



Managing Cotton Growth with Stance[®] Plant Growth Regulator

Trial Objective

- Managing cotton growth in modern cotton varieties is a critical component of the production system.
- Several plant growth regulator (PGR) formulations exist in the marketplace including formulations of 4.2% mepiquat chloride and Stance[®] plant growth regulator from Bayer Crop Science. Stance[®] Plant Growth Regulator affects two key plant hormones to provide effective and consistent vegetative management.
- The primary purpose of this work was to identify use patterns for Stance[®] Plant Growth Regulator which could aid in producing cotton crops across the US.

Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (lb/acre)	Seeding Rate (seeds/acre)
Scott, MS	Mixed Sandy Loam	Corn	Conventional	5/18/2023	9/25/2023	1500	42,000

- There were seven Deltapine[®] brand cotton varieties planted in this trial:
 - » DP 2115 B3XF
 - » DP 2127 B3XF
 - » DP 2211 B3TXF
 - » DP 2239 B3XF
 - » DP 2317 B3TXF
 - » DP 2328 B3TXF
 - » DP 2333 B3XF
- Plant growth regulator treatments were:
 - mepiquat chloride, 4.2% generic formulation, applied on:
 - » 6/30/2023 at 16 fl oz/acre
 - » 7/19/2023 at 16 fl oz/acre
 - » 8/4/2023 at 16 fl oz/acre
 - mepiquat and Stance[®] Plant Growth Regulator rotation, applied on:
 - » 6/30/2023 with mepiquat at 16 fl oz/acre
 - » 7/19/2023 with Stance[®] Plant Growth Regulator at 4 fl oz/acre
 - » 8/4/2023 with Stance[®] Plant Growth Regulator at 4 fl oz/acre
 - Stance[®] Plant Growth Regulator, applied on:
 - » 6/30/2023 at 4 fl oz/acre
 - » 7/19/2023 at 4 fl oz/acre
 - » 8/4/2023 at 4 fl oz/acre
 - Stance[®] Plant Growth Regulator and mepiquat rotation, applied on:
 - » 6/30/2023 with Stance[®] Plant Growth Regulator at 4 fl oz/acre
 - » 7/19/2023 with mepiquat at 16 fl oz/acre
 - Untreated control (UTC)
- This trial was designed to determine cotton response to PGR applications at the highest label rates.
- Plots were 12-row-wide strips and roughly 1000 feet long, for a total of approximately 1 acre per plot.
- All field work, tillage, and herbicides were per local standards.
- Final plant height estimations were determined by measuring 10 plants per plot.
- Trial was machine harvested and samples were ginned for lint, turnout, and quality measurements.

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Understanding the Results

- These data require interpretation and should be considered in the correct context. The treatments in this study were high-management growth control treatments, using the highest labelled rates per application, attempting to determine the upper end of the growth control response.
- The high-management PGR applications using the highest labelled rates seen in this trial would not be typical for many production systems. As the results of this study indicated, this level of PGR application would be excessive for a typical production system.

