Removal of Escherichia coli in treated wastewater used for food production in Morogoro, Tanzania

The aim of this study was to assess the removal efficiency of Escherichia coli at Mafisa and Mzumbe domestic wastewater treatment ponds in Morogoro, Tanzania. The study was done from October, 2013 to April, 2014. A total of 125 water samples from inlets and subsequent anaerobic, facultative and maturation ponds as well as treated wastewater were collected and analysed for E. coli. The estimated retention times of the wastewater treatment units were 19 and 22 days in Mafisa and Mzumbe ponds, respectively. The concentration of E. coli ranged from 4.70 to 5.60 log cfu/mL in untreated wastewater and was reduced to <1.00 to 2.00 log cfu/mL in the treated wastewater. During rainy and cold seasons, the effluent discharged out at Mafisa during August 2013; and March and April, 2014 was about 2 log cfu/mL while at Mzumbe E. coli concentration in effluent discharged out was up to 1.23 log cfu/mL. The concentration of E. coli in untreated and treated wastewater from the two wastewater treatment ponds study sites were comparable (P<0.05). Reduction of E. coli concentration in wastewater treatment ponds study sites was significant with less reduction seen at Mafisa, during rainy and cold seasons in March, April and August. To conclude, the simple wastewater treatment ponds in the study sites were effective and demonstrated potential for reduction of public health risks associated with use of treated wastewater in agricultural irrigation and aquaculture.

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