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**WASTEWATER TREATMENT POTENTIAL OF WATER  
LETTUCE (*PISTIA STRATIOTES*) WITH MODIFIED  
ENGINEERING DESIGN**

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*The layout of the system comprised 3 experimental units with 3 replicates. Each unit consists of one level of water depth with four levels of Pistia stratiotes coverage (50; 70; 90 and 0 % (control)) under the outdoor condition. The results indicated that P. stratiotes can be successfully used for wastewater treatment since it had the ability to achieve the goal of proposed design; where the highest removal percentages of BOD<sub>5</sub>; NH<sub>3</sub>; TN; TP were 83.5; 97.53; 90.3; 87% after 5; 3; 5; 4 days, respectively in the case of 25 cm of water depth with plant coverage of (90; 70; 50 and 70%, respectively). As compared with K–C\* and P–K–C\* models, this system achieved high removal efficiencies of water measurements and heavy metals (Fe, Cu, Ni and Pb). The results showed that this aquatic plant P. stratiotes can be successfully used for waste water treatment and therefore can be used for large-scale.*

**Keywords:** *Pistia stratiotes*, plant coverage, water measurements, biochemical parameters.

### **Introduction**

The eco-friendly and efficient technologies development for wastewater treatment is one of the most attractive research area [1], as the contamination of the aquatic environment by different pollutant and heavy metals has become a serious problem in the world. During the 1960s and 1970s, macrophytes were first recognized in water quality improvement [2] and played an important role in balancing and maintaining the ecosystem of a lake. They have the ability to improve the water quality by absorbing nutrients and using their effective

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Received 27.02.2017

Revised 12.07. 2017

Accepted 02.11. 2017