

NEWS



Dr Kumar observing samples in scanning electron microscopy. (Photo Indian Council of Agricultural Research (ICAR)-Central Institute of Brackishwater Aquaculture).

Tackling shrimp hatchery disease: India's efforts to investigate Zoea-2 Syndrome

Dominated by the Pacific white shrimp (*Penaeus vannamei*), India's shrimp sector is growing and becoming extremely dynamic. Healthy, high quality seed is key to its success, but the increasing intensification and commercialization of shrimp aquaculture to meet demand has exacerbated disease epizootics. Reports from hatcheries of mass larvae mortalities at the Zoea-2 stage prompted Dr. T. Sathish Kumar at the Indian Council of Agricultural Research (ICAR)-Central Institute of Brackishwater Aquaculture in Chennai to investigate further.

"*P. vannamei* and *Litopenaeus stylirostris* species appear to be infected," said Dr. Kumar. "They appear normal until they cross the Zoea-1 stage. Then they suddenly stop feeding after 36 - 48 hours and systemic abnormalities are observed, such as anorexia, lethargy, empty gut, reduction in feeding and absence of faecal strands, followed by delayed moulting of up to 3-4 days and gradual, progressive mortality in 30 - 90% of the larval population."

The impacts on hatcheries are significant. Losses from Zoea-2 syndrome in an Indian commercial hatchery with a stocking capacity of 100 million nauplii are estimated at around \$18 - 61,000 USD. Establishing strict management practices, reducing the number of days of stocking nauplii to less than 3 - 4 days in the same unit, disinfecting everything including implements and air pipes, creating shutdown periods between larval production cycles, and physically separating units for maturation, spawning and larval rearing could all help reduce mortalities.

"My work reinforces the adoption and implementation of best management practices in hatcheries," said Dr. Kumar. "It has shown that Zoea-2 syndrome isn't caused by known infectious agents. Other pre-disposing factors could be a lack of separate larval rearing units, and shrimp hatcheries must invest in improved biosecurity to prevent losses and sustained continued larval production."

Dr. Kumar suggests that an integrative multidimensional investigation, involving physiological factors within zoea and microbial dynamics in hatcheries may help to understand the causes of digestive system impairment in shrimp and the role of opportunistic pathogens.



Normal Zoea. (Credit: Sathish Kumar).



Affected Zoea (Credit: Sathish Kumar).

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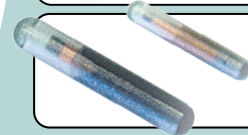
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