Soil Temperature Thresholds Causing Heat Injury in Creeping Bentgrass. (C05-pote133338-Oral)

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Abstract:

Elevated soil temperature is one of the main factors leading to summer bentgrass decline. This study was conducted to determine soil temperature thresholds influencing turf growth and physiological functions for creeping bentgrass (Agrostis palustris). Nine creeping bentgrass cultivars were subjected to different soil temperatures (20, 21, 22, 23, 25, 27, 31, 35 C) and constant air temperature (20 C) in a controlled environment for 54-d. Photochemical efficiency, turfgrass quality, and root number were measured weekly. Chlorophyll content and shoot growth rate were measured biweekly. Photosynthetic and transpiration rates, rooting depth, root dry weight, and viability were measured once within the 54-d period. Decline in all measurements occurred at soil temperatures between 23 and 35 C, depending on cultivars and treatment duration. Decreases in root number preceded declines in all other weekly measurements. Root number and photosynthetic rate were most sensitive to elevated soil temperature.

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