



Project Objective: The objective of this project was to quantify the effects of Source biological on soybean yields.

- Source Biological Insights:**
1. In 2023, the locations tested by ISA did not see an improvement in yields using Source on soybean.
 2. Tissue samples showed mixed results in nutrient concentrations and did not promote reduction in fertilizer inputs.
 3. Drought conditions created a challenging growing environment in 2023.
 4. Previous work on Sound Ag Source product line has shown potential on soybean.
 5. Connect with ISA to test new products on your own field to see potential responses.

Source Trials 2023

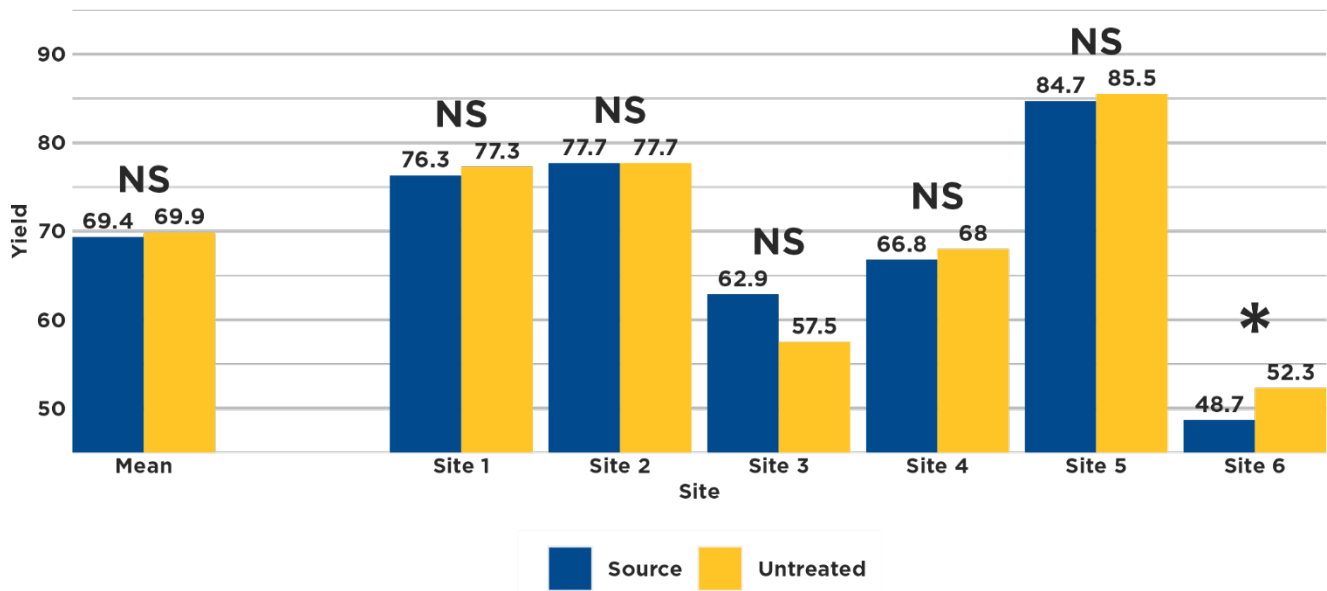


Figure 1 Yield difference between Sound Ag Source and an untreated control in 2023. Sites not statistically significant are indicated by “NS”, sites marked with * represent a significant response.

Sound Ag Source biological products are advertised as having the potential to add 25 lb N and P to plants and enhance micronutrient uptake when foliar applied. In 2023, 6 sites were established comparing a 50-50 combination of Sound Ag Source SC (0.5 fl oz/ac) and DC (1.25 fl oz/ac) biological products applied between R1-R3 to an untreated control on soybean. Locations can be seen in Figure 2. Results across all sites did not show a statistically significant response with an average response being -0.5 bu/ac with the use of the combined products. Responses at individual sites ranged from -3.6 to +5.4 bu/acre with only a single site (Site 6) in North Central Iowa showing a significant difference at -3.6 bu/ac. Note that while Site 3 did have a positive 5.4 bu/acre yield response, this was not significant due to the variability of responses across the field.