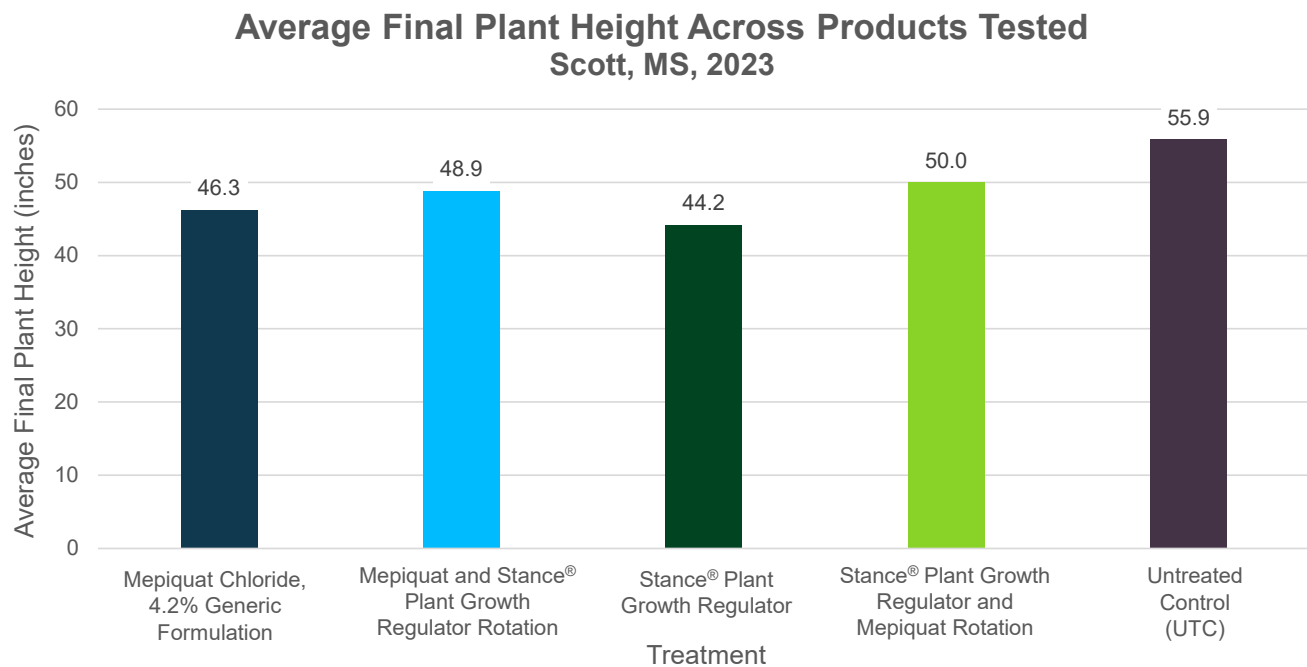


Figure 1. Average final plant height of each treatment across all varieties tested, Scott, MS (2023).



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**Average Final Plant Height by Product Tested and Treatment
Scott, MS, 2023**

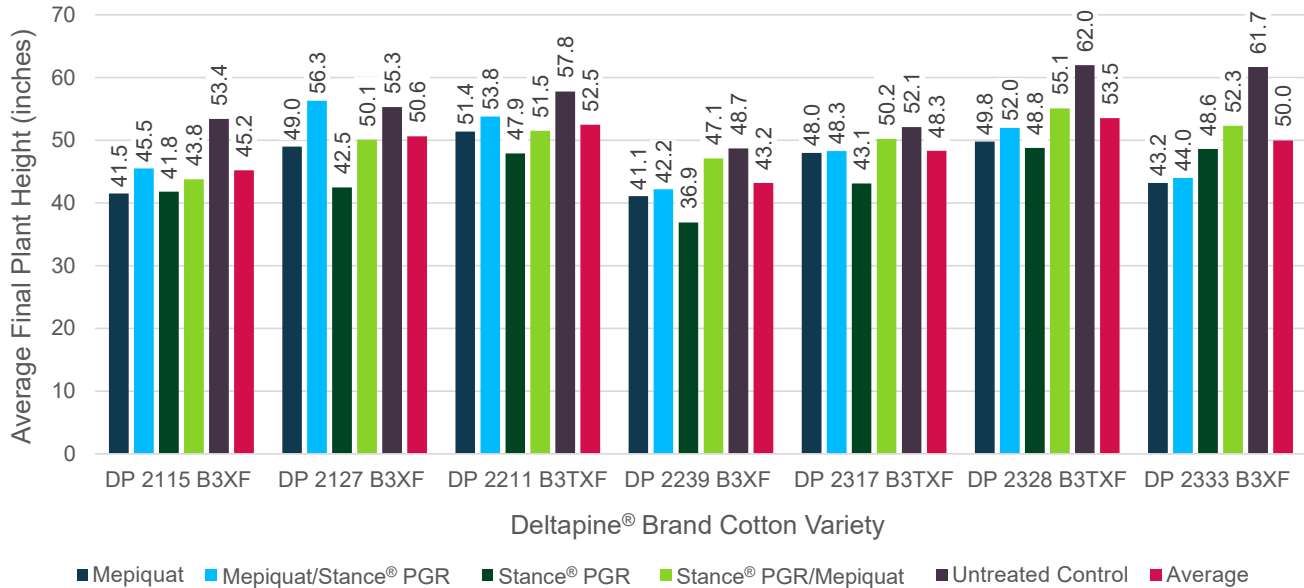


Figure 2. Average final plant height of each cotton variety tested by treatment, Scott, MS (2023)

- The UTC treatments averaged 55.9 inches tall at the end of the season. This level of cotton plant overgrowth would not be considered the typical “out of control” environment in which major applications are necessary to slow vegetative growth, but this plant height is not ideal either.
- The Stance® Plant Growth Regulator-only treatment resulted in the greatest average reduction in height compared to the untreated control. The mepiquat-only treatment was similar in average height reduction, followed by the alternating product treatments.



