Water Relations and Hormone Synthesis in Response to Drought Stress for Kentucky Bluegrass. (C05-dacosta131518-Oral)

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Abstract:

Decreases in soil water content have been correlated with alterations in plant hormone sensitivity and concentration. This study was conducted to investigate changes in abscisic acid (ABA) and cytokinin (CK) content of leaves and roots, and subsequent effects on water relations, gas exchange parameters, and other physiological and morphological characters in response to surface soil drying. Two cultivars of Poa pratensis were grown in split PVC tubes consisting of two sections. Plants were subjected to three soil moisture treatments: (i) well-watered control; (ii) upper 20-cm soil drying; and (iii) full 40-cm soil drying. In general, all parameters were lowest for the fully drying soil treatment compared to both control and partial drying. Partial soil drying had no significant effects on relative water content, electrolyte leakage, photosynthesis, and turf quality for both cultivars compared to the control. However, stomatal conductance and shoot growth rates of partially dried plants remained lower than that of control plants. Whether stomatal closure with favorable water status in leaves of partially dried plants is related to the changes in ABA and CK will be discussed.

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