



Impact of Seeding Rate and Stand Reduction on Irrigated XtendFlex[®] Soybeans

Trial Objective

- Seeding rate and the overall stand health can significantly affect soybean yield potential.
- Several biotic and abiotic factors can result in soybean stand reduction, including herbicide drift, plant pathogens and disease, drought, soil compaction and crusting, and weed pressure. Altering the initial seeding rate and potentially replanting after stand reduction to hit target yields is a crucial decision for producers.
- This study's objective was to determine the effect of two seeding rates and five levels of stand reduction on soybean yield potential.

Experiment/Trial Design

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Seeding Rate (seeds/acre)	Stand Reduction (%)
Gothenburg, NE	Hord silt loam	Corn	Strip-Tillage	5/28/2022	10/6/2022	80	80,000 and 160,000	0, 20, 40, 60, 80

- The trial was arranged as a randomized complete block design with four replications and two treatment factors - seeding rate and percent stand reduction.
 - » Seeding Rates: 80,000 and 160,000 seeds/acre
 - » Stand Reduction: 0, 20, 40, 60, and 80% were achieved by mixing a non-herbicide tolerant soybean product with the test product so that when the soybean plants were sprayed the desired percentage of stand was removed.
- The soybean product used was a 2.7 maturity group (MG), XtendFlex[®] soybean product.
- The trial was fully irrigated throughout the growing season for a total of 10.0 inches of water.
- The trial was strip-tilled on 04/14/2022 with a base fertilizer application of 29 lbs of nitrogen/acre, 60 lbs of phosphorus/acre, 25 lbs of sulfur/acre, and 0.25 lbs of Zinc/acre.



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- Weed Control:
 - » Pre-Emerge applied on 5/30/2022
 - 32 fl oz/acre Roundup PowerMAX[®] herbicide
 - 4 fl oz/acre Zidua[®] SC Herbicide
 - 5 fl oz/acre Willowood Sulfentrazone 4SC herbicide
 - 8 fl oz/acre Dimetric[®] Liquid herbicide
 - » Post –Emerge applied on 6/12/2022
 - 32 fl oz/acre Roundup PowerMAX[®] herbicide
 - 10 fl oz/acre Section[®] Three Herbicide
 - 48 fl oz/acre Warrant[®] Herbicide
 - 22 fl oz/acre XtendiMax[®] with VaporGrip[®] Technology (Restricted Use Pesticide)*
 - 8 fl oz/acre Sentris[™] (Volatility Reducing Agent)
 - 0.5% V/V OnTarget[®] (Drift Reduction Adjuvant)
 - » Late Post applied on 7/5/2022
 - 16 fl oz/acre Clethodim 2E herbicide
 - » Late Post applied on 7/12/2022
 - 32 fl oz/acre Liberty[®] herbicide
- Soybean harvest population counts were taken prior to harvest.
- Total weight, test weight, and moisture content were collected with a plot combine to calculate yield per acre.

*XtendiMax[®] herbicide with VaporGrip[®] Technology is part of the Roundup Ready[®] Xtend Crop System, is a restricted use pesticide and must be used with VaporGrip[®] Xtra Agent (or an equivalent volatility reduction adjuvant). For approved tank-mix products (including VRAs and DRAs), nozzles and other important label information visit XtendiMaxApplicationRequirements.com. Applicators must check XtendiMaxApplicationRequirements.com no more than 7 days before application of this product for additional labeling, including state restrictions. Where applicable, users must comply with additional requirements found on the website.



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Understanding the Results

- There was a significant interaction between the seeding rate and stand reduction percentage for both final soybean harvest population and yield (Figures 1 and 2).
- The final soybean harvest populations reflected a consistent reduction with the stand reduction treatments applied (Figure 1).
- Note that final stands were very low with only about 15,000 plants/acre remaining when the 80,000 seeding rate was reduced by 80% (Figure 1).
- The higher seeding rate of 160,000 seeds/acre resulted in an average soybean yield of 66.1 bu/acre, compared to 63.4 bu/acre at a seeding rate of 80,000 seeds/acre (Figure 2).
- There were significant differences in average soybean yield (bu/acre) due to stand reduction within the 80,000 seeds/acre seeding rate. The 20% stand reduction had the highest average yield of 74.4 bu/acre, followed by the 0% stand reduction at 68.5 bu/acre. The 80% stand reduction resulted in average soybean yields that were significantly lower than the other stand reduction levels, averaging just over 42 bu/acre (Figure 2).
- Greater stand reduction resulted in visually higher weed pressure in the plots. This was possibly due to slower canopy closure allowing increased light penetration to the soil surface for weed seed germination. (Figure 3).

