Physiological Responses to Simultaneous Drought and Heat Stress and Recovery for Kentucky Bluegrass. (C05-wang170924-Oral)

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Abstract:

Drought and heat are two major factors limiting growth of cool season grasses. The study was designed to investigate physiological effects of simultaneous drought and heat stress and to examine the relative importance of each stress in plant recovery from the combined stress for Kentucky bluegrass. Two cultivars, Midnight and Brilliant, were exposed to drought and heat stress (35 C) simultaneously and then were rewatered under heat stress or returned to low temperature (20 C) under drought stress. Turf quality, photosynthetic rate, and photochemical efficiency declined rapidly with the combined stress. Both cultivars recovered from 8 d of combined heat and drought stress when rewatered even though they were maintained under heat stress. However, plants did not recovered when plants were returned to low temperature but still under drought stress. Midnight showed better drought/heat resistance and faster recovery than 'Brilliant'. Whether cultivar variations in stress tolerance and recovery were related to changes in leaf water status and the content of abscisic acid and cytokinins are to be discussed.

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