International Journal of Academic Research
P-ISSN: 2348-7666: Impact Factor: 7.215
Homepage: https://www.ijar.org.in/
Volume-13, Issue-2(3), Apr-Jun-2026

DISEASE MANAGEMENT OF FISH AND SHRIMP

P.GAYATRI [1], M.RESHMA[2], K.SIVA SAI KUMAR[3], B.KRISHNAVENI[4]
[1]PG scholar, Department of Zoology and Aquaculture, V.S.M College(A), Ramachandrapuram.
[2]PG scholar, Department of Zoology and Aquaculture, V.S.M College(A), Ramachandrapuram
[3]PG scholar, Department of Zoology and Aquaculture, V.S.M College(A), Ramachandrapuram
[4]Lecturer in Zoology and Aquaculture, V.S.M College(A), Ramachandrapuram

Abstract
In the aquaculture of fish and shrimp, disease control is essential to maintaining sustainable output, financial stability, and world food security. Significant economic losses have been incurred globally as a result of the intensification of aquaculture methods, which has raised the risk of infectious diseases brought on by bacteria, viruses, fungus, and parasites. An integrated strategy that incorporates preventive, early diagnosis, and control techniques is essential for effective disease management.
Maintaining ideal water quality, appropriate stocking density, balanced diet, and stringent biosecurity procedures to reduce disease introduction and dissemination are examples of preventive methods. Health management in cultured species has been further improved by the use of probiotics, disease-resistant strains, and vaccination (where appropriate). Reducing mortality and output losses requires routine health monitoring, diagnostic surveillance, and quick action during illness outbreaks.
While bacterial infections like Aeromonas and Vibrio species are widespread in fish farming, viral diseases like White Spot Syndrome Virus (WSSV) and Early Mortality Syndrome (EMS) are given special attention in shrimp culture. To stop environmental contamination and antimicrobial resistance, chemotherapeutics and antibiotics must be used responsibly, adhering to regulatory frameworks.
In order to maintain long-term productivity and ecological balance, sustainable disease management in fish and shrimp farming necessitates a comprehensive health management strategy that incorporates biosecurity, environmental management, immunoprophylaxis, and farmer education.
Keywords: Aquaculture, Fish health, Shrimp health, Disease management, Biosecurity, Water quality, Pathogens, Viral diseases, Bacterial infections, Parasitic diseases, Probiotics, Vaccination, Antimicrobial resistance, Health monitoring, Sustainable aquaculture

INTRODUCTION

One of the food-producing industries with the fastest rate of growth in the world is aquaculture, which is essential to supplying the growing need for animal protein and sustaining livelihoods everywhere. Particularly in developing nations, the culture of fish and shrimp makes a substantial contribution to economic growth, employment, nutrition, and food security. However, one of the greatest obstacles to sustainable production is still the increasing susceptibility to infectious and non-infectious diseases that have come with the quick intensification and growth of aquaculture systems.

Numerous pathogens, such as bacteria, viruses, fungi, and parasites, are frequently responsible for disease outbreaks in the fish and shrimp farming industries. A host's immunity is further weakened by environmental stressors such poor water quality, overcrowding, temperature swings, and inadequate nutrition, which makes them more vulnerable to diseases. Viral illnesses including Acute Hepatopancreatic Necrosis Disease (AHPND) and White Spot Syndrome Virus (WSSV) have devastated shrimp aquaculture's financial results worldwide. Similar to this, severe disease outbreaks in cultured fish are frequently linked to bacterial infections such Aeromonas, Vibrio, and Edwardsiella species.

Aquatic illnesses have a significant negative economic impact, resulting in decreased growth performance, high mortality rates, higher production costs, trade limitations, and

decreased farmer revenue. Furthermore, the careless use of chemicals and antibiotics to treat illnesses has led to environmental damage, food safety issues, and antimicrobial resistance (AMR). These difficulties show how urgently aquaculture needs sustainable and successful disease management techniques.

Instead of depending only on therapeutic treatments, modern illness management places an emphasis on prevention and a comprehensive strategy. Biosecurity protocols, water quality control, healthy diet, disease-free seed, frequent health checks, early diagnosis, fish immunization, probiotics, and following best management practices (BMPs) are important elements. By combining these strategies, disease risk is decreased, animal welfare is improved, and total output is raised.

The main diseases that impact fish and shrimp are covered in this paper, along with their causes, modes of transmission, and the concepts and tactics of efficient disease control for the advancement of sustainable aquaculture.

Key Points

1. Aquaculture is highly vulnerable to infectious diseases caused by bacteria, viruses, fungi, and parasites.
2. Intensification of farming systems increases the risk of disease outbreaks.
3. Poor water quality, high stocking density, and nutritional deficiencies weaken immunity.
4. Viral diseases such as WSSV, AHPND, and IMNV are major threats in shrimp culture.
5. Bacterial pathogens like Aeromonas, Vibrio, and Edwardsiella significantly affect fish health.
6. Disease outbreaks lead to economic losses, reduced productivity, and trade restrictions.
7. Overuse of antibiotics contributes to antimicrobial resistance (AMR) and environmental concerns.
8. Preventive health management is more effective than curative treatment.
9. Key preventive strategies include biosecurity, use of SPF/SPR seed, water quality management, and proper nutrition.
10. Regular health monitoring and early diagnosis (PCR, ELISA) are essential for disease control.
11. Vaccination (in fish) and probiotics help enhance disease resistance.
12. Sustainable disease management requires integrated health management practices and farmer education.

