

# 2010 Demonstration Report



## THE LEARNING CENTER

at Scott, Mississippi

### Effect of PGR Strategies on Cotton Yield

A key factor in producing high yielding cotton is managing the perennial and indeterminate growth habit of the cotton plant with plant growth regulators (PGRs). Proper use of PGRs, such as mepiquat chloride (Pix<sup>®</sup>), can be critical to help maximize yield potential in any given year, while the mismanagement of PGRs can result in reduced yields. When determining the proper application timing of PGRs, several factors such as soil type, soil fertility, irrigation and field history should be taken into account. Environmental factors can also influence PGR strategies and their effectiveness. However, understanding a particular variety's growth habit and response to a PGR application is one of the most important factors in developing sound plant growth management strategies. Plant response to PGRs can vary depending on the cotton variety, plant genetics and the environment during and after application. This makes a blanket recommendation very difficult and often impractical.

#### Study Guidelines

In order to better understand the growth habits and response of the Deltapine<sup>®</sup> Class of 09 and 10 cotton varieties, a study was conducted at the Learning Center at Scott, MS to investigate the effects of low (passive) and high (aggressive) PGR management strategies. Eleven total cotton varieties were planted, four Deltapine Class of 09 varieties, five Class of 10 varieties and an experimental (Table 1). Seeds were planted at 42,000 seeds/acre and the trial was irrigated.

Cotton varieties were planted in 8 row plots with 4 rows receiving the high or aggressive PGR management strategy and 4 rows receiving the low or passive PGR management strategy. The aggressive treatment consisted of 8 oz/acre of a 4.2% mepiquat chloride at matchhead square, 16 oz/acre at early bloom and 20 oz/acre at mid-late bloom. The intent of the passive treatment was to reduce the rates by approximately 20 percent and delay the timing of application by 7-10 days past the aggressive treatment timing. The passive treatment consisted of 8 oz/acre of mepiquat chloride

application pre bloom, 12 oz/acre application 10 days after first bloom, and 16 oz/acre 7-10 days past peak bloom. The early rates appear to be similar, but are effectively lower due to the delay in application timing and the growth that occurs in that time.

Plots were harvested with a commercial cotton picker adapted to harvest individual plots. Seed cotton was ginned and weighed in Scott, MS to determine lint yield per acre.

#### Results

Cotton varieties selected for the trial differed in response to PGR management strategies (Figure 1). A passive PGR strategy resulted in a higher final yield for seven of the ten selected varieties, while three cotton varieties produced higher yields with the more aggressive PGR management strategy.

The largest differences seen when comparing the same variety across the two PGR regimes were 158 lbs/acre for 09R555B2R2 which yielded higher for the aggressive PGR strategy and DP 0912B2RF at 116 lbs/acre which yielded higher for the passive PGR strategy.

#### Conclusions

As expected, not all cotton varieties responded the same to PGR applications. In eight out of ten comparisons between the high and low PGR strategies, yield differences were less than 100 lbs/acre. The largest yield differences among the cotton varieties in favor of the passive PGR strategy was DP 0912B2RF, which suggests that this variety may have less vegetative growth and that lower total amounts of PGRs may be needed to maximize yield potential. Of the tested varieties, 09R555B2R2 produced the highest overall yield at 1626 lbs lint/acre under the aggressive PGR strategy. This suggests that 09R555B2R2 may have increased vegetative growth in

#### Deltapine<sup>®</sup> Cotton Varieties

Class of 09	Class of 10	Experimental
DP 0912B2RF	DP 1028B2RF	09R555B2R2
DP 0920B2RF	DP 1032B2RF	
DP 0924B2RF	DP 1034B2RF	
DP 0949B2RF	DP 1048B2RF	
	DP 1050B2RF	

Table 1. Deltapine cotton varieties in PGR management strategy trial.

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need of control with higher PGR rates and more applications.

With the exception of DP 0920B2RF, 09R555B2R2 and DP 1034B2RF varieties, aggressive PGR management reduced yield potential. The 2010 environmental conditions at Scott, MS generated an early cotton crop with high fruit retention. High fruit retention caused the cotton plants to provide their own vegetative growth control, reducing the need for aggressive PGR management for many of the cotton varieties. Also, the mid to late season was completely free from excessive rainfall which is the factor that often makes aggressive PGR applications needed for control of vegetative growth. This points out the need for field, variety, and season specific monitoring and PGR management.

