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An assessment of phytoremediation potential of *Ipomoea aquatica* (Kangkong) in carp rearing water

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Abstract

Phytoremediation is the use of aquatic plants to decrease, extract or remove organic and inorganic compound from the water and soil. Removal of nutrients such as nitrogen and phosphorus, reduces the adverse impacts on the aquatic ecosystem. This study was conducted for 28 days to investigate the phytoremediation potential of *Ipomoea aquatica* in carp rearing water. The experiment was consisted with two different stocking densities of Kangkong plants as 6 PT (6 plants/tanks with fish), 9 PT (9 plants/tanks with fish) and C (control-only fish without plant). *Cyprinus carpio* var. *koi* (3.85±0.05 cm and 0.80±0.04g) were stocked at the stocking density of 08 fish/tank. Kangkong seedlings (height-13.00±1.80 cm) were potted and fixed into floating Styrofoam raft. Fish were fed twice a day at the rate of 5% BWt/day for the first two weeks and then 7% BWt/day. No significant difference was found among the treatments for growth parameters of fish. Ammonia levels of 9 PT (0.14±0.07 mg/L) and 6 PT (0.16±0.08 mg/L) were significantly lower than that of the control (0.52±0.48mg/L) at the end of the study period. Nitrite (1.5±0.00) mg/L and nitrate (1.67±0.08) mg/L levels did not show any significant difference between the treatments. The phosphate concentration was significantly higher in 9 PT (0.80±0.03 mg/L) than 6 PT and control. No significant differences were found among treatments for plant height (cm), shoot length (cm), root length (cm), number of leaves, % shoot length, % root length, plant dry weight (g), root dry weight (g), and total biomass (g). However, wet weight of plants, shoots and % weight gain, shoot dry weight (g) and surface area of the leaves (cm²) were significantly higher in 6 PT and % root dry weight is significantly higher in 9 PT than 6 PT. Based on the results of plant growth parameters and water quality parameters, 6 PT could be recommended as the best stocking density for the phytoremediation purpose.

Keywords: Phytoremediation, Stocking density, Water quality parameters

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