Development of a Generic Pollutant Transport Component to simulate runoff pollutant dynamics through Vegetative Filter Strips.

Oscar Perez-Ovilla Dr. Rafael Muñoz-Carpena.
Agricultural and Biological Department.
University of Florida.

One of the most widely recommended best management practice (BMP) by many state and federal agencies to control non-source point pollution from disturbed are Vegetative Filter Strips (VFS). Mechanistic approaches for simulation have shown to predict in a more accurate way the removal of these pollutants. A computer tool (software) with such capabilities is the main goal that is proposed here.

Muñoz-Carpena et. al. (1993, 1999 and 2005) developed a physically based computer program called VFSMOD-W, based on the simulation of hydrology and sediment transport (no chemical pollutant transport) by using VFS. On the other hand, James et. al. (2006) developed a transport and reaction simulation engine (TaRSE) to address the problem of modeling model water quality within the Regional Simulation Model (RSM) in response to the need of the South Florida Water Management District (SFWMD). TaRSE was applied in wetlands.

The development a flexible **"generic pollutant transport module"** (flexible approach) based on the 2-D TaRSE code, and its implementation in VFSMOD-W, will let us to assess the efficiency of VFS in reducing any pollutant load will be teste.

The module is based on the creation of an interface that can "read" all the relationships and interactions between the pollutant and the pools in the VFS. Then the program will solve the equations/relationships. After, the results will be coupled with VFSMOD, and the efficiency of removal of the pollutant will be calculated. Currently, field data are being collected from the phosphate mining areas located in the upper Peace River basin of Central Florida to test this new module with phosphorous.

The positive implications with this concept are that the program could solve any chemical or mircrobiological pollutant. VFSMOD-W will be then useful for last, current of future research work for any pollutan. It is expected that the use of this approach would likely be mainly focused for the scientific community and decision makers in a first stage.

Keywords: vegetative filter strips, VFSMOD, TaRSE, flexible approach, simulation.