Title: Two-dimensional Simulation of nitrate transport in an agriculture-intensive
                  region

Author/Authors: Morteza Mohsenipour, Hamid Asgari, Shamsuddin Shahid, Sahar Hadipuor,
                  Peiman Roushenas

Abstract: A two-dimensional steady-state solute transport model is developed to
                  simulate movement of non-point sources of pollution in anisotropic porous
                  media. The migration of chemicals dissolved in groundwater is governed by
                  advective-dispersive processes which are also affected by the velocity of the
                  flowing groundwater. Therefore, groundwater flow equation is solved for
                  hydraulic gradient and hydraulic conductivity to approximate the average
                  linear velocity of the fluid. The advection-dispersion is used to approximate
                  the spatial and temporal distribution of non-reactive dissolved chemical in a
                  flowing groundwater. A computer code is developed in MATLAB to solve the
                  groundwater flow and solute transports equations by finite difference methods.
                  The developed program is verified with soil-tank experimental data. The
                  solute transport model is used to simulate non-point source of nitrate pollution
                  in an agriculture-intensive region. Finally, the model outputs are analyzed to
                  understand the factors that influence the pollution transport in the study area.