



**Project Objective:** Quantify efficacy of fungicide products against economically significant soybean diseases as well as evaluate return on investment for Iowa soybean farmers.

**2023 Insights**

In 2023 Iowa Soybean Association evaluated three fungicides: Lucento (Groups 3 and 7), Miravis Neo (Groups 3, 7, and 11), and Veltyma (Groups 3 and 11). In 2023, we did not find a positive return on investment in the trials that we conducted using fungicides on soybeans. With no yield difference detected between no fungicide applied and fungicides applied, we estimate that growers spent an additional **\$32.27** per acre on their cost of production which did not pay for itself. It should also be noted that disease pressure was very low at all locations in 2023. Iowa Soybean Association encourages farmers to continue to think about the disease triangle and integrated pest management strategies when making fungicide application decisions.

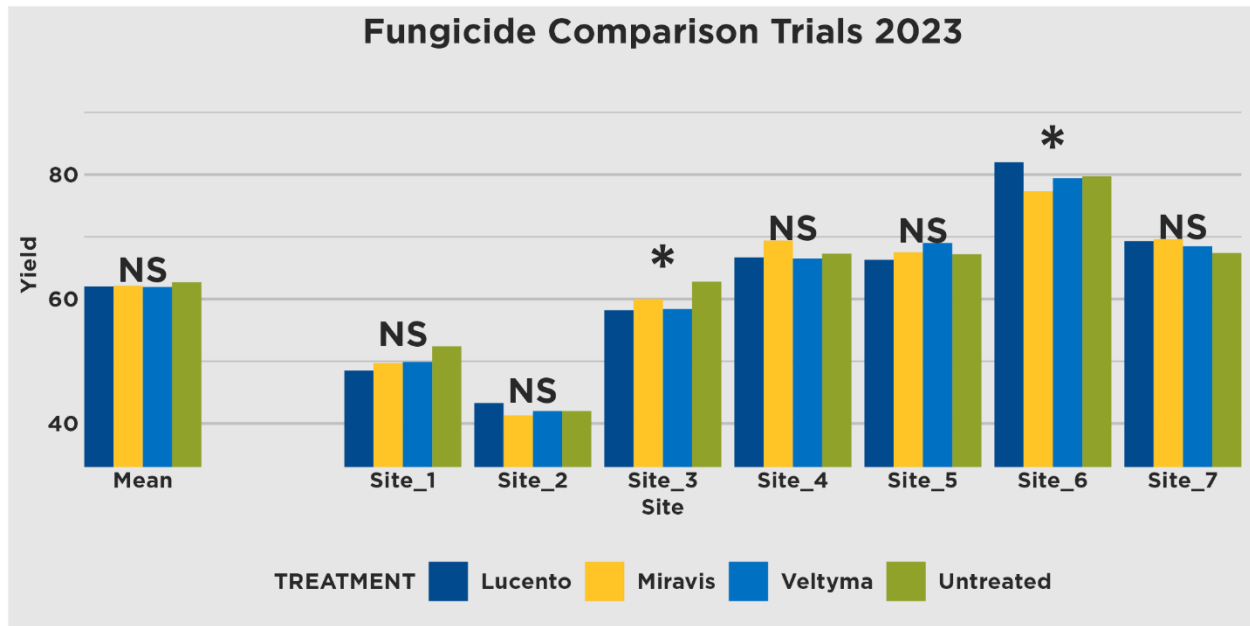


Figure 1 NS Indicates that yields were not statistically different. \* Indicates that some treatments were statistically different.

The average yield response from the 7 sites to each fungicide was statistically insignificant (NS). Lucento, Miravis, and Veltyma fungicides yielded an average of 62 bushels per acre compared to the untreated strips, which averaged 63 bushels per acre. Was this result expected? Was this result “normal”?

Individual site analysis showed a significant difference in yield only at Site 3 and Site 6. At Site 3, the untreated yield was significantly higher than yield from all applications of fungicide, and the fungicides were not significantly different from each other. At Site 6, strips with Lucento yielded significantly higher than Veltyma



and Miravis, but not significantly higher than the untreated strips. The yield of all the fungicides at Site 6 was not significantly different from the yield in untreated strips.

For a disease to be present, all three points of the disease triangle must be present: an infecting pathogen, a susceptible host, and a conducive environment. Farmers should focus on the environment at critical times during the growing season to gauge the benefit from the application of fungicides. The pathogens we are interested in on soybeans require extended periods of leaf-wetness either from rainfall or extended dew periods to develop into economically significant diseases; scouting took place primarily for frogeye leaf spot, but a general rating scale was used to accommodate the presence of other disease pressure. Even at the 2 locations with significant yield differences between treatments (Sites 3 and 6), the return on investment was negative or marginally positive as shown in Table 1. Farmers will benefit economically by applying fungicides when conditions are conducive to disease development.

