



## On-Farm Demonstration Trial: Fertility and Soil Studies Sulfur on Corn Trials

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### Objective

Determine the effects of sulfur treatments on corn yields to define best management practices.

### Introduction

In the recent past, sulfur (S) deficiency had been showing up more frequently in Iowa fields. Large yield response especially occurred in corn and fields in northeast Iowa. The increase in S response is thought to be partially due to Iowa receiving less S in the rainfall due to more stringent air pollution regulations, less S fertilizer applications, higher crop yields, and less widespread use of manure. Sulfur fertilizer applications can offer yield increases where S deficiencies are present. The objective of these trials was to evaluate potential for S deficiency and yield response in corn and soybean to S applications.

### Materials and Methods

#### Crop Year–2021

| Trial                  | 210204   | 210205   | 210416                                   |
|------------------------|--|--|--|
| Trial County           | Crawford   | Crawford   | Hancock                                  |
| Soil Type              |  |  |  |
| Previous Crop          | Corn   | Corn   | Corn                                     |
| Tillage                | No-Till  | No-Till  | Conventional                             |
| Current Crop           | Corn   | Corn   | Soybean                                  |
| Hybrid–Variety Number  | 6408   | 8073-2   | AG21ZF0                                  |
| Hybrid–Variety Company | Wyffels  | Hogemeyer  | Asgrow                                   |
| Row Spacing            | 30 in.   | 30 in.   | 30 in.                                   |
| Seeding Rate           | 33,000/ac.   | 33,000/ac.   | 128,000/ac.                              |
| Planting Date          | April 27   | April 24   | April 29                                 |
| Harvest Date           | November 9   | November 9   | September 29                             |
| Experimental Type      | On-Farm Demo   | On-Farm Demo   | On-Farm Demo                             |
| Replications           | 4  | 4  | 4  |
| Fertilizer             | Super Cal SO <sub>4</sub> (CA 21%, S 17%, CaSO <sub>4</sub> 92%) | Super Cal SO <sub>4</sub> (CA 21%, S 17%, CaSO <sub>4</sub> 92%) | Gypsum                                   |
| Application Rates      | 40lb./ac. rate<br>7lbs. actual S                                 | 40lb./ac. rate<br>7lbs. actual S                                 | 100lbs./ac. rate<br>18 lbs./ac. actual S |

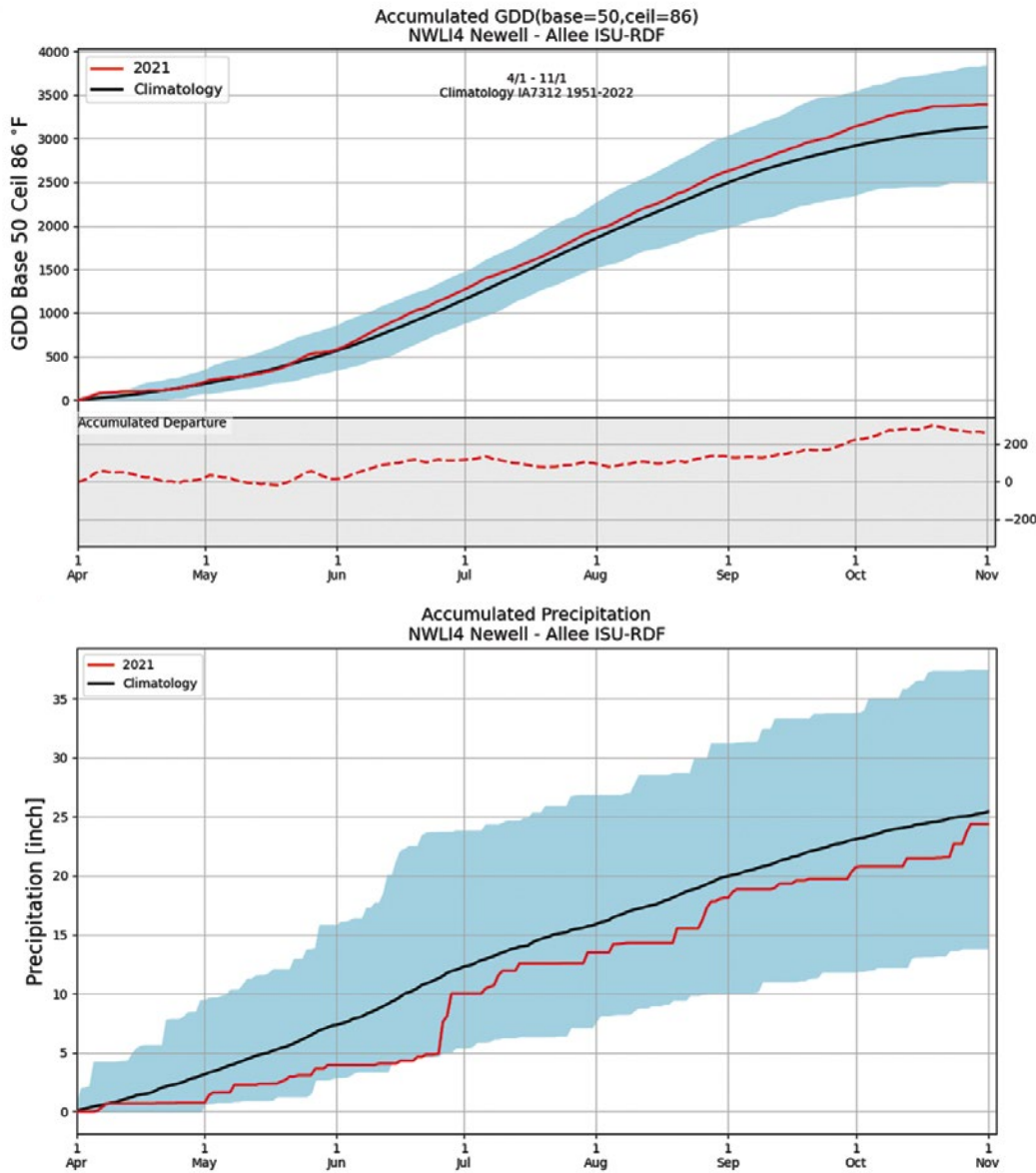
### Results

| Trial Number | Treatment                 | Yield (bu./ac.) <sup>a</sup> | P-value <sup>b</sup> |
|--------------|---------------------------|------------------------------|----------------------|
| 210204       | Super Cal SO <sub>4</sub> | 227.5 a                      | 0.89                 |
|              | Untreated Control         | 227.9 a                      |                      |
| 210205       | Super Cal SO <sub>4</sub> | 221.9 a                      | 0.68                 |
|              | Untreated Control         | 221.2 a                      |                      |
| 210416       | Gypsum                    | 71.6 a                       | 0.63                 |
|              | Untreated Control         | 70.8 a                       |                      |

<sup>a</sup>Values denoted with the same letter within a trial are not statistically different at the significance level of 0.10.

<sup>b</sup>P-value = the calculated probability that the difference in yields can be attributed to the treatments and no other factors. For example, if a trial has a P-value of 0.10, there is 90% confidence the yield differences are in response to treatments. This is consistent for demonstration trials.

## Location Climate Analysis



### Key Takeaway

There was no statistical difference between treatments for yields in all experiments.

Sulfur will only generate a yield response when a deficiency is in the soil.

If there is a history of manure applications on a field, sulfur additions are rarely needed to that field.

NOTE: The results presented are from replicated demonstration trials. Statistics are used to detect differences at a location and should not be interpreted beyond the single location.