FUNGICIDE EFFICACY ON WHITE MOLD IN SOYBEAN

TRIAL OVERVIEW

White mold is a common soybean fungal disease in the upper Midwest where cool, wet conditions are favorable for infection. In these environments, cultural practices and selected genetic tolerance may not be enough to control the disease. Fungicides reduce the impact of white mold most when applied at the R1 growth stage (flowering).[1]

RESEARCH OBJECTIVE

To test the efficacy of new commercially available fungicide products to reduce the effects of white mold in soybean and to determine which product has the best return on investment (ROI).

Location	Soil	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield/Acre	Planting Rate/Acre
Mason, MI	Loam	Continuous Soyean	Reduced Tillage	5/18/2017	11/10/2017	70 Bu/Acre	180,000

SITE NOTES:

Trial location was selected based on previous years of inoculum incorporated into the soil, continuous soybean rotation, high soil fertility, and high potential for disease pressure. A soybean product with 2.2 maturity and susceptibility to white mold was planted in 30-inch rows at a high population (180,000 seeds/acre) with five replications. Weeds were uniformly controlled using a residual/postemergence control program. Fungicides were applied at the R1 growth stage (Table 1).

Treatment	Product (Rate)	Site of Action (SOA)	Cost per Acre
1	Untreated Control		$0
2	Propulse® fungicide (6oz/acre)	SOA (3): Prothioconazole - Demethylation inhibitor (DMI) SOA (7): Fluopyram - Carboxamides	$27.65
3	Endura® fungicide (3 oz/acre)	SOA (7): Boscalid - Carboxamides	$31.50
4	Proline® fungicide[a] (3 oz/acre)	SOA (3): Prothioconazole - DMI	$14.31
5	Proline® fungicide[a] (5 oz/acre)	SOA (3): Prothioconazole - DMI	$23.85
6	Serenade® ASO fungicide (96 oz/acre) - Biological	SOA (44): QST 713 Strain - *Bacillus subtilis* syn. *B amyloliquefaciens*	$23.50
7	Serenade® ASO fungicide (128 oz/acre) - Biological	SOA (44): QST 713 Strain - *Bacillus subtilis* syn. *B amyloliquefaciens*	$31.30

[a]Labeled suppression only.

Table 1. Fungicide treatments.

- The ROI (Table 2) is based on 2017 prices of treatments, commodities, and applications costs.
- The ROI (Table 2) shows greater separation in revenue for each product even though yield may not be statistically different.
- The higher application rate of Proline® fungicide (5oz/acre) and Endura® fungicide treatments significantly improved yield over the untreated control. Yield increases from these treatments ranged from 5.8 to 7.7 bu/acre over the untreated control (Figure 1).

Entry	Fungicide	Treatment (oz/acre)	Grain Moisture (%)	Yield (bu/acre)	Yield Acre +/-	Application Cost	Treatment Cost	Commodity Price	Revenue Acre +/-
1	Untreated Control	0	16.8	49	0	$0	$0	$9.50	0
2	Propulse® fungicide	6	16.6	53.6	4.5	$7.65	$27.65	$9.50	$7.59
3	Endura® fungicide	6	16.8	55.4	6.3	$7.65	$31.50	$9.50	$20.94
4	Proline® fungicide	3	16.9	54.8	5.8	$7.65	$14.31	$9.50	$32.81
5	Proline® fungicide	5	16.8	56.8	7.7	$7.65	$23.85	$9.50	$41.99
6	Serenade® ASO fungicide	96	16.8	55.2	6.1	$7.65	$23.50	$9.50	$27.20
7	Serenade® ASO fungicide	128	16.7	49.1	0	$7.65	$31.30	$9.50	($38.78)

Table 2. Return on investment when applying each fungicide product.

