



The Response of Cotton Varieties to Population and Plant Growth Regulators

Study Guidelines

- A cotton demonstration trial was conducted at the Monsanto Learning Center at Scott, MS to demonstrate the effect of plant population and plant growth regulator (PGR) applications on plant growth and development.
- Questions asked included: What impact does increasing plant population have on cotton growth and development? Do PGR applications and planting population interact differently for different varieties?
- Four Deltapine® cotton varieties (DP 1137 B2RF, DP 1311 B2RF, DP 1321 B2RF, and DP 13R347 B2RF) were planted on May 30, 2013.
- All varieties were Genuity® Bollgard II® with Roundup Ready® Flex (B2RF) cotton.
- Each variety was planted at five different seeding rates (13,800; 27,600; 41,400; 55,200; and 69,000 seeds/acre).
- Two PGR regimes were implemented: passive and aggressive. Each variety, at each seeding rate, received both passive and aggressive PGR treatments.

PGR Applications (oz/acre)		
Date	Aggressive	Passive
2-July	12	NA
20-July	16	10
1-August	20	12

Results and Conclusions

- The exceptional 2013 growing season provided cotton plants with a somewhat abnormally long period of balanced vegetative and reproductive growth from bloom until cutout.
- The 2013 growing season was very similar to growing conditions typically experienced in Australia, California, and Arizona.
- This allowed for the accumulation of extremely high fruit retention and associated yield.

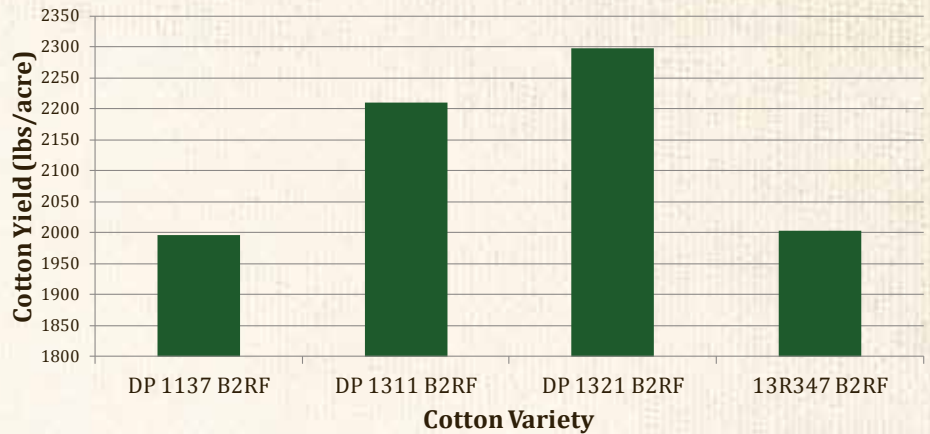


Figure 1. Cotton yield (lbs/acre) by variety across populations and PGR regimes. The 2013 cotton season was exceptional, with extremely high yield potential. Both DP 1311 B2RF and DP 1321 B2RF produced exceptional yields in 2013.

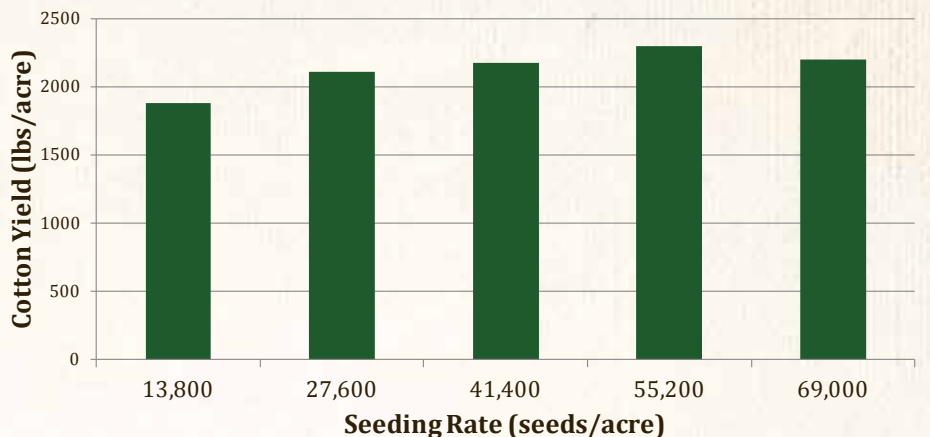


Figure 2. Cotton yield (lbs/acre) by seeding rate across varieties and PGR rates. The population responses in the growing conditions of 2013 were similar to previous years. There was a positive response to populations up to 55,200 seeds/acre and a drop in yield at higher populations.



