2018 NemaStrike™ Seed Treatment in Soybeans

Background:

Soybean Cyst Nematode (SCN) is a significant parasitic pest of soybeans that is present in every county in Iowa. Tioxazafen, which is branded as NemaStrike™ Technology, is chemistry that claims broad-spectrum control of plant parasitic nematodes and consistent yield protection in corn, soybeans and cotton. Three years of field trial testing in Monsanto (now Bayer) product development showed a yield advantage over competitive products and a positive response rate of 68 percent in soybeans.

Protocol:

Seed of a single variety and lot was provided to growers, half treated with Acceleron Standard seed treatment and half with Acceleron Standard seed treatment with NemaStrike Technology. Growers planted alternating strips with and without NemaStrike across their field, typically by loading half of their planter with each product. The outcome should result in at least four replications of each seed treatment where a clean pass with the combine can be gleaned at harvest. All other inputs were required to remain constant across the trial area.

Yield monitor data from the trials was cleaned according to industry standards and subjected to a multi-location mixed model analysis.

Outcome:

Two planned sites were lost due to farmer harvesting the field at an angle to the rows (treatments). The Iowa Soybean Association On-Farm Network® considers this data to be unusable and did not include in the analysis. Levels of SCN were assessed in the spring and fall. All fields were believed to have high levels of SCN pressure, but results were lower than expected at all sites.

On average, there was a 2-bushel yield advantage for NemaStrike on soybeans, significant at the Pr>t level of 0.02. Generally, this means we would expect to see a yield difference this large by chance alone two times out of 100. Location ST2018IA0051 had questionable data that did not represent the pattern from other locations. If this location was excluded from the analysis, the average yield advantage to NemaStrike would be 3-bushels per acre, significant at Pr>t of 0.003.

The positive response rate in our trials was 85 percent, significantly greater than the Bayer reported rate of 68 percent. Testing will continue in 2019.

The On-Farm Network is very appreciative of the collaboration with Bayer Crop Sciences to make this independent trialing possible.

Table 1. Comparisons of using Nemastrike in soybean field on-farm strip trials.

Location	Cyst Pressure	Nemastrike	No-Nemastrike	Difference	Pr>t[1]
	(eggs/100 cc of soil)	----------Yield (bu/A)----------			
ST2018IA0038	50	54.4	48.7	5.7	0.002
ST2018IA0045	50	86.4	80.4	6.0	0.005
ST2018IA0048	250	67.0	65.7	1.3	0.70
ST2018IA0050	100	52.0	49.2	2.8	0.02
ST2018IA0051[2]	250	64.2	67.7	−3.5	0.04
ST2018IA0059	100	56.0	55.5	0.5	0.86
ST2018IA0069	100	53.2	52.3	0.9	0.57
Average		61.9	59.9	2.0	0.02

[1]Pr>t is an estimate of the statistical significance of the observed difference. Values above 0.15 indicate that differences are likely due to chance alone.

[2]= There is some doubt about the integrity of data from this site.