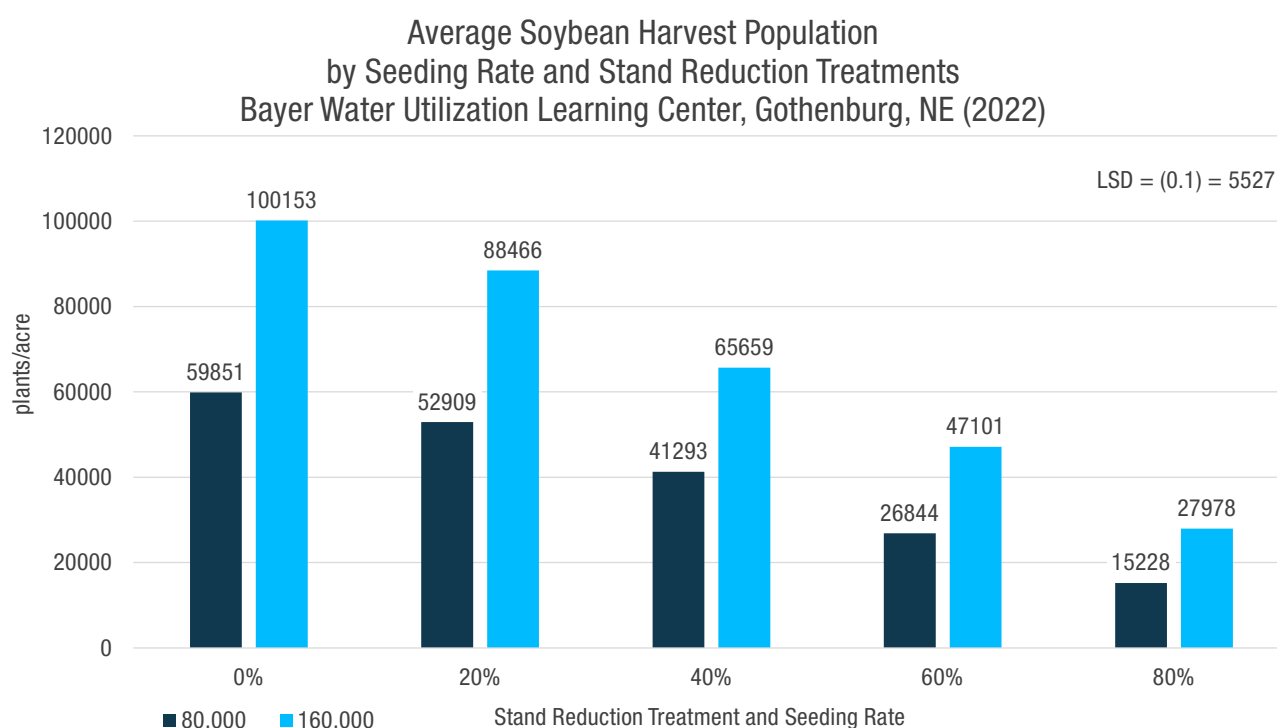


Figure 1. Soybean harvest population by seeding rate and stand reduction treatment. By experiment design, the harvest populations consistently decreased. Bayer Water Utilization Learning Center, Gothenburg, NE (2022).