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- The application of aggressive rates of PGRs in 2013 helped continue this balanced growth for a longer period, while the less aggressive management allowed plants to develop more vegetative growth in the mid-to-late season, resulting in cutout with a reduced fruit load.
- When managing “growthy” varieties, population can be a tool to moderate very aggressive vegetative development without great sacrifices in yield potential.
- Lower populations did not pay a huge price in yield.
- Aggressive PGR applications enhanced yields during the 2013 season.
- Results from the aggressive PGR applications in 2013 are a bit atypical in that during most growing seasons, many PGR applications will not lead to yield increases.
- During the extremely strong growing conditions of 2013, PGRs were a yield-increasing treatment across the board.
- This points out that that no two cotton fields or crops are the same, and each should be managed independently, based on knowledge and monitoring from that season, field, and/or variety.
- Growers should consult the data to determine which varieties are aggressive growers and how each product responds to both population and PGRs.

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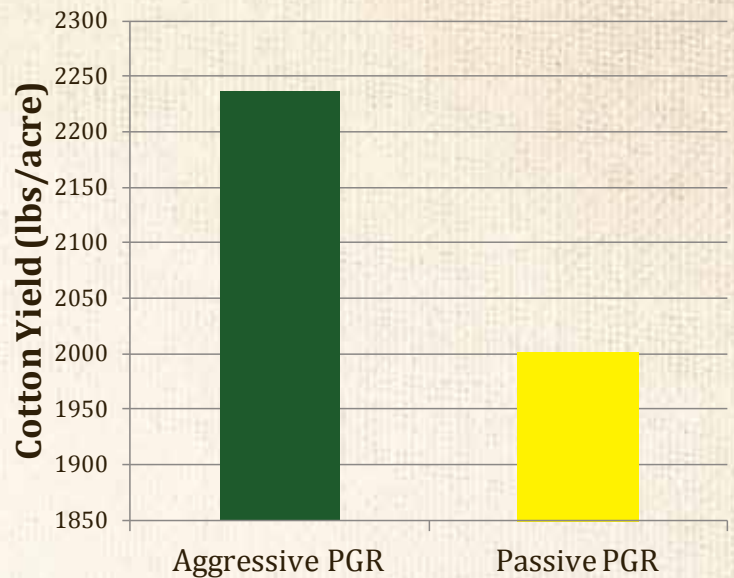


Figure 3. Cotton yield (lbs/acre) by PGR regime across varieties and populations. Contrary to more typical seasons, the aggressive PGR treatment improved yield in most cases. This is primarily due to the reallocation of resources in a season where fruit retention was extremely high.

