



# Response of a Roundup Ready 2 Xtend<sup>®</sup> Soybean Product to Planting Date and Irrigation Strategy

## Trial Objective

- Understanding the optimal planting date and irrigation strategy for soybean products is important as soybean production expands further west in the Great Plains.
- Farmers question whether Roundup Ready 2 Xtend<sup>®</sup> soybean products lodge more than the Roundup Ready 2 Yield<sup>®</sup> soybean products.
- The objective of this study was to evaluate how soybean product, planting date, and irrigation strategy interact to help producers best place products on their fields and maximize their inputs.
- This trial was also established to determine if Roundup Ready 2 Xtend<sup>®</sup> soybean products and Roundup Ready 2 Yield<sup>®</sup> soybean products have a similar potential to lodge.

## 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	Strip tillage	05/01/18	10/21/18	85	180K
				05/16/18	10/21/18		
				05/31/18	10/21/18		
				06/15/18	10/31/18		

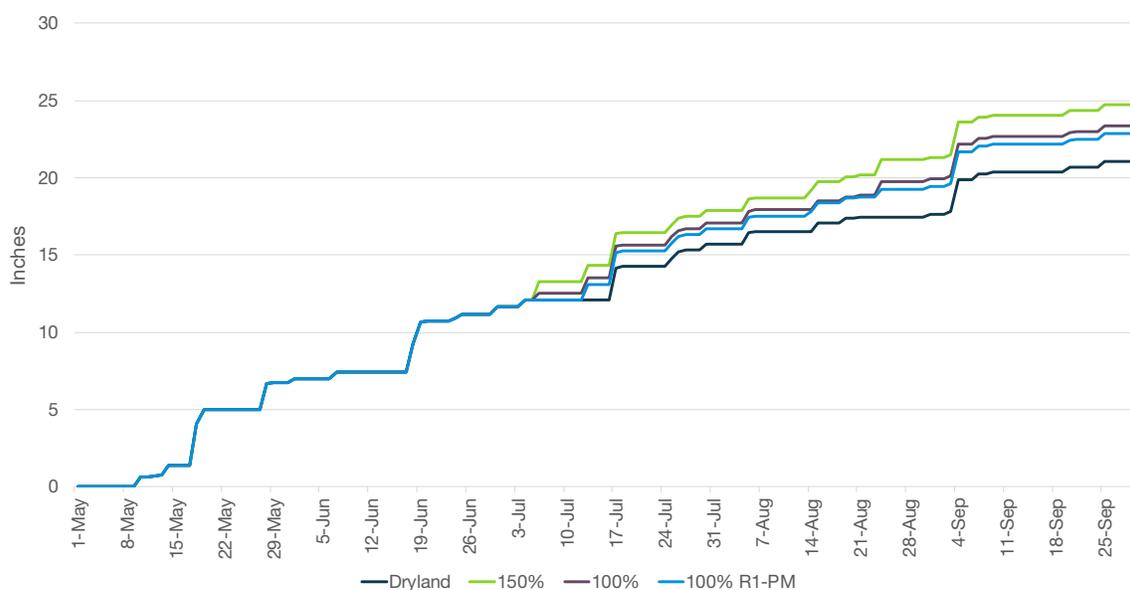
- Six Roundup Ready 2 Xtend<sup>®</sup> soybean products (2.4 to 3.3 MG) were compared to two Roundup Ready 2 Yield<sup>®</sup> soybean products (2.4 and 2.7 MG).
- Soybean products were planted on four different dates in 30-inch row spacing at 180,000 seeds/acre to provide an environment that favored lodging.
- Irrigation strategies and timing were as follows:
  - 150% - Irrigation was started in early July (3.7 inches of irrigation)
  - 100% - Full irrigation (FI) to meet the evapotranspiration of the crop (2.3 inches of irrigation)
  - R1 100% - Full irrigation was scheduled to start at R1 to physiological maturity (1.8 inches of irrigation). However, irrigation actually started at R2 for the first and second planting date, R1 for the third planting date, and V2 for the fourth planting date as seen in Figure 1.
  - Dryland – no irrigation but 21.1 inches of rainfall occurred during the growing season.
- The study was set up as a randomized split-split plot design with irrigation strategy as the whole plot, planting date as the sub plot, and soybean product as the sub-sub plot. Treatment combinations were replicated four times except for dryland, which was replicated three times.
- Weeds were controlled uniformly across the study.
- On September 13, 10.3 oz/acre of Hero<sup>®</sup> insecticide was sprayed on the fourth planting date, which was at the R6 growth stage, due to saltmarsh caterpillars defoliating the canopy.



