2021

January

POME Treatment Technology Using Biological and Physical Methods: A Review*

NOOR SAHIRA NOOR AZIZAN, SAMIHAH MUSTAFFHA AND SITI SARAH JUMALI**

Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA Me/aka Branch, Jasin Campus, 77300 Me/aka, Malaysia.

Palm oil mills have been identified as one of the main sources of environmental pollution as they generate both solid (decanter cake) and liquid {palm oil mill effluent (pome)J wastes. It is vital for the palm oil industry to implement effective measures in order to mitigate its environmental impacts. The chemical oxygen demand (COD) and the biological oxygen demand (BOD), of the effluent daily analysed by the mill laboratory are important parameters related to the intensity of the environmental impacts on the wastewater. The organic content in the effluent contributes towards the BOD and its relevance lies in the oxygen content of the water courses (usually rivers) into which the effluent is discharged. At values in excess of 100 ppm in the effluent stream, the water source will face starvation of oxygen resulting in the destruction of their marine life. POME can be treated with algae or specific aquatic plants. Past researches were carried out on the potential of Chlamydomonas incerta, Pistia stratiotes, Ipomoea aquatica, Chrysopogon zizanioides and Eichhomia crassipes *in combating environmental concerns. The result shows that* Eichhomia crassipes *is able to reduce COD, BOD, Nand P by up to 50, 90, 88 and 64 per cent respectively. Meanwhile, palm oil mill effluent (POME) can be treated by composting, a physical method using the plant* E. crassipes, *which was found to be the most effective biological method for POME treatment because its effectiveness in reducing contaminants was higher than other aquatic plants and microalgae. This review discusses several potential methods that are accepted and observed in other related researches and how biological methods compare with physical method for POME treatment.*

Keywords: Palm oil mill effluent, aquatic plants, phytoremediation, biological method, physical method.