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PERFORMANCE IMPACT OF LOADING RATE ON A MULTI-STAGE FILTRATION SYSTEM FOR AGRICULTURAL RUNOFF PURIFICATION

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Abstract

A multi-stage filtration system located next to Lushan River in Gaofeng Town of Chongqing, P.R. China was built to indicate the impact of loading rate on agricultural runoff purification performance. The experimental system was proved to be effective in the removal of agricultural non-point source pollutants, and it was adapted to the changes of influent quality and quantity. The average removal rate of chemical oxygen demand (COD), ammonia ($\text{NH}_4^+\text{-N}$), total nitrogen (TN) and total phosphorus (TP) was 35%, 73%, 37% and 54%, respectively. Removal loading per unit area of the system and influent loading can be approximately expressed in a logarithmic relationship. Removal loading of pollutant changed regularly and the system was stable at low influent loading, but performance of the system was unstable when influent loading was high. The removal loading and effluent loading decreased gradually along with the filtration system, and both of them reached the minimum value in the final stage.

Key words: multi-stage filtration system, agricultural runoff, nitrogen, phosphorus, loading rate

Received: March, 2011; Revised final: July, 2011; Accepted: July, 2011

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