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

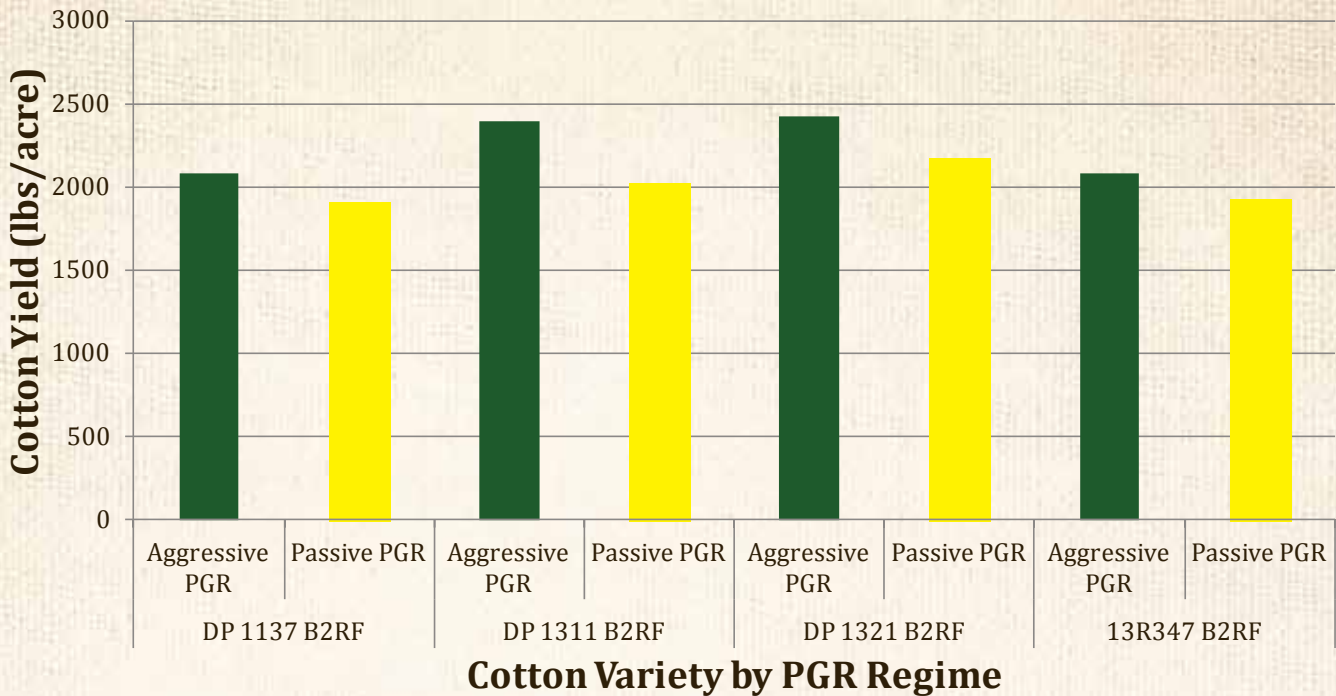


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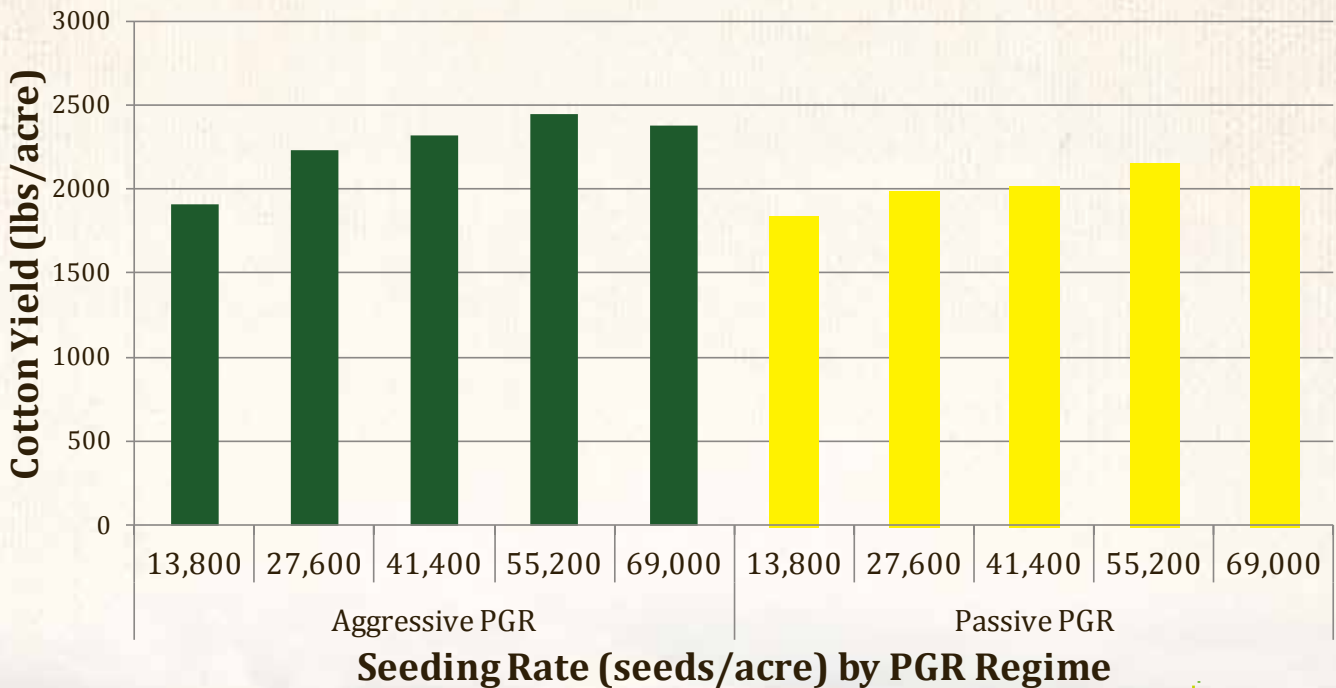


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Cotton Variety by PGR Regime

Figure 4. Cotton yield (lbs/acre) by variety and PGR regime across populations. For each variety tested, the aggressive PGR regime produced the highest yields in 2013.



Seeding Rate (seeds/acre) by PGR Regime

Figure 5. Cotton yield (lbs/acre) by variety and seeding rates across populations. Yields increased with the aggressive PGR treatment and, up to 55,200 plants/acre.