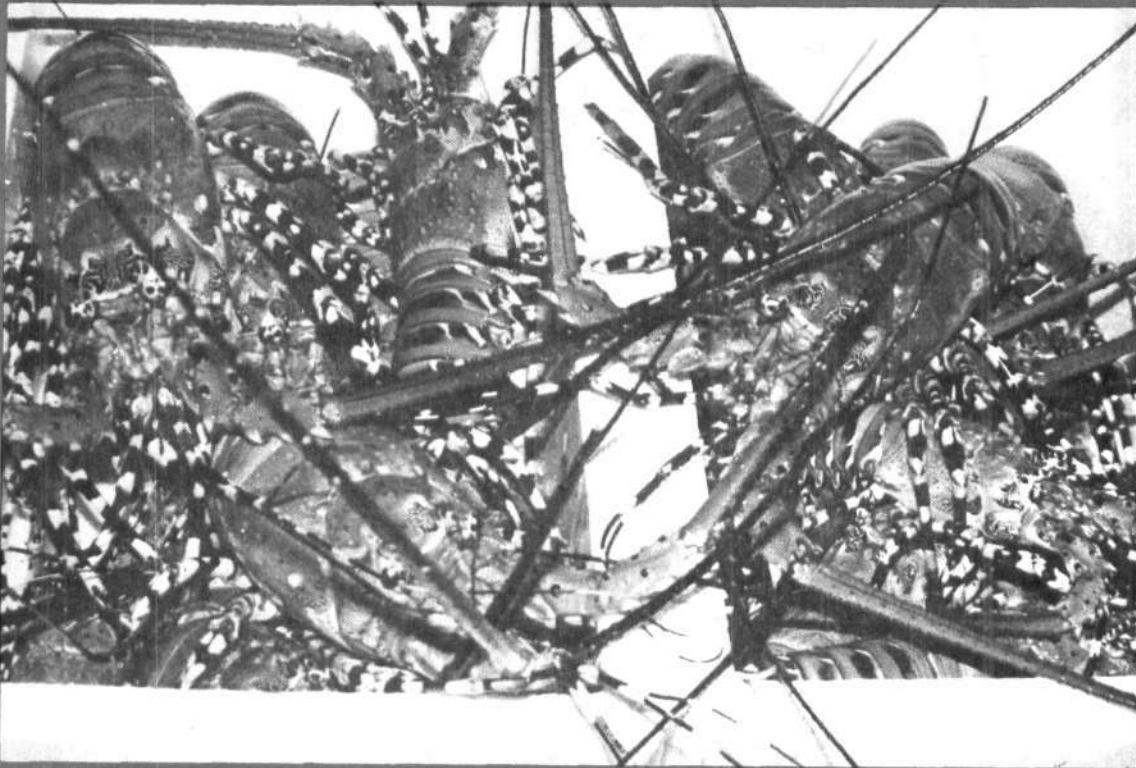




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SCIENTIFIC PRAWN CULTURE IN HOMESTEADS — A GAINFUL SELF EMPLOYMENT OPPORTUNITY FOR COASTAL WOMEN

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Women constitute an important human resource of India's coastal area. Their activities are mainly shore-based. Apart from taking care of the family, they engage in fishery related activities, such as post-harvest operations like prawn peeling, fish curing drying and collection of prawn seeds from back water and surf zone and clam shells from near shore. In such operations women are either wage earners or earning a very low income.

The role of women in aquaculture is relatively a new one which offers great scope for self-employment and serves as an additional income to the family. The concept of prawn culture in homestead water canals is developed keeping in view the generation of employment, need of alternative income for coastal population and maximum utilization of water resources available for increased production. Such prawn culture operations can be integrated with duckery,

poultry, agriculture, horticulture or piggery. Dissemination of technology related to homestead prawn culture is one among the extension programmes launched by the Central Marine Fisheries Research Institute under the project 'Planned change in a coastal village—a model for first-line extension programme at Kandakkadavu, Chellanam Panchayath, Cochin. It involves the stocking of the seed of commercially important species of prawns such as the Indian white prawn, *Penaeus indicus* or the Tiger prawn *P. monodon*, proportionate to the area and productivity and growing them for definite periods to achieve good quality and maximum quantity.

