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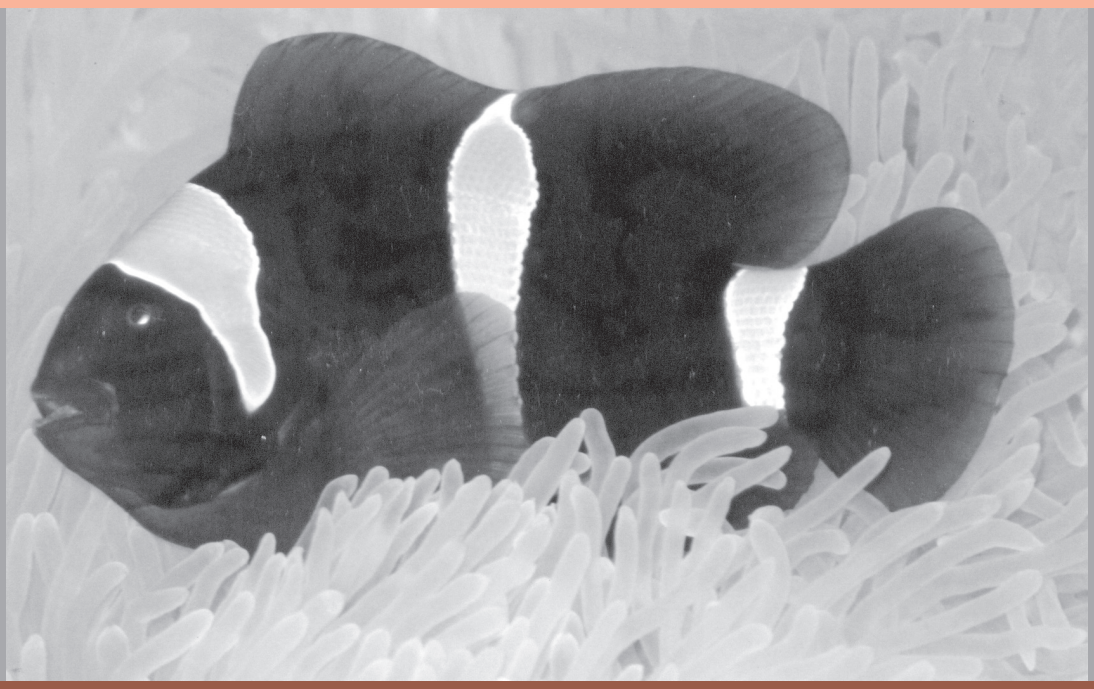

TECHNICAL AND EXTENSION SERIES

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

COCHIN, INDIA

(INDIAN COUNCIL OF AGRICULTURAL RESEARCH)

1198 Cultch preference and growth of remote-set spat of the backwater oyster, *Crassostrea madrasensis* in varied salinities

Remote setting is the method of setting larvae of bivalves in distant areas, away from the hatchery after transporting eyed larvae (pediveliger) in cool and moist condition without water. The advantages are that hatcheries need not be established near the

farms, transportation charges for cultch with spat can be completely eliminated and loss due to transportation stress can be minimized. However farmers must develop simple infrastructure to set the transported larvae near the farm.

In India, the first success in remote setting of edible oyster larvae has been done at CMFRI in 2000 when larvae from east coast were set at Cochin. This study indicated the scope for developing this technique for edible oyster *Crassostrea madrasensis*. In the present study remote setting was done and simultaneously the cultuch preference and the growth of the spat in different salinities were studied.

Remote setting experiment

Pediveliger larvae of 280 µm were transported from Tuticorin Shellfish Hatchery of CMFRI in low temperatures (22 to 28ºC) and made to set at the Calicut Research Centre of CMFRI after a transit period of 28 hrs. The larvae were acclimatized in 32 ppt salinity in 10 liters of seawater for 30 minutes. After acclimatization, when the activity of the larvae became stable, they were released in one tonne tanks at a stocking density of 5000 larvae per litre and provided with two different type of cultch material. Empty oyster shells cleaned, dried and aged and shells of the clam *Villorita cyprinoides* were used as cultch. The settlement pattern on the inner and outer surface of oyster shell was also noted. Mild aeration was provided and mixed feed of *Isochrysis galbana* and *Chaetoceros* spp. was provided to the larvae in 1:2 ratio. While continuing the aeration, 50% water was renewed everyday and the occurrence of swimming larvae monitored.

