

Seed production of Indian pompano

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Introduction

In India, the resources available for mariculture/coastal aquaculture is vast and it includes 8129 km of coastline, 2.2 million km² of Exclusive Economic Zone (EEZ) with 0.5 million km² of continental shelf, 1.2 million ha of coastal salt affected land and 3.9 million ha of estuarine area. In spite of having huge mariculture resources, India is still at the initial stage in mariculture. The coastal aquaculture scenario continues to be dominated by shrimp farming with single species. Presently, shrimp culture in India is in doldrums, due to the frequent failures of the crop. Adopting crop rotation or diversification using finfishes, to some extent would solve the issue of diseases in shrimp industry. One of the vital prerequisites for crop rotation or diversification is the availability of seed production technology for selected high value finfish. Indian pompano is a suitable species for crop rotation, since the shrimp pond could be used as such for the culture of the species without further modifications.

Therefore, it was felt a necessity to develop seed production technology of high value marine finfishes and accordingly breeding and seed production technology of Indian pompano, *Trachinotus mookalee* was initiated and perfected at Visakhapatnam Regional Centre of ICAR-Central Marine Fisheries Research Institute, Visakhapatnam, Andhra Pradesh.

Indian pompano is distributed in western Indian Ocean from the Gulf of Oman eastward to Sri Lanka. Its range also extends to Singapore, Gulf of Thailand and Hong Kong. In India it has been reported both from the east and west coasts. It is considered as one of the potential candidate species for aquaculture because of its several culture characters like fast and uniform growth rate, their attractive appearance, hardy in nature with tolerance to wide range of water salinities (5-35 g/

l), acceptability to formulated feed, firm white as well as tasty meat and high market demand. It can be cultured in both ponds and cages.

Broodstock development and spawning

Broodstock development, breeding and larval rearing of Indian pompano were first time successfully achieved at Visakhapatnam R. C. of ICAR-CMFRI, Andhra Pradesh, India.

Adult fishes (>2kg) collected from commercial catches were stocked @ 1kg/m³ in a circular tank of 125 m³ capacity fitted with a Re-circulating Aquaculture system (RAS). The tank was connected with different components of RAS such as rapid sand filter to remove suspended solids, protein skimmer to eliminate dissolved solids and biological filter to reduce biochemical waste. The whole tank water was getting re-circulated 300% per day, and the water was added at the rate 3% to top up the loss happening due to protein skimmer and backwashes of rapid sand filter.



Broodstock RAS at Visakhapatnam



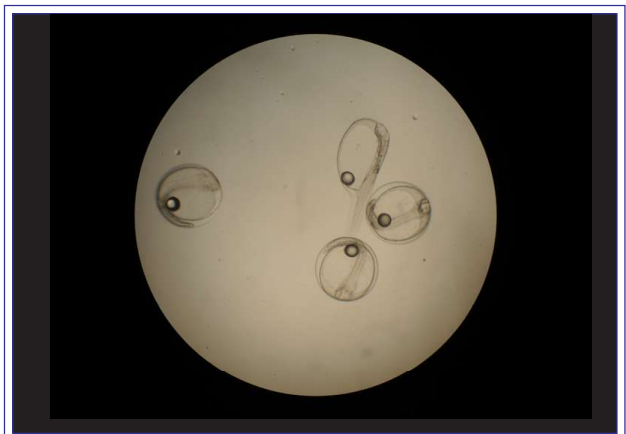
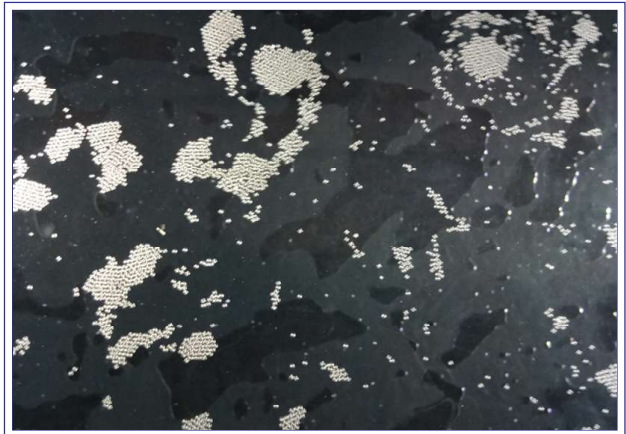
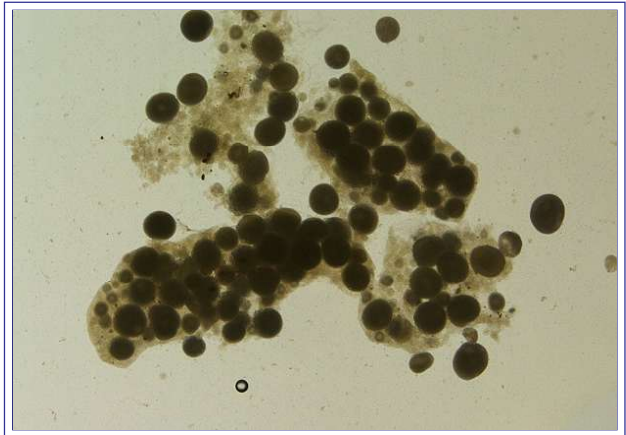
They were fed on fresh squid and clam meat fortified with squid oil, vitamin – mineral pre-mix in a day till satiation. They were cannulated and sexed. Passive integrated transponder (PIT) tagging was used for identification of individual brooder. The brooders were matured within 4 months with ova size of 450 - 550 μ m.



