Evaluation of a Fungicide and an Insecticide Seed Treatment on Soybean Yield

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Objective

To evaluate the response of a fungicide and an insecticide seed treatment on soybean yield

Background

Crop Year:	2005	Variety:	NK S27-R1
Cooperator:	Defiance Ag Research Assoc.	Soil test:	pH 7.1, P 22 ppm
County:	Defiance		K 153 ppm (12/12/03)
Nearest Town:	Defiance		Organic Mater 3.1%
Drainage:	Subsurface	Planting Date:	May 10, 05
Soil type:	Paulding Clay	Row Width:	7.5-inch
	Roselms Silty Clay	Herbicide:	June 23, 05, glyphosate 24oz/A
Tillage:	No-till	Insecticide:	Aug 6, 05, Baytrhoid 2.4oz/A
Previous Crop:	Soybeans	Harvest Date:	September 13, 2005

Methods

Experimental design was a complete block with three treatments replicated six times giving 18 total plots. Individual plot area measured 30 feet by 250 feet and ran perpendicular to the subsurface drainage system. Planting was completed with a 15 foot John Deere no-till drill using bagged seed having been commercially treated by the manufacturer. Seeding rate was calibrated and adjusted to plant 220,000 seeds per acre. Stand counts were measured on May 31 using the 1/10,000th acre hoop method at five locations within each plot area. The five location counts were then averaged and used for statistical analysis. Plots were scouted four times (July 14, July 25, August 1, and August 3) counting aphids on the whole plant to determine when the field treatment was warranted. The center 25 ft was harvested from each of the 18 plot areas for the yield record. Yield was determined by a calibrated weigh wagon and confirmed by a calibrated GPS combine yield monitor. All 18 plots were individually harvested with the same combine continuously on the same day.

Seed Treatments

Apron Maxx® - treated with metalaxyl-M and Fludioxonil fungicide at the rates specified by the manufacturer.

Cruiser®MaxxPak® - treated with Thiamethoxam insecticide and metalaxyl-M and Fludioxonil fungicide at the rates specified by the manufacturer.

Control - no seed treatment

All plots were treated equally regarding herbicide and insecticide applications.

Results

Table 1. Stand Counts at Growth Stage VC (unifoilate stage)

	Std Cts (10,000 plants/A)
Apron Maxx	17.33a
Cruiser Maxx	17.93a
Control (no seed treatment)	11.13b
LSD (0.05)	3.90

ab: results having different letters indicate significant statistical differences

Table 2. Soybean Yields

Variety NK S27-R1	Average Yield (bu/A)
Apron Maxx	38.0a
Cruiser Maxx	37.8a
Control (no seed treatment)	27.3b
LSD (0.05)	2.96

ab: results having different letters indicate significant statistical differences

Table 3. Economic Comparison of Treatments

	Seed Cost $/50# unit	Seeds/lb	Seeds / A	Lbs planted/A	Seed Cost/A	Return above Control per Acre ($5.25/bu)
Apron Maxx	$29.54	3025	220,000	72.7	$42.97	$50.32
Cruiser Maxx	$35.49	3025	220,000	72.7	$51.62	$40.62
Control	$27.41	3250	220,000	67.7	$37.11	n/a

Summary

The stand counts seem to have set the tone for the overall results early on in this plot. The May 31 stand count scouting did not reveal any significant bean leaf beetle leaf feeding among any of the 18 plots. The gain in stand count is attributed to the fungicide seed treatment not the addition of the insecticide seed treatment since the Apron Maxx and Cruiser Maxx stand counts were statistically equal. Soybean aphid scouting found a growing population from July 14 to Aug 3. Aphid counts in the Apron Maxx and Cruiser Maxx plots were very similar across all replications with the 250 aphid/plant average being reached on August 3. Control plot aphid counts approached 180-200 aphids/plant. The author believes the poor stand counts, reduced plant health and less soybean canopy contributed to lower Aphid counts in the control plots. All plots were treated with an insecticide application for aphids on August 6.

While stand count and yield were statistically higher for the Apron Maxx and Cruiser Maxx plots compared to the control, the highest economic return above the control was Apron Maxx. The added cost of the Cruiser did not show a yield increase above Apron Maxx and lowered its economic return per acre.

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