When the settled larvae became visible after 19 days, their linear measurements were taken and growth and survival monitored. An experiment to evaluate the effect of salinity

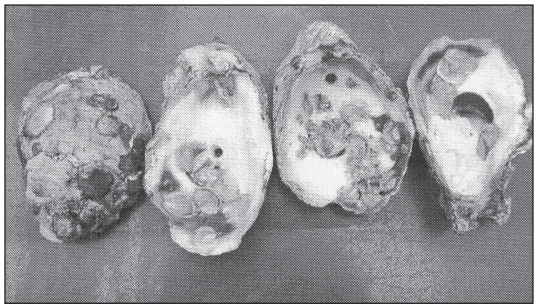

Fig. 1. Remote-set oyster spat on oyster

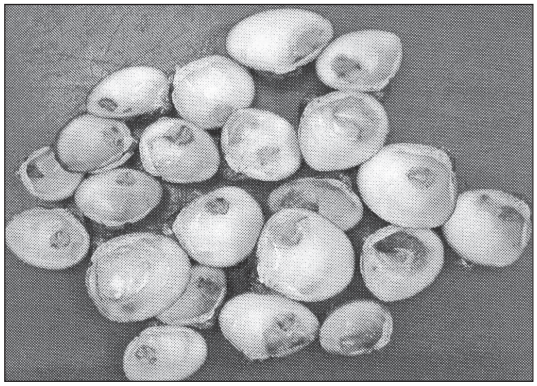

Fig. 2. Remote-set oyster spat on clam shell

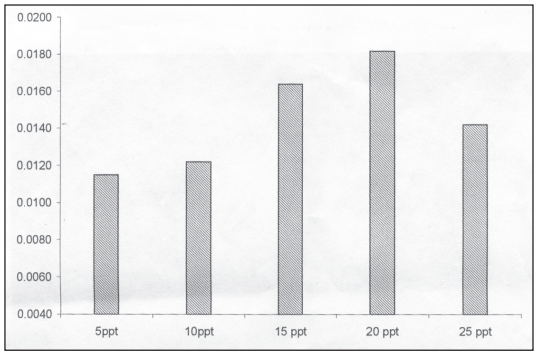

Fig. 3 Average IGR of remote set oyster spat grown in different salinities

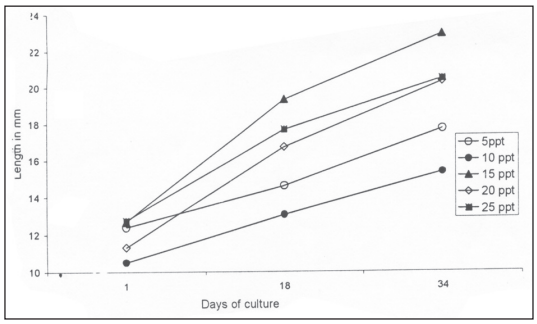

Fig. 4 Average length of remote set oyster spat reared in different salinities

on the growth and survival of the settled spat was done by stocking 50 spat settled on shell clutches in salinities of 5,10,15,20 and 25 ppt. The length and width of the spat was measured using a digital vernier calipers every 15 days.

The mean and standard error were calculated from the observed individual measurements of the replicates. These means were used to calculate the instantaneous growth rate (IGR), which does not have time restriction. The IGR was computed from the formula

$$IGR = \frac{Ln_t - Ln_i}{t}$$

where, Ln_t is the natural log of the length at time *t* and Ln_i is the natural log of the initial length.

Results

The activity of the larvae during acclimatization period ranged between 63.5 to 83.3% and the average survival was 78.7%. Highest settlement of 60% was observed on oyster shell clutches (Fig 1). Settlement on tank surfaces was 35.5% followed by settlement on clam shell (Fig. 2) (Table 1). The % settlement on the outer surface oyster shell

Table 1. Details of the remote set experiment on edible oyster

1	No. of larvae released (initial)	475000
2	Percentage survival after transit	78.7% (3,74,250 larvae)
3	Total no. of spat in oyster shells	5256 (60%)
4	Total no. of spat settled inside the tank	3117 (35.5%)
5	No. of spat in clam shell	392 (4.5%)
	Total spat	8765
6	% of settlement	2.30

was higher (76%) than on the inner surface.

The larvae measured 6.01 mm in 19 days and reached 12.36 and 14.93 mm in 38 and 75 days respectively. The IGR in different salinities varied with the highest (0.0182) and lowest (0.0115) in 5 ppt (Fig 3). The mean length of the oyster spat in different salinities were noted (Fig. 4) and the highest mean length was in 15 ppt. Survival was 100% in all the salinities during the 34 day experimental period.

The study indicated the scope for remote setting of oyster larvae. This can be taken up as a collaborative venture with the State Fisheries Department wherein the setting facilities can be developed as a common facility where major oyster farms are located. The survival and good growth of the spat in 5 to 25 ppt salinity indicates the scope for starting oyster culture during September-October itself along the west coast. This can result in two crops instead of a single crop.

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