

GOLDEN JUBILEE CELEBRATIONS

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Shrimp culture during 1998 - 2000 at marine fish farm, Regional centre of CMFRI, Mandapam Camp.

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With the introduction of trawlers in the Palk Bay and Gulf of Mannar during 1960s under Indo-Norwegian Project exploitation of shrimp began and it has reached commercial scale during 1970s as many private entrepreneurs initiated trawl fishing. The annual shrimp landings ranged from 1000 to 2000 tonnes during beginning of 1990s in the Mandapam region. In 1960s *Metapenaeus affinis* was the dominant species followed by *Penaeus semisulcatus*. Gradually *M. affinis* was replaced by *P. semisulcatus* and by 1970s *P. semisulcatus* was dominant species of shrimp fishery in this region. As shrimp catches are promising and fetching lucrative income, effort has gradually increased and the catch of *P. semisulcatus* has reached maximum sustainable level, and further increase in fishing effort by trawlers would lead to depletion of shrimp stock. The other source to augment the shrimp production is to adopt culture practice all along the coastal areas and to establish ranch fishery in the sea by releasing hatchery raised seed in large scale.

In 1987, CMFRI has taken up searanching programme under the leadership of Dr. P. Vedavyasa Rao, and *P. semisulcatus* has been selected as a candidate species for searanching. A backyard hatchery has been established with one million post larvae capacity. Technology has been developed for seed production of green tiger shrimp and ranching of juveniles continued since then. Seagrass bed areas in the Gulf of Mannar and Pillaimadam lagoon nearby Marine Fish Farm were selected to release hatchery raised seed.

Observations made on movements of released seed have revealed that seagrass beds are most suitable nursery grounds for green tiger shrimp and juveniles released in the lagoon are migrated to Palk Bay immediately after one day from releasing in search of seagrass beds.

Tagging experiments were carried out during 1990-94 to assess the recruitment pattern of searanch population to the commercial shrimp fishery in the fishing grounds. Under this programme hatchery raised postlarvae were reared upto taggable size (100mm) in earthen ponds, marine fish farm, acclimatised to seawater for 2 h, tagged with ATKIN tags, acclimatised in the seawater for 2 hours again and survived juveniles were released into the Palk Bay where seagrass beds were dense. Tagging experiments have revealed that searanch population is surviving, growing and get recruited to the fishery. The same study also revealed that searanch population is maturing at the age of 6 months and spawning in the sea.

Besides this releasing of seed and tagging programmes, in 1988 experimental farming of green tiger shrimp has taken up in a small pond of 400 sqm area and PL₂₅ were stocked at a rate of 5/sq.m. After 120 days of culture 7 kg of shrimp was harvested and the harvested size was 98.3 mm TL. Growth was progressed well during first 60 days and thereafter growth was stunted. The survival rate was 40%.

During 1993-94 experimental farming

was conducted in two earthen ponds of 800 sq.m. each. Seed was stocked at the density 5/sq.m. and culture was carried out for 136 days. Stocked population was fed with Biofeed imported from Singapore. Water exchange was provided once in 15 days from the day 60. Harvested size was 124.11 mm TL/16.74g and 112.13 mm TL/11.95g respectively in pond 1 and 2. Survival rate was 43.4% in pond 1 and in the other it was 76.02%. FCR was 1:2 This experiment has revealed the potentiality of green tiger shrimp for adopting to commercial culture.

Commercial culture of green tiger shrimp was taken up during 1996 - 97 in 3 large ponds of 0.24 ha each. Each pond was facilitated with outlet made of 6" PVC pipe which was used for water intake from channel as well as to drain out from the pond. Water level in the pond was maintained at 0.75m depth by pumping water from channel. Seed was stocked at a rate of 60,000/ha. Stocked population was fed with pellet diet supplied by M/s. C.P. Aquaculture (India) Private Limited. This experiment was ended with a tragic incident, which could not be explained. The harvested size ranged from 119.8 mm TL/14.3g to 129.5 mm TL/18.8g after 150 days of culture. The generated revenue was Rs.25,564.

During 1997-98, 6 earthen ponds (0.99ha) of different sizes were stocked with 51,000 PL20 of *P. semisulcatus*. Stocking density ranged from 3/sq.m. to 6/sq.m. Temporary seashore well was dug and piled with sand bags in the peripheral region. Seawater was drawn to the sump by laying four 6" PVC pipes. Kirloskar diesel pumpset (14.5 HP) was established near the sump and 6" pipeline was laid from diesel pumpset to experimental ponds (No.15,16 and 17). Stocked population was fed with pellet diet supplied by M/s. C.P. Aquaculture (India) Private Limited. Field laboratory at Fish farm was renovated by removing ceiling and establishing roof with palmyra beams and

asbestos cement sheets. Single-phase electricity supply was reestablished. After 145 days of culture harvest was carried out and 659.4kg of shrimp was caught. Production rate varied from 163 kg/ha to 1040 kg/ha. A sum of Rs.93,022/- was generated from the sale of shrimp.