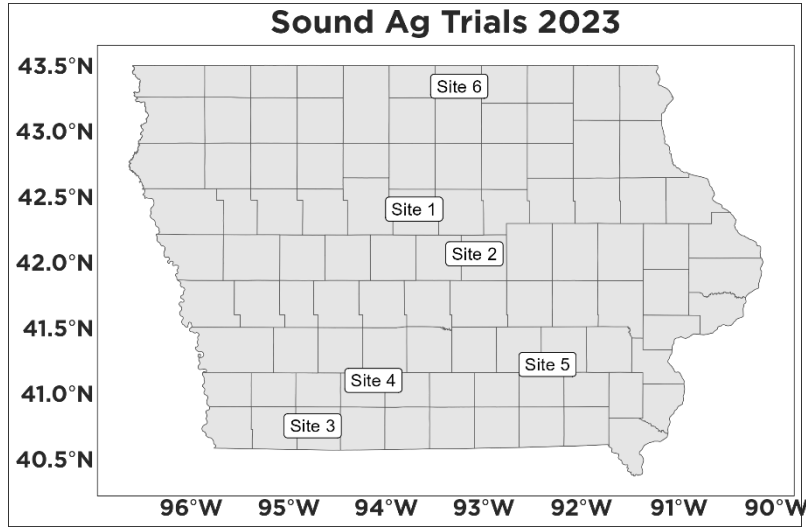


Figure 2 Site locations in 2023

Tissue Test Results

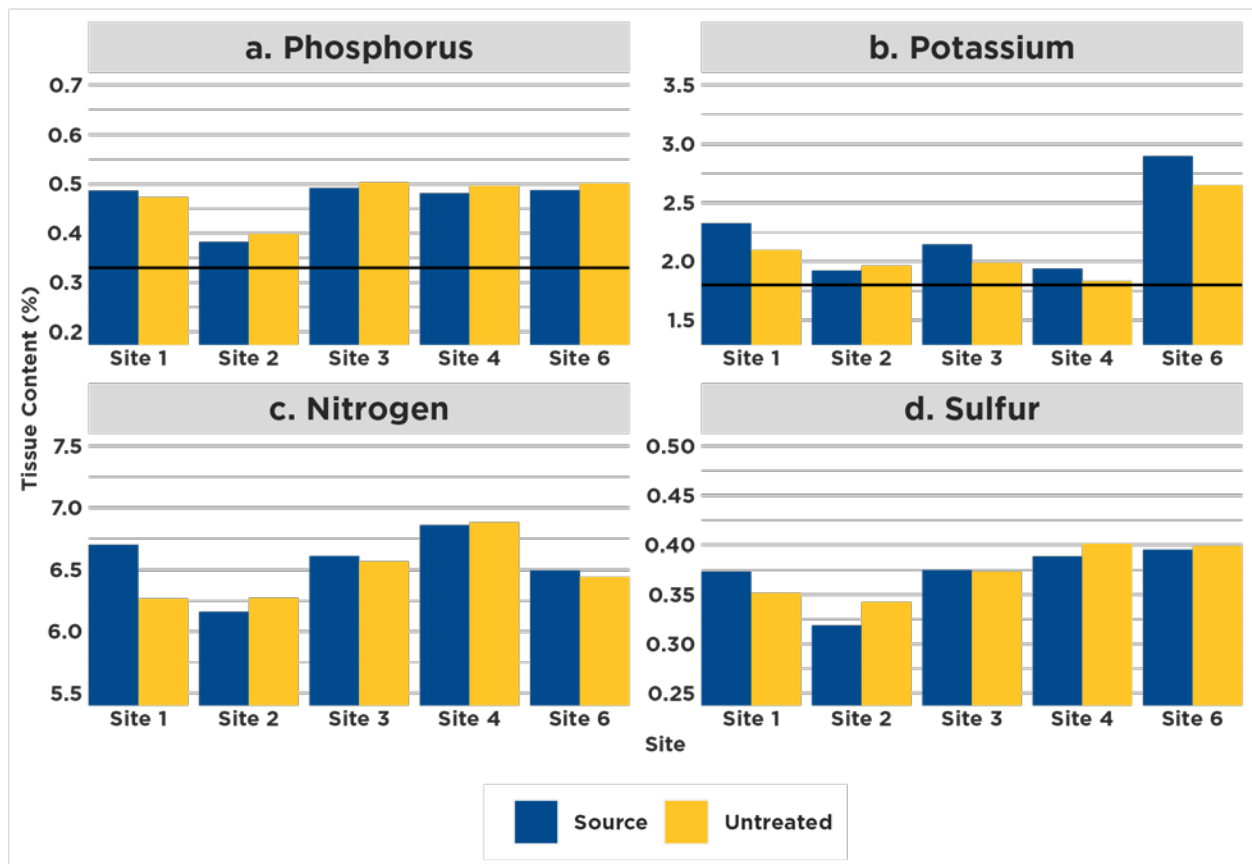


Figure 3a-3d Results from tissue sampling 15-45 days following application. Sufficiency levels reported by Iowa State University for P and K displayed as horizontal black lines on respective graphs. All sites fell within the sufficiency range of 0.2-0.4 for Sulfur.

