Effective Hydraulic Conductivity K_e

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$$K_{ei}=K_{bi}\ e^{p_i(basalcover+\ littercover)}$$

In this equation K_{bi} is the 25% percentile saturated hydraulic conductivity for each soil textural class, i, reported by Rawls et al. (1998), p is defined as the natural log of the ratio of the geometric mean to the 25 % percentile values of saturated hydraulic conductivity; $basalcover$ is basal area cover (expressed as a fraction); $littercover$ is litter cover (expressed as a fraction).

Sand: $K_e = 64 * [exp(0.3564 * (basalcover + littercover))]$

Loamy Sand: $K_e = 30.5 * [exp(0.3056 * (basalcover + littercover))]$

Sandy Loam: $K_e = 5 * [exp(1.1632 * (basalcover + littercover))]$

Loam: $K_e = 2.5 * [exp(1.5686 * (basalcover + littercover))]$

Silt Loam: $K_e = 1.2 * [exp(2.0149 * (basalcover + littercover))]$

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Sandy Clay Loam: $K_e = 0.8 * [exp(2.1691 * (basalcover + littercover))]$

Clay Loam: $K_e = 0.5 * [exp(2.3026 * (basalcover + littercover))]$

Silty Clay Loam: $K_e = 0.9 * [exp(1.4137 * (basalcover + littercover))]$ * Stone et al. (1992)

Sandy Clay: $K_e = 0.3 * [exp(2.1203 * (basalcover + littercover))]$

Silty Clay: $K_e = 0.5 * [exp(1.2809 * (basalcover + littercover))]$

Clay: $K_e = 0.3 * [exp(1.7918 * (basalcover + littercover))]$

Reference:

Rawls, W.J., D. Gimenez, and R. Grossman (1998). Use of soil textural, bulk density, and slope of the water retention curve to predict saturated hydraulic conductivity. *Transactions of the ASAE*, Vol. 41(4):983-988.

Stone, J. J., L. J. Lane, and E. D. Shirley (1992). Infiltration and runoff simulation on a plane. Transactions of the ASAE, Vol. 35(1):161-170.