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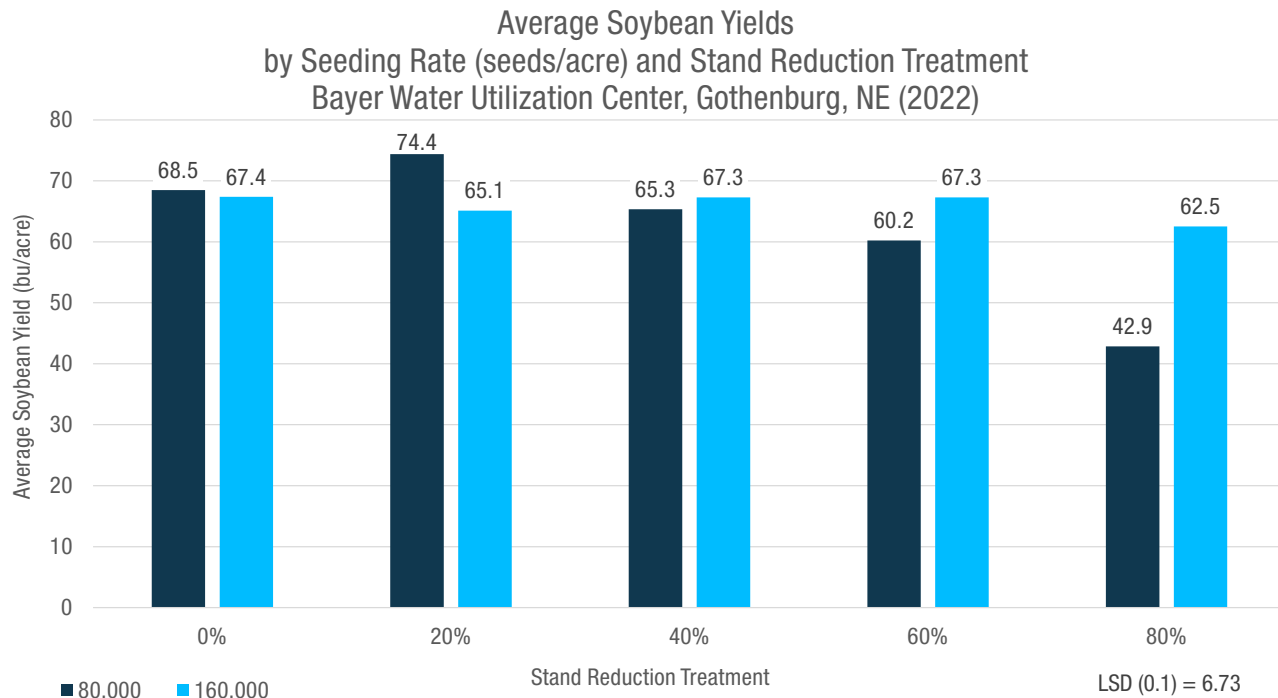


Figure 2. Average soybean yields as impacted by seeding rate (seeds/acre) and stand reduction treatment. Bayer Water Utilization Learning Center, Gothenburg, NE (2022).

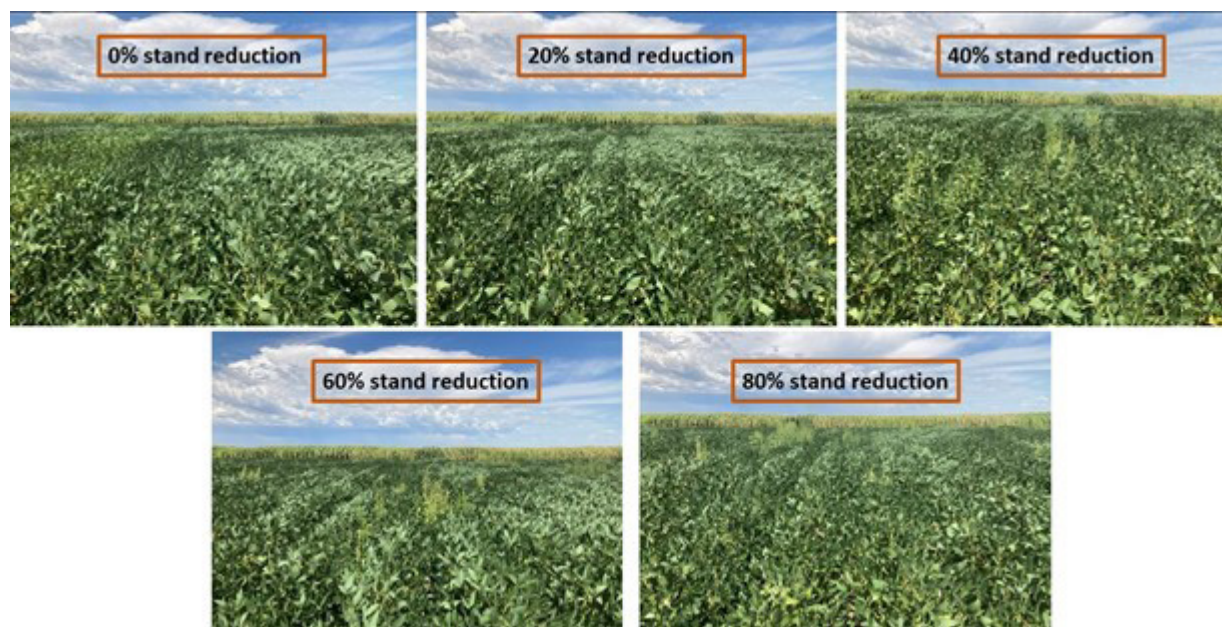


Figure 3. Weed pressure by stand reduction treatment within the 80,000 seeds/acre seeding rate. The pictures were taken on 8/31/2022 at the Bayer Water Utilization Learning Center, Gothenburg, NE (2022).

