

ABSTRAK

Air Limbah Balai Yasa PT.KAI mengandung berbagai macam kontaminan yang bisa membahayakan lingkungan jika tidak ada pengolahan. Tumbuhan kolonjono (*brachiaria mutica*) dengan kombinasi bakteri dan/ tanpa bakteri berpotensi untuk mengurangi kadar pencemar. Tujuan penelitian ini adalah mengevaluasi tanaman kolonjono (*brachiaria mutica*) dalam mengurangi kontaminan logam besi (Fe), timbal (Pb), tembaga (Cu), Total Suspended Solid (TSS), dan amonia air limbah di Balai Yasa Yogyakarta menggunakan metode Floating Treatment Wetland (FTW). Air limbah dengan kondisi perlakuan 100% dan yang telah diencerkan (50% dan 25%) dimasukkan kedalam masing-masing kontainer bervolume 13,5L. Styrofoam yang telah dilubangi sebanyak 5 buah diisi dengan gelas yang telah terisi tanah, pasir, kerikil, sabut kelapa, dan kemudian tanaman kolonjono (*brachiaria mutica*) sebanyak 5 buah. Styrofoam diletakkan mengambang pada permukaan air limbah agar akar tanaman berada dipermukaan air. Pengujian ini dilakukan selama 28 hari di tempat yang terkena sinar matahari dan pengukuran kadar TSS, amonia, dan Logam (Fe, Cu, dan Pb) dilakukan tiap hari ke- 0, 7, 14, 21, dan 28. Hasil menunjukkan tanaman Kolonjono (*brachiaria mutica*) dengan kombinasi bakteri dan/ tanpa bakteri mampu menurunkan kadar logam (Pb dan Cu) dengan nilai maksimum *removal* masing-masing mencapai 100% dan 97%. Amonia juga turun maksimal 93%. Akan tetapi Kolonjono kurang efektif dalam mereduksi TSS dan Fe. Kondisi tanaman terpantau tetap tumbuh setiap minggunya meskipun kondisi beberapa daun berubah warna atau mengering.

Kata Kunci : Air Limbah, Fitotreatment, Floating Treatment Wetland, Kolonjono (*brachiaria mutica*).

ABSTRACT

Wastewater in Balai Yasa, PT.KAI contain various contaminants that can endanger the environment if there are no treatment carried out. Kolonjono known as brachiaria mutica with a combination of bacteria with/ without bacteria has the potential to reduce levels of the pollutants. The purpose of this study is to evaluate Kolonjono (brachiaria mutica) in reducing contaminants of Ferrous (Fe), Lead (Pb), Copper (Cu), Total Suspended Solid (TSS) and Ammonia in Balai Yasa Wastewater using floating treatment wetland method. Pure 100% wastewater and diluted wastewater (50% and 25%) filled in a container size 13,5L Styrofoam is perforated with 5 holes which filled with soil, sand, gravel, coconut fiber and 5 kolonjono (brachiaria mutica) plants. Styrofoam placed on the surface of the wastewater sample so that the root of the plants could be contacted directly to the wastewater. This study was carried out for 28 days in a place that was exposed to sunlight. TSS, Ammonia, Fe, Cu, Pb Tested in days 0, 7, 14, 21, and 28. The results showed that kolonjono (brachiaria mutica) with a combination of bacteria with/ without bacteria can reduce metal content (Pb and Cu) with maximum removal values 100% and 97% respectively. Ammonia also dropped by a maximum of 93%. However Kolonjono (brachiaria mutica) is less effective in reducing TSS and Fe. The condition of the plant is growing every week even though the conditions of some leaves changes or become dry.

Keywords : *Floating Treatment Wetland ,Kolonjono (brachiaria mutica) , Phytotreatment , Wastewater.*