



Organic matter composition of soil aggregate coatings related to wettability

H.H. Gerke, R.H. Ellerbrock

Soil Landscape Research Institute, Leibniz-Centre for Agricultural Landscape Research (ZALF) Eberswalder Str. 84, D-15374 Müncheberg, Germany (hgerke@zalf.de / Fax: +49 33432-82-280)

Based on model analyses and observations, one key component for understanding preferential flow processes seems to be the mass transfer of water and solutes between matrix and inter-aggregate or bio-pores that control local non-equilibrium conditions during rain storms. Parameters of the mass transfer term in two domain models should reflect these local properties at preferential flow path surfaces (i.e., aggregate coatings, crack surfaces, or bio-pore linings). The poster presents investigations on coatings of aggregates from arable top and sub soils. Data obtained from the interior and the coatings were different with respect to hydraulic properties and also to organic matter composition. The FTIR measured CH/CO ratios correspond to wettability measured as contact angle using capillary rise method. Results indicate that the coating material was less wettable than the core and suggest that aggregate coatings in the arable subsoil are lower in CEC but higher in sorption potential for hydrophobic substances as compared to the core. Ignoring such small-distance variability in SOM and using samples of mixed soil may lead to errors in describing solute transport in structured soils.