ABSTRACT

**CORRELATION TYPE OF FILTER AGAINST DECOMPOSER OF
AMMONIA AND PHOSPHATE IN RESIRCULATION SYSTEM**

By

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The reduction of water quality could be caused by the accumulation of organic matters and inorganic of metabolic waste and uneaten feed. High concentration of organic matter and inorganic in cultivation media would affect to the metabolism of fish and cause mortality. One way to overcome the problem was to apply a recirculation system. The use of different filters in the system were expected to be a container for bacterial decomposition of ammonia and phosphate so that the water quality could be optimized. The aim of this study was to determine the correlation of ammonia, nitrite, nitrate and phosphate concentration to the density of bacteria on different filters. The research was conducted from June until July 2015 Department of Aquacultur, Lampung University. The implemented experimental design was completely randomized design with three treatments and three replicates, they were : palm trees, sponges and rubble fibers. The data were analyzed by using correlation and regression test. The result showed that the use of different filters were capable to correlate positively on bacterial decomposition of ammonia and phosphate, therefore the ammonia (P=0.024) and phosphate concentration (P=0.002) could be reduced significantly. The best correlation between bacterial density and ammonia concentration were found in rubble filter by 0.739. The rubble has extensive surface and hollow-cavity for bacteria to stick on. The best correlation between bacterial density and phosphate concentration was affained in palm trees filter by 0.881, allegedly because of uneaten feed and feces accumulation in the bottom of filter, resulting in anaerobic condition, allowing the bacteria decomposition of phosphate to grow optimally.

Key words : Water quality, recirculatiom, density of bacteri, ammonia and phosphate.

ABSTRAK

KORELASI JENIS FILTER TERHADAP KEPADATAN BAKTERI PEROMBAK AMONIAK DAN FOSFAT DALAM SISTEM RESIRKULASI

Oleh

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Penurunan kualitas air dapat disebabkan oleh akumulasi bahan organik dan anorganik dari sisa metabolisme dan sisa pakan. Konsentrasi bahan organik dan anorganik yang tinggi pada suatu media budidaya akan mempengaruhi proses metabolisme ikan bahkan dapat menyebabkan kematian pada ikan. Salah satu cara untuk mengatasi hal tersebut adalah dengan mengaplikasikan sistem resirkulasi. Penambahan filter yang berbeda pada sistem ini diharapkan mampu menjadi wadah bakteri pengurai amoniak dan fosfat tumbuh sehingga dapat mengoptimalkan kualitas air. Penelitian ini bertujuan untuk mengetahui korelasi konsentrasi amoniak, nitrit, nitrat dan fosfat dengan kepadatan bakteri pada filter yang berbeda. Penelitian ini dilaksanakan pada bulan Juni sampai Juli 2015 di Jurusan Budidaya Perairan Universitas Lampung. Desain penelitian mengikuti Rancangan Acak Lengkap (RAL) dengan tiga perlakuan filter ijuk, spons dan pecahan karang dengan 3 kali ulangan. Analisis data menggunakan metode korelasi dan uji regresi. Hasil penelitian menunjukan bahwa penggunaan filter yang berbeda mampu berkorelasi positif terhadap bakteri pengurai amoniak dan fosfat, sehingga mampu menekan konsentrasi amoniak (P=0,024) dan fosfat (P=0,002) secara signifikan. Korelasi kepadatan bakteri dan konsentrasi amoniak terbaik ditemukan pada filter pecahan karang sebesar 0,739. Pecahan karang diduga memiliki permukaan yang luas dan berongga-rongga tempat bakteri menempel. Korelasi kepadatan bakteri dan konsentrasi fosfat terbaik ditemukan pada filter ijuk sebesar 0,881, diduga terjadi karena penumpukan sisa pakan dan feses pada dasar filter yang mengakibatkan kondisi menjadi anaerob sehingga bakteri pengurai fosfat dapat tumbuh secara maksimal.

Kata kunci : kualitas air, resirkulasi, kepadatan bakteri, amoniak dan fosfat