

Water Treatment Using *Eichhornia crassipes* and Avifauna Control in The "La Mansión" Pond

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Abstract : The objective of this study was to improve water quality in the "La Mansión" pond in order to irrigate green spaces on the Peruvian Union University campus (Lima, Peru) using the aquatic species *Eichhornia Crassipes*. Furthermore, tree trimming and cleaning activities were performed that reduced water pollution caused by organic deposits and feathers from wild birds. The impaired waterbody is located on the campus of the Peruvian Union University, 580 meters above sea level, with a volume of 6,405.336 m³, an area of 3,050.16 m², 256.81 m perimeter, and 0.12 m³/s input flow. Seven 1.8 m² floating systems were implemented, with 12 common water hyacinth plants in each system. Before implementing this system, a water quality analysis was performed to analyse the physical-chemical, microbiological, and organoleptic parameters. The pre-analysis revealed the pond's critical condition, with electrical conductivity: 556 mg/l; phosphate: < 0.5; pH: 7.06; total solids: 412 mg/l; arsenic: <0.01; lead: 0.115; BOD₅: 14; COD: 16.94; dissolved oxygen: 13; total coliforms: 24000 MCL/100 ml; and thermo-tolerant coliforms: 11000 MCL/100 ml. After implementing the system, the following results were obtained: EC: 495 mg/l; DO:9.2 mg/l; TS: 235 mg/l; BOD₅: 7.7; COD: 8.47; Pb: 0.001 mg/l; TC: 460 MCL/100 ml; FC: 240 MCL/100 ml. Thus, we confirmed that the system is 78.79% efficient regarding the Peruvian ECA (Environmental Quality Standards) established for water according to DS #015-2015-MINAM. Therefore, the water is suitable for plant irrigation. Finally, we concluded that treating wastewater with the species *Eichhornia Crassipes* is efficient since an improvement was achieved in the impaired waterbody.

Keywords : *Eichhornia crassipes*, plantlets, cleaning, impaired waterbody, pond

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