INTERACTIVE EFFECTS OF ELEVATED CO_2 AND SALINITY ON THREE COMMON GRASS SPECIES

Donovan Moxley and Xianzhong Wang, Department of Biology, Purdue School of Science, Indiana University–Purdue University Indianapolis, Indianapolis, IN 46202

Atmospheric carbon dioxide (CO_2) has increased steadily since Pre-Industrial times. The need for a better understanding of the effects of elevated CO_2 on plant physiology is clear, particularly in the context of other changes and stresses. Previous studies have focused on how plants are affected by either elevated CO_2 or salinity, one of many plant stresses. However, little is known about the interaction of these two factors on plant growth. In my project, plants were exposed to both elevated CO_2 and salinity, so that the effects of either factor and the interaction of the two on common grass species could be examined. Three grass species were subjects for my experiment. Kentucky bluegrass (*Poa pratensis* L.) and red fescue (*Festuca rubra* L.), both C_3 cool season grasses, as well as buffalo grass(*Buchloe dactyloides* (Nutt.)Engelm.), a C_4 warm season grass, were studied. The CO_2 levels were set to 400 µmol mol^{-1}, close to the current concentration, or 760 µmol mol^{-1}, projected to be reached by the end of this century. The salt concentrations were 0, 25, 50, 75, and 100 mM NaCl with $CaCl_2$ added at lower rates (1% of each respective molarity for NaCl). Five replicates per treatment (a total of 150 pots) were grown for 100 days. My results demonstrated stimulated growth at elevated CO_2 and inhibited growth with increasing salinity. Collection and statistical analysis of data for variance is being performed to determine which, if any, of the fixed factors had significant effects on the given parameters. My results will improve the understanding of plant responses to multiple environmental changes in the future.