EVALUATION OF GROWTH CHARACTERISTICS OF MODERN COTTON VARIETIES IN GEORGIA, 2013 Brock A. Ward T. Jay Hathorn Nicholas D. McGhee D. Scott Carlson University of Georgia

Tifton, GA Jared R. Whitaker University of Georgia Statesboro, GA Guy D. Collins University of Georgia Tifton, GA

Abstract

Prior to 2010, approximately 85% of Georgia's cotton acreage was planted to a single full-season variety, DP 555 BR. With the removal of this variety from the market, Georgia's cotton growers must now choose from many other varieties that differ in maturity, growth potential, management requirements, and response to environmental stress. Due to the increasingly rapid release of modern varieties onto the market, evaluation of plant growth and fruiting characteristics is necessary in order to provide timely, accurate, and research-based information to growers. Evaluation of such parameters could provide insight on how growers should manage new varieties with plant growth regulators, irrigation, or other agronomic inputs.

As part of the UGA On-Farm Cotton Variety Performance Evaluation Program, 12 top-performing cotton varieties were planted in growers' fields in both irrigated and non-irrigated environments across all regions of Georgia's cotton belt. All varieties were planted in six-row plots, and were replicated three times. Prior to harvest, the authors collected plant height, node of first sympodia, nodes above cracked boll, percent open bolls per 10 feet of row for each plot, and the number of bolls per foot of row per plot for each variety in the trial: Worth County (high-yielding irrigated trial). The following varieties were evaluated: PHY339WRF, PHY499WRF, PHY575WRF, DP1050B2RF, DP1137B2RF, DP1252B2RF, DG2610B2RF, CG3787B2RF, FM1944GLB2, ST4946GLB2, ST6448GLB2, NG5315B2RF.

Data were subjected to Analysis of Variance, and means were separated using Fisher's Protected LSD at p < 0.05. Plant height was significantly different among several of the varieties tested, with a range of approximately 18 inches between the tallest and shortest variety, suggesting that overall growth potential does vary among modern varieties. The node of first sympodia and nodes above cracked boll (often used as a partial measures of maturity) were also significantly different among the twelve varieties in the trial ranging 1.5 and 3.1 respectively. Percent open bolls ranged over 27% and the number of bolls per foot of row ranged 13.2 across varieties, illustrating a wide range in maturity and yield potential among some of the most widely planted varieties in Georgia. The range in the number of bolls per foot of row suggests that yield differences may be related to boll numbers, along with other variables such as lint percentage.

Significant differences between varieties were observed for all parameters evaluated; plant height, node of first sympodia, nodes above cracked boll, percent open bolls, and number of bolls per foot of row. Interestingly however, similar trends were not observed across all maturity parameters nor measures of growth potential, indicating that no single parameter can accurately predict maturity or growth potential, however this data does provide insight on how particular varieties should be managed. Further analysis of these parameters across multiple environments may be warranted.

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