



Economic Loss Due to Fish Diseases in India: Evidence from Statistics

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Fish diseases cause significant economic losses to Indian aquaculture every year, affecting farmers' income, national fish production, and export earnings. Major losses occur due to reduced survival, poor growth, cost of disease management, and crop failure. Statistical evidence from national and state-level reports indicates that diseases account for nearly 20–30% loss in aquaculture production in India. Shrimp farming alone suffers losses worth several thousand crore annually due to viral and bacterial diseases. This article presents statistical evidence of economic losses due to fish diseases in India and highlights the need for disease surveillance, biosecurity, and scientific health management to reduce losses and improve sustainable aquaculture.

Keywords: fish diseases, economic loss, Indian aquaculture, shrimp disease outbreaks, biosecurity, disease surveillance

Introduction

Aquaculture is one of the fastest-growing food production sectors in India, contributing significantly to employment, nutrition, and export revenue (FAO, 2022). However, disease outbreaks remain a major constraint in fish and shrimp farming, leading to large-scale crop failures and economic loss (ICAR-CIBA, 2020). Common bacterial, viral, and parasitic diseases affect carp, tilapia, seabass, and shrimp culture systems across the country (Otta et al., 2014). Economic losses due to diseases include direct production loss, cost of medicines and chemicals, loss due to mortality, and market rejection of diseased stock (FAO, 2022). Statistical studies help quantify these losses and support evidence-based policy and management decisions (Doff, 2023).

Major Fish and Shrimp Diseases Causing Economic Loss

Major disease-causing agents in Indian aquaculture include:

Bacterial diseases: *Vibrio* spp., *Aeromonas* spp., *Streptococcus* spp. cause mass mortality and reduced growth in finfish and shrimp (Otta et al., 2014).

Viral diseases: White Spot Syndrome Virus (WSSV) and Enterocytozoon hepatopenaei (EHP) cause severe losses in shrimp farming (ICAR-CIBA, 2020).

Parasitic and fungal diseases: Epizootic ulcerative syndrome (EUS) and parasitic infestations reduce market value and survival (Bondad-Reantaso et al., 2005).

These diseases spread rapidly due to high stocking density, poor water quality, and inadequate biosecurity (FAO, 2022).

Statistical Evidence of Economic Loss in India

National-Level Losses

Studies indicate that fish and shrimp diseases contribute to 20–30% production loss annually in Indian aquaculture (FAO, 2022). The total annual economic loss due to diseases in aquaculture is estimated to be over ₹15,000 crore when considering direct and indirect losses (ICAR-CIBA, 2020).

Components of loss in aquaculture:

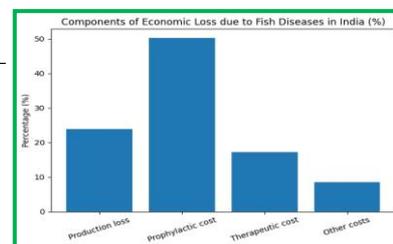
Production loss – ~23.9%

Prophylactic measures (lime, probiotics, disinfectants) – ~50.31%

Therapeutic measures (antibiotics, chemicals) – ~17.26%

Other losses – ~8.53%

(Shinn et al., 2018)

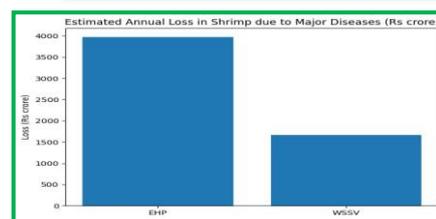


Shrimp Farming Losses

Shrimp culture contributes significantly to India's export earnings, but disease outbreaks severely affect profitability.

Loss due to EHP in shrimp farming: ~₹3,977 crore

- Annual loss due to WSSV: ~₹1,670 crore (ICAR-CIBA, 2020)

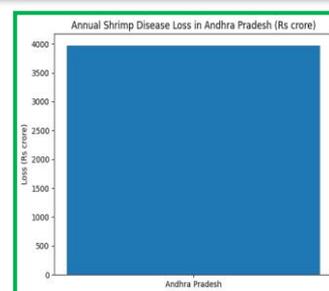


State-Level Evidence (Andhra Pradesh)

Andhra Pradesh, the major shrimp-producing state, faces huge economic losses due to disease outbreaks.

Estimated annual shrimp disease loss in Andhra Pradesh: ₹3,975 crore

(ICAR-CIBA, 2020; Dept.of Fisheries, 2023)



Statistical Interpretation for Fisheries Management

Statistical data clearly show that disease outbreaks are not isolated events but recurring economic threats. Trend analysis of production data reveals fluctuations in shrimp and fish yield corresponding to major disease outbreaks (Dept.of Fisheries, 2023). Correlation between high stocking density and disease incidence indicates that intensification without biosecurity increases risk (FAO, 2022).

Applied statistics helps in:

Identifying disease-prone seasons

Estimating expected losses

Planning insurance schemes

Designing cost-effective health management strategies (Zar, 2014)

Implications for Farmers and Policy Makers

Economic loss due to fish diseases affects:

Farmers: Reduced income, crop failure, debt burden (ICAR-CIBA, 2020)

Export sector: Rejection of diseased shrimp affects foreign exchange earnings (Dept.of fisheries, 2023)

Food security: Reduced availability of affordable fish protein (FAO, 2022)

Improving disease surveillance, diagnostic facilities, and farmer training can significantly reduce these losses (Bondad-Reantaso et al., 2005).

Conclusion

Statistical evidence clearly shows that fish and shrimp diseases cause substantial annual economic losses in Indian aquaculture. Losses amounting to several thousand crores each year highlight the urgent need for scientifically guided disease management. Integrating statistical analysis with aquatic animal health practices can help predict outbreaks, reduce

losses, and improve sustainability of Indian fisheries. Strengthening biosecurity, promoting disease-free seed, and applying preventive health strategies are crucial for minimizing economic losses in the future.

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