



# Evaluating the Importance of Seed Treatment in Early-Planted Soybeans

## Trial Objective

- By delaying soybean planting, the yield potential of the crop is decreased. University of Illinois data indicate that maximum soybean yield potential is achieved at a planting date of April 17, based on nine years of research from 2008 through 2016.<sup>1</sup>
- Cold soil temperatures can delay germination, increasing the risk of unprotected seeds being damaged by insects, nematodes, and soil-borne pathogens, and limiting the potential benefit of an extended growing season.
- Largely due to the widespread adoption of treated soybean seed, growers now plant soybeans increasingly earlier than ever before. For example, Illinois farmers had 31 percent of their soybean crop planted by May 3, 2020 compared to the previous five-year average of 12 percent.<sup>2</sup>

## Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Seeding Rate (seeds/acre)
Roanoke, IL	Silt loam	Corn	Conventional	4/9/19, 4/23/19, 5/7/19, 5/18/19, 6/3/19, 6/18/19	10/9/19, 10/23/19	70	140,000
Roanoke, IL	Silt loam	Corn	Conventional	3/7/20, 4/6/20, 4/20/20, 5/9/20, 6/1/20, 6/15/20	10/7/20, 10/15/20	70	140,000

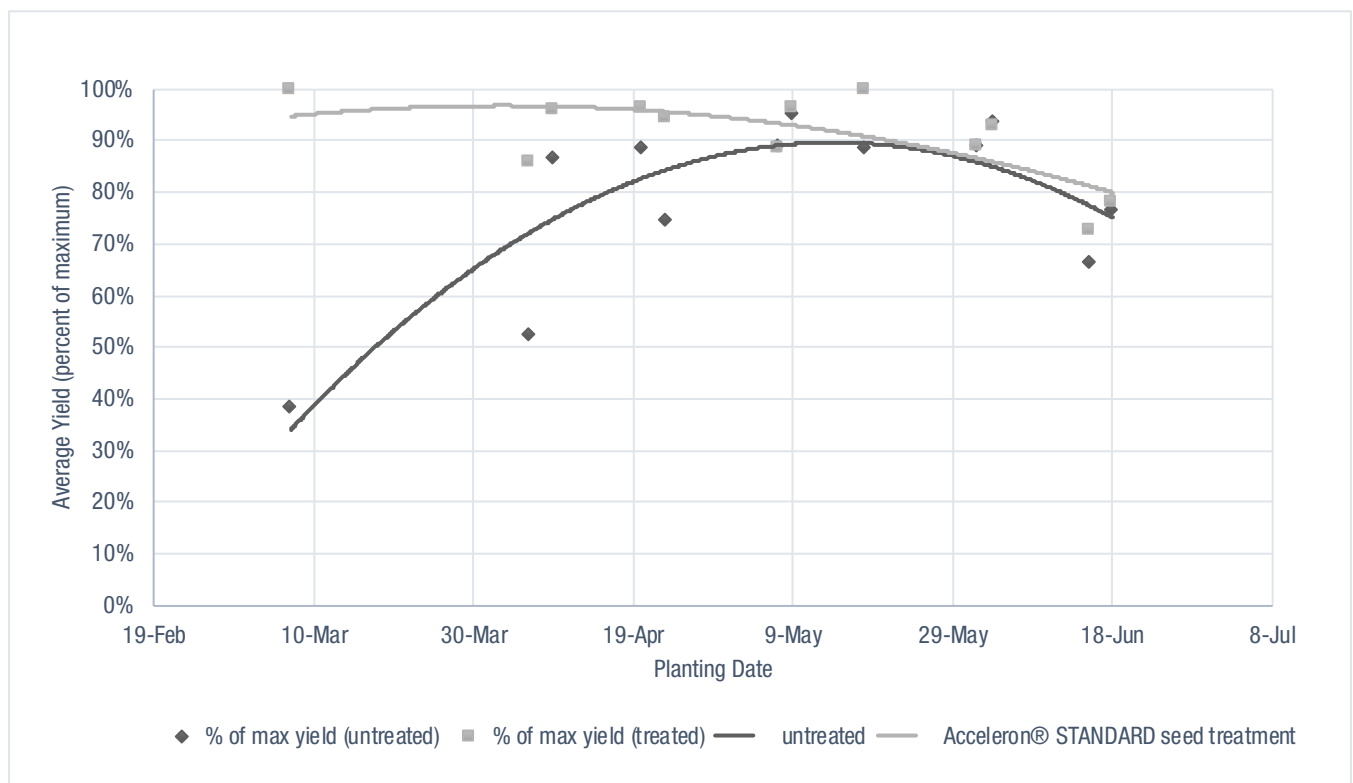
- This research was conducted at the Bayer Crop Science FOCUS site in Woodford County, Illinois from 2019 to 2020 with a goal of better understanding the value of quality seed treatments when planting soybeans early.
- A single maturity group (MG) 3.6 soybean product was planted across six planting dates each year from March through June.
- Seeds in this trial were either treated with Acceleron® STANDARD seed treatment or left untreated.
- Plots in this trial were planted at a seeding rate of 140,000 seeds/acre and harvested at maturity.
- The 2019 growing season was very cool and wet through early June, leading to delayed planting for many growers. Hot and dry conditions were prevalent in July and August and excessive rainfall returned in September and October.
- In 2020, there was sufficient moisture in the early portion of the growing season, but drought conditions persisted throughout August and into early September.
- The first planting date in 2020 was on March 7. The soil temperature at planting was 33°F, and the seeds took 52 days to emerge.
- On May 8, 2020 after the first three planting dates had emerged, the air temperature dipped to 29°F overnight for several hours. This resulted in an average loss of 2.6% of seedlings across treatments and planting dates.



