

Development of Non-Point Pollutants Removal Equipments Using Media with Bacillus sp.

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Abstract : This study was conducted to reduce runoff by rainwater infiltration facility using attached growth with Bacillus sp., which are reported to remove nitrogen and phosphorus, as well as organic matter effectively. This study was investigated non-point pollutants removal efficiency of organic, nitrogen, and phosphorus in column using the media attached growth with Bacillus sp. To compare attached growth with bacillus sp. and detached media, two columns filled with perlite, zeolite, vermiculite, pumice, peat-moss was installed. In A column (attached growth with bacillus sp.), in case of infiltration velocity 30 mm/hr in high concentration of influent, it showed the removal efficiency (after aging term) is SS (suspended solid) 85.8 ± 1.2 %, T-P (total phosphorus) 67.0 ± 8.1 %, T-N (total nitrogen) 66.0 ± 4.9 %, COD (chemical oxygen demand) 73.6 ± 2.9 %, $\text{NH}_4\text{-N}$ 72.7 ± 3.0 %. In B column (detached media), in case of infiltration velocity 30 mm/hr in high concentration of influent, it showed the removal efficiency (after aging term) is SS 86.0 ± 2.2 %, T-P 62.5 ± 11.3 %, T-N 53.3 ± 3.9 %, COD 34.6 ± 3.7 %, $\text{NH}_4\text{-N}$ 61.5 ± 2.8 %. Removal efficiency of A column is better than B column. As the result from this study, using media with Bacillus sp. can improve an effective removal of non-point source pollutants.

Keywords : non-point source pollutants, Bacillus sp., rainwater, infiltration facility

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