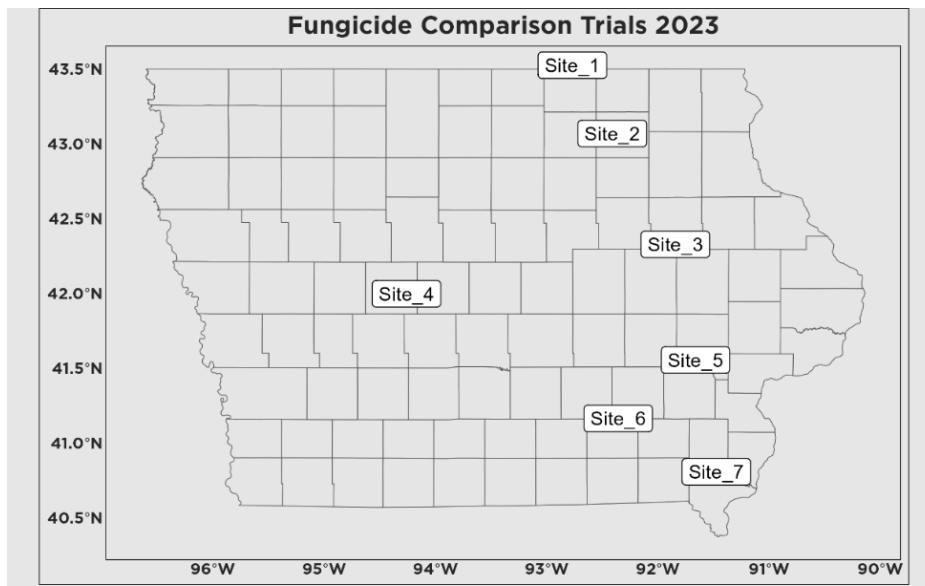


Figure 2 Trial locations in 2023 fungicide testing.

Table 1 Economic return of fungicides on 2 locations across the state.

Sites with significant response	Fungicide	Product cost \$/ac	ISU estimated Application cost \$/ac	2023 Average \$/bu soybean market price	Breakeven Yield response bu/ac	Trial average bu/acre yield response	Estimated Net Result \$/acre
3	Lucento	\$19.90	\$10.00	\$14.06	2.1	-4.5	-\$93.17
3	Miravis	\$22.44	\$10.00	\$14.06	2.3	-2.8	-\$71.81
3	Veltyma	\$24.48	\$10.00	\$14.06	2.5	-4.3	-\$94.94
6	Lucento	\$19.90	\$10.00	\$14.06	2.1	2.3	\$2.44
6	Miravis	\$22.44	\$10.00	\$14.06	2.3	-2.4	-\$66.18
6	Veltyma	\$24.48	\$10.00	\$14.06	2.5	-3.0	-\$76.66



### **Project Methods**

Fungicides were applied at the R3 growth stage utilizing a drone. Application rates for each product followed the label: Veltyma (7 oz), Miravis Neo (13.7 oz) and Lucento (5 oz). Disease Severity scouting was performed at the R5 growth stage using the scale in the section below. Scouting was performed at R5 to understand the level of disease progression in the field without fungicide application using the untreated plots at each location. 2023 was another dry year in a series of dry years. The average June to September rainfall between all seven sites was 10 inches below the 30-year average. In 2020 when rainfall was above the 20-year average fungicide trials demonstrated a positive ROI. This trial is being duplicated in 2024 to better understand yield and ROI across environments and years.

### **Disease Severity Results**

*Table 2 Average disease ratings for each trial location at the untreated control strip.*

Site_ID	Average Disease Rating
Site_1	3.5
Site_2	2.7
Site_3	2.0
Site_4	2.0
Site_5	2.8
Site_6	2.3
Site_7	1.3
Mean	2.4

*Table 3 General disease rating scale used to assess disease ratings across all trials*

Rating Scale
1-No Disease
2-10% Coverage
3-20% Coverage
4-30% Coverage
5-40% Coverage
6-50% Coverage
7-60% Coverage
8-70% Coverage
9-80% + Coverage

We observed relatively low disease pressure across all sites with a mean rating of 2.4 (Table 2). This equated to an average disease coverage of 10-20%. The highest average rating for the untreated was 3.5 at Site\_1. This value represents a coverage of disease between 20% and 30%. The disease rating scale can be seen in Table 3.

If you are interested in participating in any study conducted by the Iowa Soybean Association, please contact our office (515-251-8640) and ask to speak with a Research Agronomist.

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