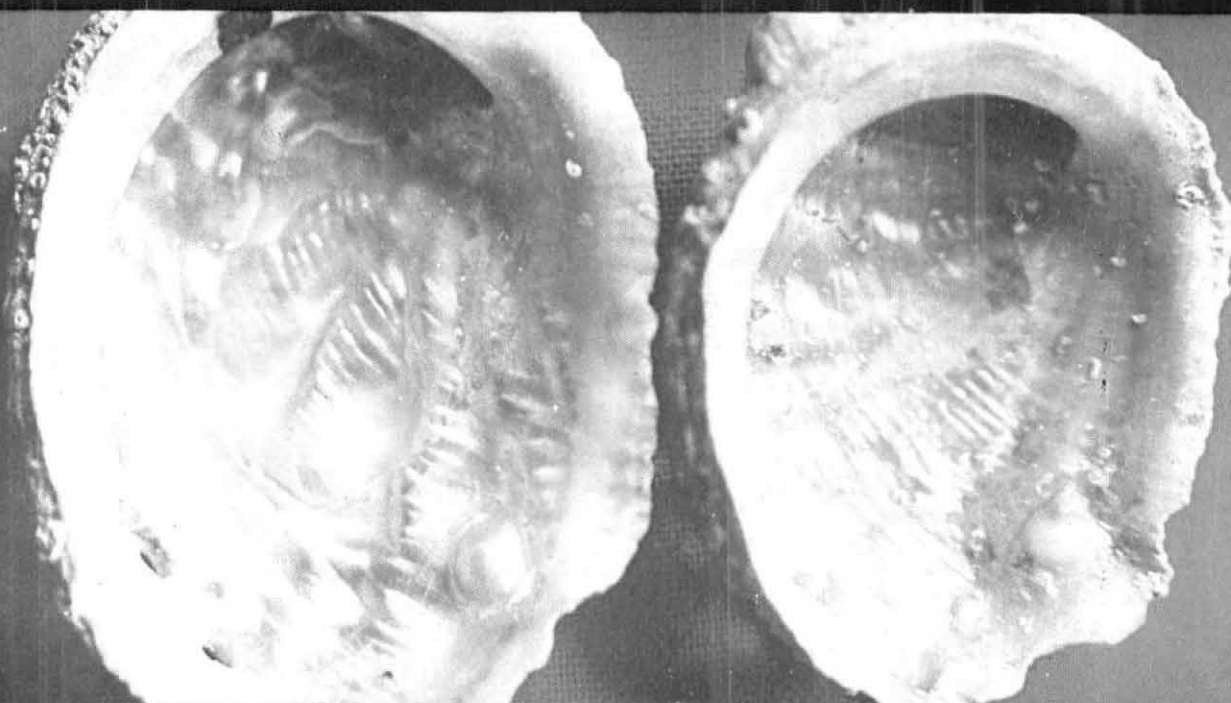




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## Feasibility of integrated bivalve farming at Pallipuram in Vypeen Island, Cochin

The technologies for edible oyster and mussel farming have been developed by CMFRI in 1980's. In order to facilitate the transfer of technologies, several demonstration trials have been carried out at various locations to test the adaptability, ecofriendliness, economic viability and sustainability of these technologies.

The edible oyster farming experiments at Dalavapuram, Quilon during 1994-'97 were highly successful in demonstrating the technical viability of bivalve farming. Several farmers have since successfully adopted the technology. The feasibility of growing a short crop of mussels in the estuarine system during the post monsoon months along with oysters for at least four to five months, when higher salinity conducive for mussel growth prevails in the Ashtamudi lake, has been established. This proved to be highly successful and farmers have evinced interest in this integrated system of farming to raise multiple crops.

In order to identify new sites suitable for edible oyster and mussel farming, location testing and demonstration experiments were

carried out at Pallipuram near Munambam in Vypeen island off Cochin. Pallipuram estuary opens at Munambam. The farm site is 2 km from the Munambam bar mouth.

Oyster shell strings (rens) were suspended from racks erected in the canal leading to the Munambam bar mouth to study spat settlement and growth pattern. Oyster strings with spat collected from Ashtamudi lake were also transplanted to Pallipuram to monitor the growth of oysters in this site. The hydrographic and sediment parameters were monitored monthly. The growth of the oysters was also monitored. Twenty seeded ropes of 0.75 m length each were suspended from the rack in December 1999. The growth and environmental parameters were monitored. Seed of 15-25 mm size collected from the mussel beds off Narakkal, were seeded onto 12 mm nylon ropes covered by mosquito netting.

### Hydrographic and sediment parameters:

The hydrographic and sediment, parameters were monitored during the entire culture period. Salinity ranged from 3‰ in July to 32‰ in March. Productivity ranged from 0.65 mg/l in June to 8.75 mg/l in December. The productivity (gross) ranged from 0.52 mg C/m<sup>3</sup> per day in June to 5.24 mgC/m<sup>3</sup> per day in April. The nutrients in the water and the soil texture were also analyzed.

**Edible oyster :** Edible oyster seed production was initiated at Pallipuram, near Cherai, in Vypeen island. A total of 25 rens were suspended from the rack constructed in the canal bordering a private shrimp farm. Moderate settlement was observed at an average of 15 numbers per string and four numbers per shell. This was low when compared with the settlement pattern at Dalavapuram, Quilon in the Ashtamudi lake.

