

Physiological Response of Three Creeping Bentgrass Cultivars to Drought Stress and Natural Plant Growth Regulators. (C05-zhang135429-Oral)

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Abstract:

Drought is often accompanied by oxidative stress and large reductions in photosynthetic efficiency (PE). Previous research has indicated that application of the natural plant growth regulators (NPGR) -seaweed extract and humic acid-prior to drought improved resistance by increasing the endogenous leaf antioxidant content of 'Penncross' creeping bentgrass. This research was conducted to determine if two other bentgrass cultivars-G2 and L93-would respond similarly and to determine if treatment responses could be associated with changes in leaf tissue cytokinin and auxin levels. Bentgrass plugs were transplanted from the field into greenhouse pots and treated with the NPGRs. Cultivars were either maintained at field capacity or allowed to dry-down. Drought resulted in reduced PE and increased alpha-tocopherol content. Foliar application of seaweed extract (50 mg m⁻²) and humic acid (150 mg m⁻²) significantly increased PE and alpha-tocopherol content across cultivars and soil moisture level. Hormonal associations with these changes will also be discussed. Visually, NPGR treatments resulted in 4 to 7 more days' maintenance of green color and leaf turgor during dry-down.

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