Source product application occurred between the R1-R3 growth stages, and soil and tissue samples were taken 15-45 days post application. Tissue analysis results are shown in Figure 3 for all but Site 5 which was removed due to sampling error. When looking at nitrogen and phosphorus, the two nutrients specifically mentioned by the product literature, results vary at



each location but overall show little to no increase in nutrient concentration. Potassium and phosphorous values at all locations were at or above Iowa State University sufficiency guidelines. Drought conditions at all locations may have limited the amount of uptake that was possible by the plants, with seasonal rainfall totals between 4.6 and 10.2 inches below the 20-year average rainfall totals for the same timeframe. Rainfall totals can be seen in Table 1.

	April–August Rainfall (inches)		Application-Sample Rainfall (inches)
	2023	20-year Avg	
Site 1	14.8	20.4	1.2
Site 2	15.2	20.8	0.9
Site 3	18.2	22.8	10.2
Site 4	18.1	22.7	9.7
Site 5	16.3	21.5	3
Site 6	11.4	21.6	2.8

Table 1 April-August rainfall totals in 2023 and the 20-year average at each location. Total rainfall at each location from time of application to tissue and soil sample collection.

Soil Test Results

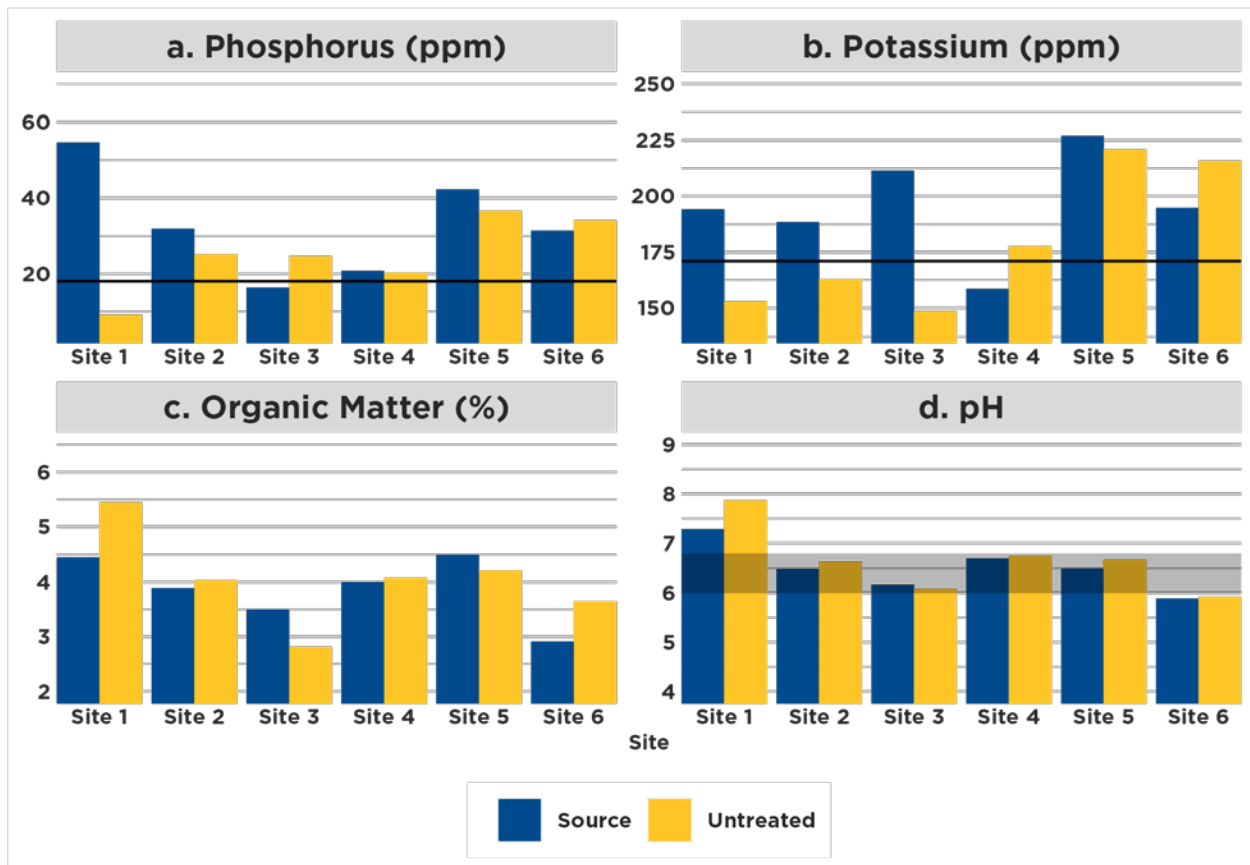


Figure 4a-4d Results from soil sampling. Optimum levels reported by Iowa State University for P and K displayed as horizontal black lines on respective graphs. Recommended pH range of 6.0-6.8 displayed in Fig 4d.

