Soybean Response to Planting Date

Trial Objective

- The purpose of this study was to evaluate how soybean product, planting date, and irrigation strategy interact to help farmers maximize soybean yield potential and return on investments.

Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Planting Rate (seeds/acre)
Gothenburg, NE	Hord Silt loam	Corn	Strip tillage	4/29/19 5/13/19 6/4/19 6/24/19	10/8/19 10/8/19 10/8/19 10/14/19	85	180K

- The study was set up as a randomized split-split plot design with irrigation strategy as the whole plot, planting date as the sub plot, and soybean product as the sub-sub plot. Treatment combinations were replicated four times.
- Initially, there were four irrigation strategies. However, because of the timely rainfall throughout the growing season (27 inches from May 1 to September 1), irrigation was limited. A 0.8-inch difference between the four irrigation strategies resulted in no irrigation impact; therefore, the data was summarized across the treatments.
- Eight Roundup Ready 2 Xtend® soybean products with maturity groups (MG) of 2.4 to 3.3 MG were compared.
- The soybean products were planted at 180,000 seeds/acre on four different dates with a row spacing of 30 inches and irrigated.
- Weeds were controlled uniformly across the study and no fungicides or insecticides were used to control other pests.

Understanding the Results

- Soybean yield (Table 1) and test weight (Table 2) were impacted by an interaction of soybean product with planting date. As stated above, irrigation strategy had no influence.

Table 1. Average bu/acre reduction in yield response for each soybean product relative to planting date (darker green colors indicate less average yield loss).

	Planting Date			
Soybean Product	29-Apr	13-May	4-Jun	24-Jun
2.4MG-A	0	-1.1	-3.2	-13.5
2.5MG	0	-1.7	-5.5	-14.6
2.9MG-A	0	-0.6	-3	-14
3.3MG	0	0.1	-4.4	-18.8
2.4MG-B	0	-0.3	-0.9	-11.9
2.6MG-A	0	2.2	0.6	-11.9
2.9MG-B	0	3.1	-1.5	-14
2.6MG-B	0	-0.8	0	-12.4
LSD (0.1)	2.15			

Table 2. Average test weight (lb/bu) response for each soybean product relative to planting date (darker green colors indicate higher average test weights).

	Planting Date			
Soybean Product	29-Apr	13-May	4-Jun	24-Jun
2.4MG-A	62.7	63.1	62.7	64.8
2.5MG	63.3	63.5	63.5	65.0
2.9MG-A	63.1	63.2	62.9	63.7
3.3MG	59.5	58.8	61.3	59.7
2.4MG-B	62.9	63.2	63.1	65.0
2.6MG-A	63.0	62.9	62.0	64.1
2.9MG-B	63.3	63.1	62.8	64.2
2.6MG-B	63.0	63.0	63.0	64.9
LSD (0.1)	0.68			

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- Higher yields were consistently observed with the earlier planting dates; some soybean products had higher yields with the planting dates of April 29 or May 13 or both compared to the June 24 planting date.
  - Based on the yields of previous research at the Gothenburg Learning Center, yields for the first two planting dates were less than anticipated (off by 5 to 10 bu/acre) due to a challenging growing environment, so the average yield loss for delaying soybean planting on June 4 was not as high. The season experienced cool, wet growing conditions and an early-season hail event on May 26. Final stands across all soybean products for the planting dates of April 29, May 13, June 4, and June 24 were 66.5K, 52.5K, 121K, and 111K plants/acre, respectively.
- Soybean test weights (Table 2) were impacted more by soybean product with planting date having some affect.

Figure 1. Overview of the study on September 19 at the Gothenburg Learning Center showing the impact planting date and soybean product has on soybean maturation.

Key Learnings

- Soybean products responded to planting date with some products recording their highest yield with the earliest planting date (April 29) while others had their highest yield with the second planting date (May 13). All products had their lowest yield with the last planting date (June 24).
- Farmers should work with their local seed salesman or agronomist to help determine which soybean product(s) are best suited to help maximize yield potential and return on investment for their farming operation.

Legal Statements