BIOMASS AND ADAPTIVE RESPONSES OF FOUR PINUS SPECIES (P.STROBUS, P.RESINOSA, P.BANKSIANA, P.RIGIDA) TO A CO_2 X MOISTURE STESS FACTORIAL

John E. Major[1], Alex Mosseler[1], John Malcolm[1], and Moira Campbell[1]

Biomass, nutrient, and chlorophyll responses were quantified for 4 species of Pines: White pine (*Pinus strobus*), red pine (*P. resinosa*), Jack pine (*P. banksiana*), and Pitch pine (*P. rigida*) grown under CO2 x moisture stress factorial experiment after 3 years of treatment. The CO2 treatments were ambient and 2x elevated CO2 and the moisture stress treatments included irrigated and drought. The experiment was also grown with 4 spruce species; however, we will only present results comparing genus and within the pine species. Results often showed significant genus x CO2 interaction effect due to magnitude effects which resulted in pine having a better positive response than spruce. The genus x moisture stress interactions was often not significant. Height growth had a small CO2 effect, while biomass had a much larger CO2 effects. White pine often had the greatest nutrient concentrations while pitch pine had the lowest nutrient concentrations. There was more photosynthetic down regulation with spruces than pines (chloroplast, and carboxylation). It would appear that pines will do better in an elevated CO2 world than spruces.

[1] Natural Resource Canada, Canadian Forest Service-Atlantic