



Corn and Soybean Planting Timing Decisions

Trial Objective

- Widespread adoption of quality seed treatments in soybeans has led to increasingly early planting of soybeans by growers across the midwestern United States. For example, in 2021 by May 2, Illinois growers had completed 41% of soybean planting, compared to 14% average for the previous 5 years¹.
- Early in the planting season, growers are often faced with the decision of whether to plant corn or soybeans first.
- This research was conducted with a goal of understanding the risks and benefits of planting corn and soybeans at various timings throughout the spring.

Research Site Details

- Corn and soybeans were planted on simultaneous dates in both 2020 and 2021.
- In 2020, a 3.6 relative maturity (RM) soybean product was planted and in 2021 a 3.5 RM product was used.
- In 2020, a 114 day RM corn product was planted, while the 2021 data includes an average of 113 and 114 day RM corn products at each planting date.
- In both 2020 and 2021, heavy frost reduced the soybean stands in the earliest planting dates.

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	3/7/20, 4/6/20, 4/20/20, 5/9/20, 6/1/20, 6/15/20	10/7/20, 10/15/20	75	140,000
Roanoke, IL	Silt Loam	Soybean	Conventional	4/6/20, 4/20/20, 5/9/20, 6/1/20, 6/15/20	9/24/20, 10/8/20, 10/20/20	240	36,000
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	Soybean	Conventional	4/6/21, 4/19/21, 5/3/21, 5/14/21, 5/24/21, 6/7/21, 6/15/21	9/15/21, 9/16/21, 9/30/21	240	36,000



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Understanding the Results

- To compare data across years, results are presented as a percentage of the maximum yield for the year and corn/soybean product.
- Although soybean stands can be reduced in early plantings (Figure 1), the surviving plants have additional time to grow compared to later plantings and can still attain high yields (Figure 2).
- In 2021, emerged soybeans endured freezing temperatures for 2 consecutive nights (Figure 3) after emergence, killing 25.9% of them. Final stand was 67,846 plants per acre, with a yield of 77.7 bushels/acre (98.9% of maximum).
- Soybean yield is consistently highest in early plantings, with a steady decline in progressively later plantings, while corn yield shows a peak with too early and too late plantings negatively impacting performance (Figure 4).
- These data support the increasingly accepted practice of planting soybeans early in the growing season and waiting until conditions are more favorable for planting corn.

