Managing Sudden Death Syndrome in Soybean

Trial Objective

- Evaluate a system-based approach for Sudden Death Syndrome (SDS) management in soybean.
- Compare the yield benefit and SDS suppression of three commercially available seed treatments.
- Explore the benefits of using a seed treatment along with selecting SDS tolerant soybean products to help maximize yield potential in fields with a history of SDS infestation.

Experiment/Trial Design

- Trials were conducted over two years at four locations (1 in 2020 and 3 in 2021).

Nebraska Locations	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Seeding Rate (seeds/acre)
Battle Creek	Loamy Sand	Corn	Conventional	5/14/21	10/05/21	70	150,000
Utica	Silt Loam	Corn	Conventional	5/10/21	9/28/21	90	150,000
Hooper (Site 1)	Silty Clay Loam	Corn	No Till	5/13/21	9/27/21	80	140,000
Hooper (Site 2)	Silty Clay Loam	Corn	No Till	5/15/20	10/01/20	80	135,000

- Trial locations had a history of SDS.
- The trial design was a single replication split plot strip trial where the product was the whole plot and seed Typical planting dates for the area were targeted.
- Five soybean products, respectively, were planted at Hooper, NE (Site 2) in 2020 and Battle Creek, NE in 2021. Three soybean products, respectively, were planted at Utica, NE and Hooper, NE (Site 1) in 2021.
- At each location, the soybean products were planted with three seed treatments:
  - » Acceleron® Seed Applied Solutions Standard* + Acceleron® IX-409 Insecticide Seed Treatment
  - » Acceleron® Seed Applied Solutions Standard* + Acceleron® IX-409 Insecticide Seed Treatment + ILeVO® Seed Treatment
  - » Acceleron® Seed Applied Solutions Standard* + Acceleron® IX-409 Insecticide Seed Treatment + Saltro® Seed Treatment.

*Acceleron® Seed Applied Solutions Standard is a combination of Acceleron® DX-109 Fungicide Seed Treatment/Acceleron® D-109 Fungicide Seed Treatment, Acceleron® DX-309 Fungicide Seed Treatment, and Acceleron® DX-612 Fungicide Seed Treatment/Acceleron® D-612 Fungicide Seed Treatment.

- Weeds were controlled uniformly across the study with no foliar insecticides or fungicides applied. Nutrient management was managed by landowner according to their agronomic plan.
- All sites were irrigated using center point pivots.
- Sudden Death Syndrome field ratings (1 to 9) with 1 = good and 9 = poor based on field incidence and severity were taken at each site at the R6 growth stage (average of three locations within each treatment) (Table 1).

Table 1. Sudden Death Syndrome Field Rating Scale

		Severity		
	Percent	Mild (1-3)	Moderate (4-6)	Severe (7-9)
Incidence	0	1	1	1
	5	2	2	3
	10	2	3	4
	20	2	3	5
	30	3	4	6
	40	3	5	6
	50	3	6	7
	60	4	7	8
	70	4	8	8
	80	5	8	9
	90	5	9	9
	100	5	9	9

DISEASES

Managing Sudden Death Syndrome in Soybean

Understanding the Results

- The combined average yields of the soybean products tested, across the four locations showed no yield response to the seed treatments (Figure 1 and Table 3).
- When the data was separated by SDS incidence, the locations with SDS (Table 2) had a positive yield response trend with the addition of ILeVO® seed treatment or Saltro® seed treatment (Table 3).
- The locations with no SDS incidence (Table 2) showed no response with the addition of ILeVO® seed treatment and a slight negative trend in yield response with the addition of Saltro® seed treatment (Table 3).

