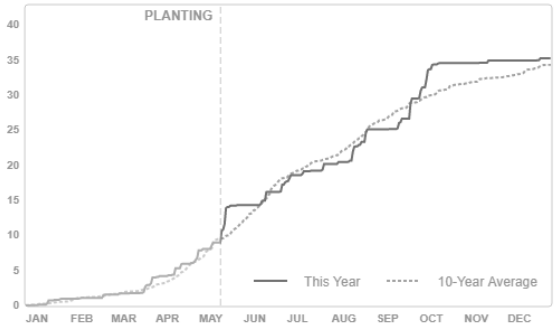
Multi-Hybrid Planting for Spatial Soybean Seed Treatments

Study ID: 078155201704
County: Saunders
Soil Type: Filbert silt loam, Fillmore silt loam, Nodaway silt loam, Pohocco silty clay loam, Tomek silt loam, Yutan silty clay loam
Planting Date: 5/16/17
Harvest Date: 10/17/17
Population: 140,000
Row Spacing (in): 30
Variety: P31T11
Reps: 17
Previous Crop: Corn
Tillage: Conventional Till

Seed Treatment: None, other than those being studied
Irrigation: Pivot
Rainfall (in):



Introduction: Sudden Death Syndrome (SDS) is caused by the soil borne fungus *Fusarium solani f. sp. glycines*. While this is a relatively new disease for Nebraska soybean farmers, there are several locations in the state where significant percentages of fields are being affected. In fields where SDS is present and soybean cyst nematode is also present, the disease can be more severe. There are not clear guidelines to determine at what point a field will have enough increase in yield to justify treatment and, therefore, on-farm research projects like this one are needed.

ILeVO® is a seed treatment marketed by Bayer CropScience for SDS and also has nematode activity (label at right). This field was selected due to the presence of SDS in the 2014 soybean crop. Two treatments were selected to test the efficacy of the ILeVO® seed treatment.

GROUP 7 FUNGICIDE

A systemic seed treatment for use on soybean for the protection against damage caused by early season plant pathogenic nematodes. As a soybean seed treatment provides protection from seedling infections by *Fusarium virguliforme*, the causal agent of Sudden Death Syndrome.

ACTIVE INGREDIENT:	
FLUOPYRAM: *N*-[2-[3-chloro-5-(trifluoromethyl)-2-pyridinyl]ethyl]-2-(trifluoromethyl)benzamide*	48.4%
OTHER INGREDIENTS:	51.6%
Contains 5 lbs FLUOPYRAM per gallon (600 g FLUOPYRAM per liter)	**TOTAL: 100.0%**

*(CAS Number 658066-35-4)

EPA Reg. No. 264-1167

Product information from: *http://www.agrian.com/pdfs/ILeVO_Label1.pdf*

A: Standard soybean treatment (for this study PPST2030)
B: Standard soybean treatment plus ILeVO at a rate of 1.18 fl oz/140,000 seed unit

The additional capabilities of the multi-hybrid planter allow for site specific application of ILeVO in the portions of the field that historically show the effects of SDS. This site specific application of ILeVO can reduce input costs while still effectively managing SDS pressure.

Figure 1. Zone prescription for soybean treated with standard treatment (dark grey) and ILeVO (light grey).

Management Zone Creation: Historical yield data was used to cluster data into management zones representing distribution of SDS in the field. (*Figure 1)*. These zones were assessed for SDS disease levels and final yield results.

Results: Within each zone, check strips of the opposite seed treatment were established for evaluation. Data were analyzed using the GLIMMIX procedure in SAS 9.4 (SAS Institute Inc., Cary, NC). Mean separation for treatment within a zone was performed with Fisher's LSD. Letters below apply for differences within a zone.

Disease levels were low through harvest at this field site; therefore, no disease ratings were collected during the growing season.

