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# Soybean Response to Sulfur Fertilization

Vincent Lawson

*Iowa State University*, [vlawson@iastate.edu](mailto:vlawson@iastate.edu)

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## **Abstract**

The objective of this trial was to investigate response of soybean to sulfur fertilization when grown on irrigated coarse sand soil with low organic matter.

## **Keywords**

RFRA1129

## **Disciplines**

Agricultural Science | Agriculture

## Soybean Response to Sulfur Fertilization

### RFR-A1129

Vince Lawson, farm superintendent

#### Introduction

The objective of this trial was to investigate response of soybean to sulfur fertilization when grown on irrigated coarse sand soil with low organic matter.

#### Materials and Methods

Trial location was Field B, which has a Fruitfield coarse sand soil with 1 percent organic matter and soil pH of 7.4. A spring soil test reported 222 lb/acre phosphorus (very high), 180 lb/acre potassium (low), and 22 lb/acre of sulfur (low) in the topsoil. Potash (0-0-60) was broadcast at a rate of 200 lb/acre before chisel plowing and disking. Soybean seed, Pioneer 93Y05, was planted on May 20 at seed spacing of 6-7 per ft in rows 30 in. apart. Soybeans were irrigated as needed with subsurface drip irrigation lines placed 12 in. deep and 60 in. apart. Weed control was achieved with use of s-metolachlor and glyphosate herbicides. Plots were arranged in a randomized complete block design with four replications. A treatment plot consisted of six soybean rows 20 ft long with data taken from center two rows. Calcium sulfate (21% Ca, 17% S) was used as the sulfur source and banded between plot rows at rates to equal 0, 10, 20, and 40 lb/acre sulfur on June 22 when soybeans were at the V3 growth stage. Recently matured trifoliolate leaves were collected on August 9

when soybeans were at R2 growth stage for percent sulfur in plant tissue determinations. Soybean plots were harvested on October 15 with a plot combine.

#### Results and Discussion

Since the reported sufficiency range for sulfur content in soybean leaves is 0.21–0.49 percent and Treatment 1, the control, had a reading of 0.26 percent (Table 1), it is probable that the soybean plants were acquiring adequate amounts of sulfur from their environment without the addition of sulfur fertilizer. Visually, no growth differences were observed between the treatments but applying sulfur fertilizer did increase the percent of sulfur content in foliage. Plot harvest on October 15 indicated good growing conditions. All treatments produced high yields and were not significantly different.

In general, sulfur fertilizer applications are not recommended for soybean production because research has rarely shown an economical response. This trial work supports that recommendation although further work would be useful for identifying conditions under which a response might be expected.

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**Table 1. Sulfur fertilizer treatments, plant tissue % sulfur on August 9, and treatment yields.**

Treatment	Description	Plant tissue % sulfur	Yield bushels/acre <sup>a</sup>
1. Control	No sulfur fertilizer	0.26	72.4
2. Sulfur 10 lb/acre	59 lb/acre CaSO <sub>4</sub> applied June 22	0.32	74.4
3. Sulfur 20 lb/acre	118 lb/acre CaSO <sub>4</sub> applied June 22	0.29	69.6
4. Sulfur 40 lb/acre	236 lb/acre CaSO <sub>4</sub> applied June 22	0.31	72.2

<sup>a</sup>Treatment yields were not significantly different at the 5 percent level.