Comparison of Commercial Seed Treatments on Soybean in Iowa

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Introduction

The use of seed treatments on soybean is becoming more prevalent in Iowa. Due to increasing seed costs, many farmers are reducing their seeding rates, consequently stand establishment is very important. Seed treatment products may include fungicides, nematicides, insecticides, and biologicals. Seed treatments protect stand by reducing risk of seedling disease and early-season insect damage. The objectives of this study were to evaluate commercial seed treatments for stand establishment, disease and insect control, and effect on yield.

Materials and Methods

Seed treatment products (Table 1) were applied to soybean variety IA 3014, with resistance to *Phytophthora sojae* and Soybean Cyst Nematode (HG type 0) by the respective companies taking part in the trial. The trial was planted April 17, 2015, into a Taintor silty clay loam following corn in a minimum tillage system. The experimental design was a randomized complete block design, and each plot was four rows wide (30-in. row spacing) by 17.5 ft long. Stand count was assessed at 35 days after planting by counting the total number of plants in the center two rows of each plot. Soil samples were collected from plots of treatments that included a nematicide and the untreated seed control three times during the growing season—three days after planting (planting season), 60 days after planting (mid season), and six days after harvest (harvest season). The center two rows of each plot were harvested with a small plot combine on October 2. All data were subjected to analysis of variance and means were compared at the 0.1 significance level using Tukey test.

Results and Discussion

Soil temperature at planting was approximately 60^{o}F but dropped to less than 50^{o}F for five days when 1.2 in. of rain occurred within 24 hours of planting. Despite the favorable conditions (cold and wet) for seedling disease development, seed treatments did not improve stand apart from Intego Suite where the stand count was greater than the untreated control, but not different than any other seed treatment ($P < 0.1$). No effect of seed treatment was detected on yield ($P < 0.1$). Since SCN populations were low, it was difficult to detect an effect of the seed treatments on SCN final population and reproductive factor (RF). Mean initial SCN population densities were 71 eggs/100cc soil. SCN numbers in each treatment were generally lower at mid-season and greater at harvest season. The RF ranged from 0.4 to 3.5 at the ISU Southeast Research Farm.

Table 1. Effect of soybean seed treatments on stand, SCN populations and reproductive factors, and yield.

Treatment	Manufacturer	Plants/acre per 1,000[1]	% stand	Soybean cyst nematode population / 100 cc soil: 3 days after planting	Soybean cyst nematode population / 100 cc soil: Mid season (60 days after planting)	Soybean cyst nematode population / 100 cc soil: (6 days after harvest)	SCN reproductive factor (RF)	Yield
CruiserMaxx Vibrance	Syngenta	111.9 ab	93.2	100	25	150	2.1	77.1
Clariva Complete Beans	Syngenta	107.6 ab	89.7	0	0	250	3.5	73.9
Clariva Complete Beans + Mertect 340-F	Syngenta	110.3 ab	91.9	125	100	25	0.4	79.3
Proline + Trilex Flowable + Allegiance + Poncho/VOTiVO + ILeVO	Bayer	111.8 ab	93.1	50	0	75	1.1	76.1
EverGol Energy + Allegiance + Poncho/VOTiVO + ILeVO	Bayer	111.6 ab	93.0	75	25	125	1.8	78.6
Intego Suite	Valent	114.0 a	95.0	.	.	.	.	72.5
Warden CX	Winfield	112.0 ab	93.3	.	.	.	.	76.7
Acceleron	Basf	106.6 ab	88.9	.	.	.	.	73.3
Acceleron VaultHP Integral	Basf	105.3 ab	87.7	.	.	.	.	74.2
Acceleron VaultHP Integral FloRite	Basf	107.0 ab	89.2	.	.	.	.	72.2
PPST + EverGol Energy + Allegiance + Gaucho	Pioneer	110.0 ab	91.7	.	.	.	.	75.5
Rancona V100 Pro FS + Belmont 2.7 FS + Attendant 480	Agriphar	108.9 ab	90.7	.	.	.	.	72.4
Rancona V100 Pro FS + Belmont 2.7 FS + Thiabendazole 4L ST + Attendant 480	Agriphar	107.9 ab	89.9	.	.	.	.	76.2
Untreated Control		103.9 b	86.6	75	0	75	1.1	70.7
CV%		3.3		144.8	223.1	97.3	97.3	8.6
P-value		0.01		0.63	0.15	0.16	0.15	0.84

[1]Means with different letters are significantly different with Tukey test, alpha = 0.1.