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**Figure 1. Soybean plants on July 7th, the date of the first irrigation. The earliest planting date (May 1) was irrigated at R2, planting date 2 (May 16) was irrigated at R2, planting date 3 (May 31) was irrigated at R1, and planting date 4 (June 15) was irrigated at the V2 growth stage.**



**Figure 2. Rainfall and irrigation throughout the growing season. There were high amounts of rainfall throughout the growing season, reducing the requirement for irrigation.**



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## Understanding the Results

- In the irrigated treatments, the highest yield was recorded for the May 1 and May 16 planting dates (Figure 3).
- The R1 100% irrigation treatment had the highest numerical yield for the May 1 and May 16 planting dates (Figure 3) and had the lowest amount of irrigation water applied outside of the dryland treatment.
- Soybean lodging was not influenced by an interaction of planting date and irrigation strategy (data not shown).
- Some soybean products responded favorably to the 100% FI treatment while others had better performance if they were only fully irrigated during the reproductive stage through physiological maturity (Figure 4).
  - No significant reduction in yield was observed by only irrigating the soybean product during the reproductive stage. This strategy would be influenced by the precipitation for a given year but soybeans can be exposed to minor water stress during the vegetative stage with little impact on yield potential.
- Soybean lodging was influenced by soybean product and irrigation strategy with some soybean products having significantly higher lodging overall and some differences observed in how they responded to irrigation strategy (Figure 5).
- The highest yield for a soybean product was observed with either the May 1 or May 16 planting date. The lowest yield potential was consistently observed with the June 15 planting date (Figure 6).
- Lodging potential was directly influenced by an interaction between soybean product and planting date, with high levels of lodging recorded for the May 1 planting date with the 2.4MG-A product while planting date had little impact on lodging for the 2.9MG-B soybean product (Figure 7).
- Roundup Ready 2 Xtend<sup>®</sup> soybean products did not have a higher potential of lodging when compared to the Roundup Ready 2 Yield<sup>®</sup> soybean products. Instead, differences in lodging can be attributed to the individual soybean product (Figure 8).

