Use of Nearest Neighbor Analysis for Field Screening of Iron-deficiency Chlorosis in Soybean. (C01-falkner093637-Poster)

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Abstract:

Field screening for iron-deficiency chlorosis (IDC) requires that soybeans be planted in fields with a history of IDC. It is a challenge to find a large, uniform area to test lines. In lieu of controlling all environmental factors that interact to produce IDC, heterogeneity may be dealt with through use of nearest neighbor analysis (NNA). NNA uses measurements in neighboring plots to compute a covariate describing the local environmental potential to be subject to IDC. Several IDC studies of varying size were analyzed first as randomized complete blocks (RCB) and second using nearest neighbor analysis. The relative efficiency of each method of analysis was compared by taking the ratio of the mean square errors found in the analyses of variance. For most of the comparisons, the relative efficiency of NNA over RCB was in the range of 90 - 110%, indicating that neither method was superior to the other. However occasional comparisons had higher relative efficiencies (up to 234%) of NNA over RCB and increased the ability of the analysis to detect differences among treatment means.

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