



## **North Central Soybean Research Program**

### **Multi-State On-Farm Partnership**

Nathan Paul (*Project leader, Iowa Soybean Association*), Mark Licht (*Iowa State University Extension and Research*), Dan Davidson (*Illinois Soybean Association*), Meg Leader (*Indiana State Department of Agriculture*), Ignacio Ciampitti (*Kansas State University*), Michael Staton (*Michigan State University Extension*), David Kee (*Minnesota Soybean Association*), Greg Luce (*Missouri Soybean Association*), Laura Thompson (*University of Nebraska Extension*), Laura Lindsey (*Ohio State University*), Graig Reicks (*South Dakota State University*), Shawn Conley (*University of Wisconsin Extension*) and Peter Kyverga (*Iowa Soybean Association*)

Soybean farmers need to be able to verify products and management practices that increase their on-farm returns. Data from real world, large-scale trials is the best way to generate this data.

This project will further support the Multi-State On-Farm Partnership Program. The initial program began with checkoff funding provided by the United Soybean Board, and included 18 on-farm research trials in 11 states in 2015. The interest was so high that the project was expanded to as many as 30 trials in 2016 with several states, such as Michigan, Iowa and Wisconsin, supporting additional project fields through their local on-farm research programs.

### **Project objectives**

The primary goal of this project is to continue to organize and coordinate the efforts of states ready to move forward together in a multi-state effort as represented by participation in the 2015 and 2016 projects.

Using replicated strip trials across approximate 20 acres per trial, the following soybean production topics were included in the 2017 on-farm trials:

1. Soybean Population
2. Soybean Row Spacing
3. Starter Fertilizer
4. Foliar Plant Growth Regulator
5. In-Furrow Boron vs. Foliar applied
6. Foliar Plant Growth Regulator vs. Fungicide

### **Report for 2017**

The 2017 NCSRP Multi-State soybean trial program was incredibly successful with over 95% of trials being successfully executed. Across the 9 participating states, including South Dakota, Minnesota, Iowa, Nebraska, Ohio, Michigan, Illinois, Kansas and Indiana, 29 soybean research trials were established and submitted for analysis and final report generation.

**Soybean Population.** The most popular research topic in 2017 (and 2016) is soybean population trials. Researchers from 8 states conducted 16 soybean population trials with populations pushing the extremes on both ends. Four trial locations featured 80,000 as the low soybean population and 190,000 to 200,000 as the high population. Results from the population trials varied greatly. In two research locations in Ohio, the 80,000 soybean population out yielded the highest populations (190,000 and 200,000) with one location showing 80,000 seeding rate with a 10.1 bu/ac advantage over the 190,000 rate. Averaged across all locations, the optimal seeding rate was between 120,000 and 160,000 seed per acre. Yield results need to be compared with rainfall amounts and timing for a more thorough analysis as to which conditions best favored which soybean population.

**Foliar plant growth regulator and fungicide.** Several of these research topics had more than one location, while others were limited to a single location. Foliar PGR vs. Fungicide was a single trial conducted in South Dakota. It showed very little difference in response with the fungicide not providing enough return to justify the cost this year.

Three locations studied the effects of a plant growth regulator, applied at R1-R2 growth stage. Researchers used two different, but similar industry products called Ascend and Vigeo. Both products promote flowering, pod development and seed filling. Yield results from these locations were flat, averaging about -0.5 bu/acre response.

**Boron.** In-furrow boron showed a large response compared to foliar application boron. While limited to a single trial in Indiana, a 5.39 bu/acre response in favor of the in-furrow application. This type of response, though only in a single location, warrants additional research in the 2018 multi-state on-farm partnership.

**Soybean Row Spacing.** Researchers conducted four soybean row spacing trials across three states in 2017. Comparisons typically consisted of 15 inch row spacing versus 30 inch row spacing. A single location also included 7.5 inch drilled row spacing. Results from the majority of these trials were consistent with previous years research showing a positive yield response for 15 inch soybean spacing versus 30 inch soybean spacing. Across the three 15 vs. 30 inch row spacing soybean trials, the 15 inch soybeans maintained a 3.4 bu/ac advantage.

In the Nebraska location, which also studied the 7.5 inch drilled row width, results favored the 7.5 inch row spacing on irrigated ground. Drilled soybeans saw a 3.5 bu/acre advantage over 30 inch row spacing and a 4.2 bu/acre advantage over 15 inch row spacing. Results from this location are reflective of the early season stand counts collected. Comments from the Nebraska research team include: *“The 15” treatment had a poor stand due to the way it was double planted (dirt thrown over last planted rows). Additionally, some rows in this treatment were just plain missing. Despite this, it yielded well.”*

**Starter fertilizer.** Starter versus no starter trials were conducted across five locations in four different states. Indiana, Minnesota, Nebraska and South Dakota all did research comparisons using slightly different starter fertilizers. The most common starter was a 10-34-0 applied in-

furrow at planting. Harvest populations favored starter trials, but across all locations, no measurable yield response was found between the treatments. These results are consistent with the 2016 starter versus no-starter trials as well.