CULTIVATION METHODS ON TURFGRASS WATER RELATIONSHIPS AND GROWTH UNDER SOIL COMPACTION

UNIVERSITY OF GEORGIA
Experiment, Georgia

Dr. Robert N. Carrow
Principal Investigator

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On recreational turfgrass sites, soil compaction can increase water use while reducing growth. A primary means of alleviating soil compaction is by cultivation. A number of turfgrass cultivation methods are available but very limited data exists on their relative effectiveness for reducing soil compaction; thereby, improving water use efficiency and growth. In this study, five cultivation methods were compared under compacted soil conditions on Tifway bermudagrass -- deep drill aerifier, hollow-tine coring, solid-tine coring, Aerway slicer, Ryan slicer.

In the surface four inches, the Ryan slicer, deep drill, and Aerway slicer improved rooting compared to the compacted control (no cultivation) by 53%, 23% and 23%, respectively. Deep rooting is especially important and the Aerway slicer and deep drill methods enhanced rooting by 120% and 55%, respectively, relative to the control, while solid-tine coring reduced deep rooting by 15%. All cultivation methods improved water use in August compared to the check ranging from 2% to 14% higher. In this case, greater water use would be considered as beneficial since better growth should occur. One measure of growth is clipping yield. The deep drill aerifier and Aerway slicer were most effective and increasing clipping yields by 44% and 37%, respectively, over the control.

These plots will be severely compacted in Fall 1987. Cultivation treatments will be repeated in Spring 1988 and followed by periodic growth and water use measurements.