

WATER HYACINTH AS A BIOLOGICAL TREATMENT FOR SEWAGE WASTE WATER IN AQUACULTURE EARTHEN PONDS

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ABSTRACT

A field study was applied at Shader Azam ,while the laboratory analysis was conducted at Central Laboratory for Aquaculture Research (CLAR), Abbassa Abou-Hammad, Sharkia Governorate. This study was designed to investigate the effect of water hyacinth cultivation in earthen pond on removal of different pollutants such as heavy metals, nitrogen compounds and their effect on growth performance of Nile tilapia and Mullet.

The removal of heavy metals from sewage wastewater in aquaculture earthen ponds by the water hyacinth, *Eichhorma crassipes* (Mart.) was investigated. Results showed that water hyacinth adsorbed organic compounds, improved pH, NH₃, DO, nitrogen compound and SD. Also, water hyacinth absorbed phosphorous from sewage wastewater. The reduction of heavy metals from sewage wastewater ranged from 24 to 82.5%. The cultivation of water hyacinth in ponds decreased growth performance of Nile tilapia and Mullet, but the accumulation of heavy metals in fish organs was sharply decreased with increasing water hyacinth cultivation in ponds. The highest concentrations of heavy metals were found in liver tissues followed by gills then muscles. Only gutted fish with removed gills would be recommended for consumption due to the heavy metals concentrations in gills, liver and kidney tissues. The accumulation of heavy metals in the plant roots was higher than in leaves. Water hyacinth was found to remove about 90% of different pollutants from sewage wastewater.