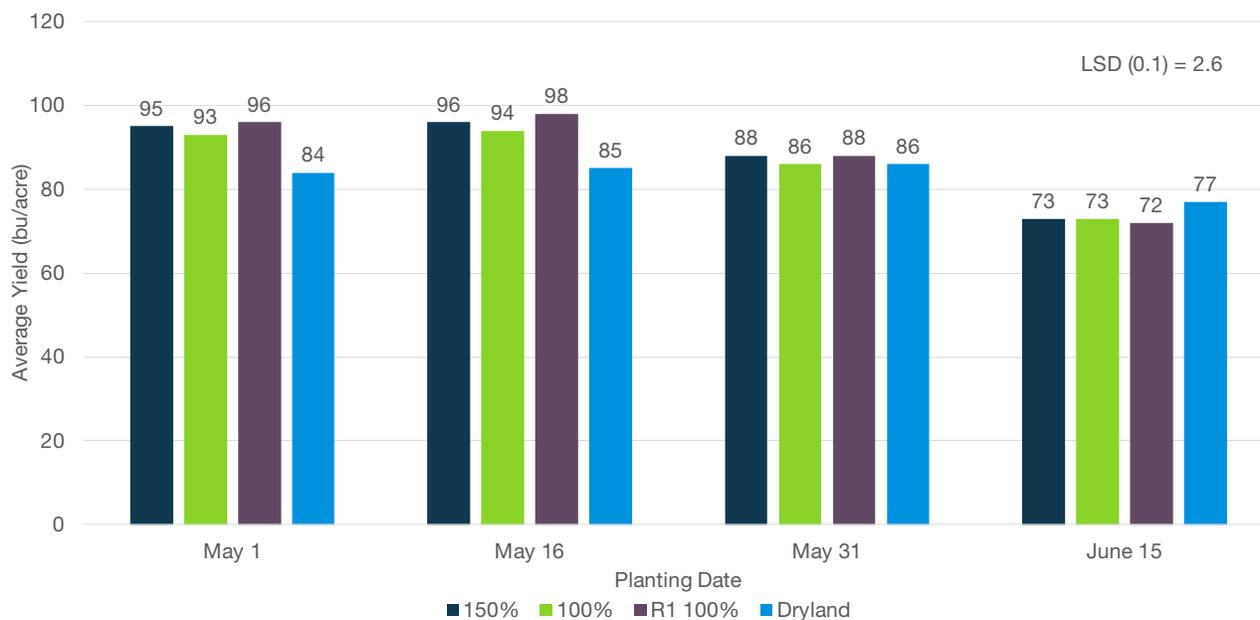


Figure 3. Influence of planting date and irrigation strategy on soybean yield.



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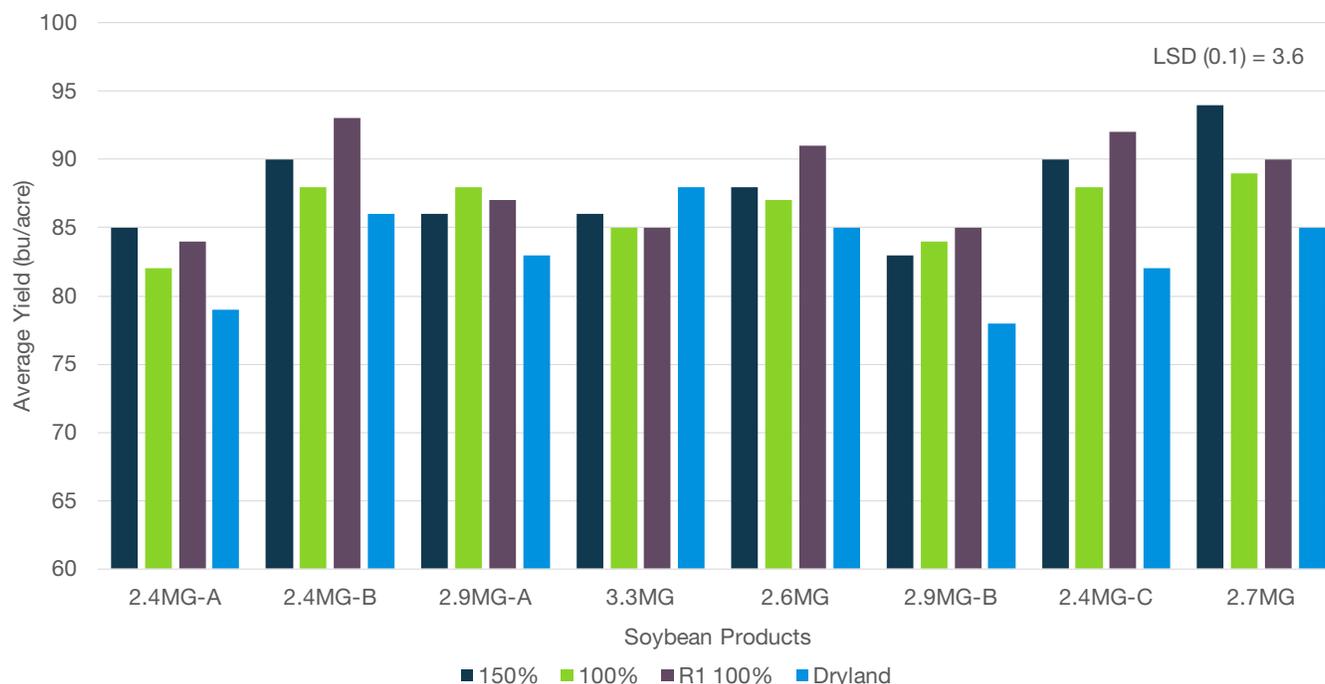


Figure 4. The irrigation strategy influenced yield differently for each soybean product.

