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Impact on disease and pond management options in shrimp farms during heavy rains and floods

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Proper water quality management is essential for successful and quality shrimp production. Maintaining a good culture environment through use of proper management practices will reduce the risk of disease and increase production, shrimp quality and marketability. During December 2015 to January 2016, the area between Deduruoya estuary and Mundel lagoon (Udappu) was flushed out by the North-East monsoon causing considerable damage to shrimp farms. During this period, many farmers reported signs of disease in their culture ponds. Consequently, most farms immediately harvested at lower average weight (approximately 17-20 g).

Our study was aimed at analyzing the effects of heavy rains on water quality fluctuations leading to epidemics together with management options adopted by the farmers. Initially, the water quality parameters of selected ponds, and water source and counts of total bacteria and Vibrio sp. were analyzed. Finally, white spot syndrome virus (WSSV) was checked through PCR analysis. The results showed that direct flood and retention of flood water in lagoons had resulted in extremely low salinity (0-3 ppt), resulting in unusually low salinity in ponds (2-8 ppt) for 2-5 weeks. Concentrations of ammonia (0.20±0.05 mg/l) and nitrite (0.07±0.03 mg/l) were at suboptimal levels in culture ponds during this rainy season. This may be due to high mixing of bottom sediments, releasing ammonia and low water exchange due to suboptimal conditions in the water source. Dissolved oxygen values were also low (2.26±1.54 ppm) as observed between 10.00 am and 3.00 pm; but pH remained within optimal range (7.5-9.0). The number of total bacteria was high in comparison to the count of Vibrio sp. However, all samples analysed were negative for the WSSV. Although some farmers used probiotics for disease prevention and water quality management there was no significant difference between farmers using such options and those who did not.

Our results elucidated that there was no white spot disease (WSD) outbreak during this particular weather condition. Reasons for the signs of disease observed which were similar to WSD may have been caused as a result of stress due to unfavorable salinity, ammonia and nitrite in the water. Therefore, it is essential to implement and follow good water quality management practices during such a sensitive weather condition in order to harvest the maximum average weight and to ensure shrimp quality.

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