Article ID 240202072

Shrimp Farming in India: Navigating Growth and Key Requirements

Jatin Soni
College of Fisheries, CCS Haryana Agricultural University, Hisar
*Corresponding Author: jsdhillon@hau.ac.in

Shrimp farming, also known as shrimp aquaculture, is an important industry in India. The country has a long coastline and favorable environmental conditions for shrimp farming, making it one of the largest producers and exporters of shrimp in the world. Here are some key points regarding the farming of shrimp in India:

Shrimp Species: The most commonly farmed shrimp species in India are the Pacific white shrimp (*Litopenaeus vannamei*) and the tiger shrimp (*Penaeus monodon*). *Litopenaeus vannamei* is the dominant species due to its higher growth rate, disease resistance, and adaptability to various farming conditions.

Pond Culture: Shrimp farming in India is primarily done in earthen ponds, though some farms use concrete or lined ponds. These ponds are prepared with proper water management, aeration, and soil quality to provide a suitable environment for shrimp growth. In recent days, shrimp farming is primarily done in lined ponds to prevent soil borne diseases and to avoid monitoring of soil quality parameters.

Seedstock: High-quality post-larvae (PL) or seedstock are crucial for successful shrimp farming. Hatcheries produce these shrimp larvae and post-larvae, which are then stocked into the grow-out ponds. Biosecurity measures are often employed to reduce the risk of disease transmission.

Water Quality Management: Maintaining the quality of water in the ponds is essential. This includes monitoring temperature, salinity, pH, and oxygen levels. Regular water exchange and treatment are necessary to prevent diseases and maintain optimal conditions for shrimp.

Temperature: Shrimp are ectothermic animals, which mean their body temperature is regulated by the surrounding water. The optimal temperature for most shrimp species is generally in the range of 25-32°C, 30-32°C are preferred for optimal growth.

- **Salinity:** Shrimp are often farmed in either freshwater or brackish water. The appropriate salinity level can vary within the range of 5-35 parts per thousand (ppt).
- **pH:** The pH level of the water should be maintained within a range of 7.2 to 8.5. Fluctuations in pH can stress the shrimp and affect their growth.
- **Dissolved Oxygen (DO):** Shrimp requires sufficient dissolved oxygen in the water to respire. The higher levels DO (6-8 mg/L) are preferred for optimal growth.
- **Total Ammonia Nitrogen (TAN):** Ammonia is produced as a byproduct of shrimp metabolism and decomposing organic matter. TAN levels should be kept below 1 mg/L to prevent ammonia toxicity.
- **Water Exchange and Filtration:** Proper filtration systems and water exchange rates

should be in place to maintain water quality parameters within acceptable ranges.

It's important to regularly test and monitor these water quality parameters in your shrimp farming operation and make necessary adjustments to maintain optimal conditions for your shrimp. Specific requirements may vary depending on the species of shrimp being farmed and the local environmental conditions.

Feeding and Nutrition: Shrimp are omnivorous, and they are typically fed with pelleted or extruded feeds. These feeds are formulated to meet the nutritional requirements of the shrimp at different stages of growth. Some farms also use natural feed sources like plankton and algae. Primarily shrimp feed 3% pf their body weight per day. Normally shrimp feds 3 to 5 times a day

Disease Management: Disease outbreaks can be devastating to shrimp farms. Farmers employ various strategies, including regular health checks, quarantines, and the use of probiotics and antibiotics (in accordance with regulations) to manage and prevent diseases. Here are some of the major diseases that affect shrimp in aquaculture:

- **White Spot Syndrome Virus (WSSV):** WSSV is one of the most devastating viral diseases affecting shrimp. It causes white spots on the shrimp's exoskeleton, lethargy, and high mortality rates. There is no cure for WSSV, and prevention is key, often involving strict biosecurity measures.
- **Taura Syndrome Virus (TSV):** TSV primarily affects Pacific white shrimp (*Litopenaeus vannamei*) and can lead to high mortality rates. Infected shrimp typically display abdominal muscle necrosis, deformities, and a darkened coloration. Management strategies include strict biosecurity measures and the use of specific pathogen-free (SPF) shrimp.

Harvesting and Processing: Shrimp are typically harvested after a growth period of around three to five months. They are sorted by size, collected, and processed for export or local consumption. Processing includes washing, sorting, freezing, and packaging.

Export: India is a major exporter of shrimp products, and the industry is subject to international quality and safety standards. The shrimp are exported as frozen, head-on, headless, or value-added products to countries like the United States, European Union, and Japan.

Regulations: Shrimp farming in India is regulated by various government agencies, including the Marine Products Export Development Authority (MPEDA). These agencies set standards for water quality, disease control, and sustainable practices.

Challenges: The shrimp farming industry in India faces challenges such as disease outbreaks, environmental concerns, and fluctuations in global shrimp prices. Sustainable and responsible practices are becoming more important due to environmental and social concerns.

It's important to note that the shrimp farming industry is continuously evolving, with efforts to improve sustainability, reduce the environmental impact, and meet international quality standards. Additionally, the specific practices and regulations can vary from region to region within India.

* * * * * * * *