Measurement of Physical Properties of the USGA Sand Mix --- Some Suggestions. (C05-chong111622-Oral)

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Abstract:

The 1993 USGA golf green recommendation requires that total porosity, airfilled porosity, and saturated hydraulic conductivity (Ksat) of the sand mix should meet specific values in order to qualify as a USGA green. Reports indicate that the variation of these parameters measured in the same laboratory seemed to be within acceptable ranges. However, inter-laboratory measurements on the same parameters of the same material resulted in large variations, particularly for saturated hydraulic conductivity. The variation limits the utility of the data. In order to eliminate some potential errors occurred in measurement of Ksat, a new permeameter for measuring Ksat of coarse-textured rooting mix has been developed. The advantages of the proposed permeameter include: (1) Both saturation and Ksat measurement processes can be carried out within the same hydraulic system. (2) By keeping the soil column in water at all times, air re-entry (entrapped-air) into the sample is avoided. (3) The hydraulic gradient is adjustable to fit a wide range of hydraulic drops. The developed permeameter can be operated by a technician with minimum knowledge in soil physics but produce consistent laboratory results for use in sand mix selection and simulation of water and solute movements in golf greens.

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