Spectral Reflectance Relation to Canopy PAR Absorption. (A03-waltershea155349-Oral)

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Abstract:

The fraction of absorbed photosynthetically active radiation (fPAR) is a key variable in the study of terrestrial ecosystem-atmosphere interactions. The objective of this study is to investigate the relationship between canopy spectral reflectance (vegetation indices) and estimates of fPAR which account for the portion of PAR utilized by vegetation. Vegetation indices and PAR absorption were measured at a wheat site and a tallgrass prairie site. The utilized PAR fraction was estimated as fPARgreen (the product of the fraction of green biomass and field measured fPAR (fPARtotal)) and fPARchl (deduced from light response parameters estimated from micrometeorological measurements of CO2 flux and incident radiation). Vegetation indices were linearly related to fPARtotal, fPARgreen and fPARchl for canopies from initial growth to peak LAI. When the canopy was a mix of green and non-green components, the relationship was only slightly altered for fPARgreen and fPARchl but differed for fPARtotal. The near linear relationships of fPARgreen and fPARChl with vegetation indices suggest that the PAR fraction utilized by vegetation can be estimated through remote sensing techniques.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 10:30 am

Keywords:
spectral reflectance, absorbed PAR