

The effect of vegetation harvest on the operation of a surface flow constructed wetland

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Abstract

Constructed wetlands represent a low-cost and highly efficient municipal wastewater treatment alternative, due to their low technological and energy demands. Wetland vegetation releases an amount of carbon to the system, when it is decomposed (winter period). Part of this organic matter could remain in the system, and will be decomposed at very low rates during winter and spring. In this research, a constructed superficial-flow wetland was divided into two equal parts and vegetation (*Typha latifolia*) was harvested in one of them. The organic load applied to the system was 11.2 gBOD/m²·d. The control of the organic matter was carried out during 141 d (111 d in winter and 30 d in spring). Differences in efficiencies (TSS, BOD and COD), were observed between both types of the wetland, with an important increase in these differences during spring. Vegetation released organic matter to the system, specially suspended and biodegradable matter. BOD and TSS released per dry gram of *Typha* were 4.24 mgBOD/g*Typha* and 4.36 mgTSS/g*Typha*, respectively. Harvest is a recommended practice in systems treating diluted wastewater, especially in productive areas like the Mediterranean. The recommendations can also be applied to a broader geographic area.

Keywords: wastewater treatment wetlands, *Typha*, decomposition, biodegradable organic matter, suspended organic matter, harvest.