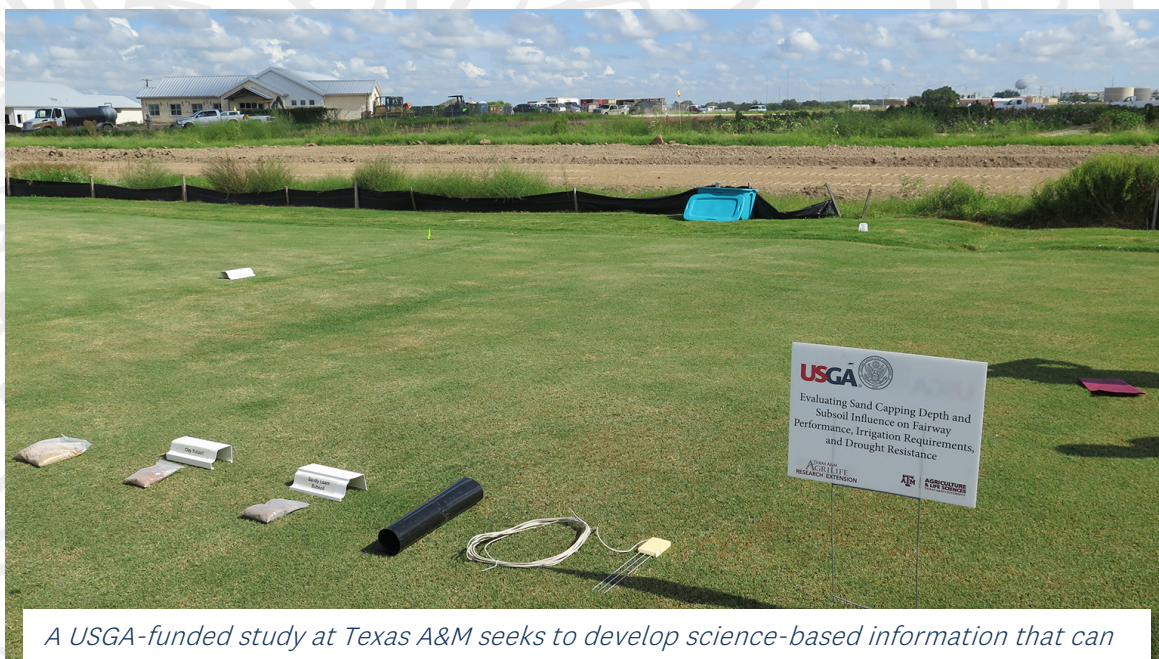




Sand-Capping Depth And Subsoil Influence Fairway Performance

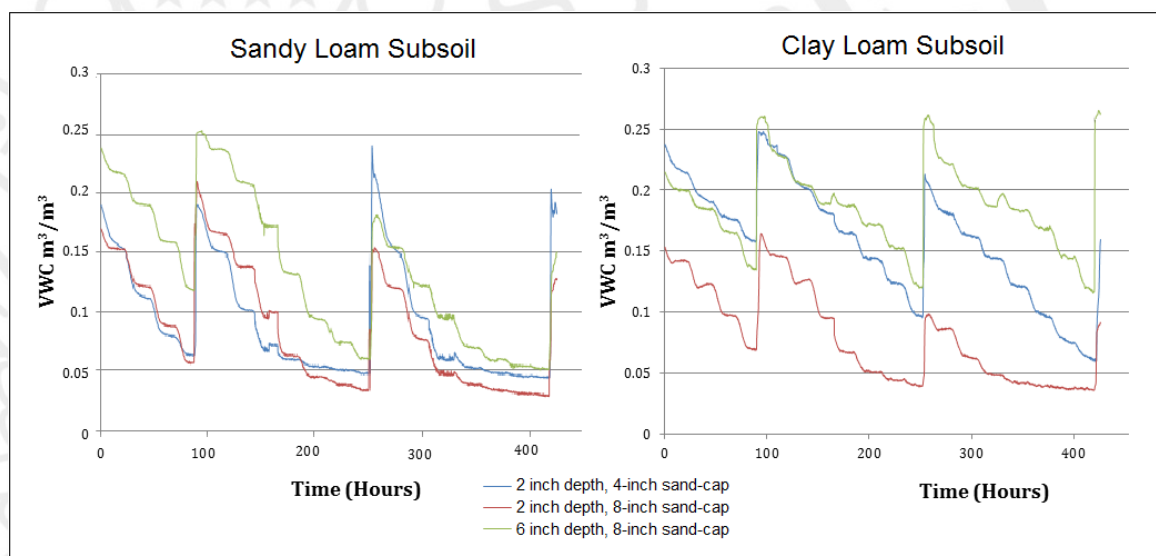
Sand capping golf course fairways is a trend driven by the need for improved turfgrass growing and playing conditions, especially on areas where low-quality irrigation water and fine-textured soils exist. Due to the significant cost sand-capping can add to a construction or renovation budget, often less-than-optimal depths of sand are placed atop existing soils. However, the ideal sand-cap depth – which should provide an optimal balance of water- to air-filled porosity for adequate growing conditions – ultimately depends on the physical properties of the sand and the environmental conditions at the site. Unfortunately, no specifications currently exist for sand-based construction atop an existing soil. A USGA-funded study at Texas A&M University seeks to develop science-based information that can contribute to the development of such recommendations.



A USGA-funded study at Texas A&M seeks to develop science-based information that can contribute to the development of recommendations for sand capping golf course fairways.

Four-inch and 8-inch deep sand-cap treatments were placed atop a clay loam or sandy loam subsoil. During 2016, water movement within and through sand-cap treatments following summer irrigation and rain events was monitored. Changes in soil moisture were measured at various depths in both the 4-inch and 8-inch deep sand-cap plots (Figures 1). Sodium adsorption ratio (SAR) of fairway subsoils – i.e., the upper 4 inches – sharply increased within the initial 12 months of the study due to the high sodium concentration (~270 ppm) of the irrigation water. Sodium levels declined during the winter months due to an abundance of natural rainfall. The SAR problem has been reduced to some extent by sand-capping.

Thatch development was measured December 2015, 15 months into the study. Data showed that the 8-inch deep sand-cap had significantly less thatch compared to the control and 4-inch deep sand-cap treatments.



Changes in soil moisture between irrigation events at 2- and 6-inch depths within the 4- and 8-inch deep sand-cap treatments atop sandy loam and clay loam subsoil. Data represent a single irrigation per week during June 2016.

Summary Points

- The different subsoils – i.e., clay loam and sandy loam – have an effect on moisture content in the overlying sand-cap.

- Although few differences were observed in the first year, some turfgrass drought stress was observed during 2016 on the 8-inch sand-cap. This was most pronounced atop the sandy loam subsoil.
- The SAR is likely to gradually increase from growing season to growing season, which may negatively effect soil structure and root development within the subsoil as these systems age.
- Differences in the rate of thatch accumulation suggest that management of organic matter should not be overlooked when managing a sand-cap system. However, a delayed rate of thatch accumulation has been observed with the deepest sand-cap tested – i.e., 8-inches deep.

Source: Adapted from B. Wherley, K. McInnes, W. Dyer, C. Reynolds, and J. Thomas. Department of Soil and Crop Science, Texas A&M University