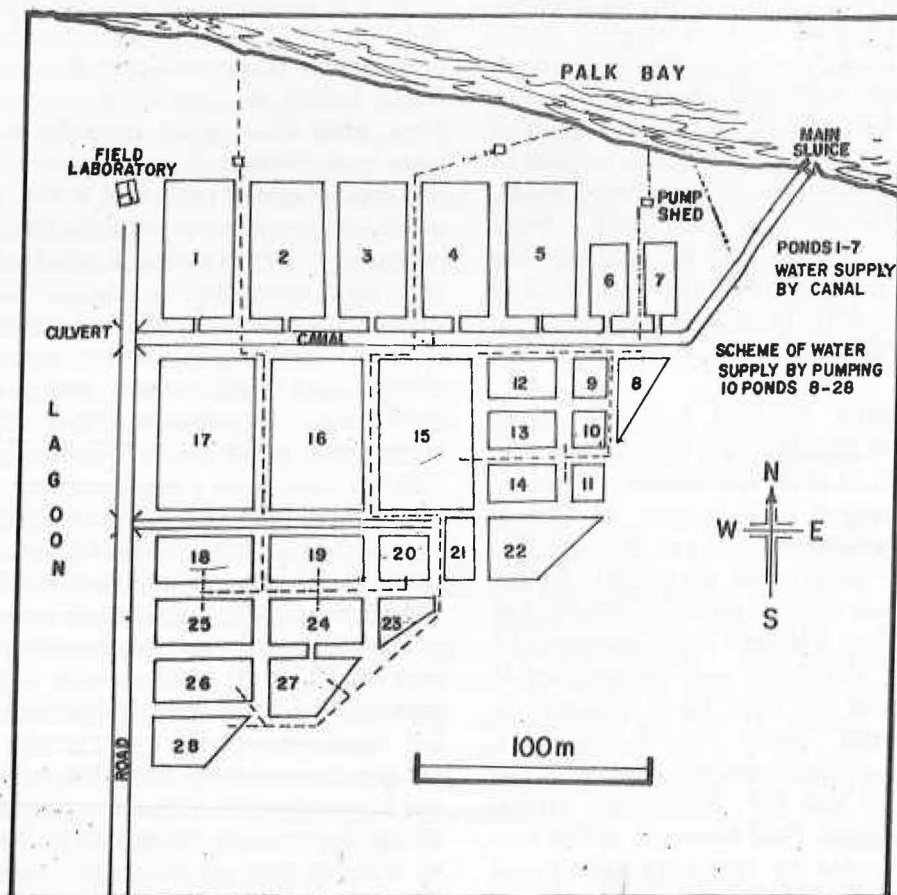
During 1998-99, constructions of sluices were made for 3 ponds (15, 16 and 17). Slopes for the same were also constructed at the place of water inlet. Modified pond No.18 (0.35ha), 19 (0.32 ha) and 20 (0.15 ha) were made by merging small ponds (18,25 & 26; 19, 24 & 27; and 20, 21 & 23) of different sizes. Pond bottom of these three ponds was raised up to 35 cm height by placing the soil that brought from the lagoon. Combine drain out sump was constructed for the pond 18 and 19 and 14.5 HP diesel pump set was fixed to provide effective water exchange through pond No.22. Surface drain out facility was provided from pond 22 to lagoon. Seawater drawing sump was constructed in the seashore with two lines of cement pipes of 2 ft dia. Pump house was constructed to accommodate diesel pumpset (14.5 HP) as well as electrical pumpset (12.5 HP). Water delivery pipeline was laid from electrical pump set to pond number 18, 19 & 20. Three phase electricity supply was obtained and 7 paddle wheel aerators were fixed in six experimental ponds. Shrimp culture was carried out in 7 earthen ponds. This year besides the green tiger shrimp, black tiger shrimp *P. monodon* was initiated with the aim of developing a viable technology for brood stock development in captivity. Out of 7 ponds, two (0.5 ha) were stocked with PL 29 of *P.semisulcatus* and the remaining five were with PL 15-20 of *P.monodon*. Stocked population was fed with commercial diet of C.P. Aquaculture (India) Pvt. Limited. After 150 days of culture totally 3,516.75 kg of shrimp was harvested and Rs.9,03,426/- was generated through sale proceeds of shrimp. Of the 3,516.75 kg of shrimp harvested, black tiger contributed 3,108.75 kg and 408.0 kg was by green tiger.

During 1999-2000 shrimp culture was practiced in 5 ponds of which 3 were with tiger shrimp, 1 with green tiger shrimp and the other with 3 shrimps namely black tiger shrimp, green tiger shrimp and Indian white shrimp. After 147 days of culture, 1,048 kg of black tiger shrimp was harvested from 3 ponds (0.75 ha). The production of green tiger shrimp was 59.0 kg from 0.15 ha pond. Polyculture experiment was conducted in 0.08 ha pond by stocking 3 Indian cultivable species to study the compatibility among them. After 90 days of culture, as black tiger shrimp was infected with white spot, harvest was done and

production was 41.0 kg. Of the three shrimps stocked, only black tiger shrimp was infected which is revealing the fact that black tiger shrimp is more susceptible to whitespot compared to other two shrimps. Totally 1148 kg of shrimp was harvested and Rs.4,37,151 was generated.

The outcome of the experimental farming conducted during 1988-2000 is development of viable grow-out technology for green tiger shrimp and viable technology for development of broodstock of black tiger shrimp in captivity.

Map of fish farm before 1998
Regional Centre of CMFRI, Mandapam.



**Map of modified fish farm,
Regional Centre of CMFRI, Mandapam.**

