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Assessment of Escherichia coli along Nakibiso Stream in Mbale Municipality, Uganda

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Abstract : The aim of this study was to assess the level of microbial pollution along Nakibiso stream. The study was carried out in polluted waters of Nakibiso stream, originating from Mbale municipality and running through ADRA Estates to Namatala Wetlands in Eastern Uganda. Four sites along the stream were selected basing on the activities of their vicinity. A total of 120 samples were collected in sterile bottles from the four sampling locations of the stream during the wet and dry seasons of the year 2011. The samples were taken to the National water and Sewerage Cooperation Laboratory for Analysis. Membrane filter technique was used to test for Erischerichia coli. Nitrogen, Phosphorus, pH, dissolved oxygen, electrical conductivity, total suspended solids, turbidity and temperature were also measured. Results for Nitrogen and Phosphorus for sites; 1, 2, 3 and 4 were 1.8, 8.8, 7.7 and 13.8 NH4-N mg/L; and 1.8, 2.1, 1.8 and 2.3 PO4-P mg/L respectively. Basing on these results, it was estimated that farmers use 115 and 24 Kg/acre of Nitrogen and Phosphorus respectively per month. Taking results for Nitrogen, the same amount of Nutrients in artificial fertilizers would cost $ 88. This shows that reuse of wastewater has a potential in terms of nutrients. The results for E. coli for sites 1, 2, 3 and 4 were 1.1 X 107, 9.1 X 105, 7.4 X 105, and 3.4 X 105 respectively. E. coli hence decreased downstream with statistically significant variations between sites 1 and 4. Site 1 had the highest mean E.coli counts. The bacterial contamination was significantly higher during the dry season when more water was needed for irrigation. Although the water had the potential for reuse in farming, bacterial contamination during both seasons was higher than 103 FC/100ml recommended by WHO for unrestricted Agriculture.

Keywords : E. coli, nitrogen, phosphorus, water reuse, waste water
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