



Mississippi Corn Promotion Board 2024 Progress Report

Project

Title: Fertilizer Response to Soil Sample Location within the Seed-bed

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Project Summary (Issue/Response)



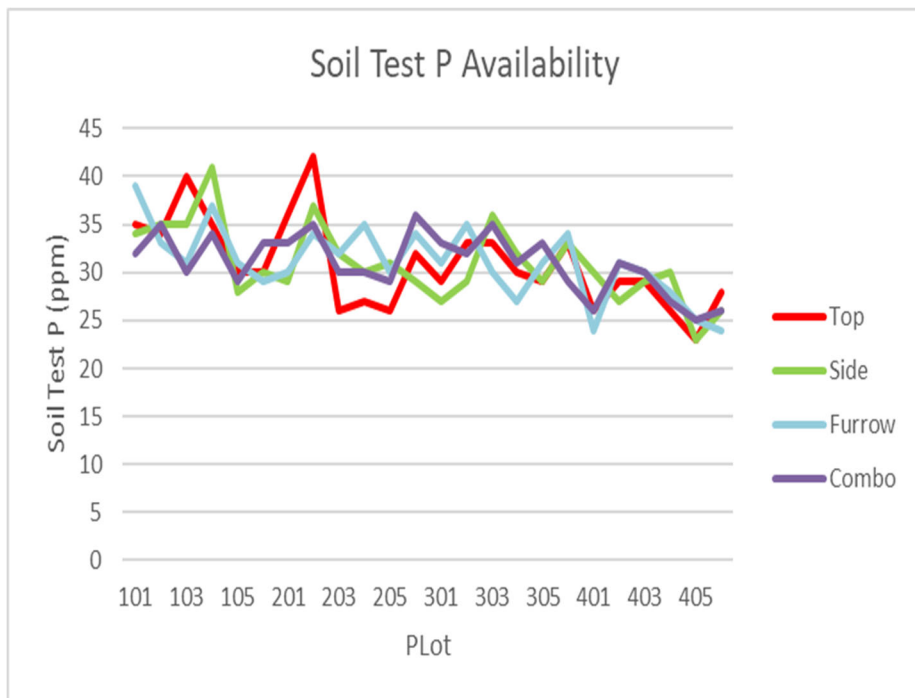
Reductions in tillage operations which mix the soil can potentially lead to nutrient stratification within the seedbed. Furthermore, soil test results are only as accurate as the sample submitted to the lab. Should plant essential nutrients become stratified in a field fertilizer recommendations could be skewed to either over or under applying based upon where the sample is collected. The objective of this research was to determine if the location of individual soil core collection effected soil test P levels and fertilizer recommendations. To accomplish this objective a P rate trial was established in a field with potential nutrient stratification. Prior to fertilizer application each plot was soil sampled using four different soil core collection schemes. The schemes were cores collected from the top of the seedbed only, the side of the seedbed only, the furrow middle only, and a combination of four cores collected from each of the previous three locations. Phosphorous fertilizer was then applied at 6 rates and corn grain yield was correlated to P rate and soil sample results.



Project Results/Outcomes

In 2024 the location was not responsive to P fertilizer and there were no differences in corn grain yield. Soil test data indicated very little variation in soil test P levels based on sample collection location. In all samples, available P levels ranged from 23 to 42 lbs/a. Within a plot, differences in available P never varied more than 10 lbs/a. On average soil test P levels within a plot tended to follow similar trends across all soil sampling schemes. It is most likely that continued use of broadcast fertilizer applications is offsetting any potential nutrient stratification effects of reduced tillage practices.

Project Results



Soil test P values across plots by soil sample location.

Project Impacts/Benefits

Preliminary results from this project indicate that so long as a quality soil core is collected the location the core is collected from within the seedbed will have minimal effect on P fertilizer recommendations. Results from this project will benefit MS corn producers by confirming that fertilizer recommendations are not affected by the location individual cores are collected within the seedbed.

Project Deliverables

Preliminary results from this trial will be shared at local producer meetings throughout the state.