

## Intisari

Penelitian ini bertujuan untuk mengetahui pengaruh aerasi terhadap kualitas air fisik, kimia, serta unsur hara dalam budidaya nila merah (*Oreochromis sp.*) sistem resirkulasi. Penelitian dilaksanakan pada bulan April hingga Juli 2018. Penelitian menggunakan Rancangan Acak Lengkap (RAL) terdiri atas 3 perlakuan yaitu: *microbubble generator* (MBG), Aerator konvensional dan tanpa aerasi yang seluruhnya dioperasikan dalam sistem resirkulasi. Masing-masing perlakuan diulang 3 kali. Bak plastik berukuran 1 m x 1 m x 1 m dengan kedalaman air  $\pm 90$  cm, ditebari nila merah ukuran  $\pm 13,6$  gram/ekor, sebanyak 50 ekor. Pengamatan kualitas air dilakukan secara langsung setiap dua minggu sekali pada pagi dan siang hari, meliputi parameter: suhu air, jumlah partikel terlarut (*Total Dissolved Solid/TDS*),  $O_2$  terlarut, dan pH menggunakan alat WQC (*Water Quality Checker*); pengamatan karbondioksida ( $CO_2$ ) bebas, dan alkalinitas dilakukan secara titrasi. Sampel air diambil pada awal, pertengahan, dan akhir percobaan untuk diamati di laboratorium, meliputi parameter: kebutuhan oksigen biologi (*Biochemical Oxygen Demand/BOD*), kebutuhan oksigen kimia (*Chemical Oxygen Demand/COD*), amonia ( $NH_3$ ) bebas, nitrit ( $NO_2^-$ ), nitrat ( $NO_3^-$ ), nitrogen (N) total, fosfat ( $PO_4^{3-}$ ) dan fosfor (P) total. Semua parameter dianalisis menggunakan analisis keragaman (*Analysis of variance/Anova*), apabila hasil berbeda nyata diuji lanjut menggunakan uji Duncan. Hasil penelitian menunjukkan pemberian aerasi MBG dan Aerator konvensional berpengaruh nyata ( $P < 0,05$ ) terhadap peningkatan kualitas air  $O_2$  terlarut dan suhu air; serta tidak berpengaruh nyata ( $P > 0,05$ ) terhadap kualitas air pH, TDS,  $CO_2$  bebas, alkalinitas, COD, BOD; serta unsur hara/senyawa amonia bebas, nitrit, nitrat, N total, fosfat dan P total.

Kata kunci: aerasi, *microbubble generator*, kualitas air, nila merah, sistem resirkulasi

### *Abstract*

This study aims to determine the effect of aeration on water quality physical, chemical, and nutrients in the tank recirculation system of red tilapia (*Oreochromis sp.*) culture. The study was conducted from April to July 2018. Research using completely randomized design (CRD) consists of three treatments, namely microbubble generator, conventional Aerator, and without aeration which together operated in a recirculation system. Each treatment had 3 replicates. Plastic tubs measuring 1 m x 1 m x 1 m with a water level of  $\pm 90$  cm, stocked with red tilapia measuring  $\pm 13,6$  grams as many as 50 head. Monitoring of water qualities conducted directly every two weeks in the morning and during the day include: water temperature, total dissolved solid (TDS), dissolved oxygen ( $O_2$ ), and pH using WQC (Water Quality Checker); free carbondioxyde ( $CO_2$ ) and alkalinity observation with titration method. Water samples are taken at the beginning, middle, and end of the experiment to be observed in the laboratory, including parameters: Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), free ammonia ( $NH_3$ ), nitrite ( $NO_2^-$ ), nitrate ( $NO_3^-$ ), N total, phosphate ( $PO_4^{3-}$ ) and P total. All parameters were analyzed using Anova, if significantly different results further tested using the Duncan test. Aeration treatment results showed significant effect ( $P < 0.05$ ) on dissolved oxygen ( $O_2$ ), and water temperature; and no significant effect ( $P > 0.05$ ) on water pH, TDS, free carbondioxyde ( $CO_2$ ), alkalinity, COD, BOD, free ammonia ( $NH_3$ ), nitrite ( $NO_2^-$ ), nitrate ( $NO_3^-$ ), N total, phosphate ( $PO_4^{3-}$ ) and P total.

Key words: aeration, microbubble generator, water quality, red tilapia, recirculating system