

Semi-batch operated constructed wetlands planted with *Phragmites australis* for treatment of dyeing wastewater

Abstract

The objective of present study is to evaluate the using of constructed wetland under semi-batch operation for the treatment of azo dye Acid Orange 7 (AO7) containing wastewater. The emergent plant selected in our study was *Phragmites australis*. Toxic signs were observed at the *Phragmites australis* after the addition of AO7 into the wetland reactors but it can adapt to the wastewater as shown in the increase of stem as the operation continue. Our result shows that the artificial aeration and the presence of *Phragmites australis* had a significant impact on the removal of organic matters, AO7, aromatic amines and NH₄-N. The COD removal efficiency in the aerated and non-aerated wetland reactors was 95 and 62%, respectively. The NH₄-N removal efficiency in the aerated wetland reactor (86%) was significantly higher than the non-aerated wetland reactor (14%). All wetland reactors show high removal efficiency of AO7 (> 94%) but only the aerated wetland reactor perform better in the removal of aromatic amines.

Keywords

AO7; Artificial aeration; Constructed wetlands; NH₄-N; *Phragmites australis*; Semi-batch