Evaluation of Seed Treatments on Soybean Yields

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Objective

To determine soybean yield response to rhizobium and Bioforge seed treatment products.

Background

Crop Year:	2011	Soil Test:	pH=6.0, Buffer=6.9, CEC= 6.4, ppm-P=46, ppm K=157, OM=2.6%
Location:	Delta, OH		
County:	Fulton County		
Soil Type:	Colwood (Loam) Bixler, Gilford (Loamy Fine Sands)	SCN Count:	920 eggs/100 cc of soil
		Planting Date:	June 6, 2011
Drainage:	Subsurface Drainage 45 ft spacing	Seeding Rate:	170,000 seed per acre
		Row width:	15 inches
Previous Crop:	Corn	Variety:	Pioneer 92Y80-SCN R
Tillage:	Fall chisel	Harvest Date:	October 17, 2011

Methods

This study was designed with three treatments replicated three times in a randomized complete block design. The total set of treatments was:

1. Trilex FS (0.32 oz/cwt) , Allegiance (0.75 oz/cwt), Gaucho 600 (1.6 oz/cwt)
2. Trilex FS (0.32 oz/cwt) , Allegiance (0.75 oz/cwt), Gaucho 600 (1.6 oz/cwt), Optimize 400 (2.8 oz/cwt)
3. Trilex FS (0.32 oz/cwt) , Allegiance (0.75 oz/cwt), Gaucho 600 (1.6 oz/cwt), Optimize 400 (2.8 oz/cwt), Bioforge (4 oz/cwt)

The standard seed for soybeans used on this farm is treatment 1 to provide protection against seedling disease and insect pest common to the soils of the area. Treatment 2 added Optimize 400 with the active ingredient Lipo-chitooligosaccharide and *Bradyrhizobium japonicum* rhizobia inoculant carrier. Treatment 3 added to BioForge to treatment 2. Bioforge labeling indicates it is primarily composed of N,N'- diformyl urea and reduces plant stress. The seed treatments were applied by the farm operator with a Gustafson HG2000 drum treater.

The entire treatment area was planted to Pioneer 92Y80. The company rates the variety as a 2.8 maturity with a Phytophthora Rps 1K resistance gene and 6 partial resistance rating, 6 for sudden death syndrome, 7 for frogeye leaf spot, 8 for brown stem rot and 5 for Sclerotinia. The disease scale in company supplied literature is 9=excellent and 1=Poor.

The plot was harvested with an IH 2366 combine equipped with a calibrated Ag Leader 3000 yield monitor. A single swath width consisting of the center 20 feet of each 60 foot plot was separated from the harvest yield file was used to determine yield. The data was post process with ArcView GIS 3.3 software and Enhanced Farm Research Analyst Version 1.12 module.

Results

Soybean Yield Response to Seed Treatments

Treatment	Yield (bu/A)	Moisture (%)
Trilex FS (0.32 oz/cwt) , Allegiance (0.75 oz/cwt), Gaucho 600 (1.6 oz/cwt)	57.5	15.0
Trilex FS (0.32 oz/cwt) , Allegiance (0.75 oz/cwt), Gaucho 600 (1.6 oz/cwt), Optimize 400 (2.8 oz/cwt)	57.0	15.1
Trilex FS (0.32 oz/cwt) , Allegiance (0.75 oz/cwt), Gaucho 600 (1.6 oz/cwt), Optimize 400 (2.8 oz/cwt), Bioforge (4 oz/cwt)	57.8	15.1
LSD (0.10)	NS	NS
CV%	5.7	0.8

Weather Data for 2011, Toledo Express Airport (7 miles from test site)

Month	Precipitation	Departure from Normal Precipitation	Average Temperature	Departure from Normal Temperature
April	6.33	3.09	48.1	-0.2
May	5.88	2.74	61.1	1.5
June	0.51	-3.29	70.8	2.0
July	3.34	0.54	78.8	5.8
August	3.19	0.04	71.7	0.2
September	6.51	3.73	62.8	-1.3
October	3.16	0.56	52.4	0.1

Summary

No differences were noted in the treatments. Overall soybean yield were higher than average for the field due to planting date and moisture. Soybean growth and canopy development were good for the year despite periods of stress. Emergence occurred quickly due to the late planting date within 4 days. The site is managed with soybeans every fourth year due to the SCN management plan implemented on the farm.

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