Science Publications

American J. of Environmental Sciences
Quarterly Publication

Title: Sustainable Management of Effluents from Small Piggery Farms in Mexico

Author: J.L. de Victorica-Almeida, M. Galván-García and R. Ayala-Ruiz

Source: American J. of Environmental Sciences 4(3): 185-188 , 2008

Abstract: In Mexico, pig farming is the third most important livestock activity due to its contribution to the total meat production. However, it is estimated that around 38% of pig farms dispose their wastewaters without any treatment directly into the nation's water bodies, which in turn has a severe impact in the environment. One reason for not treating is the high costs involved, especially for small pig farms. Therefore, a study was performed to develop a low cost and easy to operate treatment system suitable for this type of wastewater and with a quality that allows the reuse of the final effluent within the farm. The pilot study was performed in packed reactors to evaluate the influence of the hydraulic superficial charge on the removal of BOD and COD from a partially treated effluent produced in a small swine farm. BOD and COD initial concentrations ranged from 1,173-2,318 mg LG 1 and 2,146-4,119 mg LG 1, respectively. The reactors were three PVC columns, 10.16 cm in diameter and 1.32 M in height, each with 6.4 L of total volume and packed with a fixed bed of volcanic rock (tezontle), 47.7% porosity and 7 mm mean diameter. The columns were operated in sequence with download flow under Superficial Hydraulic Charges (SHC) of 1, 3 and 5 m3/m2h, with recirculation. The results show treatment efficiencies of 97.3-98.9% for BOD and 84.8-92.6% for COD, with recirculation time between 16 and 27 days. The results of this study are being used to establish the basic elements for designing and implementing suitable wastewater treatment systems to recycle and reuse these effluents in small scale piggery farms in Mexico, to promote sustainable management and reduce water pollution.