Soil sampling was conducted at all sites at the same time as tissue sampling. Samples were collected at a 6-inch depth with results from the analysis shown in Figure 4. Again, severe drought conditions may have impacted soil test results. Large changes between treatments



can be seen at Site 1 and Site 2, which also correspond to the two sites that had the least amount of rainfall (Table 1) between application and sampling event (1.2 and 0.9 inches respectively). This lack of rainfall may have resulted in limited movement of the product from the area of application.

Previous Work

While ISA worked with a combination of Source SC and DC in 2023, products in the Source line were evaluated individually in 2021 and 2022 (Figure 5). When applied to corn, responses to the Sound Ag products varied greatly from -6 to +18 bu/ac. Of the 25 sites conducted in 2021 and 2022, only 10 resulted in a yield gain with an overall average response of 1 bu/ac. On soybean, responses were mostly positive with 10 of the 13 sites resulting in a yield gain, with an overall average response of 1.4 bu/ac.

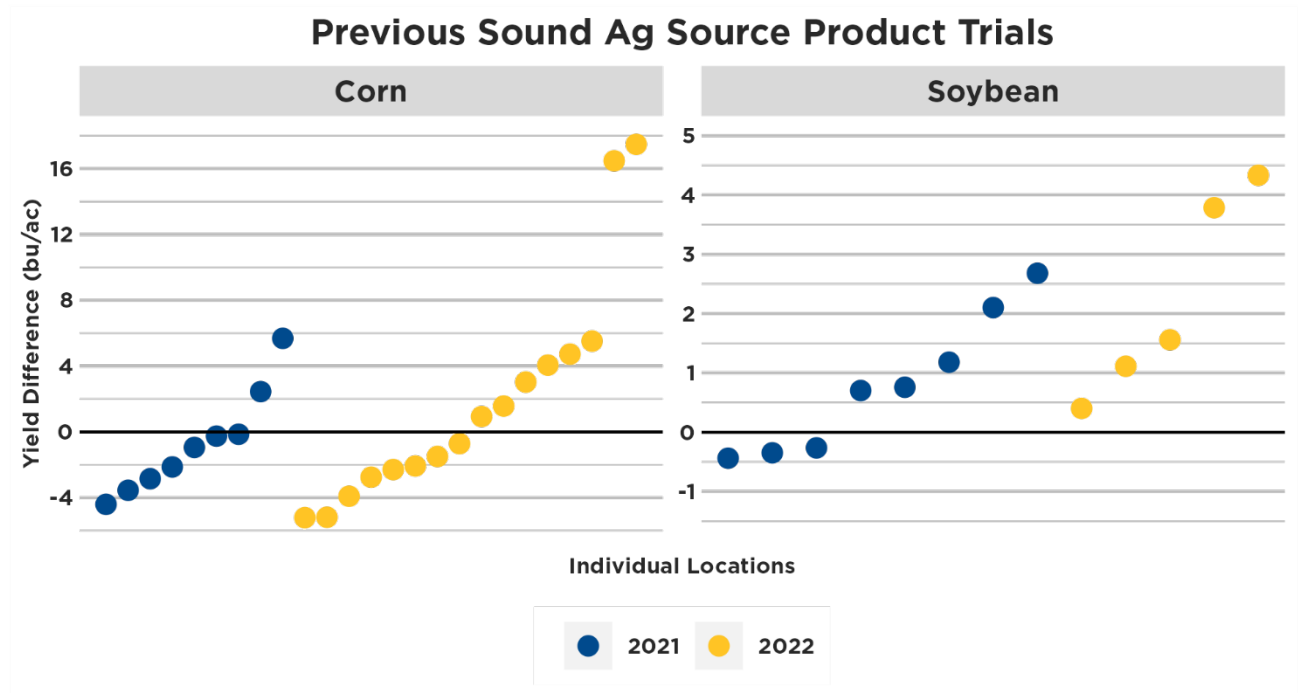


Figure 5 Yield differences between Sound Ag Source products and untreated control in 2021 and 2022 on corn and soybean.