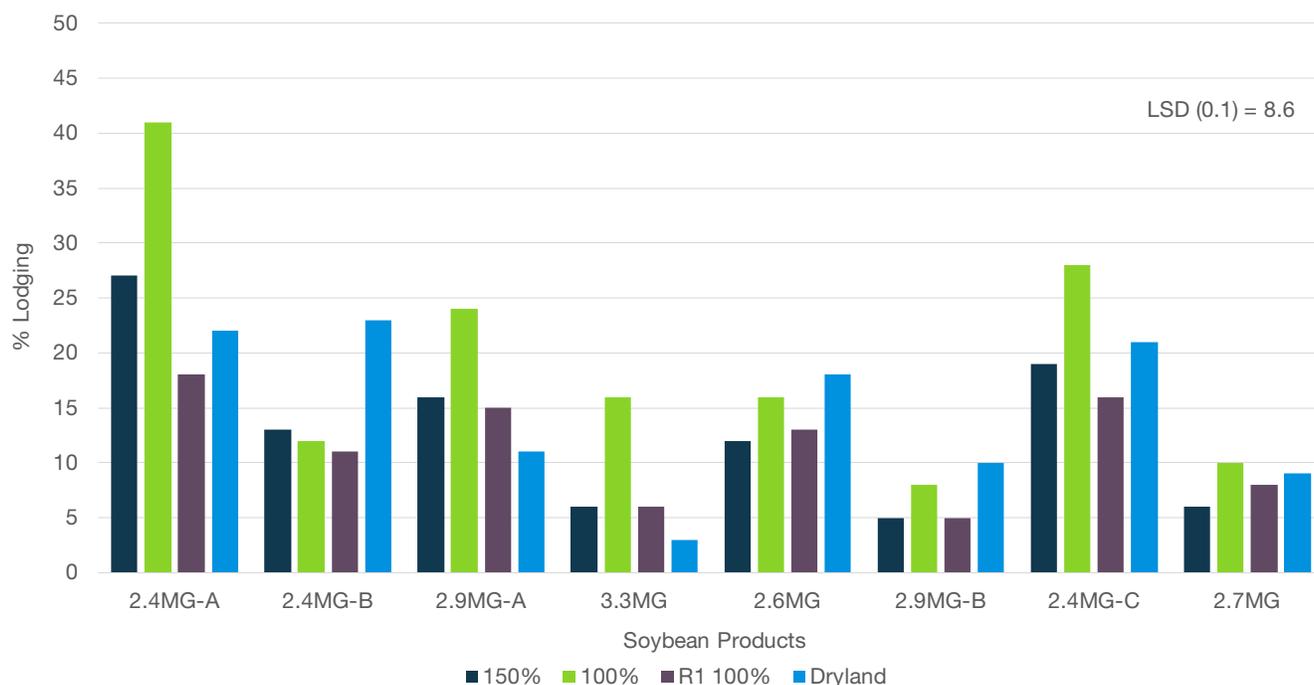


Figure 5. The irrigation strategy influenced lodging differently for each soybean product.



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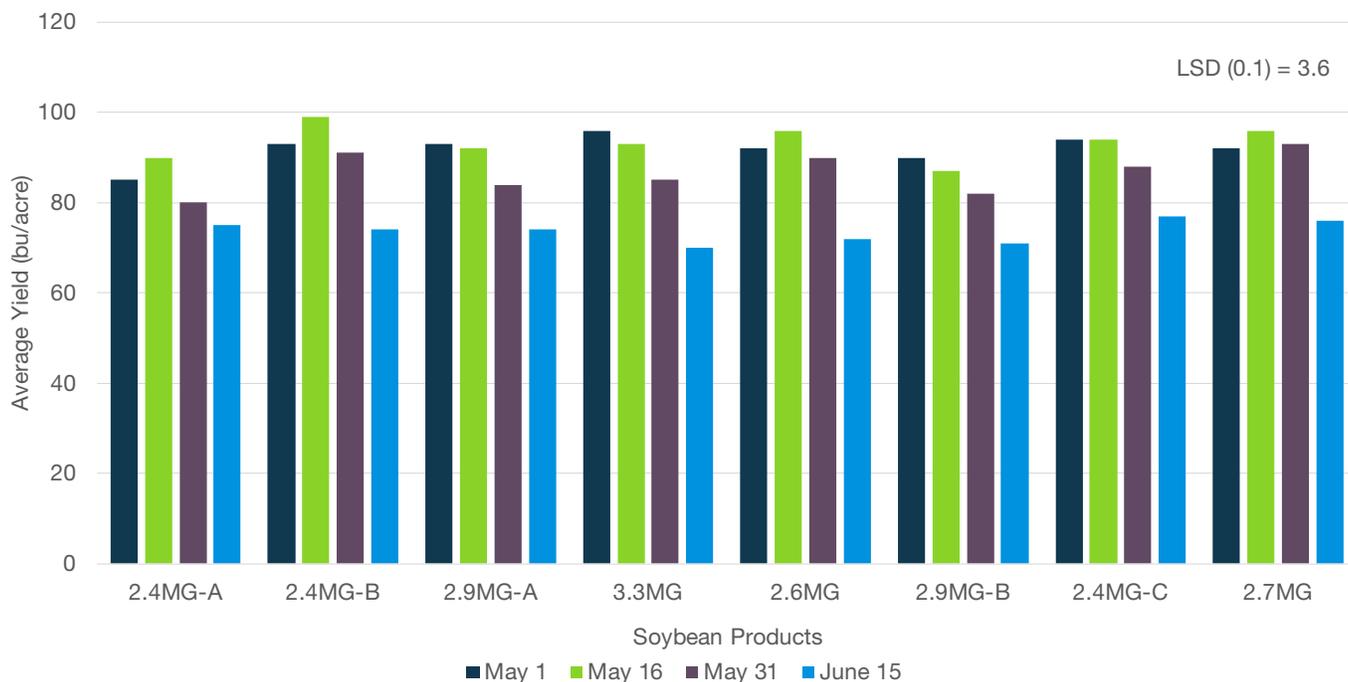


