



Impact of root water uptake on soil water flux distribution

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Root water uptake is a dynamic process, which depends locally on the gradient between soil and root water potential. Since the root water potential is non-uniformly distributed along root segments, models usually assuming a spatially constant root or soil water potential may fail to describe the soil-root flux distribution and thus the soil water flux variability. As a result, solute spreading through cropped soil may be incorrectly predicted. To assess the impact of these assumptions on solute transport, we developed a 3-D numerical model to simulate water flow in heterogeneous non-saturated soil and in roots. Numerical scenarios were run and results show that taking the variable root water potential profile into account may drastically change the soil water flux distribution in the rhizosphere.