Women can successfully culture prawns in unutilized water canals in homesteads. Water canals in coconut groves can also be utilized for this purpose. Given under are some guide-lines for women who take to prawn farming in their homesteads.



Fig. 1. A view of the homestead prawn culture water canal where demonstration was conducted by CMFRI.

While selecting culture sites, care should be taken that they are connected directly or indirectly with back water, having free tidal water movements. Tidal flow renews the water in the canals avoiding stagnation and bring in nutrients and live food organisms. It helps in regulating the temperature of the water, causes circulation of nutrients throughout the pond and takes out biological wastes (metabolites). It should be ascertained that water and soil of such canals are free from pollutants and silt. Women can seek help of fisheries extension personnel to get the water and soil tested to assess its suitability.

Water characteristics

While venturing into prawn culture one should keep in mind that the canal should have the height of water around 0.75 to 1 m throughout the period of culture. Less height than this will lead to excessive heating during summer and thereby affect survival of prawns. Water temperature optimal for prawn is 25-30°C.



Fig. 2. Removing unwanted vegetation from sides of the canal.



Fig. 3. Bunding in progress.

For the successful growth and survival of prawns the physical and chemical qualities of water should be checked periodically and kept at optimum level. When temperature and salinity increase, concentration of dissolved oxygen decreases. For prawn farming the dissolved oxygen content should not go below 3.5 ml/litre. Salinity is another important factor to be taken into consideration. The ideal salinity for prawn culture is found to be 10-35 ppt. Another aspect to be kept in mind is that the optimal pH for water ranges between 7.5 to 8.5 for successful prawn culture. A woman doing prawn culture in homesteads can check herself the height of water and temperature using scale and thermometer. For checking the level of oxygen, pH and salinity she may seek the help of a specialist by consulting the local Extensionist.

Preparation of culture site

The vegetation from the sides of the canals should be completely cleared which can be done



Fig. 4. Eradication of predators using ammonia.

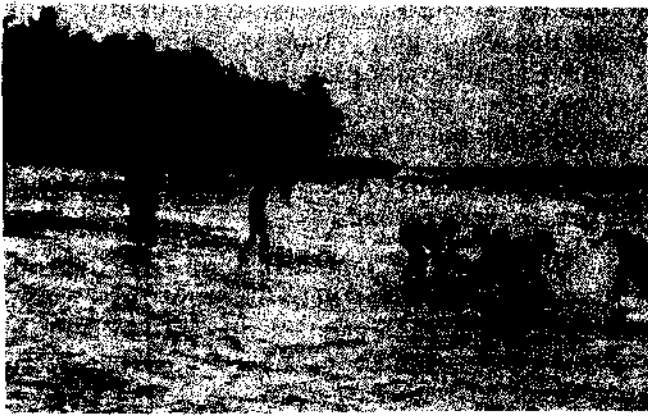


Fig. 5. Collection of prawn seed from the sea.

by women farmer themselves. Firm bunds of clay should be constructed on the sides or the existing bunds and should be strengthened. Being a small water canal, this work also can be done by women. A sluice gate should be erected to regulate the flow of water. The bottom of the canal should be levelled slopping towards the sluice gate. For the fixing of the sluice gate help of male members of the family may be needed.

All decaying organic matter and predatory organisms present in the water have to be removed. Eradication of undesirable organisms can be done by netting and hand picking. Croton seed, mahua oil cake or ammonia can be applied @ $3-4 \text{ g/m}^3$, 200 g/m^3 and 15 g/m^3 respectively. Handpicking can be skillfully done by women and for application of croton seed, mahua oil cake and ammonia training from concerned organisations may be obtained. Krishi Vigyan Kendra of CMFRI at Narakkal has trained a good number of women in the eradication practices. The advice of a



Fig. 6. Cleaning the nylon mesh screen of sluice gate to avoid clogging.



Fig. 7. Harvest in progress in the homestead prawn culture canal.

subject matter specialist may be sought for studying the productivity of the water canal. If productivity study shows unsatisfactory result, it should be improved by applying organic and inorganic fertilizers, according to the advice of a specialist.

