Adjusting Water Regime by Constructing Sand-based Root-zone with Different Depths. (C05-li165001-Oral)

Authors:

- D.Li* - *Iowa State University, Ames, IA 50011*
- D.D.Minner - *Iowa State University, Ames, IA 50011*
- N.E.Christians - *Iowa State University, Ames, IA 50011*

Abstract:

It has been suggested that alternating the depth of root zone on putting greens may help to alleviate the problem of uneven moisture distribution in fluctuated golf greens. The objective of this study was to investigate how total root zone depth affects soil water retention at various increments throughout the profile. Five materials were used in the study. Sand I conformed to USGA specifications, and sand II was higher in the fine fraction. The three mixtures were 5% peat/95% sand I, 5% peat /95% sand II, and 15% peat /85% sand II(v/v). Profile depths were 10, 20, 30, 40, 50, 60, and 80 cm. Matric potential at the top 2.5 cm decreased as soil column length increased up to certain lentgh specific to each material. Thereafter, it remained constant with further increases of soil column length. Sand I and sand II had a value of matric potential of -37 and -36 mbar, respectively. Mixing 5% peat extended the matric potential values of sand I and sand II to -46 and -55 mbar, respectively. The mixture of 85% sand II and 15% peat had the lowest matric potential of -66 mbar. Total volume of water in a unit-section area of column integraed from the van Genuchten equation showed significant diferences at the top part of root zones when the root zones were deeper than 20 cm.

Corresponding Author Information:

Deying Li
Iowa State University
106 Hort Hall, Iowa State University
Ames, IA 50011-1100

phone: (515)2946025
fax: (515)2940730
e-mail: dyli@iastate.edu

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