

SOIL TEST PHOSPHORUS AND POTASSIUM AS AFFECTED BY SITE SPECIFIC SOIL FERTILITY MANAGEMENT

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Abstract

The overall objective of this field scaled study was to provide an in-field evaluation of common site specific fertilizer strategies used in corn / soybean production. While a team of researchers are working on several specific objectives, this work specifically focuses on three of them. First, to evaluate the variability in soil tests for making site specific phosphate (P) and potassium (K) application. Second, to measure the change in this variability over time as affected by fertilizer management strategy. Lastly, to determine the relationships of P and K fertility to the yield of corn and soybeans.

Site specific soil fertility management (SSSFM) strategies have been used more extensively in Minnesota over the past decade. However, strategies and recommendations for SSSFm differ. While some relationships have been studied, greater understanding of the repercussions of SSSFm on soil tests was needed. This study was established in the fall of 1998 for this purpose.

Three common SSSFm strategies were examined in this study. Those treatments consisted of the following: traditional field scale averaging, non-integrated center point, and integrated, composite grid approaches. These three treatments represent the most common utilized by the agricultural industry in Minnesota. The application of treatments was also completed by modern, field scale equipment to mimic the application by the agricultural industry. The three treatments were replicated eight times across two fields in alternating corn and soybean rotation in Southern Minnesota.

Intensive grid soil samples were collected in the fall of 1998 to establish a benchmark of soil fertility levels. Yields and intensive soil samples were again collected in 1998, 1999, & 2000 on each replication. The following spring, fertility treatments were applied based upon University of Minnesota Extensive Service Recommendations.

As of September 2001, data analysis and reporting is underway.

(Poster and paper of findings to date were not available at time of publishing. They may be available in November at the Conference.)

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