Prediction of Double-Crop Soybean Leaf Area Index and Yield Variability Utilizing the Normalized Vegetation Index. (C03-holshouser071931-Poster)

Authors:

- D.L.Holshouser - *Virginia Polytechnic Institute and State Universit*
- B.P.Jones - *Virginia Polytechnic Institute and State Universit*

Abstract:

The use of vegetation indices acquired from remotely sensed data may be a means of accurately estimating both soybean leaf area index (LAI) and yield. The objective of this study was to determine if the normalized difference vegetation index (NDVI), obtained from color-infrared aerial images, might be used to estimate LAI and yield of double-crop soybean. Significant correlations ranging from 0.46 to 0.90 were found between NDVI and LAI, and from 0.36 to 0.83 between NDVI and yield. Instances where all LAI measurements were below 3.0 typically resulted in a linear relationship of LAI to NDVI. Where LAI exceeded 3.0 and no soil type or cultivar interactions were observed, LAI increased exponentially with increases in NDVI. LAI levels above 4.0 had no significant relationship with NDVI. At early development stages, cultivar and soil type affected the relationship between LAI and NDVI. Yield was observed to respond in a similar fashion as LAI, indicating a relationship between soybean LAI and yield. Images acquired between the beginning pod and beginning seed development stages resulted in the strongest correlations between LAI and yield and NDVI.

Corresponding Author Information:

David Holshouser
Virginia Polytechnic Institute and State Universit
6321 Holland Road
Suffolk, VA 23437

phone: 757-657-6450
fax: 757-657-9333
e-mail: dholshou@vt.edu

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