Effective treatment of raw municipal wastewater with aerated constructed wetland

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Constructed wetlands are an eco-friendly alternative municipal and industrial wastewater treatment. The environment within a constructed wetland is mostly either anoxic or anaerobic, because there is no direct contact between the water column and the atmosphere. Some excess oxygen is supplied to the wastewater by the roots of the emergent plants, but this oxygen is likely to be used up in the biofilm growing directly onthe roots and rhizomes, and is unlikely to penetrate very far into the water column itself. Therefore typical constructed wetland systems are not good for the treatment of raw wastewaters, because the pollutant loadings are too high to be treated successfully by the biological elements of the wetland.

In this study, a constructed wetland was designed to remove BOD_5 together with total nitrogen (T-N) from municipal wastewater. The designed wetland was composed of the aerobic tank and anaerobic/anoxic one which was connected in series immediately after theaerobic one, and could treat 100 m^3 raw municipal wastewater every day.