

Pest Management

Characterizing new ways to manage insects, weeds and diseases in soybeans and corn is very important to Iowa farmers. The On-Farm Network® (OFN) conducted research on promising new seed treatments and fungicides in 2018, as well as conducted pest incidence surveys.

NemaStrike™ Technology from Bayer Crop Science

Soybean Cyst Nematode (SCN) is a significant parasitic pest of soybeans present in every Iowa county. 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 testing in Monsanto (now Bayer) product development field trials showed a yield advantage over competitive products and a 68 percent positive response rate in soybeans.

Results indicated an average yield advantage of 2 bu/acre for NemaStrike with a range from 0 to 6 bu/acre. Unlike Bayer's data, the OFN results indicated a positive response rate of 85 percent. SCN pressure at research trial locations is believed to be low. This research will be repeated in 2019 at sites with higher SCN pressure.

Table 1. Response of soybeans to NemaStrike seed treatment at seven Iowa locations.

| Location | Cyst Pressure (eggs/100 cc of soil) | NemaStrike | No-NemaStrike | Difference | Pr>t |
|---------------|---|---------------------------|---------------|------------|-------|
| | | -----Yield (bu/acre)----- | | | |
| ST2018IA0038 | 50 | 54.4 | 48.7 | 5.7 | 0.002 |
| ST2018IA0045 | 50 | 86.4 | 80.4 | 6.0 | 0.005 |
| ST2018IA0049 | 250 | 67.0 | 65.7 | 1.3 | 0.7 |
| ST2018IA0050 | 100 | 52.0 | 49.2 | 2.8 | 0.02 |
| ST2018IA0051* | 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 |

* = There is some doubt about the integrity of data from this site.

Soybean Responses to Delaro® Fungicide

Delaro fungicide is a new dual mode of action residual fungicide for use in soybeans, corn and other crops. Most dual ingredient fungicides offer good broad-spectrum disease control in soybeans with timely application. An additional claim for Delaro is its ability to suppress white mold with two applications.

The purpose of these trials was to evaluate the effectiveness and value of single applications of Delaro versus untreated checks or dual applications of Delaro.

All locations were scouted for presence of disease in mid- to late-August and disease pressure was low. Frog eye leaf spot and white mold pressure were low at these sites.

For single pass application trials, the average yield advantage for Delaro fungicide was statistically significant at 3.3 bu/acre (Table 2). The range of response was from 0 to 8 bu/acre. Grain moisture levels were also analyzed. At location 226, grain moisture level was significant at 1 percent greater, but there was no moisture response in any of the other trials.

Despite the absence of white mold pressure, there was a statistically significant 1.5 bu/acre difference for the two-pass versus the single pass treatment (Table 3). The range of response was from 0.2 bu/acre to 3.2 bu/acre over a single fungicide application applied near R1.

The yield effect of the two-pass treatment could have been due to the later application. For example, a single application at R3 may have resulted in the same response, but this factor was not considered in this protocol.

The OFN concludes that Delaro fungicide is a very important tool for soybean farmers to manage diseases and raise yield levels. The response to two-pass treatments may require additional research, especially at sites with significant white mold pressure.

Table 2. Soybean response to Delaro fungicide under single pass treatments near the R1 growth stage.

| Location | Delaro | No-Delaro | Difference | Pr>t |
|----------|------------------------|-----------|------------|--------|
| | -----yield (Bu/A)----- | | | |
| 106 | 62.4 | 54.5 | 7.9 | 0.0005 |
| 122A | 66.0 | 62.7 | 3.2 | 0.02 |
| 151 | 59.6 | 59.5 | 0.1 | 0.94 |
| 152 | 62.4 | 61.5 | 0.9 | 0.51 |
| 153 | 58.0 | 56.1 | 1.9 | 0.23 |
| 155 | 78.1 | 71.0 | 7.1 | 0.001 |
| 180 | 65.2 | 63.1 | 2.1 | 0.08 |
| 186 | 67.9 | 65.2 | 2.7 | 0.10 |
| 226 | 57.5 | 49.9 | 7.6 | 0.002 |
| 230 | 78.6 | 73.4 | 5.2 | 0.06 |
| Average | 65.5 | 61.8 | 3.8 | 0.0001 |

Table 3. Soybean response to Delaro fungicide under single and two pass treatments.

| Location | 2 Pass Delaro | 1 Pass Delaro | Difference | Pr>t |
|----------|------------------------|---------------|------------|------|
| | -----yield (Bu/A)----- | | | |
| 105 | 61.3 | 58.0 | 3.2 | 0.23 |
| 122B | 61.7 | 59.4 | 2.3 | 0.27 |
| 198 | 75.9 | 75.5 | 0.4 | 0.65 |
| 229 | 63.3 | 61.0 | 2.3 | 0.13 |
| 238 | 67.8 | 68.0 | -0.2 | 0.89 |
| Average | 66.3 | 64.7 | 1.7 | 0.04 |