The use of remotely sensed images for small plot research. (A08-bullock142823-Poster)

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Abstract:

Remote Sensing has been used as a tool in Precision Agriculture to sitespecifically manage inputs on large farms. We hypothesize that remote sensing can be used as a tool in small plot research as well. The remotely sensed images contain reflectance information that can be related to various crop characteristics and general plant performance, which are often the very measures taken by agricultural scientists as they conduct small plot research. The statistical analysis of remotely sensed images is complicated by severe multicollinearity of the data, which in turn necessitates a multivariate statistical approach. In this work principal component analysis and principal component regression were used for the analysis of hyperspectral remotely sensed images of small plot research of soybean (Glycine max) and corn (Zea mays). The set of 60 highly correlated hyperspectral bands and numerous field observations was successfully reduced to a small set of jointly uncorrelated principal component variables. This combined data set of the hyperspectral remotely sensed data and the field observations accounted for substantially more variability than did the field observations alone.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002 Presentation Time: 9:00-11:00 am Poster Board Number: 227

Keywords:

Remote Sensing, Covariates, Experimental Design, Statistics