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Average Lint Yield Across Products Tested Scott, MS, 2023

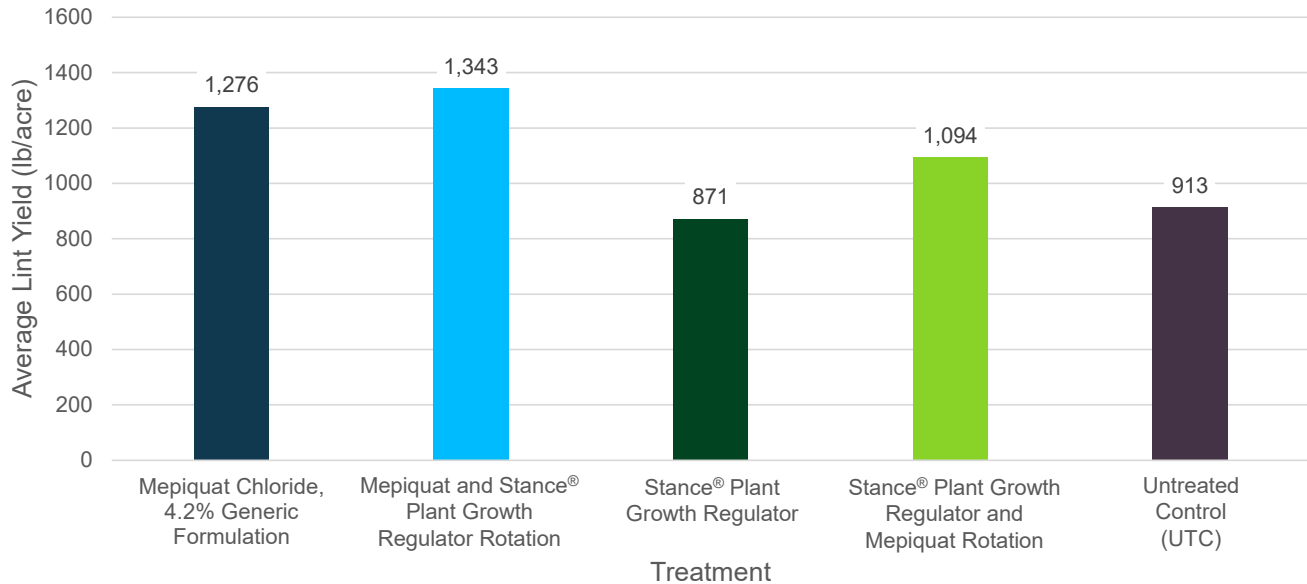


Figure 3. Average lint yield of each treatment across all varieties tested, Scott, MS (2023).