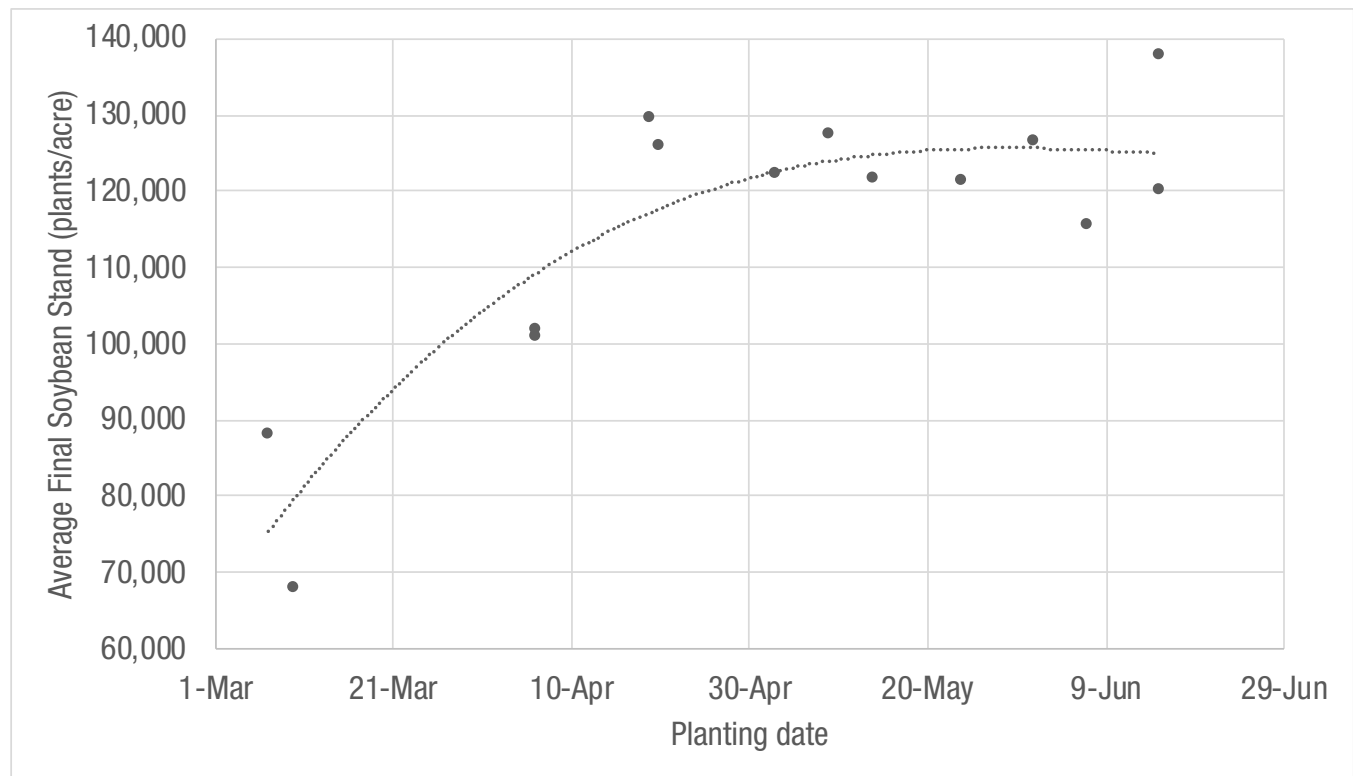


Figure 1. Average final soybean stands across planting dates and years (2020 and 2021).



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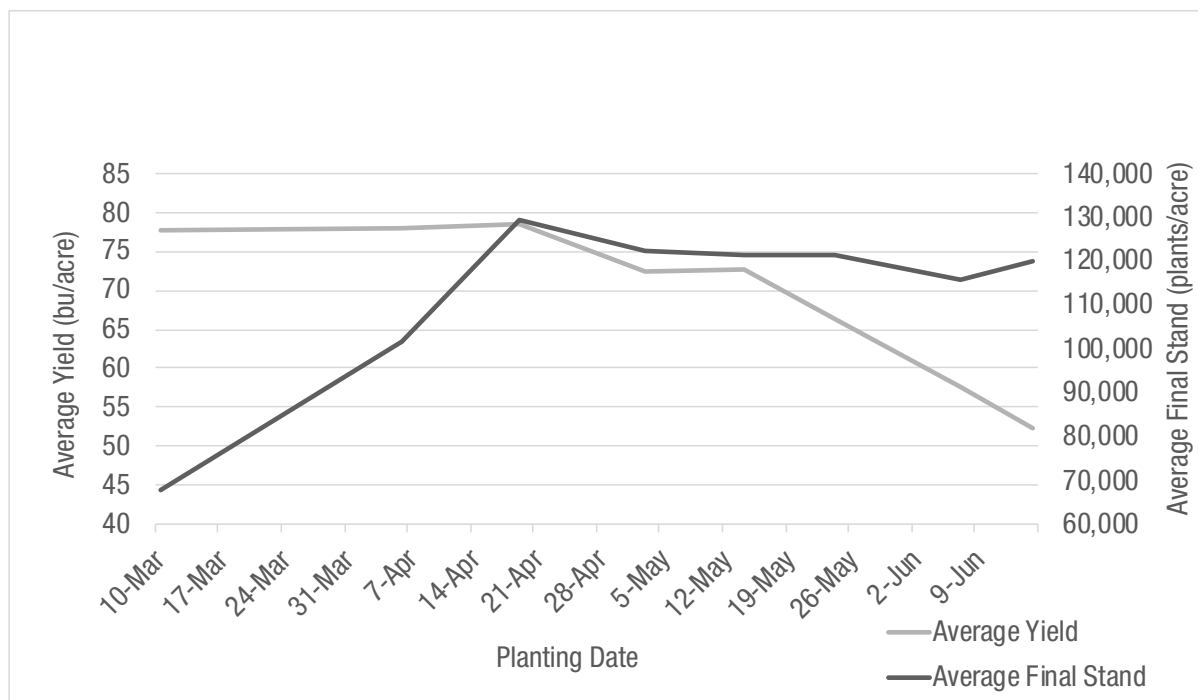


Figure 2. Average yield and average final stand count of 3.5 RM soybean across planting dates in 2021.



