GROWTH RESPONSES TO RATES AND TIMING OF PLANT GROWTH REGULATORS ON NEW DELTAPINE COTTON VARIETIES

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Introduction

One of the most common methods of controlling excessive vegetative growth in cotton is through the use of plant growth regulators (PGRs). Most PGRs act by reducing the amount of indoleacetic acid produced in the plant resulting in a shorter, more compact plant (Kerby et al., 1982; Relyea et al., 1990; Vargas, 1991). With the introduction of DP 0912 B2RF, growers had to learn to manage cotton with PGRs in a more aggressive manner compared to previous years. With new year’s release of a new class of varieties, there is a need to understand how these new cotton varieties respond to PGRs. Therefore, studies were conducted in 2011 across 4 locations in the Mid-South to determine if these new varieties respond differently to any response differences in PGR rates and timings with regards to leaf height of DP 0912 B2RF, DP 11R159B2RF, DP 1252 B2RF, and experimental MON11R159B2RF compared to DP 0912 B2RF.

Materials and Methods

Plant growth regulator studies were conducted at 5 locations across the Midwest and Southeast in Tulsa, MS, Carman, SC and Macon, GA. Each location was set up as a one replication strip study. Locations were planted according to the optimum planting time for that respective region. (Figure 1) The plant growth regulator varied at each location to test standard, intermediate, and high rates as well as single, sequential, and delayed applications. The standard rate was applied 100 oz/A early bloom (UTC), 40 oz/A early-squaring (ES), and 60 oz/A early bloom plus late-squaring (ES + EB) to all the cotton. The results were averaged from an average of 10 plants per plot at each location. Analyses were conducted using a strip model design in JMP (SAS Institute Inc., Cary, NC) and were considered as regressions. No replications were conducted using MON11R159B2RF, but data are presented for the year’s trials.

Figure 1. Plant height measurements taken at or near cutout for plant growth regulator treatments comparing DP 1212 B2RF and DP 0912 B2RF.

Results and Discussion

Yield and Varietal Differences

Across all environments, all early bloom applications of 18 oz/A and single sequential treatments significantly decreased plant height compared to early square applications of 4 oz/A and single early bloom applications of 16 oz/A. However, all other treatments were similar. The standard rate was applied 100 oz/A early bloom (UTC), 40 oz/A early-squaring (ES), and 60 oz/A early bloom plus late-squaring (ES + EB) to all the cotton. The results were averaged from an average of 10 plants per plot at each location. Analyses were conducted using a strip model design in JMP (SAS Institute Inc., Cary, NC) and were considered as regressions. No replications were conducted using MON11R159B2RF, but data are presented for the year’s trials.

Summary

Younes, B. W. 1985. Effects of low rate multiple applications of pac泰apic chloride on the reproductive and vegetative structures in cotton. M.S. Thesis, Mississippi State University, Mississippi State, MS.


Reference


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