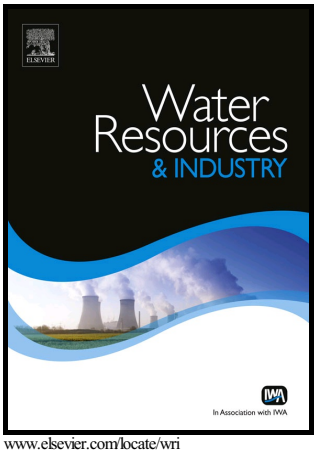

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Characterization of Effluent from Food Processing Industries and Stillage Treatment Trial with *Eichhornia crassipes* (Mart.) and *Panicum maximum* (Jacq.)

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Abstract

In this study, effluents from 11 food processing industries from various sectors were characterized through analysis of physical and chemical parameters. In general, effluents pHs are between 4.07 and 7.63. Lead (Pb^{2+}) and cadmium (Cd^{+}) concentrations range from 0.083 to 1.025 mg/l and 0.052 to 0.158 mg/l respectively. The biodegradability of the effluent is very low. The principal component analysis (PCA) grouped industries according to their organic matter levels; thus, stillage, livestock, molasses and sugar refinery effluents show some similarities, as well as confectionery, oil mill, dairy and brewery effluents. Forms of nitrogen measured show low levels of nitrites (NO_2^-), high levels of nitrates (NO_3^-), ammonium (NH_4^{+}) and Kjeldahl nitrogen (TKN). Among these effluents, a treatment trial with *Eichhornia crassipes* and *Panicum maximum* was applied to stillage effluent from Fermencam distillery. The results show that *Panicum maximum* and *Eichhornia crassipes* reduce pollutant loads of Fermencam's wastewater.

Keywords: Physicochemical characterization, effluents, food industries, *Eichhornia crassipes*, *Panicum maximum.*

1. Introduction

Regardless of the size of food processing companies, their activities contribute to the economic development of countries in the world. To meet both the overall economic growth and food security targets of the population, sub-Saharan African countries focus more effort on food processing industry. Due to an exponential population growth, these developing