

Evaluation of Insecticide and Fungicide Seed Treatments on Soybeans

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Objectives

The objective of this study was to evaluate the yield benefit of applying two different seed treatment programs on soybeans. These seed treatments included two different company's fungicide programs plus the addition of an insecticide in conjunction with the fungicides.

Background

Soil Type:	Hoytville silty clay loam, Haskins loam	POST(June 30):	8 oz/A Phoenix + 0.3 oz/A FirstRate + 16 oz/A Select Max + 2 lb/A AMS + 0.25% v/v NIS
Drainage:	Tile- nonsystematic	Variety:	Thompson Seeds TS350 (3.5 RM)
Previous Crop:	Corn	Row width:	7.5 inches
Tillage:	No-till	Planting Rate:	225,000 seeds/A
Soil Test (2005):	pH 6.2, P 38 ppm, K 118 ppm	Planting Date:	May 30, 2006
Fertilizer:	220 lb/A 2-7-52 surface broadcast (February 2006)	Harvest Date:	October 13, 2006
Herbicide:	1 oz/A Python + 1 pt/A		
EPP(April 16):	Dual II Magnum + 1.5 pt/A Glyphomax XRT + 1 pt/A 2,4-D LVE + 17 lb/100 gallons AMS		

Methods

This study was set up with four different seed treatments plus an untreated check. These five treatments were replicated three times in a complete randomized block design. The seed treatments were a combination of fungicide and fungicide/insecticide programs promoted by two different companies, Bayer Cropsciences and Syngenta. The treatments were as follows:

- 1) Untreated check
- 2) ApronMaxx fungicide only (Apron XL @ 0.64 oz./cwt + Maxim 4FS @ 0.08 oz/cwt)
- 3) ApronMaxx fungicide (same rates #2 as above) + Cruiser 5FS insecticide @ 1.28 oz/cwt
- 4) SoyGard L fungicide only (Protégé FL @ 0.2 oz/cwt + Allegiance FL @ 0.75 oz/cwt)
- 5) SoyGard L fungicide (same rates as #4 above) + Gaucho 480 insecticide @ 2.0 oz/cwt

The soybean seed used was all one lot of Thompson Seeds TS350 which was then divided up and sent to each company to have the seed treatments applied. Syngenta applied the ApronMaxx and Cruiser treatments, and Bayer applied the SoyGard L and Gaucho treatments. All plots were planted using a John Deere 750 no-till drill. Plot size was 90 feet wide by 600 feet long.

Early emergence populations were taken June 13 with soybeans at growth stage VC to V1. Both early emergence and harvest populations (October 11) were estimated by counting the number of plants in the row on each side of a 10 foot section at three different locations in each plot. The average number of plants counted per 10 feet was converted to plants per acre. Harvesting was accomplished with a John Deere 6620 combine equipped with a calibrated AgLeader PF3000

yield monitor. Plot weights were determined with a calibrated weigh wagon. Moistures were taken from the combine yield monitor. All yields were adjusted to 13% moisture.

Results

Table 1. Early emergence population, harvest population, moisture, interior and exterior yield means for each treatment.

Treatment	Early Emergence Population (plants/A)	Harvest Population (plants/A)	Moisture (%)	Interior Yield (bu/A)	Exterior Yield (bu/A)
Untreated check	198,200	168,800	13.9	58.2	58.2
ApronMaxx	191,700	173,900	13.8	59.8	60.4
ApronMaxx/Cruiser	187,800	164,600	13.7	58.2	58.5
SoyGard L	228,400	178,900	13.9	57.4	58.0
SoyGard L/Gaucha	188,600	174,600	14.1	58.7	59.3
LSD (P=0.05)	NS	NS	NS	NS	NS
F-test	2.7	<1	2.4	<1	2.0
CV (%)	9.0	10.5	1.3	3.9	2.0

NS= not significant

Summary

There is some question as to possible edge effect from insecticide treatments and insect movement, and because of this two yield checks were done on each plot. An interior yield was taken by harvesting one round (29 feet) from the center of the 90 foot wide plot, and exterior yields were taken by harvesting one pass (14.5 feet) from each outside edge of the plot. The results from this one year trial do not show any statistical differences between treatments for early emergence populations, harvest populations, moisture, or either of the interior or exterior yield checks. The lack of response to the seed treatments may be due to several factors. First, the relatively late planting date (May 30) may have allowed for warmer soils and faster seed germination meaning less opportunity for diseases to affect seedling health. Wet conditions in late April and early May prevented the timely planting of this trial as originally intended. Second, insect pressures were minimal early in the season when the insecticide seed treatments have been promoted as helping to protect the plant.

A similar study conducted at Farm Focus in 2005 showed similar results except it did show a yield advantage for the addition of the insecticide seed treatment in the late planted plots only. Significant soybean aphid pressures in 2005 were most likely the reason for this yield difference in that particular study. Results of the 2005 study may be accessed on the Farm Focus website at http://farmfocus.osu.edu/cruiser_apron_beans-05.pdf.

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