



Metamorphosed fingerlings

The formulated feed is sprinkled on the surface of the water in small amounts frequently at every 2-3 h throughout the day. Formulated feed is added in small amounts so that the feed is consumed within 5 - 10 minutes, as excess feed should not be allowed to accumulate on the bottom of the tank where it will get decomposed and degrade water quality. The size of particulate feed is increased to 400–800 µm from 30<sup>th</sup>-45<sup>th</sup> DPH. High-quality micro diets, specifically formulated for marine finfish, should be used and these should be stored in a refrigerator or freezer to maintain their quality. In addition, minced fresh fish meat is fed from 30<sup>th</sup> DPH.

The larvae metamorphoses after 30-35 days of culture. Regular grading of the larvae is carried out to avoid cannibalism. Juveniles of orange spotted grouper is harvested after 40-45 days of larval rearing and are shifted for nursery rearing. The average survival during the larval rearing is around 12%.

### Nursery rearing

The nursery rearing of orange spotted grouper is standardized with different feed and culture conditions. Pellet feed with 45% protein and 10% lipid is an ideal feed during the nursery rearing of orange spotted grouper. Fishes are fed @ 10% of the biomass for 3-4 times in a day. Nursery rearing is carried out in different systems such as RAS, hapa fixed in pond and cement



Nursery rearing in pond

tank. The stocking density is generally 300- 1000 nos per m<sup>3</sup> depending upon the culture system. The RAS is stocked with 1000 nos/m<sup>3</sup> and the fish grows to a size of 38 g in 2 months with a growth rate of 0.59 g/day. Hapa in pond is stocked @ 200-400 nos/m<sup>3</sup> and the fish grows to a size of 32 g in 2 months with a growth rate of 0.4 g/day. The cement tank is stocked @ 100-200 nos/m<sup>3</sup> and the fish grows to a size of 18 g after 2 months with a growth rate of 0.26 g /day.

### Grow out culture

The growth potential of orange spotted grouper is studied by culturing the advanced fingerlings of the fish in sea cages. A 6 m dia floating HDPE cage is used for the culture. In general, advanced fingerling of approximately 10 cm (15 g) is an ideal size for stocking either in cage or pond for culture. The stocking density is 30 nos/m<sup>3</sup> in cages and 2500 nos/acre in ponds. Initially the fishes are stocked in the cage with 1 cm mesh size net and after reaching 100 g size fishes are transferred to cages with 2 cm mesh size nets and finally after reaching 500 g in size they are stocked in cages of 2.5-3 cm mesh net till harvest. During the culture in grow out, low value fish (sardine, scad, tilapia, etc) meat is considered as good feed.



Grouper cultured in cage

In addition, the pellet feed with 40% protein is also used for the grow out system. However, the acceptance for fish meat is better than pellet feed, and added to this the wastage is also more for pellet feed in cages. Food Conversion Ratio is 1:1.6 - 1:1.7 with pellet feed and 1:6.0 - 1:7.0 for low value fish. Net exchange is an important aspect for cage culture of fishes, and it is necessary to change the net once in 30-45 days as part of the best management practice in cage culture. However, based on the observation, the time can be decided for net exchange. The fish stocked at 15 g size grows to 250 g, 500 g, 750 g and 1000 g after 4 months, 6 months, 8 months and 12 months, respectively in cages. The cost of production estimated is ₹ 220/kg and the farmgate price realized is ₹ 350/kg.

### Consultancy Services offered by CMFRI:

Layout and hatchery designing for finfish

Training on live feeds

Training on broodstock development and larval rearing of finfish

Technical services for nursery rearing and grow-out culture in ponds & cages



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