

Intisari

Pengaruh Frekuensi Pencucian Filter Mekanis terhadap Dinamika Nitrogen Anorganik pada Budi Daya Ikan Nila Merah (*Oreochromis sp.*) dengan Sistem Resirkulasi

Sistem akuakultur resirkulasi (RAS) merupakan sistem budi daya yang memanfaatkan kembali air melalui sistem filtrasi. Filter mekanis berperan penting dalam mencegah lolosnya padatan ke filter biologis yang dapat menurunkan efisiensi nitrifikasi. Oleh karena itu, perlu diketahui frekuensi pencucian filter mekanis menggunakan jaring yang dapat menjaga agar nitrifikasi dalam filter biologis tidak terganggu. Penelitian dilaksanakan selama 60 hari dalam RAS semi-*outdoor* dengan ikan nila merah (*Oreochromis sp.*). Parameter utama yang dianalisis meliputi Total Amonia Nitrogen (TAN), nitrit, dan nitrat, yang diukur setiap 10 hari menggunakan metode sesuai SNI pada masing-masing parameter. Parameter pendukung yang diambil meliputi suhu, pH, *dissolved oxygen* (DO), dan alkalinitas. Hasil penelitian menunjukkan bahwa seluruh perlakuan dengan sistem RAS (M_X , M_7 , M_{28}) menghasilkan konsentrasi TAN dan nitrit yang jauh lebih rendah dibandingkan kontrol tanpa RAS (K). Konsentrasi TAN pada akhir pemeliharaan tercatat $0,59 \pm 0,61$ mg/l (M_7), $0,76 \pm 0,35$ mg/l (M_{28}), $1,26 \pm 1,21$ mg/l (M_X), dan $5,26 \pm 1,71$ mg/l (K). Konsentrasi nitrit tetap di bawah 0,5 mg/l pada semua perlakuan RAS, sedangkan nitrat meningkat secara konsisten pada seluruh perlakuan.

Kata kunci: filter mekanis, nitrifikasi, nitrogen anorganik, RAS, TAN

Abstract

The Effect of Mechanical Filter Cleaning Frequency on Inorganic Nitrogen Dynamics in Red Tilapia (*Oreochromis sp.*) Culture Using a Recirculating Aquaculture System

A recirculating aquaculture system (RAS) is a cultivation system that reuses water through a filtration system. Mechanical filters play an important role in preventing solids from escaping into biological filters which can reduce nitrification efficiency. Therefore, it is necessary to be concerned about the frequency of washing the mechanical filter of fishermen's nets that can keep the nitrification in the biological filter undisturbed. The study was carried out for 60 days in a semi-outdoor RAS with red tilapia (*Oreochromis sp.*). The main parameters analyzed included Total Ammonia Nitrogen (TAN), nitrite, and nitrates, which were measured every 10 days using SNI-compliant methods for each parameter. The supporting parameters taken include temperature, pH, dissolved oxygen (DO), and alkalinity. The results showed that all treatments with the RAS system (M_X , M_7 , M_{28}) resulted in significantly lower concentrations of TAN and nitrite than controls. TAN concentrations at the end of maintenance were recorded at 0.59 ± 0.61 mg/l (M_7), 0.76 ± 0.35 mg/l (M_{28}), 1.26 ± 1.21 mg/l (M_X), and 5.26 ± 1.71 mg/l (K). Nitrite concentrations remained below 0.5 mg/l in all RAS treatments, while nitrate increased consistently throughout treatments.

Key words: inorganic nitrogen, mechanical filters, nitrification, RAS, TAN