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Popular Article

Boosting Shrimp Health: The Key Role of Water Quality Management

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Abstract

The cultivation of shrimp is a lucrative industry that has experienced significant growth in recent years. However, shrimp culture is susceptible to various diseases, which can have detrimental effects on the productivity and profitability of shrimp farms. The key to effectively managing these diseases lies in maintaining optimal water quality within shrimp culture systems. This abstract explores the crucial role of water quality management in controlling and preventing shrimp culture diseases.

Keywords: Shrimp, Diagnosis, Aquaculture, Treatment.

Introduction

Shrimp, a delightful delicacy enjoyed by many, has seen a surge in demand over the years, making shrimp culture a thriving industry. However, like any living organism, shrimp are susceptible to diseases that can devastate their populations and threaten the livelihoods of shrimp farmers. The good news is that the secret to combating these diseases lies in the very element that surrounds these crustaceans: water. In this article, we will explore how managing water quality can be a game-changer in shrimp culture disease management, ensuring healthier and more sustainable shrimp farms.

Perils of Shrimp Culture Diseases

Shrimp culture diseases, ranging from viral infections to bacterial and parasitic infestations,



pose significant challenges to farmers. These diseases can cause mass mortalities, reduce growth rates, and negatively impact the overall health and productivity of shrimp populations. The economic repercussions are severe, with potential losses running into millions of dollars each year. Tackling these diseases head-on requires a multi-faceted approach, with water quality management playing a crucial role.

Connection Between Water Quality and Shrimp Health

Water quality is the foundation upon which shrimp health thrives or suffers. Maintaining optimal water conditions is vital for preventing and managing diseases in shrimp culture systems. Several key factors influence water quality, including temperature, dissolved oxygen levels, pH, salinity, and ammonia concentration. When these parameters deviate from the optimal range, it creates a stressful environment for shrimp, making them more susceptible to diseases. By closely monitoring and managing water quality, farmers can create an environment that fosters shrimp health and reduces the risk of disease outbreaks.

Proactive Water Quality Management

To effectively manage shrimp culture diseases, proactive water quality management is essential. Regular monitoring of water parameters is crucial to identify potential issues before they escalate. Modern technologies, such as automated sensors and data analysis systems, can aid in real-time monitoring, providing farmers with valuable insights into the health of their shrimp populations. In addition, implementing appropriate corrective measures, such as adjusting water parameters or implementing water treatment and filtration systems, can help maintain optimal conditions and reduce disease risks.

Power of Prevention

Prevention is always better than cure, and this holds true for managing shrimp culture diseases. Implementing biosecurity measures and adopting good aquaculture practices are vital in preventing disease introduction and spread. Quarantine protocols for new shrimp stocks, proper pond hygiene, and stringent control of water sources are all crucial steps to minimize the entry and spread of pathogens. A holistic approach that combines water quality management, biosecurity, and sustainable farming techniques can create a resilient environment where shrimp thrive and diseases struggle to take hold.



Table 1. Disease diagnosis and treatment

S.No	Name of the disease	Causative agent	Symptoms	Prevention / treatment
1.	White spot syndrome virus (WSSV)	Baculo virus	Numerous white spot in the body of the shrimp and they have loose shells.	1. Wash the pond with 30 ppm chlorine before the culture 2. Nauplii and eggs are wash with iodine and formalin. 3. Good water quality parameter.
2.	Enterocytozoon hepatopenaei (EHP)	Microsporidian parasite	Retard growth	1. Select Specific pathogen free brooders 2. Don't use expired feed 3. Add quick or Agri lime to the pond before culture
3.	Vibriosis (or) Black shell disease (or) tail rod	Vibrio alginolyticus, V. anguillarum or V. parahaemolyticus (gram negative bacteria)	1. Red coloration of the body 2. Gill tissues appears in yellow color 3. White patches in abdomen 4. High mortality	1. It is controlled by rigorous water management through ROS system. 2. Reduce the organic load by increasing water exchange 3. Maintain good water parameter
4.	White gut disease	Hepatopancreatic Microvilli	1. White fecal matter 2. Gut is white in color 3. Low consumption of feed 4. Loosening of shell	1. Give probiotics with feed 2. proper water management 3. Selection of quality seed
5.	Early mortality syndrome (EMS)	Vibrio parahaemolyticus	Shrimp will die within 7 - 30 days of culture	1. Maintain the parameters like PH, salinity, dissolved oxygen in optimum level. 2. Regular removal of sludge. 3. Use probiotics once a week. 4. Avoid overfeeding
6.	Running mortality syndrome (RMS)	Vibrio parahaemolyticus	Shrimp will die frequently after 40 days of culture	1. Avoid overstocking 2. Removal of death shrimp. 3. Maintain the parameter like PH, ammonia and nitrite in optimum level.
7.	Brown gill disease	Gill associated virus (GAV)	1. If dinoflagellate occurs this gill disease also occurs. 2. Gill color changes into brown.	Proper water quality parameter should maintain
8.	Black gill disease (or) black spot disease	Fusarium solano	1. Black spot on the shrimp body 2. Formation of brown color gill.	1. Water replacement for every week. 2. Maintain 10 – 20 ppt salinity in pond.



Conclusion

As the demand for shrimp continues to rise, it becomes increasingly important for shrimp farmers to prioritize the health of their aquatic populations. Water quality management emerges as a powerful tool in the fight against shrimp culture diseases. By maintaining optimal water conditions and implementing proactive disease prevention strategies, farmers can reduce the occurrence and impact of diseases, leading to healthier and more productive shrimp farms. With the right practices in place, the future of shrimp culture looks brighter, ensuring a steady supply of these succulent crustaceans to satisfy our taste buds for generations to come.

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