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INDUCED SPAWNING AND LARVAL REARING OF *CRASSOSTREA MADRASENSIS* (PRESTON) IN THE LABORATORY*

The technology of culturing the edible oyster *Crassostrea madrasensis* by rack-and-tray method has been developed by the Central Marine Fisheries Research Institute at Tuticorin. For carrying out oyster culture more effectively it is necessary that hatchery techniques are evolved so that oyster seed could be adequately produced and supplied for a continuous culture system.

Investigations on induced spawning and rearing of the oyster have been taken up at the Institute's hatchery laboratory at Tuticorin. For the first time in India spat of *Crassostrea madrasensis* have been produced on a large scale in August, 1982 in the laboratory.

Spawning: Oysters selected for spawning are conditioned for 24 to 48 hours at temperatures of 20°C to 22°C in an air-conditioned room. During this period the oysters are fed with phytoplankters (a mixed culture of diatoms and *Chlorella).* The oysters are then transferred to water at temperature above ambient level i.e., 30°C-32°C. When so treated the oysters usually spawn. To ensure spawning in females, sperm suspension from a ripe male is provided in the medium as an additional stimulus. The spawning process is generally over within 5 to 20 minutes which depends on the condition of the gonad. The gametes are transferred to a 10-1 beaker containing seawater specially filtered through cartridges. The fertilised eggs settle at the bottom and undergo further development.

*Larval rearing:*The first cleavage of the egg follows immediately after the appearance of the second polar body and successive divisions occur quickly. At the end of 3½ hours the morula stage is

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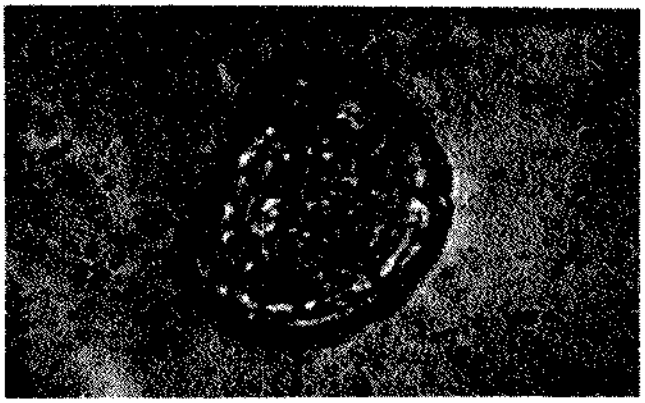

A

B

C

Fig. 1. Larval stages and spat of edible oyster *Crassostrea madrasensis* A.Stright-hinge stage. B.Umbone stage. C.Eyed stage. D.Pediveliger stage. E.Spat.

D

E

reached. After further development, the straight-hinge or 'D' shell larval stage is reached at the end of 20 hours (Fig.1A). The larva is semi-transparent with the velum creating a strong ciliary current which directs minute particles of food into the stomodaeum. On an average the larva measures 50 µ along DVM (dorsoventral measurement) and 66 µ along APM (anteroposterior measurement) on the first day. On the 3rd day the larva becomes slightly oval in shape and measures 95 µ along DVM and 100 µ along APM. On the 7th day the larva attains the umbone stage and measures more along DVM than APM and the shell grows by addition of ridges. The larva measures on an average 150 µ along DVM and 110 µ along APM at this stage (Fig.1B).

The larva attains eyed stage on the 17th day. The foot is slightly developed with a tuft of cilia at the tip (Fig.1C). The larva measures between 295 µ and 310 µ along DVM and between 250 µ and 275 µ along APM. On the 18th day the larva starts crawling with the foot and becomes pediveliger (Fig.1D). The larva measures 350 µ along DVM and 310 µ along APM. Subsequently the pediveligers settle to lead a sessile life. The velum totally disappears and the labial palps and gills start appearing. This is known as plantigrade stage. Thereafter the larvae develop the characteristic adult features and metamorphose into spat (Fig.1E). The young spat measures 450 µ along DVM. On the whole, the development is completed within 19 days after fertilisation.

The larvae from straight-hinge stage were fed with *Isochrysis galbana* cultured in the laboratory under controlled temperature. Further work is in progress to standardise methods for producing oyster spat on a large scale.