MODELLING THE PESTICIDE CONCENTRATION IN RICE FIELD BY A LEVEL IV FUGACITY MODEL COUPLED BY A DISPERSION-ADVECTION EQUATION

Wilson Alberto Contreras Espinosa, Damian Ginestar Peiro,
Lourival Costa Paraíba, Rafael Bru García

wilcones@doctor.upv.es, dginesta@mat.upv.es, lourival@cnpma.embrapa.br, rbru@mat.upv.es

Abstract

The numerical simulation of level IV fugacity model coupled to a dispersion-advection equation to simulate the environmental concentration of a pesticide in rice fields is presented. The model simulates the dynamic distribution of the pesticide in a compartimental system constituted by air, water, rice plants and bottom sediment joint with saturated soil layers.

The level IV fugacity model is given by a linear system of ordinary differential equations that consider the fugacities and, consequently, the concentrations of the pesticide in air, water, rice plants and bottom sediment. The dispersion-advection equation, given by a partial differential equation, simulates the pesticide leaching in the saturated layers of the soil, considering the hydrodynamic dispersion, the pesticide degradation rate and the soil pesticide absorption in the saturated soil layer.