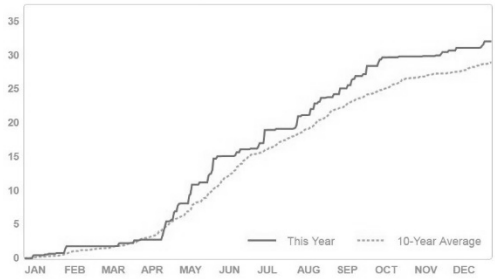
Multi-Hybrid Planting for Spatial Soybean Seed Treatments

Study ID: 614159201601
County: Seward
Soil Type: Muir silt loam; Muir silty clay loam; Hobbs silt loam
Planting Date: 6/7/16
Harvest Date: 10/11/16, 10/19/16
Population: 170,000
Row Spacing (in): 30
Hybrids: Pioneer 31T11
Reps: 11
Previous Crop: Corn
Tillage: Conventional Till

Seed Treatment: none, other than those being studied
Irrigation: 4”
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 PPST 2030® + Evergol Energy® + Gaucho® + Allegiance® was used)

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.

Management Zone Creation: Historical yield data showing the possible extent of Sudden Death Syndrome was not available for this field site, therefore a traditional strip trial method was used *(Figure 1)*. This will

Figure 1. Strip trial design for soybean treated with ILeVO (dark grey) and without ILeVO (light grey).

allow for future delineation of management zones after determining the extent of SDS throughout treated and untreated strips.

Results: Yield of ILeVO treated and untreated seed were evaluated. Data were analyzed using the GLIMMIX procedure in SAS 9.4 (SAS Institute Inc., Cary, NC).

Foliar disease symptoms were assessed using Southern Illinois University at Carbondale's Method of SDS scoring. The disease symptoms were assessed using a 1 to 9 scoring system, with a score of 1 indicating the least symptoms and 9 indicating premature death. In addition, the overall incidence of affected plants was determined. These two scores were combined to create the disease index (DX). DX = disease incidence x disease severity/9. Disease assessments were conducted on 8/31/16 and 9/8/16.

Treatment	Disease Severity	Disease Incidence (%)	Disease Index (DX)	Disease Severity	Disease Incidence (%)	Disease Index (DX)
	----------Aug 31, 2016----------			----------Sept. 8, 2016----------		
Standard Treatment + ILeVO®	0.25	1	0.0028	0.96	4.42	0.47
Standard Treatment	1.82	7.16	1.44	2.44	15.32	4.14
P Value	N/A	N/A	N/A	N/A	N/A	N/A

Treatment	Yield (bu/acre)†	Marginal Net Return ($/ac)‡
Standard Treatment + ILeVO®	68 A	613.37
Standard Treatment	64 B	592.00
P-Value	0.0033	N/A

†Bushels per acre corrected to 13% moisture.
*Values with the same letter are not significantly different at a 95% confidence interval.
‡ Marginal Net Return based on $9.25/bu soybeans, $15.63/acre ILeVO seed treatment cost ($10.19/oz).

Summary: The standard + ILeVO treated seed had higher grain yields than the standard treatment. The increase in yield covered the additional seed treatment cost and resulted in higher marginal net return. Disease ratings were not collected for all replications, therefore, no statistical analysis could be performed. All disease observations recorded are considered low disease levels.

This study sponsored in part by: Bayer CropScience LP