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Soil Research

Supplementary Material

Influence of the physical properties of pumice and biochar amendments on the soil's mobile and immobile water: implications for use in saline environments

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Methodology of the measurement of the mobile-water fraction in pumice and biochar (Clothier et al., 1992; Clothier et al., 1995)

The volumetric content of the tracer in the mobile and immobile water at any time is

$$\theta C = \theta_m C_m + \theta_{im} C_{im} \quad [1]$$

Here θ_m and C_m are the volumetric water content and the resident fluid concentration of the mobile phase, respectively, and θ_{im} and C_{im} are the volumetric water content and the resident fluid concentration of the tracer in the immobile phase, respectively. Here we assume that, in the equilibrated region immediately under the sandy soil mixtures, the tracer concentration in the mobile phase will be that supplied by the wetting system, namely C_m . Furthermore, if the tracer is chosen so that none is present in the amendment under study beforehand, and if it is sufficiently small so that the immobile water remains essentially free of tracer at the time of sampling, then Eq. [1] will reduce to

$$\theta_m = \theta(C^*/C_m) \quad [2]$$

This will allow easy determination of the mobile phase from measurements of θ and C^* , along with the known C_m .

References

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