Effects of Root Zone Mix and Slope on Moisture in Sand Based Putting Greens

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Many new putting greens are built according to USGA specifications, which require a sandy rootzone mix over a pea gravel layer. This holds water at the interface of the rootzone mix and the pea gravel (perched water table). However, "Localized Dry Spot" (dry and very likely water repellent conditions) and "Black Layer" (a result of wet and soggy soil conditions) can be associated with these putting greens, especially when they have an undulating design. A study was initiated in summer 1997 and funded by the Michigan Turf Foundation, TriTurf Inc., GCSAA and O. J. Noer Foundation to investigate if altering the rootzone depth would increase the water content near the soil surface in elevated areas and decrease the water content of the rootzone mix in low areas. This would relieve areas of elevation extremes from moisture stress and thereby reduce the occurrence of LDS and Black Layer. Preliminary results support the hypothesis that greater rootzone depths at the lower ends of sloping greens result in lower soil moisture, and shallower depths of rootzone mixes on elevated areas of greens increase soil moisture in the upper layer of rootzone mixes.