ponds or ideal pond size 0.5- 1.5 ha, depth 1.2 metres and higher stocking densities. Prawns are stocked at the rate of 30,000 to 40,000/ha for 6 months. The ponds are highly managed. They are aerated with help of aerator. There is a high water exchanged to remove waste products and maintain water quality. The prawns are fed on specially designed diets typically in the form of formulated pellets with high protein contents. They are feed 3 to 5 times daily. The feeding can be done manually either from a shore or from boats or using mechanized feeder distributed all over a pond. Such ponds produce annual production between 400 to 1200 kg/ha/ 6 months.

Molting and shelter materials

The molting is very necessary for prawn to grow and during this process. They can be very vulnerable. Their new skin is relatively soft and therefore after they have shed their skin. They tend to hide for 48 to 72 hours so that they can allow their shell to harden up. The moult cycle is the most critical and challenging phase in the prawn physiology. Moulting leads to the total replacement of old exoskeleton including appendages with a new exoskeleton. In molting process, the shelter materials such as small dried tree branches, plastic pipe, cement pipe, aquatic plants, grasses, gravels and shells can be introduced into prawn rearing ponds or tanks reduce any aggressive interactions (cannibalism behaviour).

Prawn harvesting

The prawn or product quality can be affected by the way the prawns are treated during the pond harvest process. Prawns should be removed or harvested from the ponds in a healthy state and as clean as possible. Ponds are sometimes partially harvested using drag nets, traps or seine nets but more often a drain harvest is used. The water is released through the outlet which has a net fitted over the pipe and the prawns are then caught with help of nets.

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