

Overview of subsurface constructed wetlands application in tropical climates

Abstract

Subsurface flow constructed wetlands (SFCW) have specific capacity to absorb and retain particulate matters, nutrients and other pollutants which enters water bodies through surface runoff, domestic wastewater, industrial wastewater and also from plantations. However, as the field becomes more relevant towards sustainability environment, the SFCW study is often significant for developing countries with tropical climates where the zones are warm and humid weather in all years. SFCW showed an increase rate of contaminant up-take in warmer climates; therefore this treatment has been expected to operate more efficiently in tropical regions. SFCW recent technologies are also excellent in the utilisation of natural processes and the high process stability which contributing a high nutrient capturing capacity. Furthermore, the systems are simple to construct and less expensive option than aquatic plant systems which is a benefit in many developing countries. Accordingly, this paper highlights some SFCW applications on nutrients capturing capabilities (nitrogen and phosphorus), general view on construction, operation and maintenance of the SFCW and vegetation selection for start-up. In addition, application of different wastewater types such as landfill leachate, domestic wastewater and industrial wastewater are also discussed in brief. Future considerations in choosing appropriate technology aspect of wetlands applications such geographic information system (GIS), compost material and bio-particle are highlighted.