



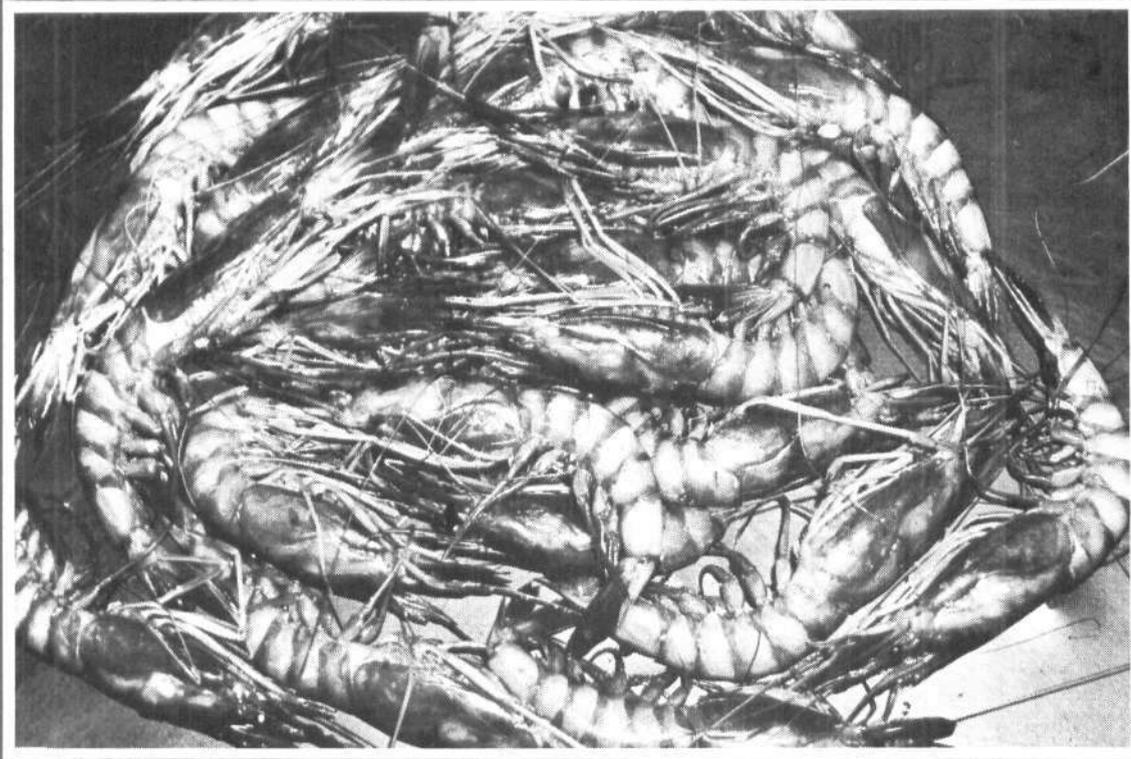
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DEMONSTRATION OF ORNAMENTAL FISH FARMING IN A COASTAL VILLAGE

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Kerala with its profuse waterbodies offers immense scope for the production of ornamental fishes including marine, brackishwater and freshwater species. Ornamental fish trade is a flourishing economic activity with a global trade of one billion US \$ per year in which the contribution of India is only around Rs. 100 million. Ornamental fish production in India takes place mainly in small and medium farms and homesteads in the suburbs of Chennai, Calcutta and Mumbai. Goldfish, koi carps, angels, platies, mollies and guppies are



Fig. 1. Ornamental fish culture facility set up in farmers' homestead.

the major items produced in these systems. Ernakulam and Trissur districts in Kerala supply limited quantities of angel fish to Tamil Nadu. Development of aquaculture has not been paid much attention in India as the thrust has consistently been on the production of table fish. Ornamental fish farming has great potential for income generation among the rural and urban communities. With a view to make a beginning in this direction, the Central Marine Fisheries Research Institute has been demonstrating the methods of homestead production of selected groups of aquarium fishes to the inland fish farmers of Chellanam, a coastal village near Cochin adopted by the Institute for promoting various fisheries activities and the details are reported in this communication.



Fig. 2. Angel fish.

Selection of farmers

Five families of Chellanam which were located on the banks of canals and ponds were selected for the purpose of demonstration under the activities of the Krishi Vigyan Kendra of the CMFRI through the active involvement of the extension staff of the CMFRI. Each household was provided an amount of Rs. 10,000 as subsidy against the unit cost of Rs. 20,000 by the Ernakulam District Administration under the Special Central Assistance to the Special Component Plan for Scheduled Castes.

Training and infrastructure

The selected farmers were given one week training in breeding, aquarium maintenance and feed preparation at the Fisheries College, Panangad, Cochin under the Kerala Agricultural University. A study tour to a private commercial ornamental fish farm at Kadachanenthal in Madurai was also conducted to expose the farmers to the practical aspects of aquaculture.