Figure 6. The planting date influenced yield differently for each soybean product.

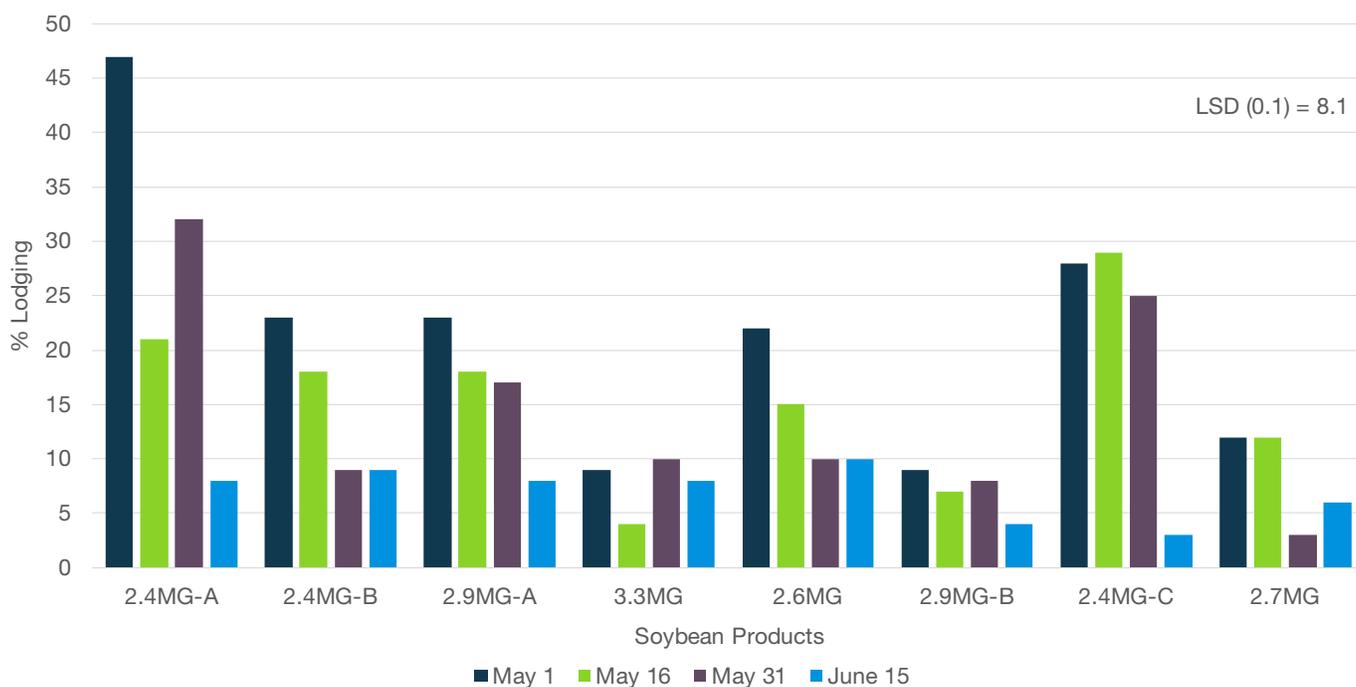
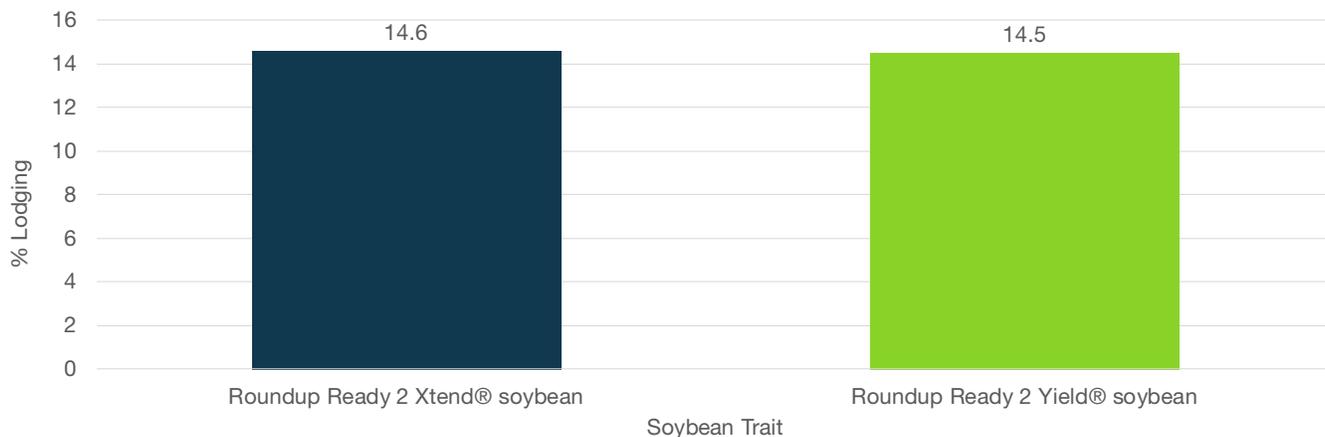