Care should be taken to monitor all varieties with respect to their growth patterns; looking at 4th and 5th internode distances, soil moisture, agronomic practices and weather patterns to make PGR application decisions on these and all cotton varieties. This study gives a snapshot of only one growth environment, of location and year, but may provide insight into general recommendations of what to look for in the Deltapine® Class of 09 and 10 cotton varieties.

*Note: These results are not intended to provide you with a blueprint on how to grow any specific variety but merely to give the benefit of some research with them. Your experience and knowledge will remain an invaluable component to the successful management of any variety. This information is being provided to you to aid you in making decisions and giving advice regarding the management of these varieties. The information is not intended to totally supplant your experience and knowledge base on the proper management of your individual crops.*

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

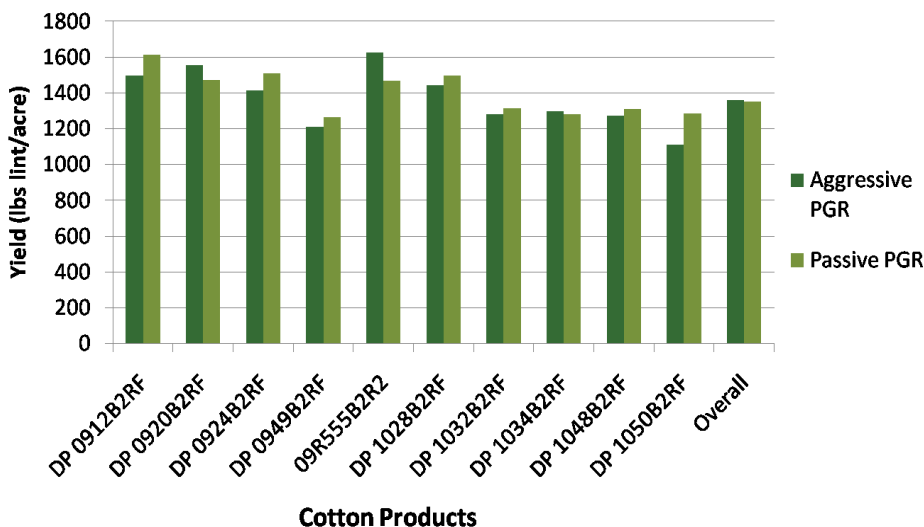


Figure 1. Effect of PGR strategies on yield (lbs lint/acre) of Deltapine® Class of 09 and 10 cotton varieties.

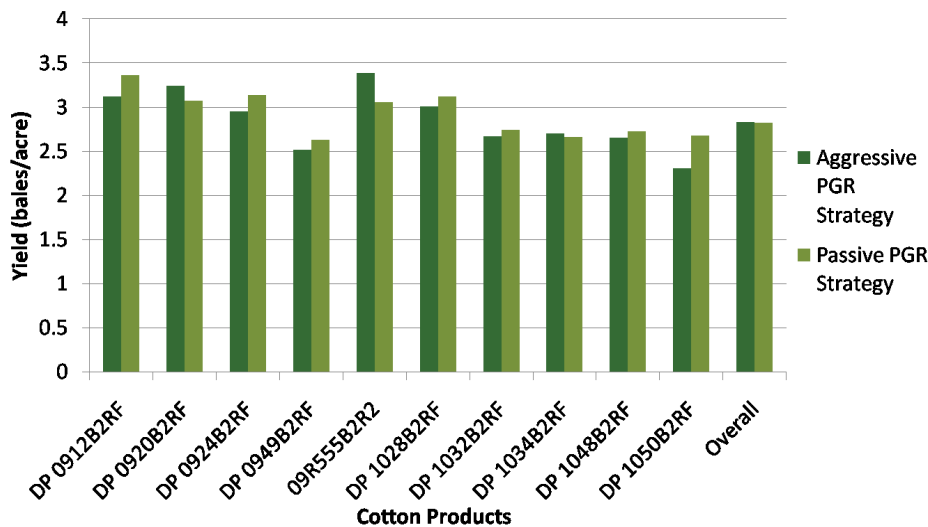


Figure 2. Effect of PGR strategies on yield (bales/acre) of Deltapine® Class of 09 and 10 cotton varieties.

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