



Evaluation of Potential Inputs to Improve Late-planted Soybean Yield

Trial Objective

- Limited research is performed on late-planted soybean and farmers are actively seeking information on what input(s) will provide the most value to his/her operation when soybean is planted late.
- The objective of this trial was to evaluate the impact that potential inputs have on the yield potential of late-planted soybean.

Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Seeding Rate (seeds/acre)
Gothenburg, NE	Hord silt loam	Corn	Conventional	06/14/18	10/23/18	75	120K, 180K

- This study was comprised of ten treatments in a randomized complete block design with three replications. Four treatments added one component to the base management (BM) treatment as indicated with a '+' and four treatments removed one component from the high management (HM) treatment as indicated with a '-' (Table 1).
- A 2.7 MG soybean product was planted in all treatments.
- Row spacing was 30 inches.
- Weeds were uniformly managed.
- Hero® insecticide at 5 fl oz/acre was applied across all treatments at R6 to control salt marsh caterpillars, except the HM-InFu treatment.
- Soil test values: phosphorous – 14 ppm, potassium – 576 ppm, organic matter – 3.6%, pH – 7.0.

Table 1. Treatments

Treatment	Inputs
BM	Planted at 120,000 seeds/acre and received 60 lb P ₂ O ₅ /acre at strip-till
BM+KR3	BM + 15 lb K ₂ O/acre foliar-applied at R3 as potassium thiosulfate
BM+Population	BM with a seeding rate of 180,000 seeds/acre
BM+SZn	BM + 25 lb sulfur/acre and 0.5 lb zinc/acre applied during strip-till
BM-InFu	BM + Hero® insecticide at 5 fl oz/acre and Delaro® 325 SC fungicide at 10 fl oz/acre applied at R3
HM	Planted at 180,000 seeds/acre and received 90 lb P ₂ O ₅ /acre, 25 lb sulfur/acre, and 0.5 lb zinc/acre at strip-till, 15 lb K ₂ O/acre foliar-applied at R3, and Hero® insecticide at 5 fl oz/acre plus Delaro® 325 SC fungicide at 10 fl oz/acre applied at R3
HM-KR3	HM without foliar-applied 15 lb K ₂ O/acre at R3
HM-Population	HM with a seeding rate of 120,000 seeds/acre
HM-SZn	HM without 25 lb sulfur/acre and 0.5 lb zinc/acre during strip-till
HM-InFu	HM without Hero® insecticide at 5 fl oz/acre and Delaro® 325 SC fungicide at 10 fl oz/acre at R3



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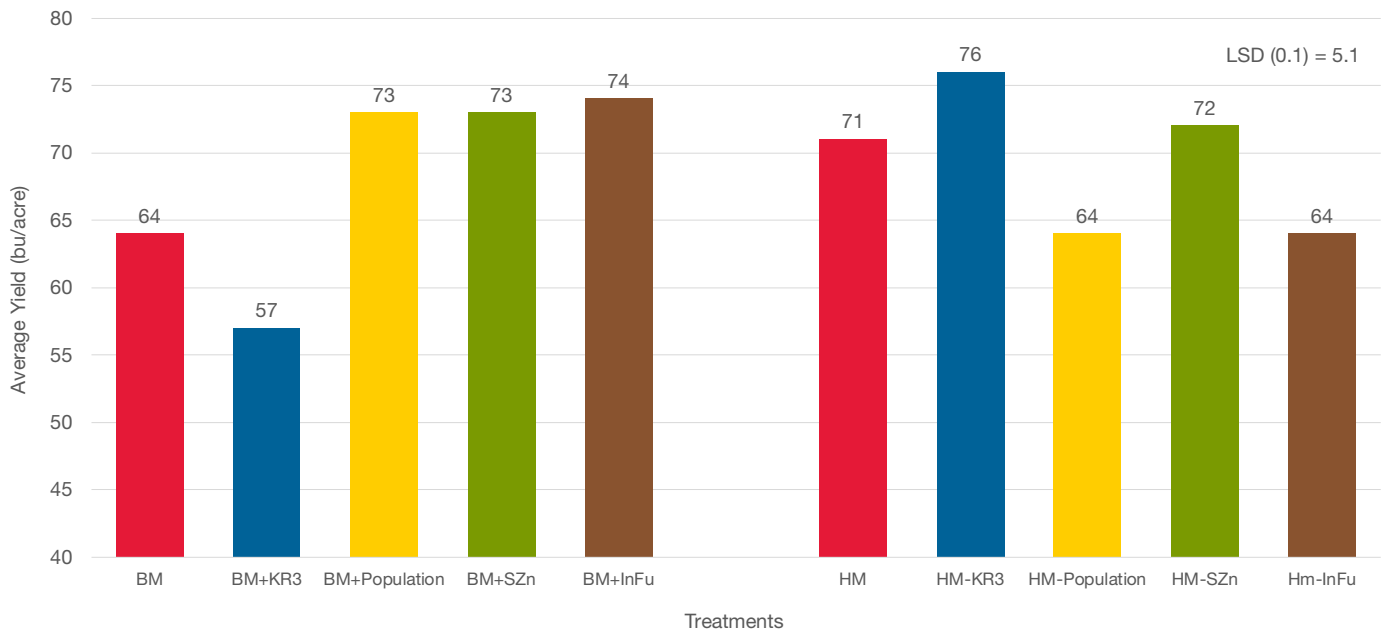


Figure 1. Soybean product response to the different treatments.

Understanding the Results

Base Management

- Good yields were obtained with the BM treatment considering that the soybean was planted six weeks past the optimum planting date of the first week in May.
- Increasing the seeding rate, adding sulfur and zinc, or applying a fungicide and insecticide all had similar yield increases over the BM treatment.
 - Diseases, such as septoria brown spot or anthracnose, could be controlled with a fungicide.
 - Insects, such as wooly bear caterpillars, grasshoppers, or bean leaf beetles, could be controlled with an insecticide.
- Potassium thiosulfate reduced yield and the most visual symptom was severe burning of the leaves. Potassium provided a positive yield response in 2017, but in that year, potassium was applied as potassium chloride to the base of the plants rather than using a foliar application, as was done in this trial.
- It is important to note that potassium thiosulfate can be safely applied but too high a rate was used with too little water and the fertilizer damaged the soybean plants.

High Management

- The HM treatment yielded more than the BM treatment.
- The highest yield in the study was obtained when removing the potassium thiosulfate treatment from the HM system, because the crop was not damaged by the foliar fertilizer application.
- Reducing the seeding rate from 180,000 to 120,000 seeds/acre, or removing the insecticide and fungicide application equally reduced yields compared to the HM treatment.

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Figure 2. Base Management with the fungicide and insecticide treatment.



Figure 3. High Management without the fungicide and insecticide treatment.



Figure 4. Feeding from salt marsh caterpillar required the late application of insecticide on 9/20/18. Caterpillars moving from senesced early-planted soybean caused large amounts of defoliation to the border rows of this trial, and the trial was treated to prevent further defoliation.

What Does This Mean for Your Farm?

- In late-planted soybean, the addition of a fungicide and insecticide or planting a higher seeding rate of 180,000 seeds/acre consistently provided higher yields and greater returns to the soybean production system.

Legal Statements

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.

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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