Figure 7. The planting date influenced percent lodging differently for each soybean product.



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**Figure 8. Percent lodging in the Roundup Ready 2 Xtend<sup>®</sup> soybean products and the Roundup Ready 2 Yield<sup>®</sup> products across all irrigation strategies and planting dates.**



**Figure 9. Lodging of the 2.9MG-A product planted May 31 with the 150% irrigation strategy**



**Figure 10. Lodging of the 2.9MG-B product planted May 31 with the 150% irrigation strategy**

## What Does This Mean For Your Farm?

- Ensuring soybeans are planted in a timely manner will likely increase yield potential.
- The planting date and irrigation strategy may influence the severity of lodging at harvest.
- Differences in lodging potential were not observed between Roundup Ready 2 Xtend<sup>®</sup> soybean products and Roundup Ready 2 Yield<sup>®</sup> soybean products.
- Producers should consult their local seed sales team to determine the best products for their irrigation environment and identify the optimal planting date.



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## Legal Statements

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**ALWAYS READ AND FOLLOW DIRECTIONS FOR USE ON PESTICIDE LABELING.** 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 or glyphosate are approved for in-crop use with Roundup Ready 2 Xtend<sup>®</sup> soybeans. 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 Roundup Ready 2 Xtend<sup>®</sup> soybeans.

**Roundup Ready 2 Xtend<sup>®</sup> soybeans contains genes that confer tolerance to glyphosate and dicamba.** Glyphosate will kill crops that are not tolerant to glyphosate. Dicamba will kill crops that are not tolerant to dicamba. Contact your seed brand dealer or refer to the Technology Use Guide for recommended weed control programs.

**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.

**Always read and follow grain marketing and all other stewardship practices and pesticide label directions.** Roundup Ready technology contains genes that confer tolerance to glyphosate, an active ingredient in Roundup<sup>®</sup> brand agricultural herbicides. Agricultural herbicides containing glyphosate will kill crops that are not tolerant to glyphosate. Bayer, Bayer Cross Design, Genuity<sup>®</sup>, Hero<sup>®</sup>, Roundup Ready 2 Xtend<sup>®</sup>, Roundup Ready 2 Yield<sup>®</sup>, Roundup Ready<sup>®</sup> and Roundup<sup>®</sup> are registered trademarks of Bayer Group. All other trademarks are the property of their respective owners. ©2018 Bayer Group, All Rights Reserved. 181203080319 121418CAM

