

Shrimp diseases with special reference to white faeces syndrome (WFS) and *Enterocytozoon hepatopenaei* (EHP)

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Diseases continue to be a challenge in the aquaculture sector with a significant economic loss to the farmers. The major issues faced by the shrimp farmers today are white spot disease (WSD), infectious myonecrosis virus (IMNV) and *Enterocytozoon hepatopenaei* (EHP). Dr. Jithendran's presentation emphasized one of the most important and emerging diseases of concern in shrimp culture today; i.e. hepatopancreatic microsporidiosis caused by EHP and stressed the need for the aquaculture industry to be proactive towards the use of SPF broodstock and ensure supply of EHP-free post-larvae for culture to the farmers.

Enterocytozoon hepatopenaei is a microsporidian parasite that infects the hepatopancreas of tiger shrimp (*Penaeus monodon*), and white leg shrimp (*P. vannamei*) in Asian and South American Countries. The infection causes slow growth and wide size variation in chronic infections and mortalities in acute infections. EHP is also known from Brunei, China, India, Indonesia, Malaysia, Philippines, Venezuela and Vietnam, causing 20-30 % production loss. In India, the disease has spread to wide geographical areas in the west coast as well as inland saline areas of Punjab, Haryana and Rajasthan during the last 2-3 years. The prevalence of EHP in ponds and the prevalence of infected post-larvae supplied to farmers continue to be much higher than desired.

There is a need to understand the dynamics of EHP and its spread, very critically. The presentation shared the recent research findings on the emerging issues in aquatic animal health management concerning EHP and White Faeces Syndrome (WFS) issues especially the geographic spread of EHP in India, transmission and life cycle, susceptible shrimp hosts, clinical signs, diagnosis and control strategies both in hatcheries

as well as grow-out systems. The role of live feed (polychaetes, clams, artemia etc.) as environmental reservoirs or potential carrier hosts was also discussed. There exist a strong association between WFS and EHP in infected shrimp ponds; however, EHP in combination with other enteric pathogens (including SHPN) and a possible unknown environmental factor (s) can cause WFS.

The biosecurity measures to be adopted in the four critical components production cycle of shrimp farming; i.e., broodstock, hatchery, nursery and grow-out were illustrated in the presentation. Each of these components would require clean water, clean rearing facilities, clean feed, hygienic protocols, and dry-out and break-cycle practice. Given the current knowledge regarding EHP, the reason for failure to consistently deliver EHP-free PL to farmers needs to be urgently determined, addressed and rectified.

The presentation highlighted the importance of the use of specific pathogen-free (SPF) broodstock, and the concept of biosecurity systems for the hatchery, nursery and grow-out ponds and the possible treatment practices to prevent EHP in the culture system. Remedial strategies of EHP affected ponds by adopting

