

INTERACTION OF SOYBEAN PLANTING DATE AND SEEDING RATE

TRIAL OVERVIEW

- Soybean yield and the potential for lodging can be highly variable depending on a number of factors including environment, soybean product, nutrient management, irrigation, and planting rate and date. With this in mind, a study was designed to evaluate the interaction of soybean planting date and seeding rate.

RESEARCH OBJECTIVE

- To assess the effects of planting date and seeding rate on soybean yield.

Location	Soil	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield/Acre	Planting Rate/Acre
Gothenburg, NE	Hord silt loam	Corn	Strip tillage		10/13/2017	90 bu/acre	Varied

SITE NOTES:

- This study was a randomized split-plot trial with date as the whole plot and seeding rate as the subplot. The study had 4 replications.
- A 2.8 MG soybean product was planted into strip-tilled, irrigated ground that was previously planted to corn with an application of 29.3 lbs/acre nitrogen, 60 lbs/acre phosphorus, 25 lbs/acre sulfur, and 0.25 lbs/acre zinc that was applied during the strip-till operation.
- Planting occurred at six dates (4/11/17, 4/21/17, 5/5/17, 5/24/17, 6/7/17, and 6/19/17) with six seeding rates (80K, 120K, 160K, 200K, 240K, and 280K seeds/acre).
- Weeds were controlled uniformly throughout the season and no insecticides or fungicides were needed.
- The April 11 and April 21 planting dates were exposed to freezing temperatures and six inches of snowfall at the end of April.
- Yield and the incidence of lodging and stem borer were measured.

UNDERSTANDING THE RESULTS

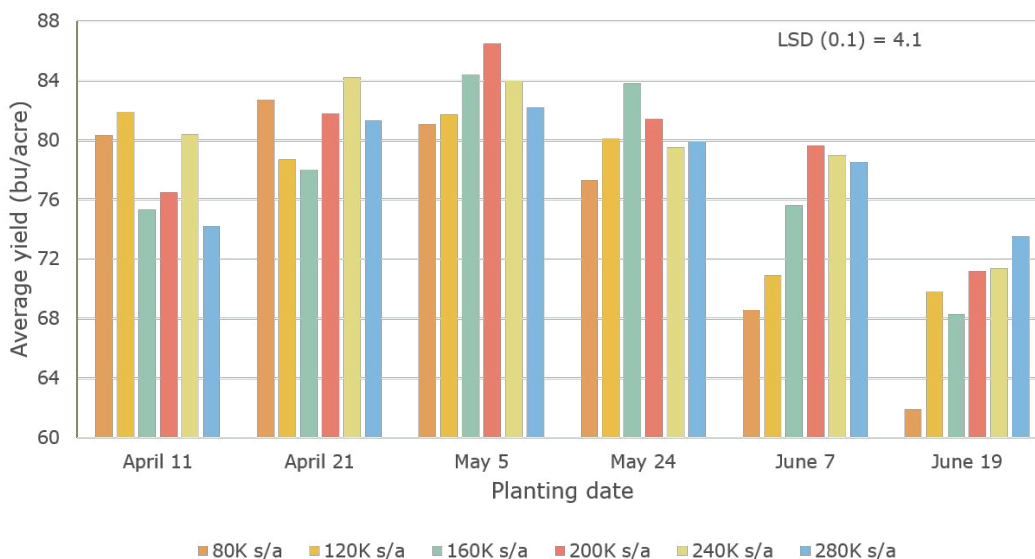


Figure 1. Soybean yields by planting date and seeding rate



Figure 2. Soybean plants from three planting dates and three seeding rates. Each image shows a plant from the 80K seeds/acre (left), 160K seeds/acre (middle), and 280K seeds/acre (right) seeding rate.