Average Lint Yield by Product Tested and Treatment Scott, MS, 2023

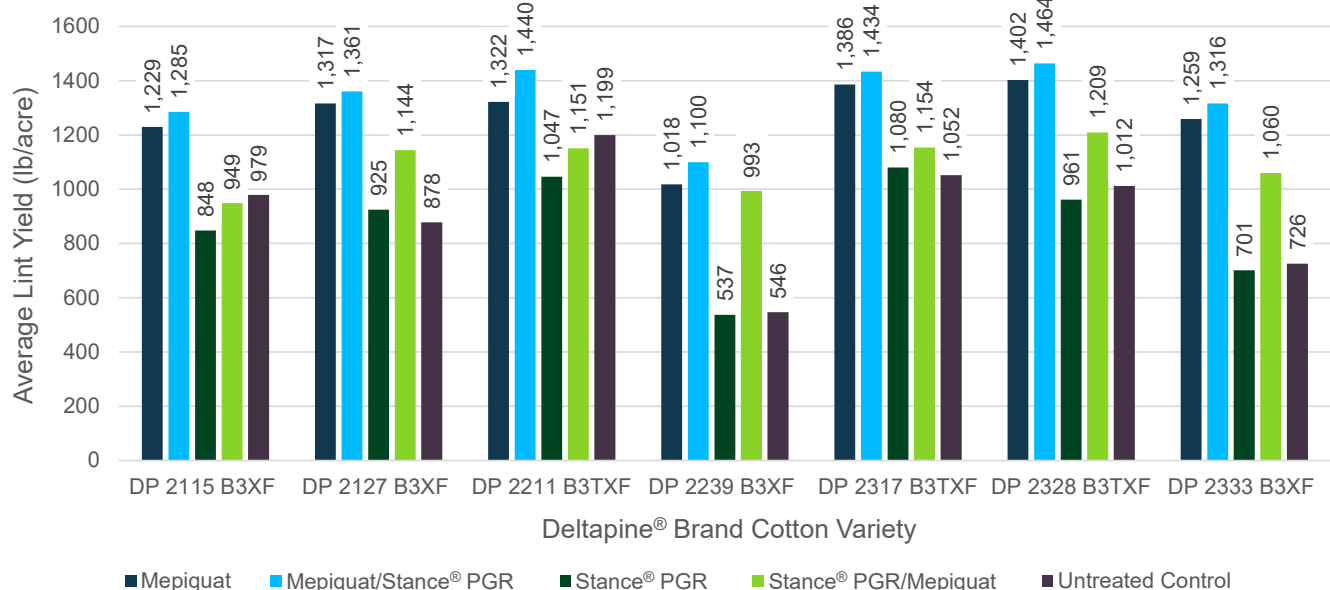


Figure 4. Average lint yield of each cotton variety tested by treatment, Scott, MS (2023).



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Average Lint Yield

- Lint yield was reduced in the Stance® Plant Growth Regulator-only treatment compared to the other PGR treatments. This lower yield may have been a result of the plants not requiring such aggressive growth control as three applications of Stance® Plant Growth Regulator at 4 fl oz/acre. The untreated control (UTC) yield was likely reduced due to the excessive growth that came from unbalanced vegetative and reproductive growth.
- Compared to the UTC, average yields increased for all treatments that included PGR applications except for the Stance® Plant Growth Regulator-only treatment. This indicates that Stance® Plant Growth Regulator can provide substantial growth control but can also be overused, resulting in a yield penalty.
- The mepiquat followed by Stance® Plant Growth Regulator treatment was numerically the highest yielding treatment in the trial, closely followed by mepiquat alone.
- Some of the differences observed in this data cannot be explained by height reduction alone. During this study we observed that early applications of high rates of Stance® Plant Growth Regulator seemed to influence a plant overall rather than just its height. Tertiary plant development (axillary positions/second and third position fruiting) was observed to slow down after the Stance® Plant Growth Regulator applications. It became apparent from qualitative observations and the collected data that some of the treatments in this study were higher than necessary to achieve the best potential return on investment for PGR use, slowing development too much for optimal yield potential to occur.

Key Learnings

- Stance® Plant Growth Regulator provides growers with a tool for controlling cotton growth.
- Applying high rates of Stance® Plant Growth Regulator early in the season may cause an increased risk of reduced yield potential. For this reason, growers should consider applying lower rates of Stance® Plant Growth Regulator early in the season.
- The highest lint-yielding treatment in the trial was the mepiquat/Stance® Plant Growth Regulator alternation (Figure 4).
- Further testing will occur in 2024 across a range of varieties using lower rates of PGR application and several rotational schemes.
- Please contact your local Bayer representative for more information.

Legal Statements

The information discussed in this report is from a single site, non-replicated demonstration. 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.

No dicamba may be used in-crop with seed with Roundup Ready® Xtend Technology, unless and until approved or specifically permitted, and no dicamba formulations are currently registered for such use in the 2024 season. Please follow <https://www.roundupreadyxtend.com/pages/xtendimax-updates.aspx> for status updates.

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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.

See the IRM/Grower Guide for additional information. Always read and follow IRM requirements.


B.t. products may not yet be registered in all states. Check with your seed brand representative for the registration status in your state.

Performance may vary, from location to location and from year to year, as local growing, soil and environmental conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on their growing environment.

The recommendations in this material are based upon trial observations and feedback received from a limited number of growers and growing environments. These recommendations should be considered as one reference point and should not be substituted for the professional opinion of agronomists, entomologists or other relevant experts evaluating specific conditions.

Products with XtendFlex® Technology contains genes that confer tolerance to glyphosate, glufosinate and dicamba. Plants that are not tolerant to glyphosate, dicamba, and/or glufosinate may be damaged or killed if exposed to those herbicides. Contact your seed brand dealer or refer to the Bayer Technology Use Guide for recommended weed control programs.

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