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## Understanding the Results

- Consistent with university research<sup>1</sup>, soybeans planted earlier in the growing season had the highest average yield in this study, provided the seeds receive a quality seed treatment (Figure 1).
- Maximum average yield in untreated soybeans was not attained until planting after the first week of May and was an average of 13% lower in yield than treated seed when averaged across planting dates.
- One of the main drivers of yield potential is stand establishment. In the March 7, 2020 planting, roughly 66% of the planted seeds treated with Acceleron® STANDARD survived, while less than 15% survived in the untreated portion of the trial (Figure 2).



**Figure 1. Effect of seed treatment on average yield by percent of maximum yield across 12 planting dates and two years, 2019 and 2020.**

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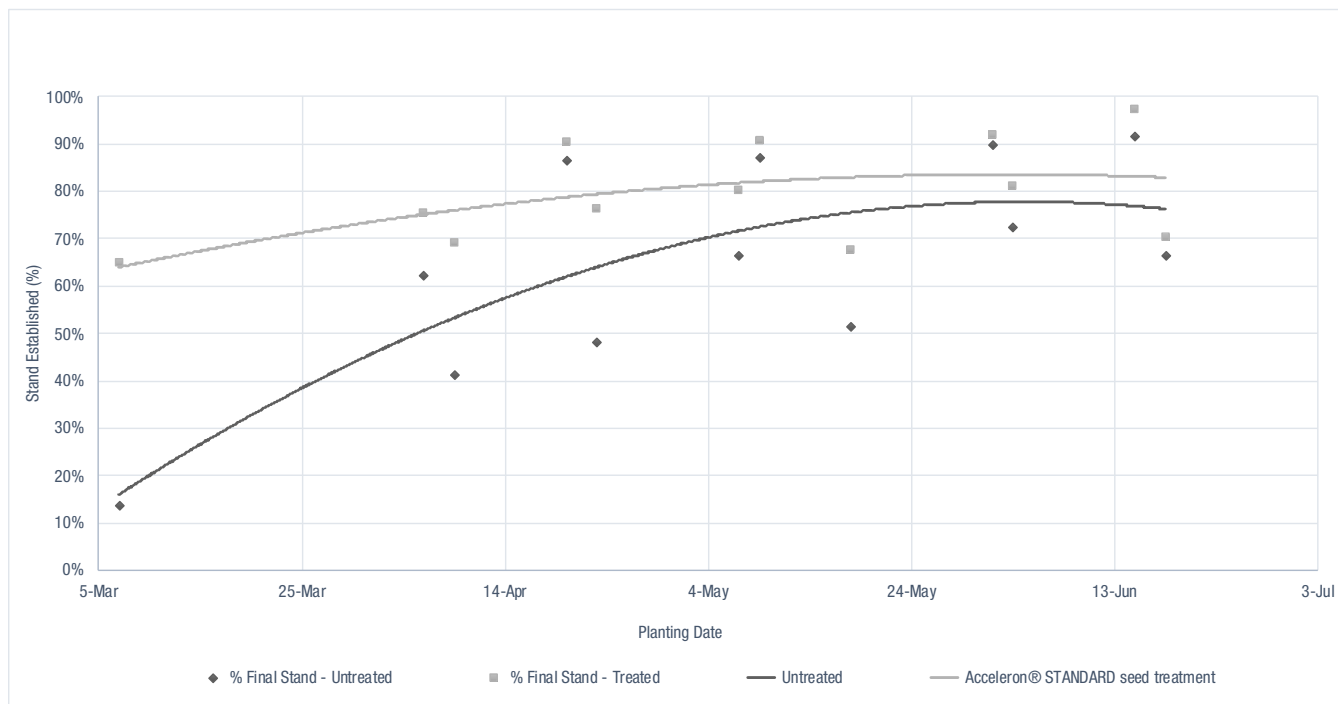


Figure 2. Percent stand established across 12 planting dates over two years, 2019 and 2020.

## Key Learnings

- Ultra-early plantings over the past two seasons did not provide a large yield advantage; however, average yields from these plantings were not penalized. If soil conditions allow, treated soybean seed can be planted early while maintaining yield potential.
- At this location in 2020, treated soybean seed had the highest yielding planting date on March 7. Early-planted soybean seed, when protected with a quality seed treatment, can handle early season adversity.
- Untreated soybean seeds should be planted into ideal conditions with soil temperatures approaching 50°F to enable quick germination for adequate stand establishment. However, delaying planting into mid-May can reduce yield potential.

## Sources

<sup>1</sup> Nafziger, E. 2016. Planting date: Corn or soybean first? The bulletin: Pest management and crop development information for Illinois. [https://farmdoc.illinois.edu/field-crop-production/crop\\_production/planting-date-corn-or-soybean-first.html](https://farmdoc.illinois.edu/field-crop-production/crop_production/planting-date-corn-or-soybean-first.html).

<sup>2</sup> U.S. Department of Agriculture National Agricultural Statistic Service. [https://www.nass.usda.gov/Statistics\\_by\\_State/Illinois/Publications/Crop\\_Progress\\_&\\_Condition/](https://www.nass.usda.gov/Statistics_by_State/Illinois/Publications/Crop_Progress_&_Condition/).

## Legal Statements

The information discussed in this report is from a multiple site, replicated demonstration. This informational piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

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