

SOYBEAN RESPONSE TO REPRODUCTIVE STAGE-APPLIED POTASSIUM

TRIAL OVERVIEW

- Potassium levels are generally considered to be at sufficient levels to achieve good yields on the Great Plains.
- Soybean plants need approximately 205 lb of potassium/acre to produce yields of 60 bu/acre; however, as yield levels increase, more potassium is needed.¹
- Soybean removes about 1.4 lb of potassium/bu with the grain compared to 0.26 lb/bu for corn.²

RESEARCH OBJECTIVE

- This study evaluated the impact that different application rates of potassium have on soybean yield when applied at different growth stages to determine if additional potassium fertilizer will impact irrigated soybean yield.
- This study came about from farmers asking questions during the Learning Center tours in 2016.

Location	Soil	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield/Acre	Planting Rate/Acre
Gothenburg, NE	Hord silt loam	Corn	Strip tillage	05/24/2017	10/13/2017	90 bu/acre	160K seeds/acre

SITE NOTES:

- Potassium was applied as 0-0-60 at 15, 30, and 45 lb K₂O/acre at the following growth stages: R1, R3, and R5.
- Potassium was applied by a 360 Y-Drop® applicator (R1) or dry spread (R3 and R5).
- A 2.4 and a 2.8 MG soybean product were evaluated.
- Potassium levels on site were 594 ppm, organic matter was 3.2%, and the pH was 6.8.
- The research was conducted as a randomized split-split plot with application growth stage as the whole plot, application rate as the subplot, and soybean product as the sub-subplot. There were 18 treatments and 4 replications.

UNDERSTANDING THE RESULTS

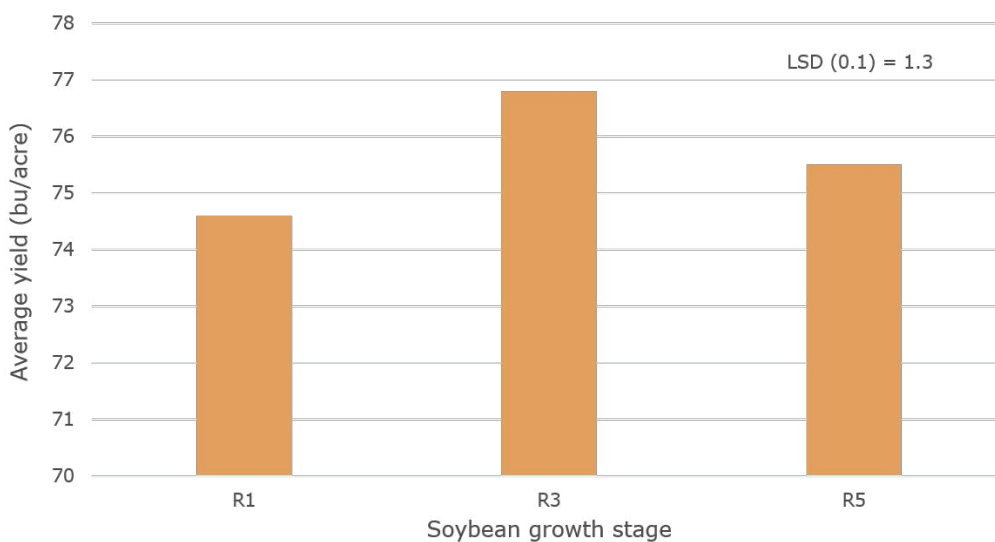


Figure 1. Soybean yield in response to potassium application at different growth stages

- The application rate had no effect on the soybean yield response to potassium.
- There was no difference in how the soybean products responded to the potassium applications.



- The timing of the application did impact yield (Figure 1). The difference in yield was 2.2 bu/acre between the R1 application and the R3 application. This difference was consistent across both products and application rates, which was somewhat surprising.

WHAT DOES THIS MEAN FOR YOUR FARM?

- There may be a marginal, yet consistent benefit in applying 15 lb/acre of potassium to soybean at the R3 growth stage.
- The information gathered from this study is only from one site in one year but the results are compelling and warrant further investigation.
- In 2018, research will be initiated to compare an application of potassium to an untreated check on six to eight soybean products.

SOURCES

1 Potassium in plants. Mosaic Crop Nutrition. www.cropnutrition.com/efu-potassium.

2 Potassium Management. Kansas State University. www.agronomy.k-state.edu.

LEGAL STATEMENT

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

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