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The effect of soil water repellency on turfgrass water requirements and performance

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In order to optimize irrigation, plant water needs as affected by soil water repellency needs to be determined. This experiment was conducted on Tifdwarf bermudagrass (*Cynodon dactylon* X *Cynodon transvaalensis*) grown on soil water repellent sands to determine if monitoring reflectance from infrared and red wavelengths can be used to indicate turf quality, and detect early water stress in bermudagrass before it is visually perceptible. During the 2004 summer, three trials were conducted in which turfgrass was initially irrigated and then subjected to either (i) no irrigation (non-irrigated control) or (*ii*) irrigated daily (irrigated) over dry-down periods. Visual turfgrass quality and localized dry spot symptoms were determined, as well as monitored by an experimental active infrared/red sensor. On some dates, the sensor determined water stress before stress was visually apparent. Furthermore, greater visual and sensor turfgrass quality and less localized dry spot symptoms were observed in irrigated turfgrass compared to the non-irrigated turfgrass. Early detection of water stress may be important for growing optimum sports turf on soil water repellent sands.