ABSTRAK

Syavira Nurlita Hadi, 2021. The Reduction of BOD, COD and TSS in Domestic Waste Using a Floating Wetland Combination Continued by Constructed Wetland. Departement of Environtemtal Engginering, University of PGRI Adi Buana Surabaya, Lecture advisor : Drs, Pungut, ST. MT.

Along with the population rate development in Indonesia increasing every year, the amount of clean water used increases cause the volume of wastewater produced to be relatively abundant, especially in urban areas, one of which is a domestic waste. Domestic waste containing organic and inorganic materials also gases contained in the household liquid waste can pollute the environment and cause various diseases. The resulting liquid waste usually has a high concentration of Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and Total Suspended Solids (TSS). Given the problems that occur, one solution to overcome domestic waste pollution is a floating wetlands combination using water hyacinth plants followed by a wetland system (Constructed Wetland) using water bamboo plants and water jasmine to reduce BOD5, COD and TSS concentrations. This study aimed to reduce the concentration of BOD5, COD and TSS in domestic waste. The initial parameters in domestic waste have an average BOD5 content of 210.67 mg/L, an average COD of 399.22 mg/L and an average TSS of 249.33 mg/L. After being processed in A reactor (Floating wetland + Constructed wetland (Water Bamboo)), it decreased to an average BOD5 level of 76.33 mg/L, COD of 144.11 mg/LL and TSS of 67.33 mg/L. While in B reactor (Floating wetland + Constructed wetland (Water Jasmine)), it can decrease to an average BOD5 level of 60.67 mg/L, COD of 129.44 mg/L and TSS of 44.00 mg/L. The results obtained that the highest efficiency in reducing BOD5, COD and TSS levels occurred in B reactor (Floating wetland + Constructed wetland (Water Jasmine)), BOD5 of 53.76% or 60.67 mg/L, COD of 44.57 % or 129 .44 mg/L and TSS of 57.47% or 44.00 mg/L.

Keywords: Domestic liquid waste, Floating wetland, constructed wetland, Water hyacinth, Water Jasmine, Water Bamboo.

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Syavira Nurlita Hadi, 2021. Penurunan BOD, COD Dan TSS Pada Limbah Domestik Menggunakan Kombinasi Floating Wetland Dilanjutkan Constructed Wetland**.** Program Studi Teknik Lingkungan, Universitas PGRI Adi Buana Surabaya, Dosen Pembimbing : Drs, Pungut, ST. MT.

Seiring laju perkembangan penduduk di Indonesia yang semakin meningkat tiap tahunnya, meningkat pula jumlah kebutuhan air bersih yang digunakan mengakibatkan volume air limbah yang dihasilkan cukup melimpah terutama di perkotaan salah satunya adalah limbah domestik. Limbah domestik mengandung bahan organik dan anorganik maupun gas yang terkandung dalam limbah cair rumah tangga dapat mencemari lingkungan serta menyebabkan berbagai penyakit. Limbah cair yang dihasilkan biasanya memiliki nilai konsentrasi Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), dan Total Suspended Solids (TSS) yang cukup tinggi. Dengan adanya permasalahan yang terjadi, maka salah satu solusi upaya untuk menyelesaikan permasalahan pencemaran limbah domestik adalah kombinasi floating wetland menggunakan tanaman eceng gondok dilanjutkan sistem lahan basah (Constructed Wetland) menggunakan tanaman bambu air dan melati air untuk menurunkan konsentrasi BOD_5,COD dan TSS. Tujuan dari penelitian ini adalah untuk menurunkan konsentrasi BOD_5, COD dan TSS pada limbah domestik. Parameter awal pada limbah domestik kadar BOD_5 rata-rata sebesar 210,67 mg/L, COD rata-rata sebesar 399,22 mg/L dan TSS rata-rata sebesar 249,33 mg/L. Setelah diolah pada reaktor A (Floating wetland + Constructed wetland (Bambu Air)), mampu turun menjadi rata-rata kadar BOD5 sebesar 76,33 mg/L, COD sebesar 144,11 mg/L L dan TSS sebesar 67,33 mg/L. Sedangkan pada reaktor B (Floating wetland + Constructed wetland (Melati Air)), mampu turun menjadi rata-rata kadar BOD5 sebesar 60,67 mg/L, COD sebesar 129,44 mg/L dan TSS sebesar 44,00 mg/L. Hasil yang diperoleh efisiensi penurunan kadar BOD5,COD dan TSS tertinggi terjadi pada reaktor B (Floating wetland + Constructed wetland (Melati Air)), BOD5 sebesar 53,76% atau 60,67 mg/L, COD sebesar 44,57 % atau 129,44 mg/L dan TSS sebesar 57,47 % atau 44,00 mg/L.

Kata kunci : *Limbah cair domestik, Floating wetland, Constructed wetland, Eceng Gondok, Melati Air, Bambu Air.*