

First quarter progress report FY21 - Kleinjan

## **National Soybean Fertilization Studies: I. Feed Me: Foliar Fertilizer Value for Soybean; II. Sulfur Fertilization Response in Soybean**

### **Objectives:**

- 1) Identify yield response in soybean to sulfur fertilizer and foliar nutrient applications (commonly marketed products).
- 2) Conduct economic analyses on the value of these products.
- 3) Extend results to soybean growers through extension networks.

### **Objective 1. Identify yield response in soybean to sulfur fertilizer and foliar nutrient applications (commonly marketed products).**

In 2020, the sulfur study was performed at 19 locations in 7 states with three rates of ammonium sulfate applied (Dr. Shawn Conley, UW lead PI). The foliar feed project was performed at 26 locations throughout 14 states with six commonly marketed foliar fertilizer products applied (Dr. Rachel Vann, NCSU lead PI).



Figure 1. Collecting leaf trifoliate samples to evaluate the efficacy of foliar fertilizer applications.

In South Dakota, both studies were planted in Brookings (high-yield environment) and Reliance (stressful environment). Plots were planted at both locations in mid-May. Soil samples were collected and sulfur fertilizer treatments were surface-applied within one week of planting. Foliar fertilizer treatments were applied with a backpack sprayer at the R3 growth stage (late July for both locations). Trifoliolate samples were collected from each plot prior to and two weeks following foliar fertilizer application (Figure 1). Leaf samples were sent to the North Carolina Department of Agricultural and Consumer Services – Agronomic Division laboratory for analysis. Plots were harvested with a Kincaid plot combine in mid-October and grain samples were sent to the University of Wisconsin for analysis. At the time of this report, none of the sample analyses has been reported and a preliminary analysis of yield data shows no statistically significant response to either sulfur fertilizer or foliar fertilizer applications at either of the testing sites in South Dakota. A more detailed analysis will be provided in future reports.

**Objective 2. Conduct economic analyses on the value of these products.**

Following harvest data analysis, economic analyses will be performed 1) on a national scope, and 2) for SD producers using local fertilizer prices and yield data from the SD trial sites.

**Objective 3. Extend results to soybean growers through extension networks.**

I plan to summarize South Dakota results and share with growers through winter talks (most likely virtual at this point), radio interviews, SDSU extension website publications, and social media during the January - March 2021 timeframe. A national summary fact sheet will be published for each study (I've attached a 2019 summary of the foliar feed study). Peer-reviewed publications will follow.