SCSB Quarterly Report

General Information

Principal Investigator(s) Name(s): C. Nathan Hancock (USCA) and Kendall Kirk (Clemson)
Organization: University of South Carolina Aiken
Date: 15 Oct 2021
Quarter: Third

Proposal Information

Title: Strategies for rescue of nitrogen deficient soybeans
Amount Expended to Date: $1,976.93

Progress Assessment

Report the progress toward the situation described in the proposal summary. Include progress against budget, timeline and scope.

The 5 research plots were set up on 12 July 2021, as described in the proposal. Four nitrogen treatments (0, 40, 80, and 120 pounds per acre) were arranged in 4 complete randomized replicates. We identified a range of chlorotic patches from severely stunted to moderately shorter plants. One of the plots was a healthy control, to assess the effect in properly nodulated soybeans. Plot set up included average soil sample, leaf tissue analysis, plot heights, handheld Greenseeker NDVI, and aerial images.

After a month of growth, 9 Aug 2021, we analyzed the health of the research plots. This included leaf tissue analysis, height, NDVI, and aerial images. Preliminary results from these measurements are shown in the Additional Information Section below. As expected, the control plot with adequate nitrogen showed little response. Plots with ~3% nitrogen showed the strongest response to treatment with an significant increase in leaf nitrogen content and greener canopy color. A plot with severely stunted plants showed a small response, but our observations suggest that they were basically beyond rescue.

Key Performance Indicators

What KPI(s) are being used to measure project success? How are KPI(s) being measured? Will KPI(s) not be met? Are KPI(s) on track? Will KPI(s) be exceeded? Explain the key circumstances that are impacting achieving or not achieving KPI(s).

We are currently on track with all the aims of the project.

Next Steps

Explain the next steps of the projects and what you hope to achieve during the next quarter.

The yield in these plots will be measured at the end of the season to determine what effect N application had on productivity. We will then calculate the economic feasibility of nitrogen application.

Additional Information

Provide all additional supporting information, facts or figures here.

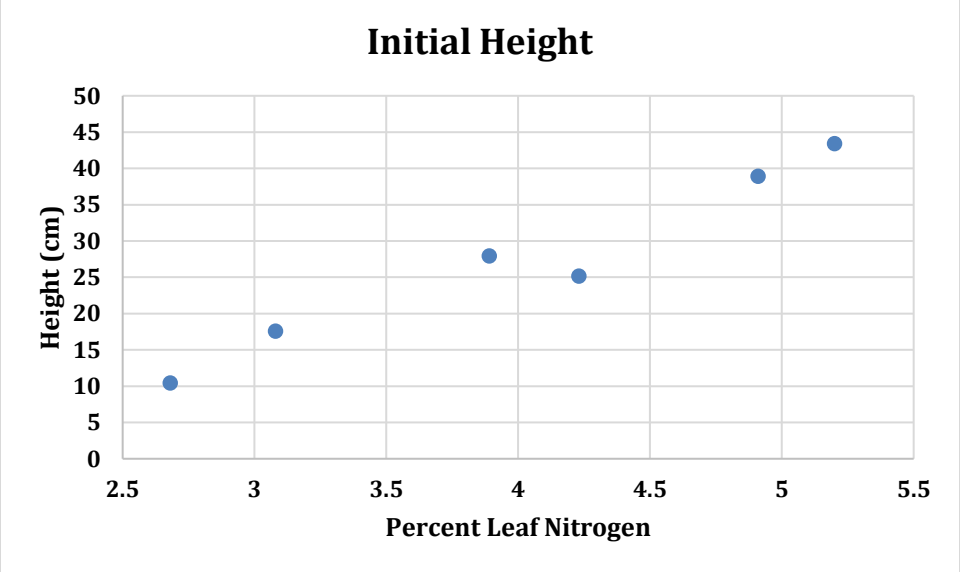

Figure 1

Correlation of % leaf nitrogen with height before nitrogen rescue application.

