Imparting Flavour to Shrimp & Crabs Under Culture With Live Clam Meat

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There has been a tremendous expansion of brackishwater tiger shrimp *Penaeus monodon* culture activities in Andhra Pradesh in the past two years. The requirements of seed and feed has increased several fold compared to the past five years.

Several types of imported and indigenous feeds are available in the market under different brand names. Apart from these, the farmers, particularly the small farmers have been trying several kinds of feeds like beef liver, boiled clam meat, snail meat etc. Many farmers are also formulating their own feed at farms with locally available ingredients, almost suiting the nutritional requirement of the shrimp. Generally they are composed of basic carbohydrates, fats, animal/vegetable protien, vitamins, minerals and binding agents. They are made into balls and shrimps are fed at regular intervals, by keeping the feed balls in the earthen bowls.

One of the major problems faced by these farmers is that, these feeds remain unutilised even 3 to 4 hours after keeping them in the pond, leading to slow growth and pollution. This is mainly due to lack of proper attractive flavouring agent in the feed, although the feed may be nutritionally balanced. Thus the daily feeding frequency gets reduced.

Feeding Experiment: One shrimp farm measuring about 0.6 ha belonging to a small farmer was chosen for this experiment. Until this experiment, locally formulated feed was being given to the shrimps *(P.monodon)*.

In this experiment freshly shucked brackishwater clam *(Meretrix meretrix)* meat, including mantle fluid was minced in a grinder and mixed in the feed, just before making them into balls. These feed balls were exposed to the shrimps through the earthen bowls, in the same way as before. It is observed that the feed was totally consumed within one hour of keeping it in the pond. Thereafter the same technique of feeding was continued. This facilitated in increasing the frequency of feedings, when compared to the previous period. Finally this clam-flavoured feed gave the same growth rate as in other ponds where other formulated imported and indigenous feeds were used.

Advantages: The advantages of flavouring are (i) The feed irrespective of composition and nutritional value is consumed at a very fast rate, thus reducing the retention time, which minimises the risk of pollution and over-fertilisation of ponds leading to algal blooms and consequent BOD problems. (ii) Since the clam is used only as a flavouring agent, it helps to increase the feeding efficiency of feeds formulated by the farmers themselves, which otherwise are less efficient.

Clam meat as flavouring agent: At present clam meat is not used for human consumption in India, except along coastal Karnataka areas. Thus the use of live clam meat along with mantle fluid as flavouring agent will go a long way in the utilisation of clam resources. It is found that clam meat with mantle fluid @ 10 gr/kg of feed is sufficient to make it attractive to the shrimps. It is also observed that mantle fluid alone is still more effective, as a flavouring agent; The cost of flavouring one kg of feed with clam meat costs just 25 paise. The boiled clam meat loses the flavour by about 50%, besides losing mantle fluids. The meat and mantle fluid forms about 15% of the total body weight of clams.

Crabs: Crabs, being highly predative organisms, are very much attracated towards clams even in natural environment. Experiments conducted at clam culture sites indicated that the mangrove crab *Scylla serrata* was able to feed on clams by cutting open the shells particularly at 20mm size.

Since crab farming has become lucrative, mixing the clam meat (including mantle fluid) in the feeds of crabs will give the same desired results as demonstrated in the case of *P.monodon*.

Availability of clams

Clams are available almost all along the Indian coasts in the shallow brackishwater environments, with varying magnitudes. They are available throughout the year.

The following commonly available species of brackishwater clams are suitable for use as flavouring agents.

Anadara granosa
Meretrix meretrix
Meretrix casta
Paphia malabarica
Katelysia opina
Villorita cyprinoides

The edible oyster, *Crassostrea madrasensis* is also available, settling on the substrata all along the east and west coasts, though in a varying magnitude. This species is also equally good as flavouring agent.

Maintenance of Live clams

Clams can be easily collected from the clam beds in low tides from the estuaries. They can be brought to the farm site and stocked in the farm itself. They thrive well in the shrimp farm environment and do not require any special attention or feeding. Clams do not interfere with the shrimps and are absolutely safe to keep them in the shrimp farms Thus they can be used in live condition as and when required.

Clams can be easily transported from place to place, without water. They can easily live for more then 24 hours without water. This character facilitates their easy transport over distant places.

EUS Strikes Again

Epizootic Ulcerative Syndrome - a fish disease of hitherto unknown etiology which caused heavy fish mortality in late eighties in eastern region of Uttar Pradesh has again registered its deadly appearance in the districts of Sidhharthnagar, Basti, Deoria etc of eastern region of Uttar Pradesh. The disease has evoked panic stricken responses among fish farmers who have now become skeptical about the success of fish culture as such.Definite improvement has been witnessed in treatment of the disease with periodic liming of ponds at rate of 200 kg (CaO) per hectare along with a daily dose of terramycin/tetracyclin at the rate of 100 mg/kg of fish seed for 10 days.