Evaluation of Seed Treatment and In Furrow Insecticide on Corn Yield and Nematode Populations

Gregory A LaBarge, Ohio State University Extension, Field Specialist-Agronomic Systems

Objective

The project objective was to determine effect of seed treatment and insecticide application on corn yield and nematode populations.

Background

Crop Year:	2012	Soil Test:	pH=5.9, Buffer=7.0, CEC= 5.6, ppm-P=166, ppm K=271, OM=2.6
Location:	Delta, OH		
County:	Fulton County		
Soil Type:	Gilford, Tedrow (Loamy Fine Sands)	Planting Date:	4/26/2012
		Seeding Rate:	34,000 seeds per acre
Drainage:	Subsurface Drainage 50 ft spacing	Row Width:	30 inches
		Variety:	Pioneer P1498HR
Previous Crop:	Corn	Harvest Date:	11/1/2012
Tillage:	Conventional		

Methods

This study was designed with three treatments which were replicated four times in a randomized complete block design. Since this was corn back to corn the grower desired some insect treatment. Treatments were:

1. Poncho 1250 ®/Votivo®
2. Poncho 1250 ®/Votivo® + Aztec (1 oz/A)
3. Aztec® (1 oz/A)

The probability of insect injury with corn back to corn increases as compared to corn in rotation with other crops. Insecticide seed treatments and in furrow insecticide application are preventative treatments for a range on soil early season pest. Poncho/Votivo contains clothianidin and *Bacillius firmus* and label states control of a broad range of insects and nematodes. These products are applied to the seed using commercially available seed treatment applicator prior to planting. Aztec 4.67G contains tebupirimphos and cyfluthrin and label statements state control a broad range of insects.

The entire treatment area was planted to Pioneer P1498HR with or without Poncho®/Votivo® as called for in the experimental design. Aztec was applied in band below the seed furrow. The hybrid is a 114 day maturity. The plot was harvested with an IH 2366 combine equipped with a calibrated Ag Leader 3000 yield monitor. The harvested area representing the treatment was 8 rows wide by 1140 feet long and also measured with a weigh wagon.

Ten soil sample cores 12 inches deep were pulled from within the rows for each treatment area and bulked for nematode testing at R10. Samples were transported and delivered to the Plant Pathology Labs at The Ohio State University, Columbus, OH the next day.

Results

Table 1. Yield response and stand counts on corn treated with insecticide seed treatment and in furrow insecticide.

Treatment	***Yield***	***Stand Count***
	Bu/A	*plants/A*
Votivo	230	30,700
Votivo & Aztec	228	31,300
Aztec	232	31,800
LSD (0.1)	NS	NS
CV %	2	2

Table 2. Nematode counts from the treatment area.

Treatment	*Spiral*		*Lesion*	*Stunt*	*Dagger*	*Stubby-root*
	Helicotylenchus	*Tylenchids*	*Pratylenchus*	*Tylenchorhynchus*	*Xiphinema*	*Para/Trichodorus*
Votivo	53	30	33	107	29	18.5
Votivo & Aztec	65	26.5	28	137.5	37.5	26.5
Aztec	83	35.5	43.5	124	51	26
Threshold nematode severity class *	Insignificant		Insig	Severe	Moderate	Moderate
LSD (0.1)	NS	NS	NS	NS	NS	NS

*Source: University of Illinois Champaign-
http://extension.cropsci.illinois.edu/handbook/pdfs/chapter15.pdf

Summary

No yield differences or stand count differences were noted between treatments. No significant differences in nematode populations were observed. Table 2 list the different nematodes identified in the sampling. The threshold number is from work at the University of Illinois. It is not known whether these thresholds apply to Ohio conditions. This project is part of the ongoing work looking at yield limiting factors in corn production. Stunt nematode in this sampling would be of greatest concern followed by dagger and stubby root nematodes.

Acknowledgements

The author expresses appreciation to Richard Snyder as the cooperating farmer who did all applications and harvest.

For more information, contact:
Greg LaBarge
OSU Extension
222 W Center St.
Marion, Ohio 43302
labarge.1@osu.edu

THE OHIO STATE UNIVERSITY EXTENSION