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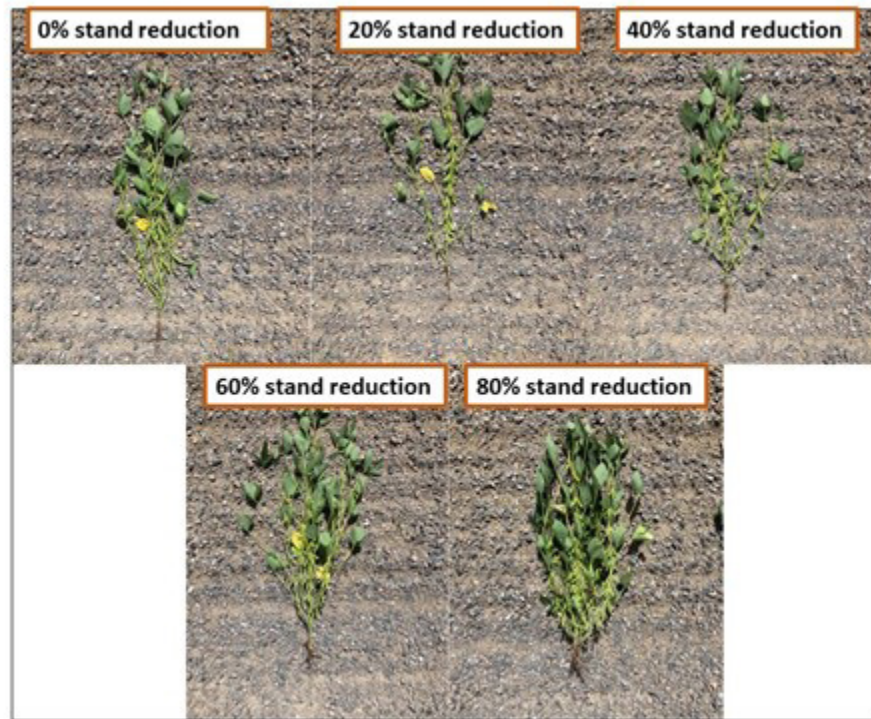


Figure 4. Soybean plants by the stand reduction treatment within the 80,000 seeds/acre seeding rate. The pictures were taken on 8/31/22 at the Bayer Water Utilization Learning Center, Gothenburg, NE (2022).

Key Learnings

- Depending on the seeding rate (seeds/acre), stand reduction due to growing conditions or management practices may result in no difference in soybean yield potential.
- The relative plasticity of a soybean plant's growth and seed production can compensate for stand reduction.
- Reduced soybean stands can potentially increase the potential for weed seed germination and weed competition.
- Farmers should work with their local seeds sales team member to help identify the best XtendFlex® soybean product for their fields.

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Legal Statements

The information discussed in this report is from a single site, replicated trial. 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.

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ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. It is a violation of federal and state law to use any pesticide product other than in accordance with its labeling. NOT ALL formulations of dicamba, glyphosate or glufosinate are approved for in-crop use with products with XtendFlex® Technology. ONLY USE FORMULATIONS THAT ARE SPECIFICALLY LABELED FOR SUCH USES AND APPROVED FOR SUCH USE IN THE STATE OF APPLICATION. Contact the U.S. EPA and your state pesticide regulatory agency with any questions about the approval status of dicamba herbicide products for in-crop use with products with XtendFlex® Technology.

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.

Products with XtendFlex® Technology contains genes that confer tolerance to glyphosate, glufosinate and dicamba. Glyphosate will kill crops that are not tolerant to glyphosate. Dicamba will kill crops that are not tolerant to dicamba. Glufosinate will kill crops that are not tolerant to glufosinate. Contact your seed brand dealer or refer to the Bayer Technology Use Guide for recommended weed control programs.

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