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ASSESSING THE ABILITY TO TREAT NITROGEN COMPOUNDS IN DOMESTIC WASTEWATER OF A CONSTRUCTED WETLAND WITH DIFFERENT AQUATIC PLANT SPECIES

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Abstract

Wastewater treatment technology by "Constructed Wetlands" with aquatic plants is being widely used in Vietnam. This paper presents research results on the ability to treat the nitrogen compounds (NH_3^- , NO_2^- , NO_3^- and total nitrogen) of domestic wastewater of a constructed wetland system with aquatic plants such as: *Pistia*, *Enydra fluctuans Lour*, *Phragmites communis*, and *Cyperaceae*; Three experiments with different combinations of aquatic plant species in a three treatment unit-constructed wetland were conducted to find a suitable retention time for each experiment, and to compare the performance of aquatic plants in the proposed systems, based on that the best combined constructed wetland system would be suggested. Results showed that aquatic plants play an important role in wetland systems because they increase the treatment efficiency for nitrogen compounds by 5% in samples without plants and by 50%-98% in samples with plants. Treatment efficiency of all vegetation in the retention time of 12 days reached the highest value, ranging from 50% to over 98%. The treatment efficiency for all nitrogen parameters of *Enydra fluctuans Lour* and *Cyperaceae* was better (by approximately 10%) than that of *Pistia*, and *Phragmites communis* respectively. The combination of *Enydra fluctuans Lour* and *Cyperaceae*have gave better treatment efficiency and this would be recommended to apply in a constructed wetland system.

Key words: aquatic plants, constructed wetland, nitrogen compound