The Importance of Quality Seed Treatments in a High-yield Soybean System

Trial Objective

- Recent research indicates that soybean crops benefit from earlier than historically accepted planting dates.[1]
- Planting into cool, wet soils like those found early in the growing season increases the risk of damage from insect seed pests and soilborne pathogens.[2]
- This research was conducted with a goal of understanding the value of protecting an early planted soybean crop from disease and insect pests.

Experiment/Trial Design

- This research was conducted at the Bayer Crop Science FOCUS site in Woodford County, Illinois from 2018-2022.
- Soybean products ranging in maturity group (MG) from 2.7 to 3.6 were used, although different products were used in different years.
- Seed was either untreated or treated with Acceleron® Seed Solutions Standard (fungicides metalaxyl, fluxapyroxad, pyraclostrobin and the insecticide imidacloprid) and ILeVO® Seed Treatment.
- Standard fertility and weed management practices were followed, and plots were harvested as they matured.

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	4/25/18 5/8/18 5/23/18	9/24/18 10/4/18	70	140,000
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
Roanoke, IL	Silt loam	Corn	Conventional	3/10/21 4/6/21 4/19/21 5/3/21 5/14/21 5/24/21 6/7/21 6/15/21	10/18/21	75	140,000
Roanoke, IL	Silt loam	Corn	Conventional	3/29/22 4/12/22 4/27/22 5/12/22 5/24/22 6/4/22 6/13/22	9/28/22 10/14/22	75	140,000

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Understanding the Results

- In general, the yield of seed treated entries was higher with earlier plantings (Figure 1).
- The difference in yield performance between treated and untreated was greatest in early plantings; the advantage of treatments was less pronounced in later plantings (Figure 2).

The average seed treatment potential return on investment (ROI) was $75.43 across all planting dates (Figure 2) based on a treatment cost of $15 and soybean value of $16/bu.

