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Start
Browse by Section/Division of Interest
View At a Glance
Author Index
CEU Approved Sessions

307-17 Physiological Responses of Annual Ryegrass to Osmotic Stress.

Poster Number **926**

See more from this Division: C06 Forage and Grazinglands
See more from this Session: Forage and Grazinglands: I

Tuesday, November 17, 2015
Minneapolis Convention Center, Exhibit Hall BC

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Annual ryegrass cv. BRS Ponteio seedlings were grown in half-strength modified Hoagland's nutrient solution and exposed to the following levels of osmotic shock: 0, 200, 250, 300, and 350 $g.L^{-1}$ PEG 6000. The study was carried out in a complete randomized design with six replications, under controlled conditions (28±2°C, 60 ± 4% RH, 16h photoperiod and 280 $mmol.s^{1}.m^{-2}$ radiation). Experiments were repeated four times, totaling 800 seedlings. Following 30 days of continuous growth, plants were harvested for the evaluations. Chlorophyll levels in the midpoint of the last fully developed leaf, transpiration rates in the base of fully expanded leaf blade, root and stem length (SL), number of leaves, leaf area (LA), plant fresh weight, and LA/SL ratio were increasingly depressed as the osmotic shock level was intensified. Leaf sap ψs decreased significantly in proportion to the level of applied osmotic shock, and such behavior was concomitant to the occurrence of significant osmotic adjustment, which increased following the augmentation of the applied level of PEG 6,000. Moreover, the higher the degree of osmotic shock, the higher was the rate of plant mortality. Significant changes in the solution ψs in the course of the experiments were observed solely with the highest concentration of added PEG 6000, suggesting intensive plant processes towards osmotic equilibrium prior to tissue death.
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<< Previous Abstract | Next Abstract >>