Treatment	Standard Treatment + ILeVO®	Standard Treatment	P-Value
	***Yield** (bu/ac) †*		
SDS Zone	66 A*	65 A	0.963
Standard Zone	65 A	65 A	0.949
	***Marginal Net Return** ($/ac)‡*		
SDS Zone	529.06	607.79	
Standard Zone	584.44	599.98	

*Values with the same letter are not significantly different at a 95% confidence interval.
†Bushels per acre corrected to 13% moisture.
‡ Marginal Net Return based on $9.25/bu soybeans, $15.17/acre ILeVO seed treatment cost ($10.19/oz).

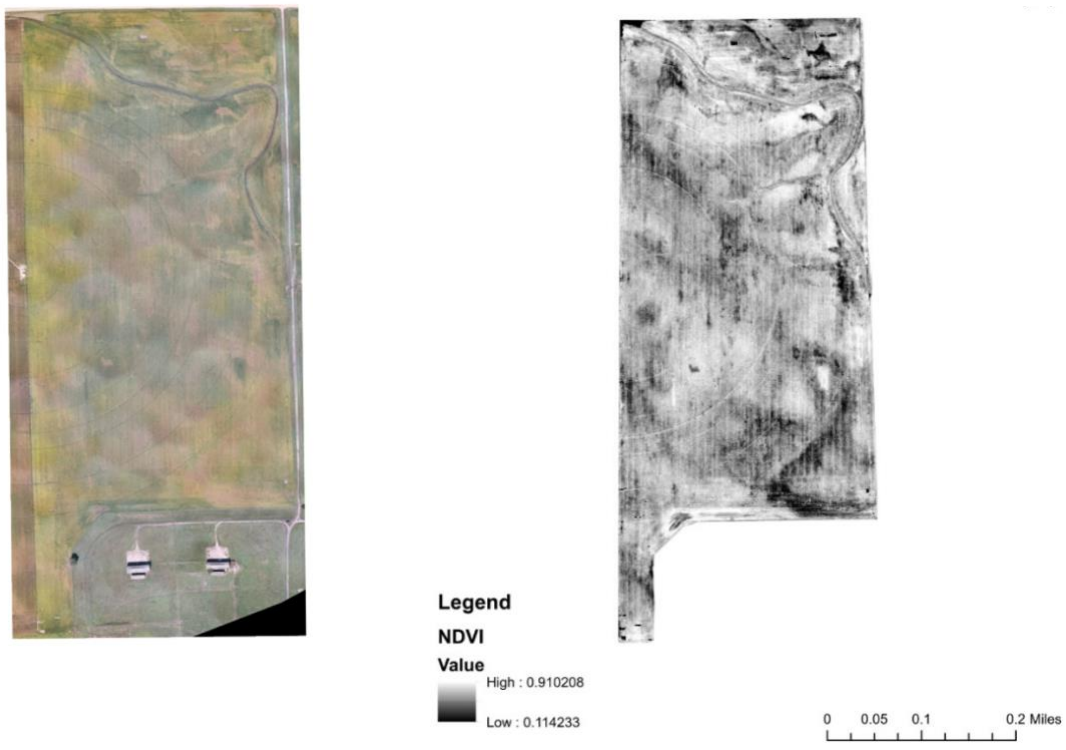


Figure 2. RGB (left) and NDVI (right) imagery of the field area.

Aerial imagery was obtained in late August *(Figure 2).* Neither RGB nor NDVI (normalized difference vegetative index) show distribution of SDS through the field. No levels of disease were detected during field scouting; consequently, no difference in treatments was visible in the aerial imagery.

Summary: There was no difference between the standard + ILeVO and standard treated seed in the SDS or standard zone. Yield results were very similar across the whole field. No visible SDS was detectible during the growing season. Some of the paired strips did yield higher individually with the ILeVO treatment; however, these areas did not display symptoms of SDS. It is possible that the ILeVO treatment was yielding higher in portions of the field with higher levels of SCN, but denser sampling of populations and analysis against treatment check strips would be needed to verify this theory.

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