[illegible] FOR REMOVING DISSOLVED ORGANIC [illegible] COMPOUND FROM [illegible] WASTEWATER

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UNIVERSITI MALAYSIA TERENGGANU

2009

Formulation of bacteria beads for removing dissolved organic carbon and nitrogenous compound from aquaculture wastewater / Noor Ikhwanie Zainal.

Lihat sebelah

FORMULATION OF BACTERIA BEADS FOR REMOVING DISSOLVED ORGANIC CARBON AND NITROGENOUS COMPOUND FROM AQUACULTURE WASTEWATER

By
Noor Ikhwanie Binti Zainal

Research Report submitted in partial fulfillment of
the requirements for degree of
Bachelor of Agrotechnology Science (Aquaculture)

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FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
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Borang Pengakuan dan Pengesahan Laporan Akhir Projek Ilmiah I dan II

BORANG PITA 8

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PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK ILMIAH I DAN II

Adalah ini diakui dan disahkan bahawa laporan ilmiah bertajuk:

Formulation of bacteria beads for removing dissolve organic carbon and nitrogenous compound from aquaculture wastewater.

oleh Noor Ikhwanie Binti Zainal, No.Matrik UK 13656 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Perikanan dan Akuakultur sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains Agroteknologi (Akuakultur), Fakulti Agroteknologi dan Sains Makanan, Universiti Malaysia Terengganu.

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DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged

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ABSTRACT

The Biological Oxygen Demand, (BOD) and nitrogenous compound removal (Ammonia and Nitrite) from a grouper recirculating tank was studied for wastewater treatment. This study was conducted in ten days. The tanks comprised of three different treatments; tanks consist of immobilized bacteria beads, blank alginate beads and control tank without bead. *Pseudomonas* sp. were used as immobilized bacteria in this study. The aim of this study was to determine the efficiency of immobilized bacteria beads to remove dissolved organic carbon and nitrogenous compound. The comparison between the removal efficiency of wastewater from all treatments was determined. The result indicated that, treatment with immobilized bacteria beads showed better performance in nitrogenous compound and dissolved organic carbon removal. The rate of ammonia removal was 0.014 mg/L/hour and the rate of nitrite removal was 0.0019 mg/L/ hour. The BOD level from grouper recirculating tank showed significant decreased with the applied of immobilized bacteria. The BOD level decreased from 0.54 mg/L on the 1^{st} day of experiment to 0.11 mg/L on 10^{th} days of experiment. The used of immobilized bacteria beads do not contribute to poor water quality. Therefore it safe to use for water treatment.

ABSTRAK

Kajian rawatan air telah dijalankan dari tangki ikan kerapu untuk mengetahui permintaan oksigen biologi (BOD) dan kadar pengurangan sebatian nitrogen. Kajian ini mengambil masa selama sepuluh hari. Tangki terdiri daripada tiga rawatan yang berbeza iaitu rawatan dengan menggunakan bakteria pegun yang dimasukkan ke dalam butiran alginate, rawatan menggunakan butiran alginate yang kosong, dan tangki kawalan tanpa butiran alginate. Bakteria yang digunakan ialah *Pseudomonas* sp. Objektif utama kajian ini ialah untuk menentukan keberkesanan bakteria pegun ini dalam mengurangkan organik karbon terlarut dan sebatian nitrogen. Perbezaan keberkesanan di antara rawatan yang dijalankan telah dikenalpasti. Keputusan menunjukkan rawatan dengan menggunakan bakteria pegun adalah lebih berkesan dalam pengurangan sebatian nitrogen dan organik karbon terlarut. Kadar pengurangan ammonia ialah sebanyak 0.14 mg/L/jam dan kadar pengurangan nitrit ialah 0.46 mg/L/jam. Nilai BOD menunjukkan pengurangan iaitu dari 0.45 mg/L pada hari pertama kepada 0.11 mg/L pada hari ke sepuluh eksperimen. Penggunaan bakteria pegun ini tidak menyumbang kepada pencemaran kualiti air. Oleh itu, ia sesuai digunakan untuk rawatan air