

## EFFICIENCY EVALUATION OF HORIZONTAL FLUX CONSTRUCTED WETLAND SYSTEM.

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### Abstract

This article presents the efficiency evaluation of horizontal flux constructed wetland system showing positive results about the synthetical wastewater treatment, by the phyto biochemical interactions, on removal of the main pollutants presents in the wastewater.

*Key words: constructed wetlands, pollutants removal, wastewater treatment.*

### Introduction

In the system adopted in this project the organic matter is degraded by aerobic and anaerobic biochemical process, as physical process of sedimentation and particle filtration. Thereat, researches indicates that system may present bigger capacity of total suspended solids removal, chemical demand of oxygen removal and great removal capacity of nutrients like phosphorus and nitrogen. The purpose of this project is to define, through experimental input and output datas, the efficiency evaluation of this system for the synthetical wastewater treatment.

### Results and Discussion

This system consists of three modules situated in Feagri, as shown in the image below.

**Image 1. Constructed Wetlands modules.**



The application rate of the effluent was determined according to real and theoretical Hydraulic Retention Time (HRT) obtained by the initial system evaluation, with two days total time. Through collected and analyzed samples it was possible to determine the removal rate of the pollutants presented in the synthetical wastewater. The results, as shown in the chart below, demonstrate considerable reductions of the

elements phosphorus and amoniacal nitrogen up to 65% and 85% respectively, although nitrate does not show significant removal values, that possibly demonstrate the early plants development which are not yet able to act in removal of the element nitrogen in its oxidized form nitrate.

**Chart 1. Components Removal Rate.**

	Chemical Oxygen Demand	Phosphorus	Nitrite	Ammonical Nitrogen
Wetland 1	46,2%	65%	42,9%	75,4%
Wetland 2	40,9%	45%	14,3%	35,7%
Wetland 3	58,2%	65%	14,3%	86,3%

### Conclusions

Through the obtained data it is concluded that the system reached an advanced level in microbiological process, resulting in a significant amoniacal nitrogen to nitrite oxidation, a high rate of phosphorus and chemical oxygen demand removal. However, considering the obtained data the complete development of the plants cicle necessary, for better values of efficiency in the removal of the pollutans present in the syntetical wastewater.

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