

ABSTRACT

Present investigation was carried at five different natural ponds in suburbs of Lahore city in order to evaluate treatment efficiency for sewage discharged by local communities. Macrophytes *Eichhornia crassipes* in Bhaikywaal village natural pond (BKW), *Typha angustifolia* in Shah Di Khui natural pond (SDK) and *Pistia stratiotes* in Niaz Baig Village natural pond (NB) and Lakhoowaal village natural pond (LKW) played an important role for treatment of sewage during this two seasons based study exhibiting slightly high removal efficiency during rainy season as compared to winter, while removal efficiency of TG natural pond remained slightly low as compare to other ponds. Removal was as follow i.e., turbidity (68-94%) and TSS (58-86%), while increase in DO remained (50-87%). Removal of inorganic and non-metallic constituents was Chlorides (54-64%), Sulfite (38-52%), Sulfate (62-75%) and Sulfide (56-75%). Metallic constituent removal of Na was (23-38%) and K (26-52%). Removal efficiency of nutrients was as follow i.e., Ammonia-Nitrogen (45-59%), Nitrate-Nitrogen (29-67%), TKN (46-59%) and TP (48-60%). BOD removal efficiency was high (67-80%) during study. Total Coliform removal was high and shown 93-97% removal efficiency. During N, P and K biomass assessment TKN concentrations absorbed by *Pistia stratiotes* at NB pond was slightly high i.e., 4.9 mg/g and 16.9 mg/g by root and shoot respectively during rainy season as compared to other macrophyte species. In case of total phosphorus (TP) highest concentrations were absorbed by *Eichhornia crassipes* (3.9 mg/g by root and 15.5 mg/g by shoot) during rainy season. In case of potassium *Typha angustifolia* absorb maximum concentrations during rainy season which were 4.1 mg/g by root and 16.4 mg/g by shoot respectively. Macrophytes absorbed high concentrations from wastewater during rainy season as compared to winter. Overall results demonstrate that natural pond is a cheap, efficient and cost effective treatment facility and exhibit efficient removal of constituents from sewage. The results are important for both academics, engineering and agricultural research view point.