The importance of local scale processes to landscape scale patterns of grassland vegetation diversity. (C06-white161849-Oral)

Authors:

- T.A.White* - *Dept of Agronomy, Iowa State University*
- D.J.Barker - *Dept of Hort and Crop Sci, Ohio State University*
- K.J.Moore - *Dept of Agronomy, Iowa State University*

Abstract:

One perspective of plant community structure regulation is that local scale processes (e.g. competition between adjacent plants) determine larger (landscape and regional) patterns of species richness. The importance of these local processes needs to be studied across varying environmental conditions and also at the scale at which these processes occur. This study aimed to determine the importance of local processes to variation in grassland species diversity by comparing soil fertility/diversity relations across and within environments differing inherently in diversity, fertility, topography and grazing management. Plant species richness, Shannon diversity and evenness were significantly and negatively related to the concentration of most plant nutrients in the soil. Phosphorus was the exception; it was not significantly related to our measures of diversity. We found that across-environment diversity/fertility relationships generally agreed with within-environment relationships. On this basis, we suggest that local-scale processes, influenced by the availability of nutrients, are key determinants of landscape patterns of vegetation diversity in our grassland communities.

Corresponding Author Information:

Todd White
Iowa State University
1443 Agronomy Hall ISU
Ames, IA 50011-1010

phone: 515 2947952
fax: 515 2945506
e-mail: toddw@agron.iastate.edu

Presentation Information:

Presentation Date: Monday, November 11, 2002
Presentation Time: 1:30 pm

Keywords:

plant species richness, soil fertility, spatial scale, New Zealand