Investigation of phytoremediation of *Cyperus rotundus* and *Phragmites australis* from Cyprinus carpio tank effluent

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Abstract

Today, freshwater resources, including rivers and lakes, are considered as an important source of water at risk of pollution from human activities, such as the outflow of fish. In this study, the effect of two species of *Phragmites australis* and *Cyperus rotundus* and their effects on water quality changes such as nitrate, ammonia, and phosphate in the Breeding of common carp were used. In this regard, 90 species of both species, reed plants with initial weights of 100 ± 10 grand nut sedge strain with an initial weight of 30 ± 5 in six channels of 120 liters (30 plants per channel) were treated. One hundred kilograms of common carp with a mean weight of 20-2.3 g was introduced into a tank with a capacity of 1000 liters dewatering during the 42-day trial period. The results showed that the average final weight of fish was 35 ± 5 and the mean weight of each plant was 50 ± 500 g and the mean weight of the nutsedge plant was 10 ± 100 g. Water quality analysis showed that there was a significant difference between the input of fish tanker water and the output water of plant cultivars ($P < 0.05$). Based on the reduced rate of high concentrations, the best remaining time was selected in the fourth week. Also, the results showed a significant difference between the outputs of the treatments in terms of improving the quality factors of water at a probability level of 5%. On the other hand, with a significant interaction between treatment output over different periods can be understood that the plant material selected as the filters have a high potential to absorb nitrates, nitrite, ammonium, and phosphates.

Keywords: Aquaponic, *Phragmites australis*, *Cyperus rotundus*, Common Carp.