

Wild black-lip pearl oyster, *Pinctada margaritifera* spat: growth and broodstock development

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The black lip pearl oyster, *Pinctada margaritifera* (Linnaeus, 1758) is a marine oyster distributed in the South Pacific, Indo-Pacific regions and the Red Sea. Globally, it is one of the three valuable pearl producing oysters in the pearl culture industry, apart from *Pinctada fucata* and *Pinctada maxima*. However, in India, the distribution of *P. margaritifera* is limited to Andamans and Nicobar Islands and occurring very rarely in Gulf of Mannar. (Alagarswami, 1983). Spat of *Pinctada margaritifera* was collected from the intertidal rocks off the coast of Visakhapatnam 17.7° N–83.3° E, Andhra Pradesh (Bay of Bengal) during low tides. The spat was light

green in colour with alternate white and green radial pattern with distinct growth processes. They were acclimatized and reared in 1 t fiberglass tanks in the marine hatchery.

The fouling on the oysters were carefully scraped of taking care not to damage the growth processes and gently washed to remove the silt. The chrysophycean yellow-brown flagellate *Isochrysis galbana* was used as a standard feed for the spat. Filtered (1 µm) and UV treated seawater was enriched with Walne's medium and inoculated with *I. galbana* and *Chaetoceros calcitrans*. The pH of the cultures was



Pinctada margaritifera spat collected from intertidal rocks off Visakhapatnam coast

maintained between 7 and 8. The microalgae were grown under 24 hours light conditions at a temperature of $21 \pm 1^\circ\text{C}$ and harvested daily in the exponential growth phase. Algal concentrations were counted daily using a Sedgwick counting cell. Shell dimensions of the oysters, excluding the growth processes were measured using a digital Vernier calipers (0.01 mm precision) and the total weight by a portable electronic balance (0.01 g precision).

The spat of *P. margaritifera* collected from along intertidal rocks off the coast of Visakhapatnam 17.7°N - 83.3°E in Andhra Pradesh (Bay of Bengal) ranged from 4 mm to 15 mm (DVM) in size. The spat reared in controlled conditions

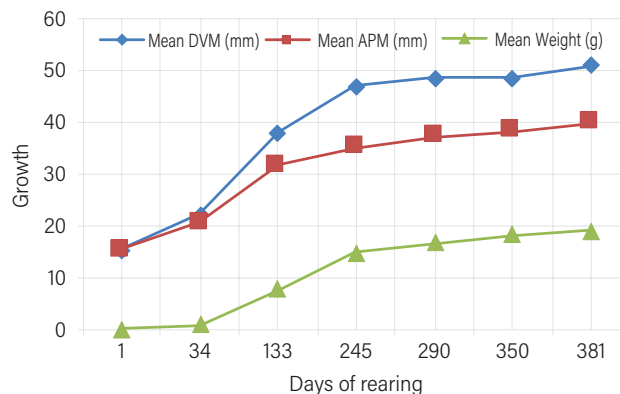
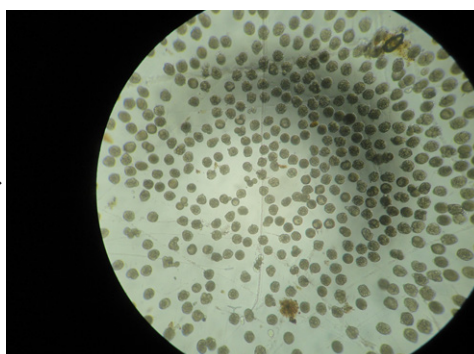


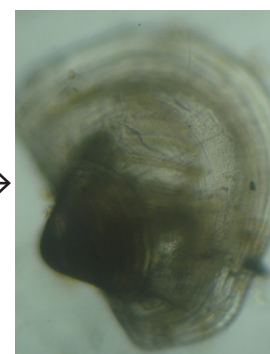
Fig. 1. Growth of *Pinctada margaritifera* spat



P. margaritifera Broodstock developed in the hatchery



Fertilised eggs of *P. margaritifera*



P. margaritifera spat ready to settle

in the hatchery attained an average of 51.01 mm (DVM), 39.94 mm (APM), 11.92 mm (Thickness) and 19.30 g Total weight) in 381 days from an initial average of 15.63 mm (DVM), 15.62 mm (APM) and 0.40 g. The gonadal development was observed at 45 mm DVM.

The Specific growth rate (SGR) per day was monitored and the mean SGR was 33.09 during 350 days of rearing and 35.37 at the end of 381 days of rearing. The SGR per day was 0.114 mm /day. The spat of *P. margaritifera* was reared for 381 days and isometric growth was observed throughout the rearing period. The relationship between the shell height (DVM) and shell length (APM) of the *P. margaritifera* spat was also linear.

Pinctada margaritifera has been reported from the Andamans and Nicobar Islands and stray numbers from the Gulf of Mannar (Alagarwami *et al.*, 1989). Spat of *P. margaritifera* collected from the Visakhapatnam coast, was successfully reared in the hatchery to adult size and brood stock was developed. Several spawnings occurred in the hatchery thereafter and larvae could be reared to spat settlement stage



P. margaritifera spat grown in the hatchery

in the hatchery. Standard technology for seed production of *P. margaritifera* in hatchery is already available (Alagarwami *et al.*, 1989). This research indicates the scope for developing the *P. margaritifera* stock under controlled hatchery conditions which can be utilized for pearl culture in the open waters on the north east coast of India.