Seed Survey

Spawning was obtained either naturally or by inducing with hormone. Once the intra-ovarian ova reaches a size of $500\ \mu\text{m}$ diameter, the male and female were induced with hCG at a dose of 350 IU/kg body weight. The spawning occurred within 36-38 hours after injection. The number of eggs spawned by Indian pompano ranged from 0.6 to 1.5 lakhs.

The spawned eggs from broodstock tank were collected by passing the surface water through an egg-collecting chamber fitted with a hapa of $500\ \mu\text{m}$. Collected eggs were treated with 20 ppm iodine solution for 10 minutes with strong aeration. Treated eggs were stocked in 100 L aquarium tank @ 200 nos per liter. Bottom settled eggs were removed after 2 hrs of stocking. The eggs hatched out 20-



22 h after fertilization at 28-30 °C, 30-32 ppt salinity and mild aeration. Newly hatched out larvae were free floating on the water surface.

The overall fertilization and hatching rate was found to be $69 \pm 1.55 \%$ and $87.67 \pm 0.81 \%$, respectively. Subsequent spawning of Indian pompano were achieved at an interval of 35-40 days in RAS.

Larviculture

The newly hatched larvae measured 2.1-2.2 mm in total length. The mouth opening was formed after 42-46 h post hatch. The newly hatched larvae were collected from the water surface of hatching tank and stocked in larval rearing tank @ 10 nos./L. Water depth of the larval rearing tank was maintained at a minimum of 80 cm. Green water was used for larval rearing.

Rotifers and copepod nauplii were added from 2nd dph onwards @ 10-20 nos./ml. Artemia nauplii were used in larval rearing tank from 9th dph. Weaning of larvae with inert diet was started from 15th day. Metamorphosis of the larvae started from 17th day and was completed by 22nd day.



The size of the metamorphosed fry ranged from 16 to 17 mm. Juveniles of Indian pompano were harvested after 25-30 days of larval rearing and were shifted for nursery rearing. The average survival during the larval rearing was around 21 %. Longer duration of light (1000 lux) was provided for two to eight



days of larval rearing, afterwards natural light period was followed. Feeding and water management during larval rearing is depicted below.

Days after hatching	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Feed management																											
Microalgae (10 ⁵ /ml)																											
Copepod Nauplii (2 nos/ml)																											
Rotifers (<100 μm) (10-15 nos/ml)																											
Rotifers (15-25 nos./ml)																											
Artemia (1-2 nos./ml)																											
Artificial diet																											
Water management																											
Siphoning																											
Water exchange																											
~ 10 %/day																											
~ 20 %/day																											
~ 50 %/ day																											
~ 100 %/day																											

Nursery rearing

The nursery rearing of Indian pompano was standardized with different feed and culture conditions. Pellet feed with 45 % protein and 10 % lipid was ideal during the nursery rearing. Feed are fed @ 10 % of the biomass for 3-4 times in a day. Nursery rearing was carried out in different systems such as RAS, hapa fixed in pond, hapa fixed in sea cages and cement tank. The stocking density was maintained 300- 1000 nos per m³ depending upon the culture system. Indian pompano grew to a size of 20-25 g in 2 months culture period, after which it was stocked in pond or cage for grow out culture.



Grow out culture

Advanced Indian pompano (15-20 g) produced were stocked in cage and fed with floating pellet having 40-45 % protein content. Initial culture showed good growth performance from 15-20 to 120-130 g (126 ± 3.17 g) after three months in FRP tank and after 10 months of rearing, fish attained an average size of 969.9 ± 67.5 g.

