

Effects of a seed treatment and a cereal rye cover crop on sudden death syndrome of soybean in Monmouth, Illinois in 2016.

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Note: This data was submitted as a Plant Disease Management Report to the Plant Management Network in 2016.

A cereal rye winter cover crop and seed treatment trial was conducted at the University of Illinois' Northwestern Illinois Agricultural Research and Demonstration Center in Monmouth, IL. The field location consisted of Muscatune and Tama Silt Loams and Sable Silty Clay Loam soils. The previous crop was soybean. Standard soybean production practices recommended by the University of Illinois Extension were followed.

On 13 May, this trial was sown at a depth of 1.25 in at a seeding rate of 140,000 plants/A to the Munson soybean variety 8366R2Y. This variety was listed by the company as having a sudden death syndrome (SDS) rating of 2.2 on a 0 to 5 ratings scale, with 1 being excellent and 5 being poor. The experiment was arranged in a split plot design with eight replicates; with winter cover crop as the whole plots and seed treatment as the split plots. Plots consisted of four 30-in. rows that were 25 ft long. The middle two rows of each plot were considered 'treatment rows' and were infested in-furrow at planting with 1.25 g of dried *Fusarium virguliforme*-infested sorghum seed per foot of row. Treatments consisted of two cover crop and two seed treatment treatments. In the fall of 2015 main plots were either left bare or seeded with cereal rye at a rate of 90 lb/acre. In 2016 split plots were seeded with either bare soybean seed or seed treated with ILeVO (1.5 oz a.i./140,000 seeds).

On 13 Jun stand count data was collected from treatment rows. On 7 Sep at full seed (R6) plants in the treatment rows of each plot were rated for sudden death syndrome severity (DS) using a 1 to 9 scale, where a rating of 1, 5, and 9 indicate mild chlorosis, severe leaf scorch and premature plant death, respectively. Disease index (DI) was determined by estimating the percentage of plants exhibiting symptoms in the treatment rows of each plot. The SDS index ranges from 0 to 100 and was calculated according to the formula: $(DS \cdot DI) / 9$. The center two rows of each plot were harvested 19 Oct with a Kincaid plot combine equipped with a Harvestmaster weighing system and yields were adjusted to 13% moisture content. For each parameter, plot means were analyzed using a generalized linear model analysis of variance and treatment means were separated using Fisher's test of least significant difference (LSD).



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Despite receiving above average precipitation in June and July, sudden death syndrome incidence and severity remained low. Stand counts were significantly lower with the cereal rye winter cover crop and ILeVO seed treatment. While winter cover crop had no effect on SDS index, SDS index was significantly lower in those plots that had been sown with seed treated with ILeVO. There were no significant interactions between the main and split plot treatments and none of the treatments had an effect on yield.

Table. The effects of a cereal rye winter cover crop (main plot) and seed treatment (split plot) on soybean stand count, sudden death syndrome (SDS) disease index and grain yield in 2016

Seed treatment, rate/140,000 seeds	Stand Count ^z (plants/A; x 1000)		SDS index ^y (0-100)		Yield ^x (bu/a)	
	Rye	None	Rye	None	Rye	None
Winter cover crop (main plot)	121781 b ^w	127312 a	2.49	2.82	55.85	57.71
Pr>F	0.0359		NS		NS	
Seed treatment (split plot)						
Untreated Check	136875 a		3.75 a		57.21	
ILeVO, 1.5 oz	112219 b		1.56 b		56.34	
Pr>F	< 0.0001		0.0073		NS	
CV	7.85		74.62		5.59	

^z Stand counts were estimated according to the number of emerged seedlings in a 17 ft 5 in length of the treatment rows of each plot.

^y The SDS index for each plot was determined by estimating disease severity (DS) and incidence (DI) from the treatment rows of each plot. DS was on a 1 to 9 scale, where a rating of 1, 5, and 9 indicate mild chlorosis, severe leaf scorch and premature plant death, respectively. DI was estimated according to the percentage of plants exhibiting SDS symptoms. SDS index was calculated according to the formula: (DS*DI)/9.

^x Corrected to 13% moisture content.

^w For each dependent main or split plot variable, means followed by different letters are significantly different based on Fisher's least significant difference test (LSD; $\alpha=0.05$).

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