REPORTING

An essential part of managing the health of aquatic animals is reporting diseases. Early outbreak detection, quick response, stopping the spread of disease, and safeguarding both domestic and foreign trade are all made possible by timely and accurate reporting. Sustainable aquaculture development is supported and monitoring programs are strengthened by an efficient reporting system.

1. Importance of Disease Reporting

1. Enables early warning and rapid response to outbreaks.
2. Prevents the spread of infectious diseases between farms and regions.
3. Supports national aquatic animal health surveillance systems.
4. Ensures compliance with international trade regulations.
5. Facilitates data collection for epidemiological studies and policy development.

2. Levels of Reporting

Disease reporting generally occurs at multiple levels:

- **Farm Level:** Farmers report unusual mortality, abnormal behavior, or clinical signs to

local fisheries or veterinary authorities.

- **Regional/State Level:** Fisheries departments compile outbreak data and coordinate control measures.
- **National Level:** Central authorities monitor disease trends and implement emergency response plans.
- **International Level:** Notifiable diseases are reported to organizations such as the World Organisation for Animal Health (WOAH, formerly OIE) and the Food and Agriculture Organization (FAO).

3. Notifiable Diseases

Certain transboundary aquatic diseases must be officially reported due to their severe economic and ecological impact. Examples include:

1. White Spot Disease (WSSV)
2. Infectious Myonecrosis (IMNV)
3. Viral Nervous Necrosis (VNN)
4. Infectious Salmon Anemia (ISA)

Reporting these diseases helps in implementing quarantine, movement control, and biosecurity measures.

4. Components of Effective Reporting

An effective aquatic disease reporting system includes:

1. Accurate farm records (stocking, mortality, feed usage, treatments).
2. Laboratory confirmation (PCR, histopathology, ELISA).
3. Clear communication channels between farmers and authorities.
4. Digital surveillance and data management systems.
5. Confidentiality and transparency policies.

5. Farmer's Role in Reporting

Farmers play a vital role in disease surveillance by:

1. Monitoring stock daily for abnormal signs.
2. Maintaining proper documentation.
3. Immediately informing authorities of unusual mortalities.
4. Cooperating with sampling and diagnostic procedures.

6. Challenges in Disease Reporting

1. Lack of awareness among small-scale farmers.
2. Fear of trade restrictions or farm closure.
3. Limited diagnostic facilities in remote areas.
4. Delays in laboratory confirmation.

Abbreviations

1. WSSV – White Spot Syndrome Virus
2. EMS – Early Mortality Syndrome
3. AHPND – Acute Hepatopancreatic Necrosis Disease
4. EHP – Enterocytozoon hepatopenaei
5. VNN – Viral Nervous Necrosis
6. IPN – Infectious Pancreatic Necrosis
7. IMNV – Infectious Myonecrosis Virus
8. PCR – Polymerase Chain Reaction
9. ELISA – Enzyme-Linked Immunosorbent Assay
10. CFU – Colony Forming Units
11. DO – Dissolved Oxygen

12. pH – Potential of Hydrogen
13. TAN – Total Ammonia Nitrogen
14. OIE – World Organisation for Animal Health
15. FAO – Food and Agriculture Organization
16. AMR – Antimicrobial Resistance
17. SPF – Specific Pathogen Free
18. SPR – Specific Pathogen Resistant
19. BMPs – Best Management Practices

Conclusion

Effective disease reporting is fundamental to aquatic animal health management. A well-structured reporting system enhances outbreak control, minimizes economic losses, ensures regulatory compliance, and supports sustainable fish and shrimp aquaculture at local, national, and global levels.

References

1. Food and Agriculture Organization (FAO). 2022. The State of World Fisheries and Aquaculture (SOFIA) 2022. Rome, Italy.
2. World Organisation for Animal Health (WOAH). 2023. Aquatic Animal Health Code. Paris, France.
3. World Organisation for Animal Health (WOAH). 2023. Manual of Diagnostic Tests for Aquatic Animals. Paris, France.
4. Lightner, D.V. 2011. Virus diseases of farmed shrimp in the Western Hemisphere. Journal of Invertebrate Pathology, 106(1), 110–130.
5. Bondad-Reantaso, M.G., Subasinghe, R.P., Arthur, J.R., et al. 2005. Disease and health management in Asian aquaculture. Veterinary Parasitology, 132, 249–272.
6. Austin, B., & Austin, D.A. 2016. Bacterial Fish Pathogens: Disease of Farmed and Wild Fish (6th ed.). Springer.
7. Subasinghe, R.P., Soto, D., & Jia, J. 2009. Global aquaculture and its role in sustainable development. Reviews in Aquaculture, 1, 2–9.
8. FAO. 2014. Biosecurity for Aquaculture: Controlling Pathogens and Ensuring Sustainability. FAO Fisheries and Aquaculture Technical Paper. Rome, Italy..