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**EFFECT OF RECURRENT IRRIGATION WITH TREATED SEWAGE  
FROM ANAEROBIC DIGESTER COUPLED WITH ANAEROBIC  
BAFFLED REACTOR ON SOIL FERTILITY**

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## ABSTRACT

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Growing recognition of treated wastewater as a resource is among the factors influencing its reuse in agriculture worldwide. Long-term effect of irrigation with treated wastewater on soil is widely reported; however, the effect of irrigated farming cycles with treated sewage on soil fertility is rarely reported. In this study, greenhouse maize plot experiment, consisting of triplicate plots irrigated with treated sewage and tap water was conducted for three consecutive farming cycles. Soil was sampled for analysis at the depths of 0-20 cm, 20-40 cm and 40-60 cm after every farming cycle. After the third farming cycle, pH and organic matter content increased significantly ( $P \leq 0.05$ ) at all depths;  $\text{NO}_3\text{-N}$  and  $\text{PO}_4\text{-P}$  increased at 0-20 cm, though was not significant ( $P \geq 0.05$ ); while EC and TDS decreased at all depths. With exception of pH, soil organic matter content,  $\text{NO}_3\text{-N}$ , and  $\text{PO}_4\text{-P}$ , were significantly higher ( $P \leq 0.05$ ) in plots irrigated with treated sewage for all cycles; while EC and TDS were only significant after the second farming cycle. Variation of soil parameters was not consistent with the irrigated farming cycles. Irrigation with treated sewage improved soil  $\text{PO}_4\text{-P}$  and organic matter content but posed soil alkalinity, thus pH amendment is needed after the third farming cycle.

Keywords: Digester, Farming cycle, Greenhouse, Recurrent irrigation, Treated sewage