The essential infrastructure for breeding and maintenance of ornamental fishes which consisted of five small concrete rings of 0.75 m height and 1.5 m diameter, four glass aquarium tanks of



Fig. 3. Mollies and gold fish in concrete tank.

75 cm length, 60 cm width and 60 cm height and the accessories were set up in each of the selected households. Black mollies, white mollies, guppies, koicarp and goldfish were stocked in the concrete tanks to help the families practise the techniques of handling and rearing the fish and select the species most suitable to the local conditions.



Fig. 4. The earthen pond where the angel fish were stocked.

Six breeding pairs of angel fishes (*Pterophyllum eimekei*) consisting of black, mosaic and golden varieties were stocked in a small earthen pond of 6 m diameter in the middle of July 1996. The pond was used as a common breeding facility where the selected farmers pooled their broodstock.

Production

The first breeding of angels took place by the middle of August 1996, and by the end of October 1996 three generations of progenies numbering about 2,000 priced on an average at Rs. 4 per fish were obtained. The labour was contributed by the

participating farmers. The rich growth of aquarium plants such as *Utricularia*, *Cabomba*, *Elodea*, *Chara* and water fern, found inside the pond and canals around formed forage for the fishes. Mollies and guppies bred within three months inside the rings while goldfish died after attaining maturity.

Feed

Supplementary feed was given to the fishes in the earthen pond, concrete ring tanks and glass tanks. Farm-made feed was given according to the density of stock. An interesting observation made was that the angels fed well on the flowers of ridged gourd (*Luffa acutangula*) which was grown around the pond. At dawn when the mauve flowers dropped from the creepers and scattered on the water surface, the angels in groups came up and nibbled at the petals. The flowers got completely eaten up within two hours. The economics of operations in respect of angelfish in the earthen pond of 6 m diameter are presented below.

Cost of 12 angelfish broodstock	-	Rs. 400
Cost of feed	-	Rs. 400
Labour	-	Rs. 1,000
Total cost	-	Rs. 1,800
Gross return	-	Rs. 8,000
Net return at the end of three months	-	Rs. 6,200



Fig. 5. The ridged gourd.

Integration with vegetable cultivation

The inland fish farmers of coastal Kerala possess the natural acumen of effectively utilising the limited land with them for crop production. Growing vegetables on the bunds of fish and shrimp farms has been a traditional practice. During June-December when the water and soil salinity are low, vegetables such as the ridgedgourd, snakegourd, bottlegourd, bittergourd, cucumber, pumpkin and amaranthus are cultivated along the bunds. The seed is sown on the bund and the creepers are allowed to climb over and spread on the *pandal*, a framework made of coir supported by bamboo poles raised to a height of about 2 m from the ground.

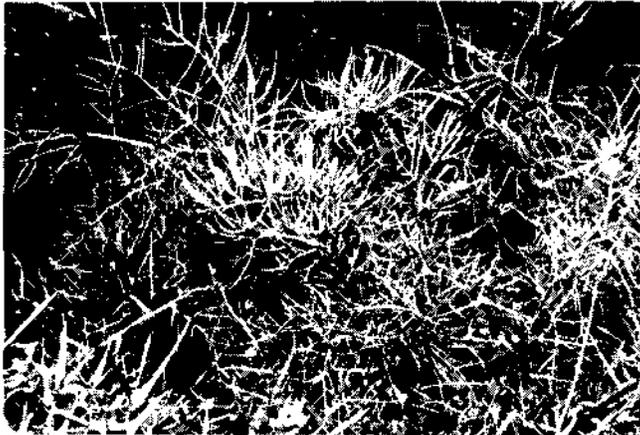


Fig. 6. *Seraptopteris* sp. (water fern).

The *pandal* is constructed in such a way that it projects above the ground water surfaces, leaving the land and water for other uses. Vegetables are grown on the banks of small ponds also and the creepers are allowed to spread above the pond. Fish and shrimp are grown in the waterbody during the season. The *pandal* provides shade to the fish below. When paddy is cultivated seasonally a portion of the farm is used for erecting the *pandal*. Algae and aquatic weeds obtained from the ponds

are used as manure for the vegetables. In Chellanam village vegetables are grown in an area of about 40 hectares mainly consisting of bunds, and about 100 tonnes of vegetables are sold every season.



Fig. 7. *Utricularia* sp.

The ornamental fish culture project initiated for the first time in this village helped to demonstrate the viability of ornamental fish culture as a low investment, self employment opportunity for the coastal communities. As it is a homestead activity, women and children can be gainfully employed. Ornamental fish culture is an ecofriendly practice and farmers in small groups could collectively create the infrastructure facilities and develop it into an economically efficient farming enterprise which could be integrated very well with agricultural crop production activities.