

# Shrimp Culture in India: Key Issues in Sustainability and Research

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IN India over the past five years, there have been major developments in shrimp farming. On the east coast in 1994–5, there were 100,000 ha of shrimp farms and they produced 83,000 t. However, shrimp diseases and environmental problems occurred, so that in 1995–6, production dropped to 70,000 t. There have also been incidents of social problems in many areas where shrimp farming occurs.

Over 90% of the farms are small scale (<2 ha) and, while a range of stocking densities are used, most farms are extensive. The farms are found near creeks, canals, estuaries and the sea. Although the Indian Government has encouraged investment in shrimp farming, there have been recent restrictions on the location of shrimp farms in an effort to prevent some of the problems that have occurred in the past.

Constraints on the industry can be summarised as follows:

- the concentration of farms in some areas is too high for the infrastructure facilities as well as the carrying capacity for the waterways;
- the reliance is on only one species of shrimp;
- there is limited seed and broodstock; and
- there are substantial irrigation problems in some areas.

Research activities are attempting to address some of the difficulties. Some ongoing research is investigating diversification of species and the use of captive broodstock. Other work involves examining the environmental impacts of shrimp farming and considering ecologically sustainable methods for the rational use of water (i.e. carrying capacity of water-

ways). This work is also assessing methods for effluent treatment.

The priority areas for research in India are:

- shrimp broodstock development;
- pathogen-free seed;
- production system management;
- immunostimulants and health monitoring;
- feed quality and probiotics;
- physiology of shrimp;
- effluent treatment systems for hatchery and farm discharges;
- monitoring impacts of shrimp farming;
- developing ways of determining carrying capacities;
- pond microbiology;
- genetic characterisation of shrimp and breeding programs;
- developing appropriate quarantine procedures;
- transfer of technology; and
- investigating the role of women and other groups in socioeconomic studies.

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