

## PENGARUH PADAT TEBAR TERHADAP KUALITAS AIR DAN KONSUMSI OKSIGEN UDANG VANAME (*Litopenaeus vannamei* Boone, 1931) DALAM BAK DENGAN SISTEM RESIRKULASI

Tujuan penelitian ini adalah mengetahui pengaruh padat tebar terhadap kualitas air dan konsumsi oksigen udang vaname (*Litopenaeus vannamei* Boone, 1931) dalam bak dengan sistem resirkulasi. Penelitian dilakukan dengan pengamatan kualitas air dan laju konsumsi oksigen udang dalam percobaan Rancangan Acak Lengkap (RAL) dengan padat tebar berbeda (125 ekor/m<sup>2</sup>, 165 ekor/m<sup>2</sup> dan 205 ekor/m<sup>2</sup>) masing-masing dengan 3 ulangan. Pemeliharaan dilakukan di bak plastik berukuran 100 cm x 100 cm x 100 cm, kedalaman air 90 cm dilengkapi dengan aerasi dan sistem resirkulasi. Media yang digunakan merupakan campuran dari air laut dan air tawar. Parameter yang diamati meliputi suhu air, jumlah padatan terlarut (*Total Dissolved Solid* /TDS), salinitas, pH, CO<sub>2</sub> bebas, alkalinitas, kebutuhan oksigen biologi (*Biochemical Oxygen Demand*/BOD), O<sub>2</sub> terlarut serta konsumsi oksigen udang yang dipelihara. Pengambilan data dilakukan setiap 2 minggu sekali. Pengujian parameter kualitas air dilakukan menggunakan WQC (*Water Quality Checker*) meliputi suhu air, TDS, salinitas, pH dan O<sub>2</sub> terlarut serta metode titrasi meliputi CO<sub>2</sub> bebas, alkalinitas dan BOD. Pengukuran konsumsi oksigen menggunakan alat respirometer dengan kapasitas air 3 L. Hasil suhu air berkisar: 27,5-28,0°C, TDS: 16,0-21,7 mg/L, salinitas: 14,9-20,9 ppt, pH: 5,2-6,5, CO<sub>2</sub> Bebas: 24-45 mg/L, alkalinitas: 90-150 mg/L, BOD: 0,8-5,4 mg/L dan O<sub>2</sub> terlarut: 1,2-4,2 mg/L. Hasil konsumsi oksigen udang yang diperoleh selama penelitian berkisar 2,2-22,3 mg/kg/jam. Hasil penelitian yang diperoleh menunjukkan bahwa terdapat pengaruh nyata ( $P < 0,05$ ) terhadap TDS, salinitas, pH, CO<sub>2</sub> Bebas, alkalinitas, BOD dan O<sub>2</sub> terlarut namun tidak terdapat pengaruh nyata ( $P > 0,05$ ) terhadap suhu dan laju konsumsi oksigen udang vaname.

Kata kunci : konsumsi oksigen, kualitas air, padat tebar, resirkulasi, udang vaname.

## THE EFFECT OF STOCKING DENSITY ON WATER QUALITY AND OXYGEN CONSUMPTION OF VANAME SHRIMP (*Litopenaeus vannamei* Boone, 1931) IN TANK WITH RECIRCULATING SYSTEM

This research aimed to determine the effect of stocking density on water quality and oxygen consumption of vaname shrimp (*Litopenaeus vannamei* Boone, 1931) in plastic tank with recirculating system. This research was conducted by monitoring water quality and oxygen consumption rate in experiment using a Completely Randomized Design (CRD) with different stocking densities of 125 shrimps/m<sup>2</sup>, 165 shrimps/m<sup>2</sup> and 205 shrimps/m<sup>2</sup> with 3 replications each. Maintenance was carried out in plastic tubs measuring 100 cm x 100 cm x 100 cm, air depth of 90 cm, equipped with aeration and recirculation system. The media used was a mixture of sea water and fresh water. Parameters observed included water temperature, Total Dissolved Solid (TDS), salinity, pH, free CO<sub>2</sub>, alkalinity, Biological Oxygen Demand (BOD), dissolved O<sub>2</sub> and oxygen consumption. Data collection was carried out every 2 weeks. Water Quality Checker (WQC) was used to monitor water quality parameters of water temperature, TDS, salinity, pH and dissolved O<sub>2</sub> and titration methods to check free CO<sub>2</sub>, alkalinity and BOD. Measurement of oxygen consumption using a respirometer with a water capacity of 3 L. The results of water temperatures ranged : 27.5-28.0°C, TDS: 16.0-21.7 mg/L, salinity: 14.9-20.9 ppt, pH: 5.2-6.5, free CO<sub>2</sub>: 24-45 mg/L, alkalinity: 90-150 mg/L, BOD: 0.8-5.4 mg/L and dissolved O<sub>2</sub>: 1.2-4.2 mg/L. The results of shrimp oxygen consumption obtained during the study ranged 2.2-22.3 mg/kg/hour. The results showed that there was a significant effect ( $P < 0.05$ ) on TDS, salinity, pH, Free CO<sub>2</sub>, alkalinity, BOD and dissolved O<sub>2</sub> but no significant effect ( $P > 0.05$ ) on temperature and oxygen consumption rate of white vaname shrimp.

**Key words:** oxygen consumption, recirculation, stocking density, vaname shrimp, water quality.