Stocking

Prawn seeds for stocking may be either obtained from prawn hatcheries or collected from back water or surf zone of the sea. Collection of prawn seeds is best done by women and they need not take any other help in this. Training in collection and identification of prawn seeds is imparted at the KVK of CMFRI. The prawn seeds collected from sea will be post-larval stage which needs further rearing in nursery ponds to attain stockable size. The optimum size for stocking is 20-25 mm. Generally, stocking rate of *Penaeus indicus* is 5-6 Nos. per square metre.

Monitoring

After stocking, growth and survival of the



Fig. 8. A view of the harvested prawns.

prawns should be observed at regular intervals by sampling with the help of a castnet. The women farmers can note and keep the record of the length measurements in her diary. If growth is not found satisfactory, remedial measure have to be undertaken by contacting the local extension personnel.

Water must be also sampled weekly and analysed for pH, temperature, oxygen and salinity. Daily flushing of water during the tides must be allowed for keeping up the quality of water. As was mentioned earlier the help of a specialist may be sought to measure pH, oxygen & salinity. A check of the water canals early in the morning will help to find out if any oxygen deficiency exists. If oxygen is less, prawns will be seen swimming at the surface. In that case steps have to be taken to incorporate air by pumping in or by agitation of water.

Feeding

If growth rate is not found satisfactory, the prawn may need feeding. An innovative woman farmer can prepare feed at home which will help her in reducing cost of procuring feed from market and will enable to utilize the local resources. She may take the help of a good nutritionist who will help her to adopt existing formulae so that locally available ingredients can be incorporated without unbalancing the nutritional consumption of the resultant feed. Feeding can be done by the women farmer themselves using feeding trays submerged in the water suspended from poles at various places in the pond.

Production

Usually the grow-out period for *P. indicus* is 85-90 days. Normally survival rate is found to be 80%. Within 90 days *P. indicus* will reach 110-120 mm in total length weighing 10-12 g.

Harvest

As soon as the prawns reach marketable size (110-120mm), harvesting has to be done. The water level may be reduced to the least possible level before the harvest. Initially harvesting should be done using castnet. The remaining prawns should be harvested using scoop net and at last by hand picking.

From a unit area of 400 square meters (10 cents) of water canal around 16 kg of prawns (*P. indicus*) can be produced which can fetch

around Rs. 75 per kg. The main expenditure will be for the sluice gate which is about Rs. 400/- for such small areas and it can be used for 2-3 years. The cost of eradication and seed will be negligible for such small water canals.

First line demonstration of scientific prawn culture in homesteads

The first-line demonstration by Central Marine Fisheries Research Institute under the extension research project, Planned Change in a Coastal Village—Model for a First-line Extension Programme proved the feasibility of this type of prawn culture as an income-generating activity easily adoptable by coastal women to realise that water canals extending from the backwater through homesteads can be gainfully utilized for prawn culture and the culture operations can be easily managed by women. The women in the project area were trained in scientific prawn culture through lectures, demonstrations and field trips. The demonstration of scientific prawn culture in homesteads was carried out at the homestead water canal of an innovative women of the locality. To emphasise the possibility of prawn in off season i.e. March to June, the demonstration was carried out during that period. Sluice gate was already available with the farmer. So expenditure incurred was only around Rs. 100 for prawn seeds, preparation of the canal and for eradication by netting. As the canal was adjacent to the house it was wholly managed by the house wife and no watch and ward was required. No manure and feed were needed as the water was already found productive. Seven kg prawns were harvested from this canal of 320 sq. m water area in off season which yielded an income of Rs. 280 @ Rs. 40/- per kg for the farmer. The prawn culture in the same canal during the season i.e. Nov.-Jan. and Jan.-March will give double the income. During monsoon, the same canal can be stocked with fishes. This experience clearly showed how enterprising it would be to cultivate fish and prawn in such canals round the year. All the homestead water canals on coastal belt which were left unutilised hitherto can thus be converted into productive prawn culture sites. The field day arranged along with the harvest helped in diffusion of this innovation to nearby village also. Follow-up studies showed that utilization of water canals for homestead prawn culture attained rapid momentum in neighbouring area as a result of this demonstration. The Institute has taken up

extension projects for further dissemination of this innovation in other localities of Ernakulam on the basis of this emulating the State Department of fisheries organisations may take

effective steps for large scale dissemination of this innovation among coastal women and draw suitable programmes to utilise all the untapped area in our coastal belt.