

ABSTRACT

This study was conducted to address the issues in the cultivation of Nile tilapia (*Oreochromis niloticus*) related to poor water quality in fish ponds, which can inhibit fish growth and reduce productivity. Therefore, the main objective of this research is to improve water quality in Jalet fish ponds using aeration technology, specifically the Resun LP 200 aerator, to enhance tilapia growth and farm profitability. An experimental method was applied by comparing two ponds: one equipped with an aerator and the other without, serving as the control. The parameters measured included water quality, fish growth, and business profitability.

The results of the study show that the use of an aerator significantly improves water quality, particularly dissolved oxygen (DO), temperature stability, and pH levels. In the aerated pond, the DO levels reached 6.5-7 mg/L, while in the control pond they only reached 4-4.3 mg/L. Additionally, temperature and pH levels in the aerated pond remained more stable, keeping the aquatic environment ideal for tilapia growth. Growth data indicated that fish in the aerated pond grew faster, with an average fish weight of 350 grams per cycle compared to 300 grams in the control pond. The survival rate of the fish was also higher in the aerated pond, suggesting that aeration not only accelerates growth but also enhances fish resilience.

Economic analysis revealed that using an aerator positively impacted business profitability. The net annual income from the aerated pond was recorded at Rp 36,504,092, which was higher compared to the control pond's income of Rp 25,000,000. Despite additional costs for purchasing the aerator and electricity, tilapia farming in the aerated pond remained more profitable than in the non-aerated pond. Thus, the use of aeration technology not only improves water quality but also increases the productivity and profitability of tilapia farming. This study recommends the application of aeration technology on a larger scale in the tilapia farming industry to enhance efficiency and sustainability.

Keywords: *Tilapia, Water Quality, Aeration Technology, Fish Growth, Productivity, Profitability.*