ABSTRAK

EFEKTIVITAS INSTALASI PENGOLAHAN AIR LIMBAH (IPAL) SEDERHANA DALAM MEREDUKSI LIMBAH BUDIDAYA UDANG DI DESA RUGUK, KECAMATAN KETAPANG, LAMPUNG

Oleh:

SEPNINA LIKE LESTARI

Intensifikasi budidaya udang vaname *(Litopenaeus vannamei*) tidak hanya meningkatkan produksi udang tetapi juga berdampak pada penurunan kualitas air buangan dari tambak udang ke perairan pantai. Pengadaan instalasi pengolahan air limbah (IPAL) pada *outlet* limbah budidaya udang menjadi salah satu pilihan untuk mereduksi bahan pencemar. Sistem IPAL termudah dan termurah yaitu menggunakan kolam sedimentasi untuk proses pengendapan partikel limbah (Jackson *et al.,* 2003). Tujuan penelitian ini untuk mengevaluasi IPAL sederhana dalam mereduksi kandungan fosfat, nitrat, *total ammonia nitrogen* (TAN), dan *total organik matter* (TOM), alkalinitas, *dissolve oxygen* (DO), pH, salinitas, *total suspended solid* (TSS), *total dissolve solid* (TDS), dan kelimpahan bakteri *Vibrio* di tambak udang vaname Desa Ruguk, Ketapang, Lampung Selatan. Sebanyak dua kolam digunakan sebagai IPAL sederhana (IPAL1 dan *outlet*) dengan luas masing-masing 2.054 m^2 dari 12 kolam tambak udang vaname. Keberadaan IPAL di tambak dievaluasi dengan pengukuran kualitas air di empat stasiun yaitu *inlet*, kolam IPAL 1, *outlet*, dan *main outlet* sebanyak tiga kali (sebelum panen, panen parsial, setelah panen). Parameter yang diukur yaitu suhu, kecerahan, nitrat, fosfat, TOM, TAN, alkalinitas, oksigen terlarut, pH, salinitas, TSS, TDS, dan kelimpahan bakteri *Vibrio*. Hasil pengukuran kualitas air menunjukkan bahwa penggunaan IPAL sederhana terbukti efektif meningkatkan kecerahan, oksigen terlarut, dan kelimpahan bakteri *Vibrio*, serta mampu mereduksi TSS, salinitas, fosfat, TAN, dan TOM, tetapi kurang efektif mereduksi TDS, pH, Nitrat, dan alkalinitas. Optimalisasi kinerja IPAL sederhana dapat ditambahkan biofilter (tanaman air), aerasi, kanal IPAL berkelok, dan lamanya waktu pengendapan air.

Kata kunci: IPAL, limbah tambak, reduksi, udang vaname.

ABSTRACT

EFFECTIVENESS OF SIMPLE WASTEWATER TREATMENT INSTALLATION (WWTP) IN REDUCING SHRIMP FARMING WASTE IN RUGUK VILLAGE, KETAPANG DISTRICT, LAMPUNG

Oleh:

SEPNINA LIKE LESTARI

Intensification of vannamei shrimp farming (Litopenaeus vannamei) has not only increased shrimp production but also resulted in a decrease in the quality of wastewater from shrimp ponds to coastal water. The provision of wastewater treatment plants (WWTP) at the outlet of shrimp farming effluents makes one of the choices to reduce pollutants. The easiest and cheapest wastewater treatment system uses a sedimentation pond for the sedimentation process of waste particles (Jackson et al., 2003). The purpose of this study was to evaluate the simple WWTP in reducing phosphate, nitrate, total ammonia nitrogen (TAN), and total organic matter (TOM), alkalinity, dissolved oxygen (DO), pH, salinity, total suspended solids (TSS), total dissolved solids (TDS), and the abundance of Vibrio bacteria in vannamei shrimp ponds in Ruguk Village, Ketapang, South Lampung. Two ponds were used as simple WWTPs (WWTP1 and WWTP2) with an area of 2,054m^2 each from 12 ponds of vannamei shrimp. The presence of WWTP in the ponds was evaluated by measuring water quality at four stations: inlet, WWTP pond 1, outlet, and main outlet by three times (pre-harvest, partial harvest, post-harvest). Parameters measured were temperature, brightness, nitrate, phosphate, TOM, TAN, alkalinity, DO, pH, salinity, TSS, TDS, and the abundance of Vibrio bacteria. The results of water quality measurements show that the use of simple WWTP was proven to be effective in increasing brightness, dissolved oxygen, and abundance of Vibrio bacteria, and could reduce TSS, salinity, phosphate, TAN, and TOM, but less effective in reducing TDS, pH, Nitrate, and alkalinity. Optimizing the performance of a simple WWTP can be added by biofilters (water plants), aeration, winding WWTP channels, and the length of water settles.

***Keywords**: WWTP, pond effluent, reduction, vannamei shrimp*