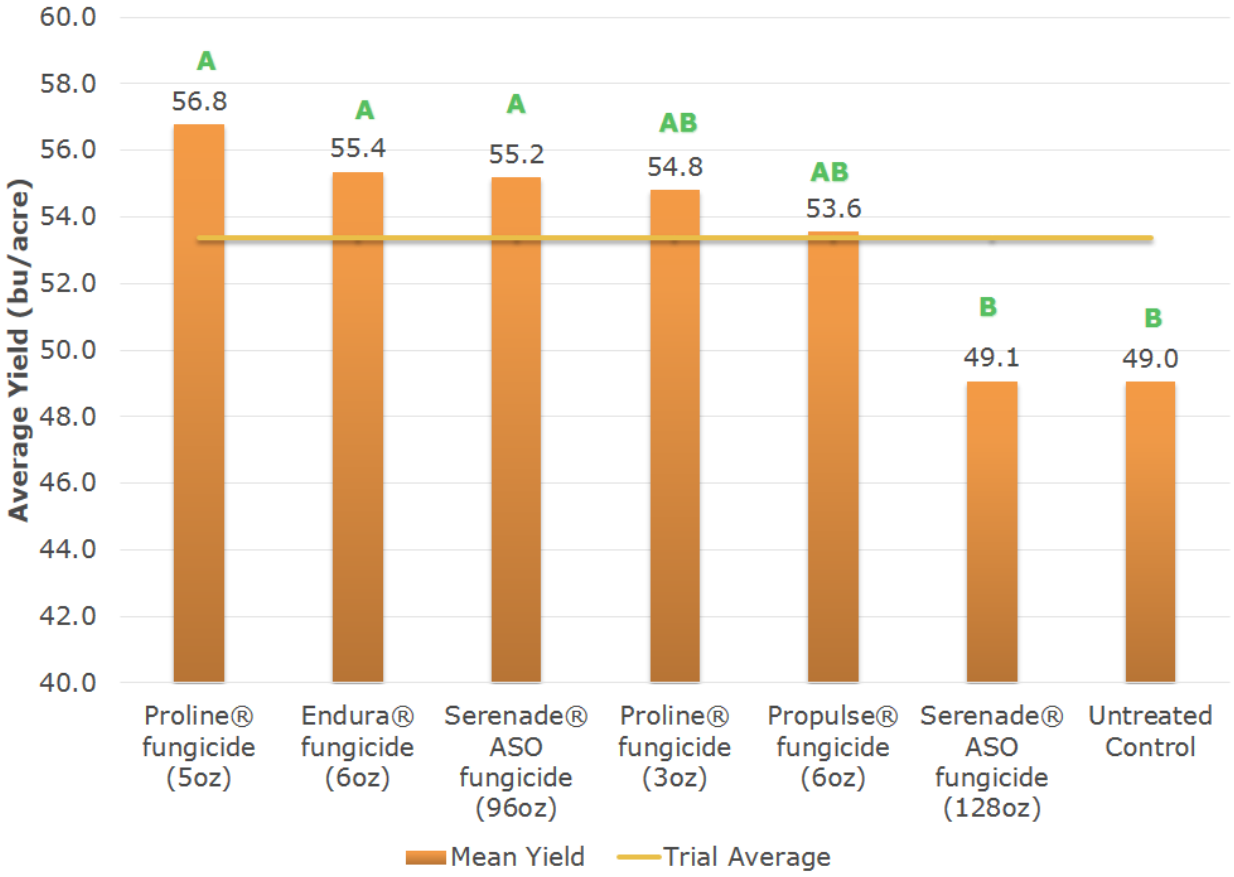

Figure 1. Effect of fungicide treatments on soybean yield at Mason, MI in 2017.

- This data corresponds with previous research from 2015 that showed Endura® fungicide applications significantly improving yield over the untreated control. Yield increases from Endura application averaged 7.2 to 9.3 bu/acre over the untreated control.
- The lower rate of Proline® fungicide increased yields by 5.8 bu/acre compared with the untreated control (Figure 1) and had a ROI of $32.81 per acre (Table 2). The higher rate of Proline increased yields by 7.7 bu/acre when compared to the untreated control and had a ROI of $41.99 per acre.

- Propulse® fungicide, a dual mode of action fungicide, did increase yield 4.5 bu/acre compared with the untreated control (Figure 1); however, when factoring in the application cost and treatment cost, only a $7.59 ROI was projected (Table 2).
- Serenade® ASO fungicide, a biological, was used at 2 different rates, 96 oz and 128 oz per/acre. The 96 oz application rate showed a 6.1 bu/acre yield increase while the 128 oz application rate showed no increase on yield (Figure 1). This data suggests further testing of this product is required to determine its effectiveness.

WHAT DOES THIS MEAN FOR YOUR FARM?

- Overall, Endura® fungicide has shown to be consistent at reducing the impact of white mold and protecting yield potential year after year. However, in this one year study, Proline® fungicide showed equal to or better protection of yield potential and was a more cost effective program, allowing for maximum ROI of $32.81 to $41.99 an acre.

SOURCES

[1] Wise, K. 2017. Fungicide efficacy for control of soybean foliar diseases. BP-161-W. Purdue Extension. 171212152425

Legal Statement