

Sulfur source and application timing effect on soybean yield

Dr. Péter Kovács and Dr. Jason Clark
South Dakota State University
Department of Agronomy, Horticulture & Plant Science

Goal and objectives

The goal of the project is to investigate if there is yield response to S fertilizer in soybean. Specific objectives are 1) determine if S source and rate effect soybean yield response and nutrient uptake, and 2) determine if S application timing effects yield response to fertilizer application.

We have proposed two different studies to address the different objectives, one focusing on the different S sources with pre-plant application, and another one focusing on the S application timing. Both studies have been planted at two locations. We planted the studies at Beresford on May 9th and all fertilizer applications have been applied for the S source study, and the pre-plant fertilizers for the S season study. The second location near Aurora was planted on May 14th.

Soil samples from 0-6" and 6-24" depth has been collected at planting, and these samples have been sent for nutrient analysis to a commercial laboratory.

Pre-plant fertilizer treatments have been applied to both studies. In the S sources study we have applied 10, 20 or 30 lbs S/ac rate of ammonium-sulfate (AMS; 21-0-0-24S), TigerXP (0-0-0-85S) or MES10 (12-40-0-10S). Additional urea and triple superphosphate were applied in plots with AMS and TigerXP treatments to equalize the applied N and P from MES10 source for each of the respective S rates. We will compare these results to a control plot which did not received fertilizer. We have collected the V4 biomass samples from these studies.

In the S season treatments has received the 5 and 10 lbs S/ac ammonium sulfate at planting and the V4 foliar applications (5 lbs S as ammonium sulfate). The following additional treatments will be at R2 (full bloom), R4 (full pod), and R5 (beginning seed) growth stages totaling of 5 lbs S/ac, and the combination of V4 and R2, V4 and R4, and R2 and R4 growth stages with 5 lbs S/ac application at the respective growth stages.

We submitted an abstract to present preliminary results at the annual meeting of the Tri-Society meeting in November if the COVID-19 pandemic will allow us to attend.