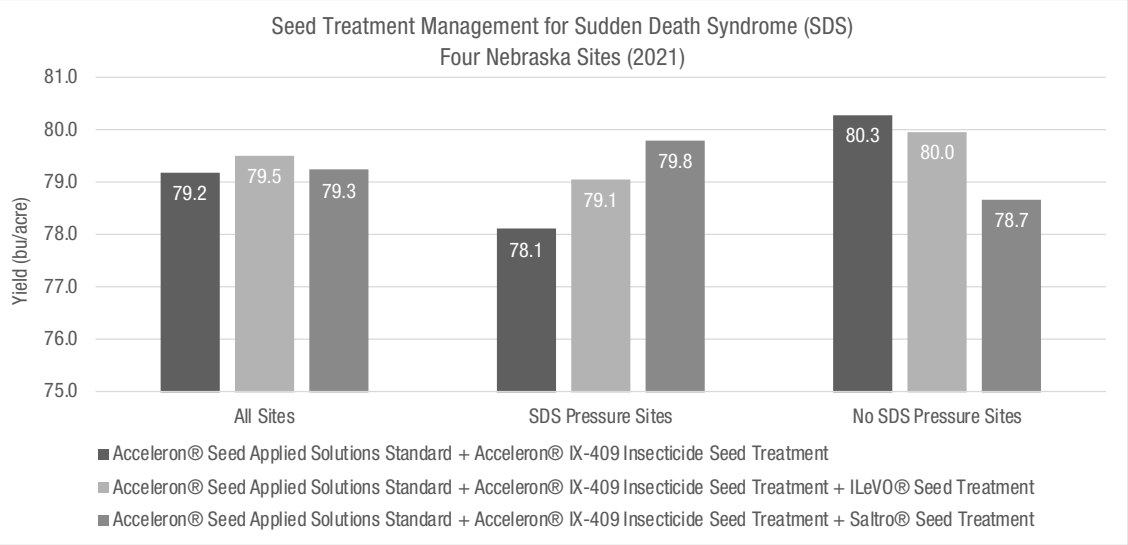

Figure 1. Average soybean yield separated by sudden death syndrome (SDS) pressure for three soybean seed treatments at four sites in Nebraska (2020 and 2021). Acceleron® Seed Applied Solutions Standard is a combination of Acceleron® DX-109 Fungicide Seed Treatment/Acceleron® D-109 Fungicide Seed Treatment, Acceleron® DX-309 Fungicide Seed Treatment, and Acceleron® DX-612 Fungicide Seed Treatment/Acceleron® D-612 Fungicide Seed Treatment.

Table 2. Average Sudden Death Syndrome (SDS) Field Rating Across Soybean Products by Nebraska Location*

Seed Treatment	SDS Field Rating by Location and (Year)			
	Battle Creek (2021)	Utica (2021)	Hooper (Site 1) (2021)	Hooper (Site 2) (2020)
Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide	1	1	5.2	3.2
Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide + ILeVO® Seed Treatment	1	1	4.2	2.8
Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide + Saltro® Seed Treatment	1	1	4.3	2.4

*Data is separated by SDS pressure for three soybean seed treatments at four sites in Nebraska (one site in 2020 and three sites in 2021). Acceleron® Seed Applied Solutions Standard is a combination of Acceleron® DX-109 Fungicide Seed Treatment/Acceleron® D-109 Fungicide Seed Treatment, Acceleron® DX-309 Fungicide Seed Treatment, and Acceleron® DX-612 Fungicide Seed Treatment/Acceleron® D-612 Fungicide Seed Treatment.

Managing Sudden Death Syndrome in Soybean

Table 3. Average soybean yield and Sudden Death Syndrome (SDS) rating across the soybean products used in the trial at each site. *

	Seed Treatment	Average Yield (bu/acre)	SDS Field Rating
All Sites	Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide	79.2	2.5
	Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide + ILeVO® Seed Treatment	79.5	2.1
	Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide + Saltro® Seed Treatment	79.3	2.1
SDS Pressure Sites	Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide	78.1	3.9
	Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide + ILeVO® Seed Treatment	79.1	3.3
	Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide + Saltro® Seed Treatment	79.8	3.2
No SDS Pressure Sites	Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide	80.3	1.0
	Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide + ILeVO® Seed Treatment	80.0	1.0
	Acceleron® Seed Applied Solutions Standard + Acceleron® IX-409 Insecticide + Saltro® Seed Treatment	78.7	1.0

*Data is separated by SDS pressure for three soybean seed treatments at four sites in Nebraska (one site in 2020 and three sites in 2021). Acceleron® Seed Applied Solutions Standard is a combination of Acceleron® DX-109 Fungicide Seed Treatment/Acceleron® D-109 Fungicide Seed Treatment, Acceleron® DX-309 Fungicide Seed Treatment, and Acceleron® DX-612 Fungicide Seed Treatment/Acceleron® D-612 Fungicide Seed Treatment.

- The response to individual seed treatments varied by individual soybean product; however, because of the limited replications of each soybean product across locations, analysis was done as an aggregation of soybean products.

Key Learnings

- Sudden Death Syndrome in soybean is a challenging disease to manage and can cause yield loss in fields with SDS incidence.
- Selecting soybean products with the highest level of SDS resistance is one of the most important management Agronomic management such as crop rotation, minimizing compaction, and reduction of excessive soil moisture can help reduce the impact of soybean SDS.
- Although no dramatic yield improvement was found with the addition of ILeVO® seed treatment or Saltro® seed treatment, sites with observed SDS incidence showed positive trends in yield response.
- A grower should always consult their local sales representative and agronomist to select the appropriate soybean product(s) to help manage the impact of SDS along with optional seed treatments for potentially improved protection.

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Legal Statements

The information discussed in this report is from a multiple site, non-replicated demonstration. This informational piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. FOR SOYBEANS, EACH ACCELERON® SEED APPLIED SOLUTIONS OFFERING is a combination of separate individually registered products containing the active ingredients: BASIC Offering: metalaxyl, fluxapyroxad, and pyraclostrobin. STANDARD Offering: metalaxyl, fluxapyroxad, pyraclostrobin, and imidacloprid.

The distribution, sale, or use of an unregistered pesticide is a violation of federal and/or state law and is strictly prohibited. Not all products are approved in all states.

Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.