Universität Hohenheim

Investigation and Simulation of the Effective Anisotropy in Hillslope Soil of Northern Thailand

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4 Conclusions

The recapitulate of this work is that under the present condition lateral flow caused by anisotropy of hydraulic conductivity was negligible. The higher lateral subsurface flow is a potential transport pathway for water and solute. It is very clear that subsurface lateral transport was caused by matric flow. The propagation of the tracer is due to transversal to dispersive processes. Only in the top soil parallel flows to the surface is identifiable. The vertical transport has substantial effect on the agrochemical movement. Agrochemicals applied below the surface might have effect on the out side the transport area and ground water. Low mass recovery shows very fast transport rate. In the given conditions the effect of the different moisture level on the anisotropy can not be perfectly determined due to the presence of the stone in the profile.

The tensiometers must not face direct sunlight as it creates negative pressure in the plexi pipes. For the Cl^- tracer values for concentration and water content fluctuates for certain distances from application area because during sampling broken rock power as a result of hammering was fixed in the gape of the auger instead of soil. It is better to take samples from the pit rather then soil auger. Back ground concentrations especially for Cl^- must be measured. Calculated anisotropy for Br^- salt is questionable as higher concentration was found from two different places. Higher concentration at 30 cm distance from application area and in between 70 and 80 cm depth occurred because of the splitting of the plum or movement of the tracers due to negative potential below the stone.

Hydrus2D can be able to compute the exact peak distance of the tracer on the application area after calibration of hydraulic conductivity by adjustment of the experimental parameters. With Hydrus2D it is difficult to simulate the exact effect of the flow interceptors like stones.