Decomposition of Elevated CO2-Grown Plant Material Under Varying UV-B Radiation Exposure in Shortgrass Steppe. (S03-king113132-Poster)

Authors:

- J.Y.King - *University of Minnesota*
- D.G.Milchunas - *Colorado State University*
- J.C.Moore - *University of Northern Colorado*
- A.R.Mosier - *USDA-ARS-SPN, Fort Collins, CO*
- J.A.Morgan - *USDA-ARS-RRR, Fort Collins, CO*
- J.R.Slusser - *USDA UV-B Radiation Monitoring Program*

Abstract:

We initiated a study in 2001 in Colorado shortgrass steppe to examine the effects of altered UV-B radiation and precipitation on plant growth, decomposition, and litter faunal activity. Open-air field structures were constructed of solid plastic sheet that passed either all wavelengths of solar radiation or all but UV-B (280-315 nm). Litterbags were placed under some structures to monitor decomposition and litter fauna. Additional structures were used to monitor plant production, tissue quality, and species composition. Manual watering under structures simulated high precipitation or drought conditions. Our preliminary results suggest that neither plant productivity nor tissue quality was significantly altered by changes in UV-B levels under either precipitation treatment. Mass loss from litterbags was affected by UV-B level, CO2 conditions of growth, and precipitation, but there were no interactions. Nitrogen content of remaining litter was not affected by UV-B level. Decomposition under structures that block UV-B radiation tended to result in lower tissue lignin content, but other components of fiber analyses were not affected. The density of litter arthropods was higher under low UV-B conditions, but fungi and bacteria were not affected by UV-B or precipitation levels.

Corresponding Author Information:

Jennifer Y. King
University of Minnesota
Dept. of Soil, Water, and Climate;439 Borlaug

phone: 612-624-0786
fax: 612-625-2208
e-mail:

Hall jyking@umn.edu
St. Paul, MN 55108

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