

A guide to ornamental fish culture (Cichlid) for small-scale fish farmers

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Introduction

India is highly potential in ornamental fish culture with states like Tamil Nadu, Kerala, and west Bengal contributing substantially in this field. Ornamental fishes of India are contributing about 1% of the total ornamental fish trade. These fishes are exported to the tune of 54 tons, having the value of Rupees 13.08 crores in 2020-21. It registered a growth of 66.55 % in terms of quantity and 20.59% in terms of value in INR. Owing to abundant availability of water sources, fertile soil and hardiness of almost all these fishes, culture of ornamental fishes can be seen as an aspect to improve self-employment to rural people and to stabilize their livelihood. This article is based on the practical knowledge gained during Experiential Learning Program in Fisheries College and Research Institute, Thoothukudi.

Some cultivable ornamental Cichlid varieties



Culture Technology

Aquariculturist is the name given to any farmer who cultures ornamental fish species. For a small-scale cultivator cement system is ideal as there is less stress on soil conditioning. One of the best systems to grow Cichlid varieties include Raceway system. Raceways can be constructed in a very short duration and is easy for the farmer to monitor the fishes for clinical signs and feed intake.

Tank Constructions

Tanks are cemented units in our campus with an area of 60m² each. After construction of cement tank, it's important to treat the bottom with lime to remove excess alkalinity. Water is added to the tank and is allowed to condition for a week to settle impurities and excess minerals. Then the system is ready for stocking. Care should be taken to not let any predatory fish larvae or poisonous microorganism to enter the system through the inlet this can be easily prevented by covering the inlet with plankton net.



Cement tank

Procurement of fishes

The fishes must be collected from a government affiliated hatchery, we procured our fishes from Siddha Aqua Farm, Thoothukudi. The fishes were collected early in the morning when the

metabolisms of the fishes are lower. Those were carefully graded according to size and were collected in double layered polythene bags with 1/3-part water and 2/3 parts oxygen. All the packets were then transported in a well enclosed vehicle without rash driving to provide the fishes stress free environment.

Stocking

The species are selected according to the interest of the farmer and also according to the fishes mostly preferred by the buyers or people around the locality. Some species of cichlids are very ferocious in that case compatibility can be maintained by introducing fishes of same size. Before stocking the fishes must be stored in quarantine for 2 weeks to make sure these are diseases free. Then the fishes were introduced in early morning hours into the system. These must be monitored closely for several days from any stress signals.



Stocking of fish seeds

We introduced 3000 no's of juveniles in raceway the stocking density was calculated to be 50cm² for one fish, enough space must be given to the fishes as lesser the stocking density the more growth can be expected in a short duration.

Feeding

Food is the most important and cost intensive aspect in fish culture. During

initial stages since the size of fish is too small (1 cm, 0.5g) powdered feed is preferred. We chose pellet feed with good protein source (more than 35%) and was ground and sieved to make fine powder. A total of 100g (8% body weight) powdered feed was taken and mixed with daphnia and was mixed to form a uniform ball. Then the ball was pinched and small pieces of it was fed to the fishes. Some daphnia was also given without mixing directly into the tank. The fishes showed good growth in this feed. After one week as fish reaches a size of 1-2cm the feeding can be shifted to pellet feed itself. The feeding ratio should increase day by day as the fishes gain in size. We can see exponential growth within 20 days of stocking and the size is doubled every week. Feeding is the main aspect which causes this good gain in size when the water quality parameters are maintained well.



Feed Ball

Water quality management

Water quality must be also ensured clearly, there is different temperature requirement for different ornamental fishes but Cichlids are mostly eurythermal.

Water quality parameters	Optimum Level
Temperature	24-28°C
Oxygen	More than 5ppm
pH	7-8
Hardness	150-200ppm
Ammonia	Trace
Nitrite	Trace
CO ₂	Less than 1ppm

Water quality parameters required for ornamental fish culture

It is important to remove uneaten feed from the pond bottom, we used motorized siphoning to remove debris or else the water color would change and there will be an increase in BOD. Aeration is very important throughout the culture period, submersible blowers are used in the tanks. Water quality test kits should be invested upon and thorough analysis of water quality every 2 days and sampling once in a week is necessary to maintain optimal growth.

Economics

We can procure seeds from a high standard government affiliated hatchery and the price range can be between Rs 3-7/- per seed for Cichlids according to the variety. Normally commercial pelleted feed costs Rs 80-110 /- per kg, so in order to start a culture in a raceway or a cemented pond of specific volume we can stock 6000 seeds in a time this could have roughly an investment of Rs 48000/- and if the culture period is extended to 80 days the seeds can be sold to Rs 20-25/- making a profit of Rs 40000/- within 3 months. These values can be altered in case of excessive mortality or ban in selling the cultivated species.

Various subsidies are available in government sector from PMMSY schemes and from NABARD. This has helped many small scale aquariculturist especially woman to excel economically in the field of ornamental fisheries.