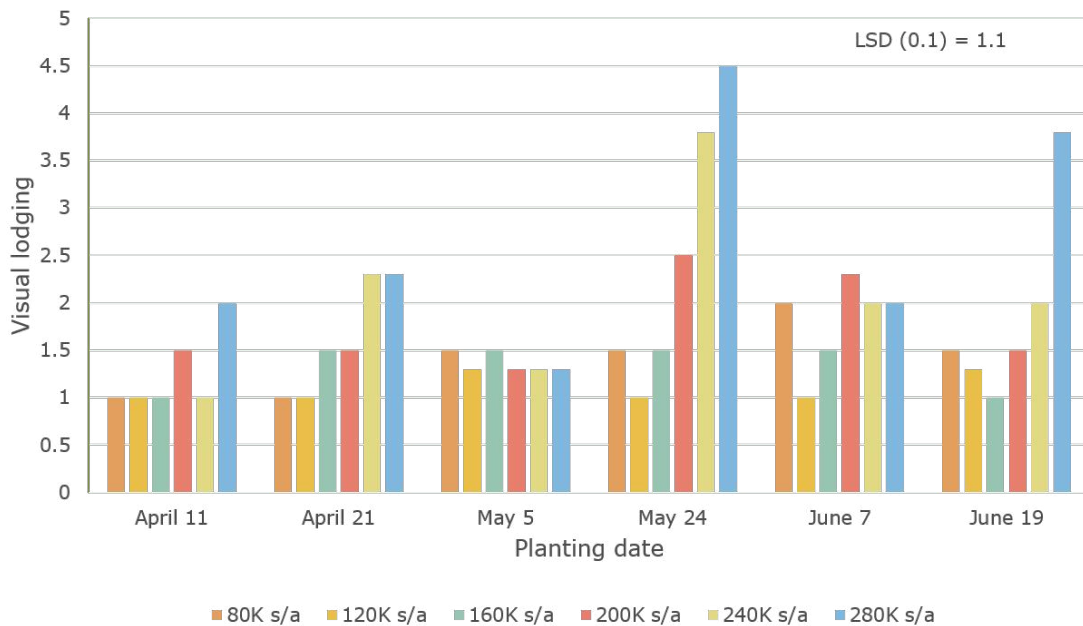


Figure 3. Soybean lodging by planting date and seeding rate. Soybean lodging was rated on a scale of 1 to 9 with 1 = no lodging and 9 = extreme lodging.

Yield

- The seeding rate impacted yield differently across planting dates (Figure 1).
- For the April 11 and 21 planting dates, the impact of seeding rate was highly variable with high yields observed at both high and low seeding rates. The variability in these results could partially be attributed to the freezing temperatures and snowfall that occurred at the end of April.
- For the May 5 and 24 planting dates, higher yields were observed with either the 160K or 200K seeds/acre rate, with lower yields observed at the lower and higher seeding rates.
- For the June 7 and 19 planting dates, the higher seeding rates had higher yields.

Lodging

- The seeding rate and date impacted the extent of soybean lodging differently (Figure 3).
- For the April 11, April 21, May 24, and June 19 planting dates, higher lodging was observed with higher seeding rates.
- For the May 5 and June 7 planting dates, higher lodging was observed at the higher and lower seeding rates.



- **Stem borer**

- Infestation of soybean stem borer was impacted by planting date but not seeding rate, with the May 5 planting date having high levels of stem borers and the other planting dates having little to no stem borers.

WHAT DOES THIS MEAN FOR YOUR FARM?

- Typically, a soybean crop is planted after corn; this can be three to four weeks after the optimal soybean planting date for the area, which can significantly reduce yield potential by 10 to 15 bu/acre. Soybean planted too early can be affected by freezing temperatures, which can reduce yield potential. Farmers should work with their local seed sales team to determine the optimum planting date for their area.
- The early spring freeze and snowfall probably caused some variability in the results for seeding rate. To that end, farmers should expect a more typical response to seeding rate as what was observed with the May 5 and May 24 planting dates, with high yields observed at the 160K to 200K seeds/acre rates.
- For late-planted soybean, higher seeding rates (200K to 280K seeds/acre) should give the best opportunity for high yields.
- Earlier-planted soybean crops have a greater risk of infestation with stem borer.

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