

NITROGEN REMOVAL FROM DOMESTIC WASTEWATER USING CONSTRUCTED  
WETLAND HAVING DIFFERENT WATER LEVELS

TEGEGNE Abraha Tadesse<sup>1</sup> and MENASBO Berhanu<sup>1</sup>

<sup>1</sup>Department of Chemistry,  
Mekelle University, Mekelle, Ethiopia

ABSTRACT

The ability of LSCWs in treating domestic wastewater to prevent the environmental pollution and to keep the surface water quality was investigated. It is generally efficient in removing TSS, COD, BOD and bacteria. Excess nitrogen in water creates a potential problem to the environment and living things. It is a source of Eutrophication in water bodies ultimately it causes toxicity to fish and aquatic plants. In drinking water, nitrogen is also a cause of blue baby syndrome (methemoglobinemia) for infants. The aim of this research is to find an optimum condition for removal of nitrogen from domestic wastewater through microbial nitrification-denitrification pathways by using different water levels in Vertical flow Constructed Wetlands. TN, BOD, NH<sub>4</sub>-N, NO<sub>3</sub>-N, pH, conductivity and temperature were measured weekly for both influent and effluents for the LSCWs. The data were analyzed using SPSS to see the significance between factors. COD removal in 7cm, 14cm and 21cm bucket were 81%, 71% and 70.8% respectively, and TN removal was 38.9% 32.3% and 25.5% respectively. From the results obtained, the water level with 7cm has the best performance in removing nitrogen to 14cm and 21 cm water levels.

*Keywords:* Microbial Nitrification-Denitrification, Wetlands, Eutrophication.