



United States Department of Agriculture
Natural Resources Conservation Service

NE-FRD01-5 2011 Ranking Period 1

FRD01 – On Farm Research and Demonstration 5 Evaluation of Sulfur Application for Corn

State Criteria for on Farm Research and Demonstration

Research Topic: Evaluation of sulfur application for corn.

Contact information: Charles Wortmann, 369 Keim, 4024722909, cwortmann2@unl.edu with support from Extension Educators Paul Hay, Jim Schneider, Keith Glewen, Mark Hinze, and David Varner.

Name and brief description of the research entity: The University of Nebraska-Lincoln Extension.

General description and summary of research to be conducted: Much fertilizer S is applied in Nebraska to medium and fine texture soils. S application often results in greener canopy color but the only evidence for increased yield and profit is anecdotal while research results consistently show a lack of yield response and reduced profitability.

Objective: To determine if there are cases of profitable response to applied S on medium and fine texture soils where soil matter content is < 2.5%, and, if so, determine soil test factors contributing to a high probability of economic response to applied S.

Procedures. The trials will be conducted in fields of medium or fine texture soil with SOM is < 2.5%. Fields that have received manure or more than 40 lb S total applied within the last two years will be excluded, and/or if irrigation water sulfate-S > 8 ppm.

The plots will be strips across the field. Trials will have 6 replications and two treatments: a no S control and an application of 30 lb S/acre (starter band application of a lesser amount is an alternative). Sulfur sources may be ammonium sulfate, elemental sulfur, gypsum, or ammonium thiosulfate. If the S source contains N, the N rate will need to be adjusted so that the N rate is same throughout the trial area. For example, if ammonium sulfate is the S source then the other N applied on the S plots will need to be reduced by 26 lb N/ac to compensate for the N applied in the ammonium sulfate. The S will be applied pre-plant in the spring, in the starter or shortly after planting.

Previous crop management history will be collected (cropping and fertilizer history, tillage system, hybrid). Yield for each experimental unit will be determined either using a yield monitor or weigh wagon. GPS is not needed for field equipment but useful.

Area of Focus: Soil quality.

Geographic Area: Annual crop producers in corn-soybean based systems in the counties of Lancaster, Gage, Jefferson, Hamilton, Saunders, Stanton, Hall, Adams and Dodge counties.



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Participant requirements:

- A detailed plan must be developed in conjunction with the researcher that provides project details, plot locations, on aerial photos and in written format and **be provided to NRCS prior to scheduling the project.**
- All inputs for the research project, including crop seed, fertilizer, herbicides, farm equipment, and manpower will be provided by the participant. Participating producers will be responsible for contacting an Extension Educator for technical assistance at critical times (layout of trial, applying treatments, harvest), all field operations including those for establishing the trial and collecting the yield data; in some cases the technical assistance may be delegated by the Extension Educator to a crop consultant or another agronomic advisor.
- Grain yield for each strip will be collected using a weigh wagon, yield map or monitoring equipment, or other means in agreement with the cooperating Extension Educator. Grain moisture will be determined for each strip. All data will be provided to the cooperating Extension Educator. All costs of implementation, excluding Extension advisory visits, will be the responsibility of the producer. Hybrids/varieties and other management practices will be the producer's choice.
- Minimum of 12 acres will be needed for the replications. Growers must have their own harvest equipment, preferably equipped with a yield monitor. Growers with their own sprayers and fertilizer applicators are preferred, but commercial herbicide and fertilizer applications are acceptable.
- The research will last a minimum of three years.

Number and size of on-farm research sites needed: At least 3 growers from the geographic area. Each site must be at least 12 acres.



Documentation: Complete the following Table and provide the documentation listed below:

Tract	Field(s)	Acres Planned				Acres Applied (completed by operator)
<i>EX. 1</i>	<i>1</i>	<i>20</i>				<i>20 acres</i>

I certify that the following information meets specifications and has been provided to NRCS:

1. Complete the table above and provide a map with delineation of the area where the enhancement was applied including partial fields.
2. Photographs of a representative number of fields/plots showing demonstration or research.
3. Final report based on University of Nebraska Extension Service that documents that details findings of the research project including soil moisture, inputs, yields, plot records, replicated treatments and all other pertinent information on each plot.

Certified by: _____ **Date:** _____