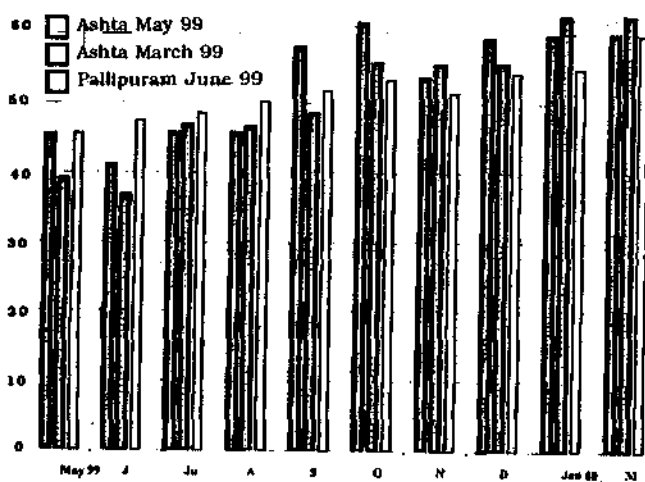
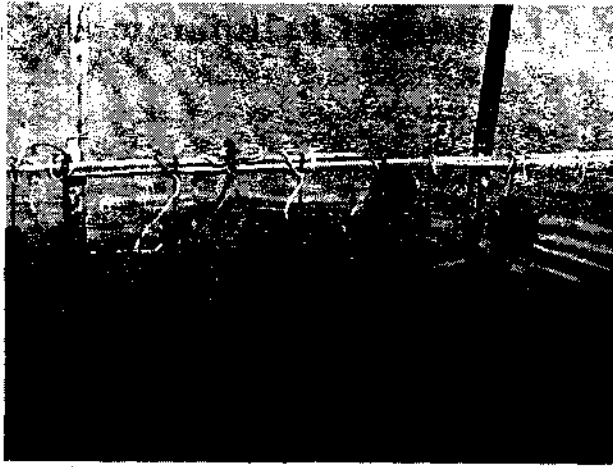


Fig 1 Growth of oyster spat, Pallipuram, 1999-2000



Harvesting mussels from Pallipuram, In Vypeen Island

Strings with spat settled at Ashtamudi were also transplanted to this site to compare the growth with those settled at Pallipuram. Fifty strings were transplanted in two spells, March, May and reared at Pallipuram. Each shell had an average of 4 numbers of spat and 18 numbers of spat per string.

The oyster spat settled at Pallipuram attained a growth of 73.9 mm by May 2000 from an initial length of 45.69 mm in May, 1999. The spat transplanted from Ashtamudi in March reached a length of 72.6 mm in May 2000, while the spat transplanted in May, 1999 reached a length of 80 mm in March 2000 (Fig1).

The increase in weight was significant in the case of the spat transplanted during May while those settled at Pallipuram did not show significant gain although growth was good

**Mussel:** Seeded mussel ropes (green) were also suspended in the farm in December 1999. A total of 20 ropes of 0.75 m, seeded with 20-25 mm green mussel seed collected from Narakkal were suspended. The environmental parameters were also monitored. Good attachment and growth was observed. The mussels attained an average length of 74 mm in four months, indicating a growth rate of 8.41 mm / month.

**Production :** The oysters were harvested in August 2000. The Pallipuram stock of oysters exhibited poor growth when compared with the Quilon stock. Seventeen strings of oysters yielded 34 kg shell-on oysters. The oysters were heat-shucked and yielded one kg of meat. The average meat percentage was 3.5%. The Quilon stock recorded better growth and from 31 strings, 105 kg shell-on oysters were harvested and yielded 4.5kg meat. The average meat percentage was 5.2%.

The mussels were harvested in May 2000. Five ropes were lost due to poaching. The average production was 9.2 kg per meter rope. A total of 137 kg shell-on mussels were harvested. The meat was extracted by heat-shucking and 32.5 kg meat was obtained. The average meat percentage was 38.9%.

Although seed settlement was only moderate and low (15-20 numbers per string and 3-4 numbers per shell) compared to the spat settlement pattern in the Ashtamudi lake (20-25 spat per string averaging 4-5 spat per shell), this area is suitable for oyster farming. The hydrographic conditions are conducive for growth. The Pallipuram stock of oysters attained marketable size at a slower rate than the Quilon stock. This may be due to the inherent genetic difference coupled with the environmental effects, which has to be confirmed through heritability studies. However, the meat content is comparable and small-scale farming can be carried out at Pallipuram.

Pallipuram is close to the bar mouth and therefore favourable for mussel farming. The salinity in the canal increases to 25‰ from December onwards and is suitable for rearing green mussel (*Perna viridis*) for at least four to five months, upto May. Thus Munambam area is a suitable site for raising a short duration crop of mussels within a period of five months. During the same season, integrated farming of oysters

and mussels were carried out at Dalavapuram. The growth rate of mussels in this farm site was 8.72 mm / month, the average meat percentage, 36.7% and the average production 7.63 kg/m rope. At Chettuva, in Thrissur district, during the same season, the average growth of mussels was 11.7 mm/month, average production 10kg/m rope and average meat percentage 38.3%. At Paravoor, in Quilon district, the average production was 7.74 kg/m rope. In the open sea raft and rack culture of mussels, off Narakkal, the average production was 10kg/m rope. The growth and

production at Pallipuram is thus comparable with that in other estuaries as well as open sea. The meat content was also high. Thus, Pallipuram is a good site for small-scale integrated farming of oysters and mussels. It can also be integrated with shrimp farming (the water intake points of shrimp farms can be utilized for mussel farming), making the farming system, economically viable, ecofriendly and sustainable.

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