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Utilization of Palm Oil Effluent and Empty Fruit Benches as a Fertilizer Marginal Oil Palm Fields at Talgaswella Estate, in the Low Country Wet Zone Agro-Ecological Zone of Sri Lanka

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Abstract

Oil palm (*Elaeis guineensis*) was first introduced to Sri Lanka, as a commercial crop, about 55 years ago and was first established in Galle District as a rain fed perennial cash crop. Palm Oil Mill Effluent (POME) is identified as a problematic waste while releasing directly to the water streams. Both POME and Empty Fruit Benches (EFB) consists of all these required nutrients in higher proportions for oil palm plants. This study was carried out with the dual intentions (objectives) of finding a solution to the disposal of waste material accumulated in oil palm factories over many years and to improve the productivity of marginally yielding oil palm fields in Thalgaswella estate Talgaswella. The study was designed using RCBD and there are eleven treatments. Fertilizer/mixtures were prepared based of the Nitrogen amount (0.63 kg/palm/year) supplied from the recommended inorganic fertilizer mixtures and rest of the organic fertilizer mixtures were prepared with using different proportions of POME and EFB to balance Potassium (K) & Prosperous (P). A ten-year-old oil palm field was selected in year 2019 for this experiment and maintained the field for three years before the data collection. There were 33 plots, each containing six palm trees. Organic treatments included different quantities of Empty Fruit Bunches (EFB), Palm Oil Mill Effluent (POME). Oil content of the fruits was analyzed at AEN oil palm factory using (Instrument-FOSS DA1650) in year 2023. All the data were analyzed with Minitab and mean separations were done using DMRT at $\alpha \leq 0.05$ level. Results clearly show that the application of organic fertilizer to the oil palm cultivation gives significantly higher oil yield. These findings can help to improving the productivity of marginal oil palm cultivations, while providing a sustainable solution to the disposal of POME and EFB.

Key words: Oil palm, Palm Oil Mill Effluent (POME), Empty Fruit Benches (EFB), Waste, productivity