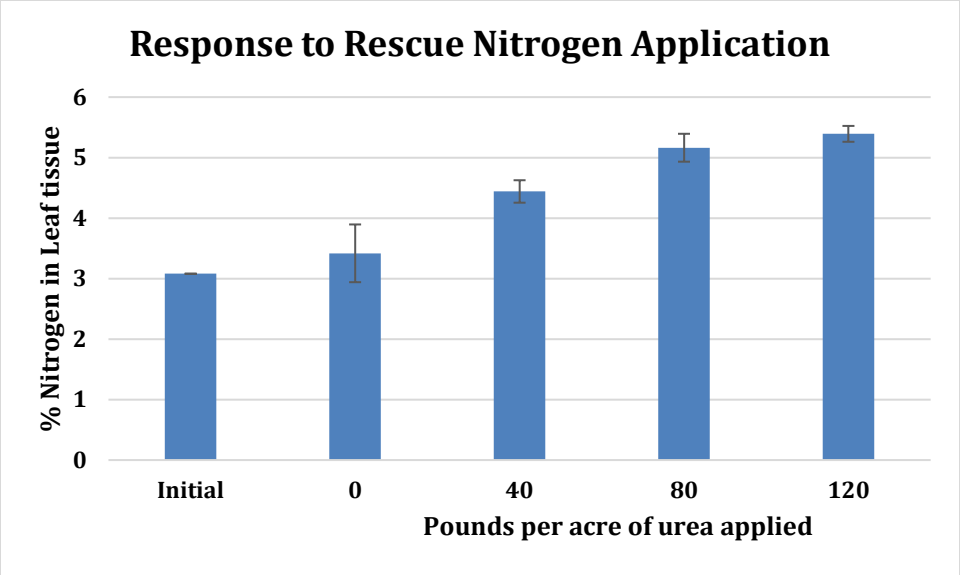

Figure 2
Response in leaf tissue observed one month after nitrogen application. It appears that 40-80 pounds of nitrogen per acre applied in a single application was enough to raise the nitrogen levels up to normal. From Odom plot #2. Error bars represent the standard deviation of 4 replicates.

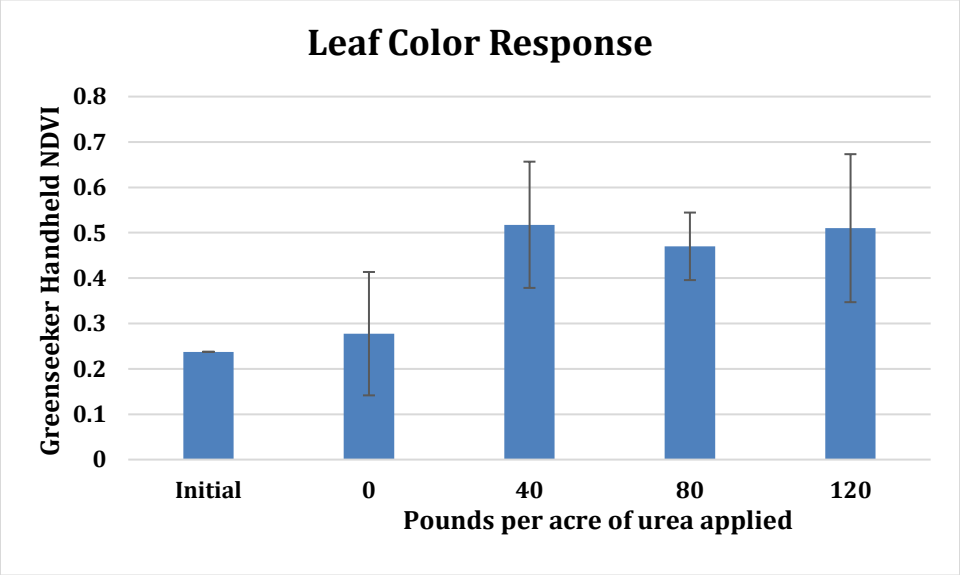

Figure 3
Color response observed one month after nitrogen application. Leaves green up (increased NDVI) in response to as low as 40# per acre nitrogen application. From Odom plot #2. Error bars represent the standard deviation of 4 replicates.