

## Effect of Substrate Type on Pollutant Removal and Greenhouse Gases Emissions in Constructed Wetlands with Ornamental Plants

**Authors :** Maria E. Hernnandez, Elizabeth Ramos, Claudia Ortiz

**Abstract :** Pollutant removal (N-NH<sub>4</sub>, COD, S-SO<sub>4</sub>, N-NO<sub>3</sub> and P-PO<sub>4</sub>) and greenhouse gases (methane and nitrous oxide) emissions were investigated in constructed wetlands CW mesocosms with four types of substrate (gravel (G) zeolite (Z), Gravel+Plastic (GP) and zeolite+plastic), all planted with the ornamental plant lily (*Lilium* sp). Significantly higher N-NH<sub>4</sub> removal was found in the CW-Z (97%) and CW-ZP (85%) compared with CW-G (61%) and CW-GP (17%), also significantly lower emissions of nitrous oxide were found in CW-Z (2.2 µgm-2min-1) and CW-ZP (2.5 µgm-2min-1) compared with CW-G(7.4 µgm-2min-1 ) and CW-GP (6.30 µgm-2min-1).

**Keywords :** methane, nitrous oxide, lily, zeolite

**Conference Title :** ICEEE 2016 : International Conference on Environmental and Ecological Engineering

**Conference Location :** Vancouver, Canada

**Conference Dates :** August 04-05, 2016