Predicting Saturated Hydraulic Conductivity For Putting Green Root Zone Mixes. (C05gimenez091635-Poster)

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Abstract:

Prediction of saturated hydraulic conductivity (Ksat) is needed for turfgrass management. Models have been developed for soil Ksat, but there is a paucity of information on their performance in putting green root-zone mixes which are typically coarse material dominated by large inter-particle pores. A power law to effective porosity (air-filled porosity at -33 kPa) has been used to predict soil Ksat, with the exponent (pore size distribution index, PDI) determined from a water retention curve in the range between -33 kPa and -1500 kPa. The model is completed with an empirical linear constant. The objective of this study was to test and adapt the power law model to turfgrass root-zone mixes. Five sand materials, one of them amended with organic and inorganic materials at various rates were investigated. Values of PDI were empirically derived from soil water retention data in the range from -2 kPa to -6 kPa and effective porosity was defined as air-filled porosity at incremental values from -2 kPa to -6 kPa. Linear constants were

calculated at the various effective porosities using measured values of Ksat. Values of the linear constant as a function of particle size distribution, amendment type, and the choice of the lower limit of effective porosity will be discussed.

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