Variability in Leaf Angle Distribution and Light Extinction Coefficient among Corn Hybrids. (A03schulthess181531-Poster)

Authors:

- U.Schulthess RESOURCE21
- D.J.Major Alpha AgRsearch Ltd
- M.R.Schlemmer University of Nebraska

Abstract:

Theoretical studies with the SAIL model show that leaf angle distribution greatly affects the amount of light reflected in the different wavelengths from a canopy. However, little information on variability of canopy characteristics among current corn hybrids is available. A field study was conducted near Shelton, NE in 2001. Shortly after tasseling, various canopy attributes were measured manually, as well as with the LAI-2000 and AccuPar PAR Ceptometer. Detailed measurements on two hybrids showed that they can differ substantially in average leaf angle distribution (54.8 vs. 60.6 degrees). Among the six hybrids studied, the light extinction coefficient (k) calculated from manually measured LAI and light interception measurements ranged from 0.41 to 0.61. A strong linear relationship between mean tip angle and k was found (R2 = 0.97). This study showed that the light extinction coefficient can vary greatly among hybrids, mainly because of differences in leaf angle distribution. This factor needs to be considered when simulating growth of corn or developing algorithms predicting leaf area index or ground cover from remote sensing.

Corresponding Author Information:

Urs Schulthess RESOURCE21 4601 DTC Boulevard Denver, CO 80237-2575 phone: 720 2744023 fax: 720 2744036 e-mail: schulthess@resource21.com

Presentation Information:

Presentation Date: Monday, November 11, 2002 Presentation Time: 2:00-4:00 pm Poster Board Number: 427

Keywords: leaf angle distribution, light extinction coefficient, corn, leaf area index