



WATER QUALITY IN AN AQUACULTURE SYSTEM USING DIFFERENT FEEDING STRATEGIES FOR JUVENILES OF NILE TILAPIA

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This study evaluated water quality parameters in an aquaculture system for Nile tilapia (*Oreochromis niloticus*) juveniles using six feeding strategies: commercial feed (T1), commercial feed with aeration (T2), microalgae supplementation (T3), microalgae with aeration (T4), and combinations of commercial feed with microalgae (T5, T6). The system consisted of circular ponds without water renewal, a condition that intensifies the impact of metabolic waste. Physical and chemical parameters, including pH, hardness, dissolved oxygen (DO₂), toxic ammonia (NH₃), and nitrite (NO₂), were monitored daily. At the start of the experiment, all water parameters met the standards established by Brazilian Legislation. However, by the 14th day, critical variations were observed. The concentration of significantly decreased in T1 (receiving 100% commercial feed without aeration), falling below recommended thresholds, likely due to the decomposition of leftover feed. Microbiological analysis supported this, as high levels of mesophilic bacteria indicated intense decomposition activity, which consumes oxygen and threatens fish survival. Nitrite levels proved to be a major constraint, reaching critical stages in all treatments except T1. Surprisingly, NO₂ concentrations were at least twice as high as reference values, peaking at 2.8 mg L⁻¹ in several treatments. These high levels were associated with increased organic matter and the activity of nitrifying bacteria. Microbiological indicators also revealed significant contamination by thermotolerant coliforms and *Escherichia coli* across all treatments, with values ranging from 10⁴ to 10⁵ CFU 100 mL in systems using commercial feed. The findings emphasize that in systems without water renewal, meticulous management of feeding ratios and aeration is essential to mitigate the accumulation of toxic metabolites and maintain adequate dissolved oxygen levels.



Keywords: *Water quality; Nitrite levels; Dissolved oxygen; Aquaculture system*