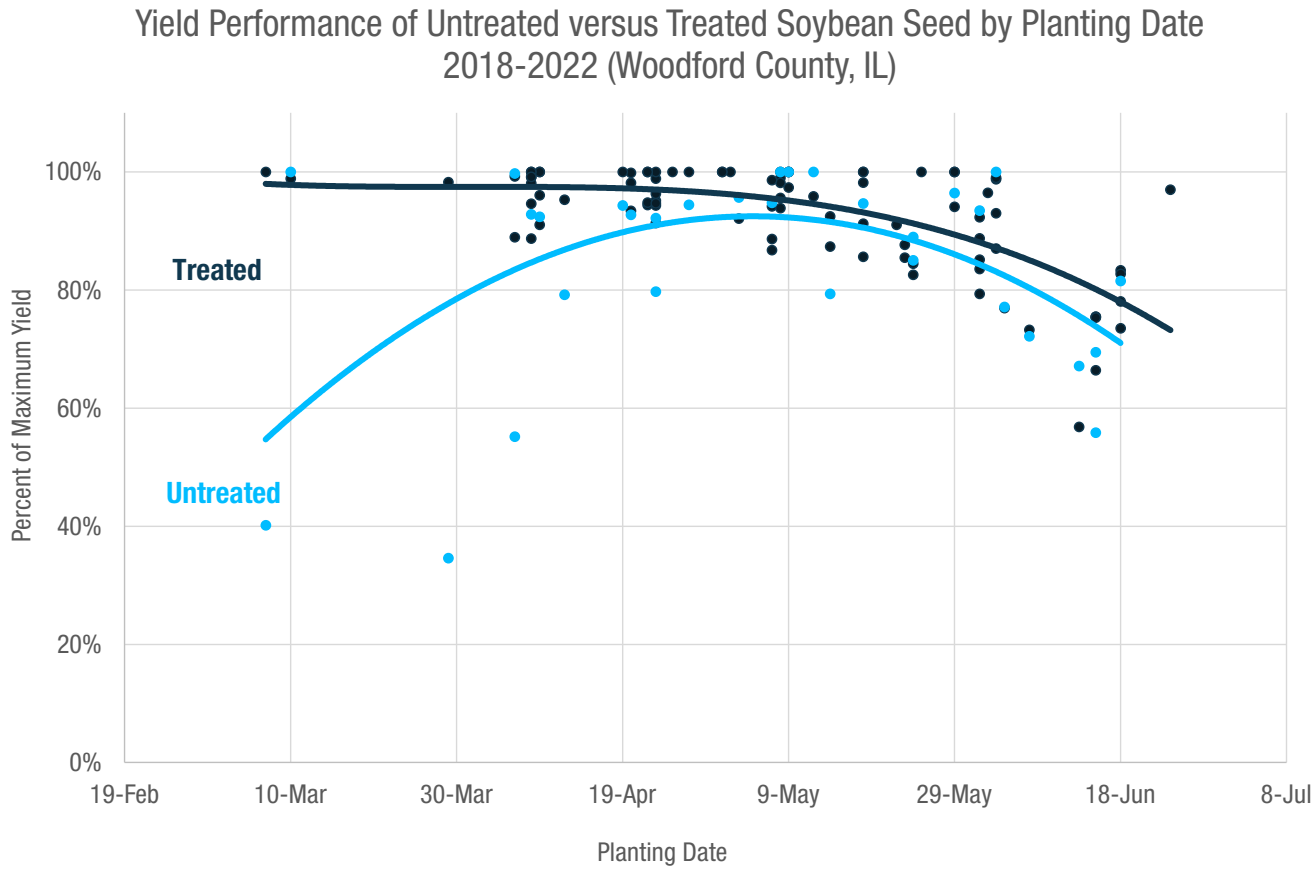

Figure 1, Yield performance of untreated versus treated soybean seed by planting date 2018 to 2022. Woodford County, IL.

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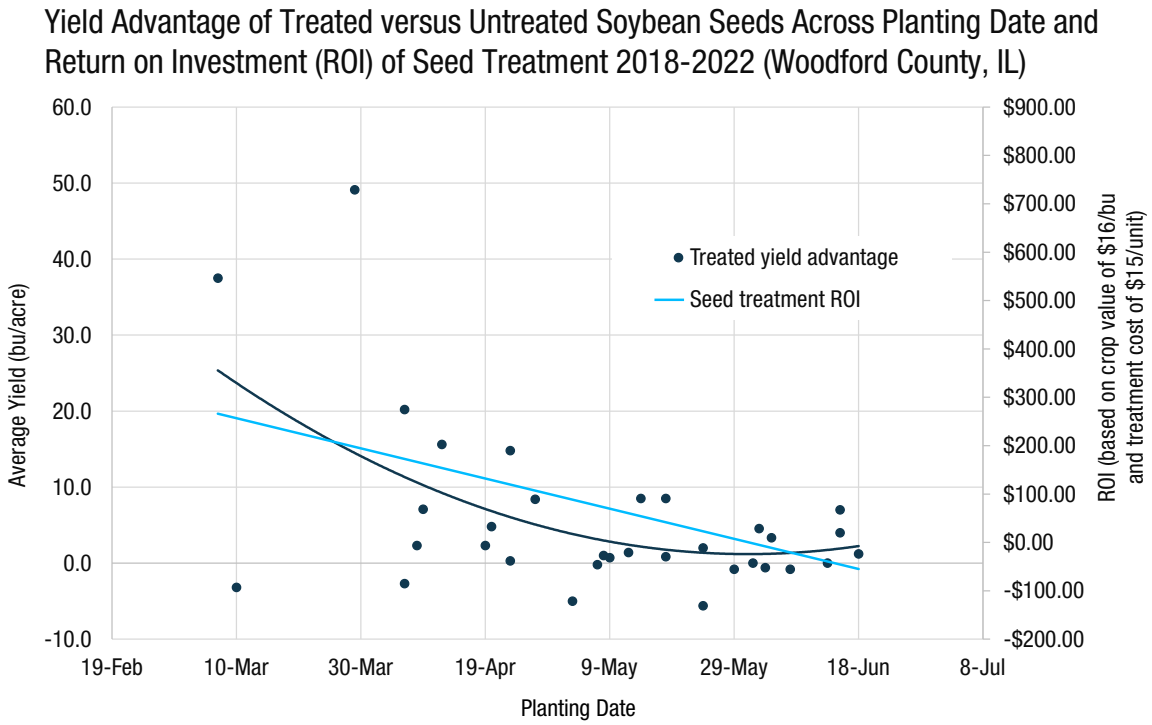

Figure 2. Yield advantage of treated versus untreated soybean seeds across planting date and potential return on investment (ROI) of seed treatment 2018 to 2022. Woodford County, IL.

Figure 3. Difference between treated (left) and untreated (right) soybeans planted on March 7, 2020 in Woodford County, IL. Final stand counts were 91,000 plants per acre in the treated entry, but only 19,000 in the untreated. Photo taken July 29, 2020.

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Key Learnings from these trials

- Soybean seed treatment is especially critical in very early plantings, with observed yield differences up to 50 bu/acre between treated and untreated.
- Seed treatment has a positive ROI in Illinois until around the end of May, by which time considerable yield potential has been forfeited.

Sources:

[1]Nafziger, E. 2020. Planting corn and soybeans in 2020. farmdoc. Department of Crop Sciences, University of Illinois at Urbana-Champaign. https://farmdoc.illinois.edu/field-crop-production/uncategorized/planting-corn-and-soybeans-in-2020.html

[2]Wise, K., Bradley, C., Chilvers, M., Conley, S., Faske, T., Giesler, L., Mueller, D., Sikora, E., Smith, D. Tenuta, A., and Tilmon, K. Factors to consider before using a soybean seed treatment. CPN-4003-W. Crop Management. Crop Protection Network. A Product of Land Grant Universities. https://crop-protection-network.s3.amazonaws.com/publications/cpn-4003-crop-management-factors-to-consider-before-using-a-soybean-seed-treatment.pdf

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