Figure 3. Frost on soybean seedlings after two consecutive nights of below freezing temperatures which resulted in a 25.9% stand reduction.

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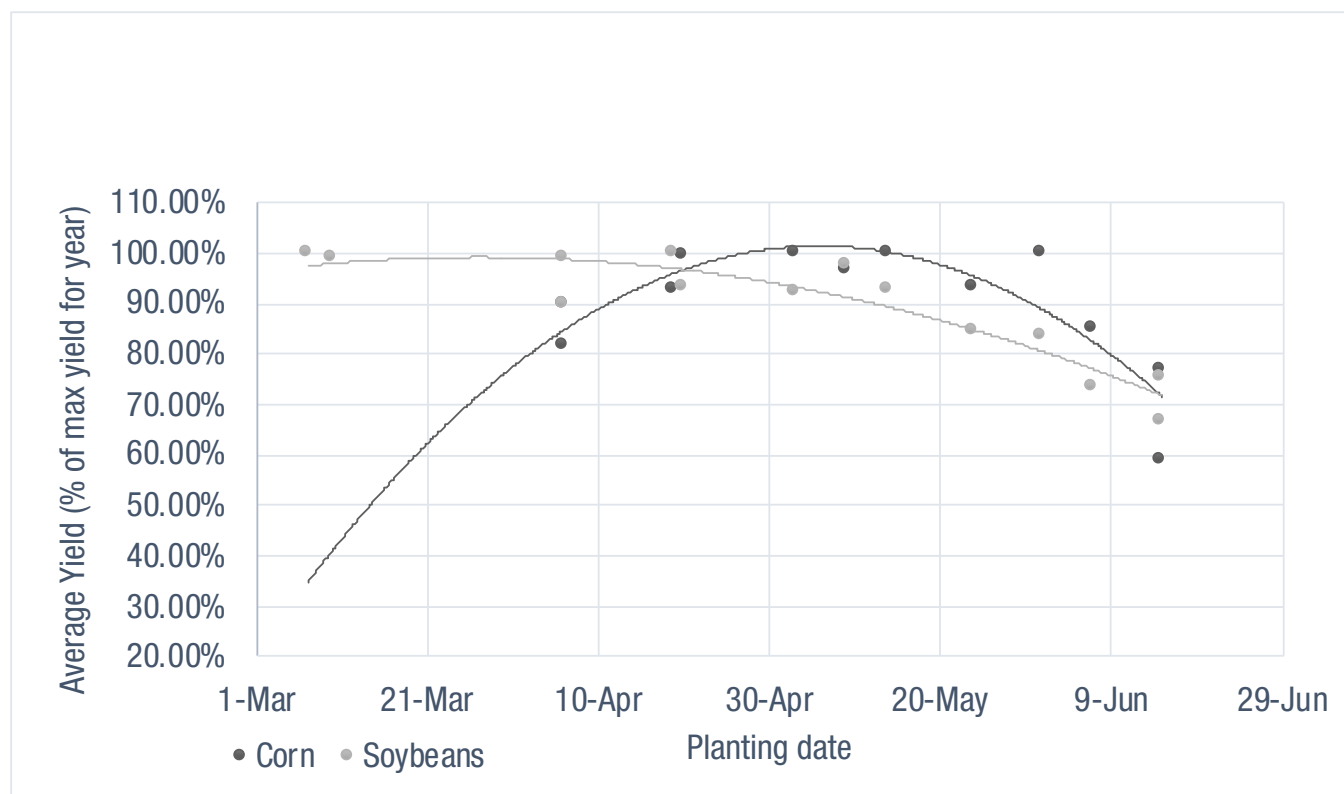


Figure 4. Relative performance of corn and soybeans at different planting dates combined over years in 2020 and 2021.

Key Learnings

- Generally, soybeans can be planted when soil moisture conditions are satisfactory, regardless of soil temperature and weather forecast. Corn, however, should only be planted when soil conditions (temperature and moisture) and the weather forecast are favorable.

Sources:

¹USDA National Agricultural Statistical Service. https://www.nass.usda.gov/Statistics_by_State/Illinois/Publications/Crop_Progress_&_Condition/2021/20210503-IL-Crop-Progress.pdf

Legal Statements

The information discussed in this report is from a multiple site, non-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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